LOS TRATADOS DE CONSTRUCCIÓN HISTÓRICOS BRITÁNICOS: SIGLOS XVII Y XVIII

Análisis de sus contenidos sobre técnicas de construcción y su aplicación en rehabilitación

TESIS QUE OPTA A MENCIÓN INTERNACIONAL

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ANEXO A

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TÍTULO	THE ELEMENTS OF ARCHITECTURE. COLLECTED BY HENRY WOTTON Kt, FROM THE BEST AUTHORS AND EXAMPLES	
AÑO PUBLICACIÓN	London 1624	
HABLA DE_		
Dedicatoria		
A quien va dirigido/Prefacio	I will therefore spend in this Preface, rather about those from whom I have gathered my knowledge: for I am but a gathered and disposer of other mens stuffe, at my best value. (...Vitruvius)	
NOTAS SOBRE EL LIBRO		
Casa Ikea	Notas	
	The accomplish and justy celebrated English gentlemen Sir Henry Wotton, many years ambassador at venice, and who died provost of Eton College, in 1639, was particularly averse to that eminent vice of the times in which he lived (disputing about religion. He said to have ventured to tell king James, by a sly stroke of national as well as personal sarcasm, that "the itch of disputation was the scab of the church". He once incurred that monarch's displeasures, for having, in a convivial party, as Augsburg, defined and ambassador to be "an honest man sent to lie abroad for the good of his country". To one who railed at papist with more zeal than knowledge, he gave his advice "Forbear sir, until you have studied the points better: he that understand amiss, will be sure to conclude worse; and pray beware of thinking, that the further you go from Rome, the nearer you are to GOD!" To another, who asked "whether the papist might be saved without knowing that: look to yourself".	
COMENTARIOS	Libro moleskino (A5), es anterior al incendio, pero da parámetros similares al resto, de hecho muchos autores lo nombran, el considerado primer tratado en inglés IMPORTANTE. Al ser un volumen antiguo se han extraído las notas de una edición comentada de Frank Hard, ver a continuación.	

AUTOR	Sir Henry Wotton// Frederick Hard	
TÍTULO	THE ELEMENTS OF ARCHITECTURE. COLLECTED BY HENRY WOTTON Kt, FROM THE BEST AUTHORS AND EXAMPLES	
AÑO PUBLICACIÓN	London 1624// 1968 by the Folger Shakespeare Library (the University Press of Virginia)	
HABLA DE_		
Dedicatoria		
A quien va dirigido/Prefacio	And with that confidence, I feel into these thoughts; of which, there were two ways to be delivered: the one historical, by description of the principal works, performed already in good part by Giorgio Vassari in the lives of Architects: the other Logical, by casting the rules and cautions of this art, into some comportable Methode; whereof I have made choice; not onely as the shortest and most Elemental, but indeed as the soundest. For thought in practical knowledge, every complete example, may bear the credite of a rule; yet peradueture rules should precead, that we may be by them, be made fit to judge of examples: therefore to the purpose; for I will preface no longer.	Hace una crítica de otros arquitectos, Vitruvio y Alberti, básicamente porque son los que se conocen. Por otro lado justifica la escritura de ese libro a pesar de no conocer el arte de la arquitectura, porque Hippodamus the Milesian escribió sobre repúblicas siendo arquitecto. Y que tiene suficiente dinero para llevarlo a cabo
NOTAS SOBRE EL LIBRO	Well building hath three conditions: commoditie, firmenes, and delight. (…) We may consider the whole subject under two general heads: the seate, and the work. Site: ➢ The qualitie and temper of the air: which being a perpetual ambient, and ingredient, and the defects dereof, incorrigible in single habitations (which I most intend) doth in those respects, require the more exquisite caution; that it be not too grosse, nor too penetrative; not subject to any foggy noysomnesse, from fens or marshes neere adioyning; nor too mineral exhalations, from the soile itself. Not undigested, for want of sunne, not unexercised, for want of winde: which wereto lieu (as it were) in a lake, or standing poole od aire, as alberti the florentin architect, doth ingeniously compare it. ➢ Astrological, as when they warn us from places of malign influence: where earthquakes, contagions, prodigious births, or the like, are frequent without any evident cause; whereof consideration is peranduenture not altogether vaine: ➢ Economical, as the site be well watered, and well swelled, that it be not of too steepie and incommodious access to the trouble both of friends and family. That it lie not far from some navigable river or arme of the sea, for more ease of provision and such other domestique notes.	

	➢ Optical, properties of a well chosen prospect; which I will call the royaltie of sight. ➢ Caution political, to built too near a great neighbor. I have not been so severe, as a great scholer of our time, who precisely restrayneth a perfect situation, at least for the maine point of health, as locum contra quem Solradios suos fundit cum sub Ariete oritur, that is, in a word he would have the first salutation of the spring.(…) Yet I must withal say that in the seating of our felues (which is a kind of marriage to a place) Builders should be as circumspect as Wooers; left when all is done that Doome befall us, which our master doth lay upon Mitylene; a town in truth (faith he) finely built, but foolish planted. The next in order is the placing of the parts; about which I will propound a rule of mine owne collection	
		Aquí entra a hablar de que el arte ha de tener reglas y que para este se fija en la naturaleza y en el cuerpo humano. Que ha sido creado por Dios. Corazón en el centro (fuente de vida); los ojos describen un círculo con su visión; los brazos, a cada lado para aproximar;
	That place of every part, is to be determined by the use. So then from naturall structure, to proceed to artificial, and in the rudest things, to preserve some image of the excellent. Let all the principal chambers of delight, all studies and libraries towards the east; for the morning is a friend to the muses. All offices that requires heat, as kitchins, stillatoires, stoves, rooms for baking, brewing, washing, or the like, would be meridional. All that need coole and fresh temper, as cellars, pantries, butteries, granaries, to the North. To the same sidelikewise, all that are appointed for gentle motion, as Galleries, especially in warm Climes, or that otherwise require a steadie and unvariable light, as Pinacothecia (saith Vitruvius) by which he intendeth (if I may gesse at his greeke, as we must doe often even at his Latine) certain repositories for workers or rarity in picture or other arts, by the Italians called studioli, which at any other quarter, where the course od the sunne doth diversifie the shadowes, would loose much of their grace. And by this rule having always regarde to the use, any other part may be fitly accommodated (…)	Notas sobre los griegos, y los romanos, y también sobre los Egipcios.
	The work: principal parts, the accessorie or ornaments; and in the principal, first the preparation of the materials, and the disposition, which is de forme.	Habla de los materiales, los cuales no desagradan a los arquitectos, habla de la piedra, la madera (los diferentes árboles) y ya cayendo bajo de la arena, la cal y la arcilla
	I must here remember that to choose and sort the materials, for every part of the fabrique, is a dutie more proper to a second superintendent, over all the under artifisans called (as I take it) by our author, officinator and in that place expressely distinguissed from the architect, whose glory doth more consists in the designement and Idea of the whole worke, and his truest ambition should be to make the forme, which is the nobler part (as it were) triumph ove the matter. (…) Whereunto though I make haste, yet me first collect a few of the least trivial cautions, belonging to the material provision. Leon Batista Alberti, is so curious, as to wish all the timber, cut out of the same forrest and all the stone out from the same quarrie. Philibert de L'Orme the French architect goes yet somewhat further, and would have the lime made of the	

	very same stone, (…), but close that part which I have now in hand, about the materials, with a principal caution: that sufficient stuffe and money be ever ready before we begin; for when we build now a piece, and then another by fits, the work dries and finkes unequally, whereby the walls growe full of shinques, and crevices; therefore such pawsings are well reproduced by Palladio and by all another. This things considered, we are both by the precepts and by the practice of the best builders, to resolve upon rectangular squares. (…) ; provided that the length doe not exceede the latitude above one third part, which would diminish the beauty of the aspect, as I shall appeare when I come to speake of symmetry and Proportion.	Habla de las bondades de los materiales según los antiguos que incluso sacaban la cal de piedras nobles como el mármol y supone que por eso los teatros aún continúan en pie. Luego pasa a hablar de los ladrillos. Y luego a como las diferentes climatologías pueden afetar a los materiales. Y una vez hablado de sobre la preparación de la materia, ahora se ha de hablar de la disposición de estos materiales, de la forma. Entra hablando de las formas pueden ser simples o mixtas, circulares o angulares. Empieza con el círculo. Que a pesar de ser bonito es muy poco aprovechable para las construcciones privadas. Complica la situación de las subdivisiones y es una pesadilla para la luz, excepto si es cenita y centrada. Defiende las figuras angulares, pero el triángulo no, porque es complicado y las figuras de más de 4 ángulos son mas apropiadas para instalaciones militares Sigue comentando temas sobre la proporción del edificio, hasta que llega a : (casa IKEA) 2ª parte del libro (pag 82-final) Habla de la pintura y la escultura a través de los siglos y como afecta a la casa. En pag 109 empieza a hablar de jardines y fuentes y elementos de jardín Pero a partir p114 hace como un resumen de todo (ver el final)
Casa Ikea	Now concerning the parts in severaltie. All the parts of every fabrique, may be comprised under five heads, which division I receive from Batista Alberti, to do him right and they are be these: The foundation The walls The apportions or overtures The compartition And the Cover. I will touch also the naturall reasons of art, that my discourse may be the less mechanicall. FOUNDATION. (…) therefore, that we may found our habitation firmely, we must first examine the bed of earth. *Substructiones fundationes fodiantur* (saith Vitruvius) *se queant inueniri ad solidum, & in solide*. By which words I conceive him to commend unto us, not onely, a diligent, but even a iealous examination what the soile will beare; advising us, not to rest upon any appearing soliditie, unless the whole mould through which we cut, have likewise beene solid; but how deep we should go in these search, he hath no where to my remembrance determine, as perhaps depending more upon discretion, then regularitie, according to the weight of the work, yet Andrea Palladio hath faired adventured to reduce it into a rule: allowing for that cavazione (as he called it) as sixt	

part of the height of the whole fabrique, unless the Cellars be under ground, in which case he would have us, (as it should seem) to sound somewhat lower.

Some Italians do prescribe, that when they have chosen the floor, or plot, and laid out the limits of the work, we should first of all digge wels and cesternes, and other under conducts and conveniences, for the suillage of the house, whence may arise a double benefit, for both the nature of the mould or soile; would thereby be safely searched, and moreover those open ventes, will serue to discharge such vapours, as having otherwise no issue might preventure shake the building. This is enough for the natural grounding, which though it be not a part of the solid fabrique, yet here was the fittest place to handle it.

There followed the substruction, or ground-work of the whole edifice, which must sustain the walls; and this is a kid of artificial foundation, as the other was natural. About which these are the chiefe remembrances. First, that the bottom be precisely level, where the Italians therefore commonly lay a platform of good bord; then that the lowest ledge or row be merely of stone, and the broader the better, closely layd without morter, which is general caution for all marts of building, that are contiguous to board or timber, because lime and wood are insociable, and if any where unfit confiners, then most especially in the foundation. Thirdly, that the breadth of the substruction be at least double to the insistent wall, and more or less, as the weight of the fabrique shall require; for as I must againe repeate, discretion may be freer then art. Lastly, I finde in some curious precept, that the materials below, be layd as they grew in the quarrie, supposing them belike to have most strength in their natural and habitual posture. For as Philippe de l'Orme observed, the breaking or yielding of a stone in this part, but the breadth of the backe of a knife, will make a cleft of more then half a foot in the fabique aloft, so important are fundamentall errors. Among which notes I have sayd nothing of pallification or pyling of the groundplot, commanded by Vitruvius, when we build upon a moist or marshy soile, because that were an error in the first choice. And therefore all seats that must use such provision below (as Venice for and eminent example) would perhaps upon good enquiry, be found to have been at first chosen by the counsel of necessity.

WALLS.

Walls are either continuall, or intermitted; and the intermissions be either pillars or pylasters; for here I had rather handle them, then as some others do among ornaments.

The entire muring is by writers diverfly distinguished: by some, according to the quality of the materials, as either stone, or brick, &c. where by the way, let me note, that to build walls and greater works of flint, whereof we want not example in our Ireland, & particularly in the province of Kent, was (as I conceive9 meerly unknown to the antients, who observing in that material, a kindle of metalical nature, or at least a fusibility, seem to have resolved it into nobler use; an art now utterly lost, or perchance kept up by a few chymicks. Some again do not so much consider the quality, as the position of the said materials: as when brick or squared stones are laid in their lengths with sides and heads together, or their points conjoined like a network (for so Vitruvius doth call it reticulatum opus) of familiar use (as it should seem) in his agem though afterwards growne out of request, even perhaps for that subtill speculation which he himself toucheth; because so layd, they are mmore apt in swagging down to pierce with their points, then in the jecent posture, and so to crevice the wall; bu to leave such cares to the meaner artificers, the more essential are these.

That the walls be more exactly perpendicular to the ground work; for the right angle (htereon depending) is the true cause od all stability; both in artificial and natural positions; a man likewise standing firmest, when he stands uprightest. That the massiest and heaviest materials be the lowest, as fitter to bear, then to be borne. That the work as it riseth, diminish in thikness proportionally, for easy both of weight, and of expence. That certain courses or ledges od more strength thenthe rest, be interlayed like bones, to sustaine the fabrique from total ruine, if the under parts should decay. Lastly, that the angles be firmly bound, which are the nerves od the whole edifice, and therefore are commonly fortified by the Italians, even in their brick buildings, on each side of the corners, with well squared stone, yelding both strength and grace and so much touching the entire or solid wall.

The intermissions (as hath been said) are either by pillars or pylasters.

Pillers which we may likewise call columns (for the word among artificers is almost naturalized) I could distinguished into simple & compounded.

But (to tread the beaten and plainest way) there are five orders of pillers, according to their dignity and perfection thus marshaled: the Tuscan, the dorique, the ionique, the Corinthian and the compound order. (p 30)

(p30-p45) Entra a hablar de los órdenes y de las partes de los pilares, base, fuste capitel, arquitrabe, intercolumnado. Las proporciones, a veces inteligibles en Vitruvio…. Los órdenes. Las precauciones que hay que tomar; 1 representan la belleza y han de estar proporcionados; 2.- los de arriba han de ser más pequeños que los de abajo; 3.- Cuidado con los elementos proyectados, pueden disminuir la luz del edificio.

Los materiales de que están hechos.

(p45) Pylasters, must not be to tall and slender, least they resemble pillars, not too dwarfish and grosse, least they imitate the piles or peeres of bridges: smoothnesse doth not so naturally become them, as a rusticke superficies, for they ayme more at state &strength, then elegancie. In private buildings they ought not to be narrower, then one third, nor broader then two parts of the whole vacuity, between pylaster and pylaster; but to those that stand at the corners, may be allowed a little more Latitude by discretion , for strength of the angles; in theaters and amphi-theaters, and such weighty works, palladio observed them, to have been as broad as the half, and now and then as the whole vacuitie: he noteth likewise (and others consent with him) that their true proportion, should be an exact square; but for lessening od expence, and inlarging of room, they are commonly narrower in flanke, then in front: their principall grace doth consist in half or whole pillars, applied unto them; in which case it is well noted by authors, that the columns may be allowed somewhat above their ordinary length, because they leane unto so good supporters. And thus much shall suffice touching pilasters, which is a cheap, & a strong, and a noble kind of structure.

Now because they are often, both for beauty and majesty, found arched, then otherwise; I am here orderly led to speak of arches, and under the same head of vaults; for and arch is nothing indeed but a contracted vault, and a vault is but a dilated arch: therefore to handle this piece both compendiously, and fundamentally, I will resolve the whole business into a few theorems.

THEOREM 1

All solid Materials, free from impediment, de descend perpendicularly downwards, because ponderosity is a natural inclination to the center of the world, and nature performeth he motion by shortest lines.

THEOREM 2.
Bricks moulded in their ordinary rectangular forme, if they shall be laid one by another in level row, between any supporters sustaining the two ends; then all the pieces between, will be necessarily sinke, even by their own natural gravity, and much more if they suffer any depression by other weight above them, because their sides being parallel, they have room to descend perpendicularly, without impeachment, according to the former theorem; therefore to make them stand, we must either change their posture, or their figure, or both.

THEOREME 3
If bricks moulded, or stones squared *cuneatim* (that is , wedge wise, broader above then below) shall be laid in a row level, with their ends supported, as in the precedent theorem, pointing all to one center; then none of the pieces between can sink till the supporters give way, because they want room in that figuration, to descend perpendicularly. But this is yet a weak piece of structure, because the supporters are subject to much impulsion, especially if the line be long; for which reason this form is seldom used, but over windows, or narrow doors. Therefore to fortify the work as in this third theorem we have supposed the figure of all the materials different from those in second: so likewise we must now change the posture, as will appear in the theorem following.

THEOREME 4
If the materials figured as before wedge-wife, shall not be disposed levelly, but in form of some arch, or portion of a circle, pointing all to the same center: in this case neither the pieces of the sayd arch, can sink downwards, through want of room to descend perpendicularly: nor the supporters or butments (as they are tearmed) of the said arch can suffer so much violence, as in the precedent flat posture, for the roundness will always make the incumbent weight, rather to rest upon the supporters, then to shove them; whence may be drawn an evident corollary; that the safest of all arches is the semicircular, and of all vaults the hemisphere, though not absolutely exempted from some natural weakness, as Baradino Baldi Abbot of guasta, in his commentary upon aristotles mechaniques, doth very well poove; where let me note by the way, that when anything is mathematically demonstrated weake, it is much more mechanically weake; errors ever occurring more easily in the management of grosses materials, then lineal designes.

THEOREME 5.
As semicircular arches, or hemispherical vaults, being raised upon the total diameter, be of all other the roundest, and consequently the securest, by the precedent theorem: so those are the gracefulness, which keeping precisely the same height, shall yet be distended, one fourteenth part longer then the said entire diameter; which addition of distent will conferre much to their beauty, and detract but little from their strength.
This observation I finde in Leon-Batista Alberti, but the practice how to preserve the same height, and yet distend the armes or ends of the arch, is in Albert Durers Geometry, who taught the Italians many excellent line, of great use in this art.
Upon five thoremes, all the skill of arching and vaulting is grounded: as for those arches, which our artisans call of

the third and fourth point; and the Tuscan writers diterzo, and di quarto acuto; because they always concurre in an acute angle, and do spring from division od the diameter, into three, four, or more parts pleasure; I say, such as these, both for the naturall imbecility of the sharpe angle itself, and likewise for the very uncomelinesse, ought to be exiled from judicious eyes, and left to their first inventors, the gother or lumbards, amongst other reliques of that barbarous age.

Thus of my first partition of the parts of every fabric, into five heads, having gone through the two former, & been incidentally carried into this last doctrine touching arches and vaults.

APERTIONS

Under which terme I do comprehended doors, windows, stair-cases, chimnies, or other conducts; in short, all inlets or outlets; to which belong two general cautions:

First, that they be as few in number, and as moderate in dimension, as may possibly consist with other due respects: for in a word, all openings are weaknings.

Secondly, that they do not approach too near the angles of the walls, for it were indeed a most essential *solecisme* to weaken that part, which must strengthen all the rest: a precept well recorded, but ill practiced by the Italians themselves, particularly at Venice, where I have observed diverse *Pergoli*, or *Meniana* (as Vitruvius seemed to call them, which are certain ballasted out-standings to satisfy curiosity or sight) very dangerously set forth, upon the very point itself, of the *Mural Angle*.

Now, Albeit I make haste, to the casting and comparting of the whole work, (being indeed the very definitive sum of this art, to distribute usefully and gracefully a well chosen plot) yet I will first under their several heads, collect briefly some of the choisest notes, belonging to these particular overtures.

OF DOORS AND WINDOWS.

These in lets of men and of light, I couple together, because I find their due dimensions, brought under one rule, by Leone Alberti (a learned searcher) who from the schoole of Pythagoras (where it was fundamental maxime, that the images of all things are latent in numbers) doth determine the comeliest proportion, between breadths and heights, reducing symmetry to symphony, and the harmony of sound, to a kind of harmony in sight, after this manner: the two principal consonances, that most ravish the eate are by consent of all nature, the fist, and the octave; whereof the first riseth radically, from the proportion, between two and three. The other from the double intervalle, between one and two, or between two and four &c. Now if we shall transport these proportions, from audible to visible objects; and apply them as they shall fall fittet (the nature od the place considered) namely in som windows, and doors, the symetrie od two or three, in their breadth and length; in others the double as aforesaid; there will indubitably result from either, a gracefull and harmonious contentment, to the eye; which speculation though it may appeare unto vulgar artisans, perhaps too subtile, and too sublime, yet we must remember, that Vitruvius himself doth determine many things in his possession; by musical founds, and much commendeth in and architect, a philosophical spirit; that is, he would have him (as I conceave it) to be no superficial, and floating artificer; but a diver into causes, and into the mysteries of proportion; of the ornaments belonging both to doors and windows, I shall speake in other place; but let me here add an observation: that our Master (as appeareth by divers passages, and particularly lib6 cap9) seems to have been a extream Lover od Luminous Rooms; and indeed I must confess that a franke light, can misbecome noe Aedifice whatsoever, Temples only excepted; which were anciently darke, as they are likewise at this day in some proportion. Devotion more requiring collected then defused spirits. Yet on the other side we must take heede to make a house (thought but for civil use) all eyes, like argus; which in northerne climes would be too cold, in southerne, too hot; and therefore the matter indeed importeth more then a merry comparison. Besides, there is no part of structure either more expencefull, then windows; or more ruinous; not only for that vulgar reason, as being exposed to all violence of weather, but because consisting od so different and unsociable pieces, as wood, iron, leade, and glasse, and those small and weake, they are easily shaken; I must likewise remember one thing, (though it be but a grammatical note) touching doors. Some were fores, & some were value. Those (as the very word may seem to import) did open outwards, these inwards; and were commonly oftwo leaves or panes, (as we call them) thereby requiring indeed, a lesser circuit in thir unfoulding; and therefore much in use among Italians at this day; but I must charge them with and imperfection, for though they let in as well as the former, yet they keep out worse.

OF STAIR-CASE.

To make a complete stair-case, is a curious peece of architecture: the vulgar cautions are these:

That it have a very liberal light, against all casualtie of *slippes*, and *falls*.

That the space about the head, be large and *airy,* which the *Italians* use to call *Un Bel-sfogo*, as it were good *Ventilation*, because a man doth spend much breath in mounting.

That the *half-peaces* be well distributed, at competent distances, for reposing on the way.

That to avoid *encounters,* and besides to gratifie the beholder, the whole *stair-case* have no niggard *Latitude*, that is, for the principal ascent, at least then foot in *Royal Buildings*.

That the breadth of every single *step* or *staire* be never less than one foot, nor more than ten inches.

That they exceed by no means half a foot in their height or thickness; for our *legs* do labour more in elevation, then in *distension*; these I say are familiar remembrances, to which let meaddle;

That the steps be layd where they join *con un tantino di scarpa*; we may translate it somewhat *sloaping*, that so the foot may in a sort both ascend and descend together, which though observed by few, is a secret and delicate deception of the paines in mounting.

Lastly, to reduce this doctrine to some *natural*, or at least *mathematical* ground, (our master, as we see lib 9 cap 2) borroweth those proportions, that make the sides of a *rectangular triangle*, which the ancient school did express in lowest tearmes, by the numbers of 3, 4 and 5 that is, *three* for *perpendicular*, from the *stair-head* to the ground; *four* for the *ground-line* itself, or *recession* from the wall; and *five* for the whole *inclination* or slopenesse in the ascent, which proportion, faith he, will make *temperatas graduum librationes*. Hitherto of *stair-cases* which are direct; there are likewise *spirall*, or *cockle staires*, either *circular*, or *oval*, and sometimes running about a *pillar*, sometimes vacant, wherein *Palladio,* (a man in this point of singular felicity) was wont to diluide the *Diameter*, of the first sort into three parts, yielding one to the *pillar*, and two to the *steps*; of the second into foure, whereof he gave two to the *stairs*, and two to the *vacuitie*, which had all their light from above, and this in exact *ovals*, is a Master-piece.

OF CHIMNIES.

In the present business, Italians (who make very frugal fires, are perchance not the best councellers). Therefore from them we may better learn, both how to raise faire mantels within the rooms, and how to disguise gracefully the shafts of chimneys abroad (as they use) in sundry forms (whoch I shall handle in the latter part of my labour) and the rest I will extract from Philippe de L'Orme: in this part od his worke more diligent, then in any other, or to doe him right, then any man else.

First, he observed very soberly, that who in the disposition of any building will consider the nature of the region, and the winds that ordinarily blow, from this, or that quarter; might so cast the rooms, which shall most need fire; that he hould little feare the incommdity of smoke, and therefore he thinks, that inconvenience, for the most part to proceede from some inconsiderate beginning. Or if the error lay not in the Disposition but in the structure itself; then he makes a Logical enquiry; that either the wind is too much let in above, at the mouth of the shafte, or the smoke stifeled below; if none of these, then there is a repulsion of the fume, by some higher Hill or Fabric, that shall overtopped the chimney and work the former effect: if likewise not this, then he concludes, that the room which is insisted, must be necessarily both little and close, so as the smoke cannot issue by a natural principle, wanting a succession and supply of new ayre.

Now, in these cases he suggested divers artificial remedies; of which I will allow one, a little description, because it favoured of philosophy, and was touched by Vitruvius himself, lib.I cap.6, but by this man ingeniously applied to the present use; he will have us provide two hollow brasse balles of reasonable capacity, with little holes open in both, for reception of water, when the air shalbe first sucked out; one of these we must place with the hole upwards, upon an iron wire, that shall traverse the chimney, a little above the mantel, at the ordinary height of the sharpest heate or flames, whereof the water within being rarified, and by rarifaction resolved into wind, will break out, and so force up the smoke, which otherwise might linger in the *tunnel,* by the way, and oftentimes revert; with the other, (said he) we may supply the place of the former, when it is exhausted, or for a need blow the fire in the mean while; which invention I have interposed for some little entertainment of the reader; I will conclude with a note from *Palladio*, who observed that the *ancients* did warm their rooms, with certain secret *pipes* that came through the walls, transporting heat (as I conceive it) to sundry parts of the house from one common *furnace*; I am ready to baptize them *Caliducts*, as well as they are tearmed *Venti-ducts*, and *Aqueducts* that convey wind and water; which whether it were a custom or a delicacy, was surely both for thrift, and for use, far beyond the German *stoves*; and I should prefer it likewise before our own fashion, if the very sight of a fire, did not add to the room a kind of *reputation*, as old *homer* doth teach us in a verse, sufficient to prove that himself was not blind, as some would lie to his charge.

Touching *Conducts* for the *suillage* and other necessities of the house, (which how base so ever in use, yet for health of the inhabitants, are as considerable, and perhaps more than the rest) I find in our Authors, this counsel; that *art* should imitate *nature*, in those ignoble conveyances; and separate them from sight, (where there wants a running water) into the most remote, and lowest, and thickest part of the *foundation*: with secret vents passing up through the walls like a *tunnel* to the wild air alost: which all Italian Artizans commend for the discharge of noisome vapours, though else-where to my knowledge little practiced.

COMPARTITIONS

Thus having considered the precedent *appertions*, or *overtures*, in severalty according to their particular requisites, I am now come to the casting and *contexture* of the whole *work*, comprehended under the term of *compartition*: into which (being the mainest piece) I cannot enter without a few general precautions, as I have done in other parts.

First therefore, let no man that intended to build, settle his fancie upon a draught of the *work* in *paper*, how exactly so ever measured, or neately set off in *perspective*; and much less upon a bare *plant* thereof, as they call the *schiographia* or *ground lines*; without a *model* or *type* of the whole structure, and of every parcel and partition in *pastboord* or *wood*.

Next that the said Model be as plaine as may be, without colors or other beautifying, lest the pleasure of the *eye* preoccupied the *judgment*; which advise omitted by the *Italian architects*, I find in *Phillippe de l'Orme*, and therefore (though France bee not the *Theater* of best building) it did merit some mention of his name.

Lastly, the bigger that this type be, it is still the better, not that I will persuade a man to such an enormity, as that *model*, made by *Antonio Labaco*, of Saint *Peters* Church in Rome, containing 22 foot in length, 16. In breadth, and 13. In height, and costing 4184. Crownes: the price in truth of a reasonable *chapel*: yet in a *Fabric* of some 40 or 50 thousand pounds charge, I will 30 pounds at least laid out before hand in an exact model; for a little misery in the premises, may easily breed some absurdity od greater charge, in the conclusion.

Now, after these premonishments, I will come to the *compartitions* itself; by which, the authors of this *art* (as hath been touched before) doe understand, a *graceful* and *useful* distribution, of the whole *ground plot* both for rooms of *office*, and of *reception* or *entertainement*, as far as the *capacity* thereof, and the nature of the *country* will comport. Which circumstances in the present *subject*, are all of main consideration, and might yield more discourse than an *elemental rapsodie*, will permit. Therefore (to anatomize briefly this definition) the *gracefulness* (whereof we speak), will consist double *analogy*, or correspondencie. First, between the *parts* and the *whole*, whereby *great fabric* should have *great partitions*, *great lights*, *great entrances*, *great pillars* or *pylasters*; in sum, all the *members great*. The next between the *parts* themselves, not only, considering their *breadths*, and *lengths*, as before, when we spake of *doors* and *windows*; but here likewise enters a third respect of *height*, a point (I must confess) hardly reduceable to any general precept.

True it is, that the *Ancients* did determine the *Longitude* of all *rooms*, which were longer the broad, by the double of their *Latitude*, *Vitruvius* lib.6 cap. 5 and the *heigh*t by the half breadth and length summed together but when the room was precisely square they made the *height* half as much more as the *latitude*; which dimensions the modern *architects* have taken leave to vary upon discretion: sometimes squaring the *latitude*, and then making the *diagonal* or overthwart line, from *angle* to *angle*, of the said *square*, the measure of the *height* sometimes more, but seldom lower then the full breadth itself; which boldness of quitting the old *proportions*, some attribute first to *Michael Angelo da Buonaroti*, perchance upon the credit he had before gotten, in two other *arts*.

The second point is *usefulness*, which will consists in a sufficient *number* of rooms, of all sorts, and in their apt *coherence*, without *distraction*, without *confusion*; so as the beholder may not only call it, *una fabrica ben raccolta*: as Italians use to speak of well united works, but likewise that it may appear *airie* and *spirituous*, and fit for the welcome of cheerful guests; about which the principal difficulty will be in contriving the *lights*, and *stair-cases*, whereof I will touch a note or two: for the first, I observe that the ancient *architects* were at much easy. For both the *Greeks* and *Romanes* (of whose private dwellings *Vitruvius*, hat left us some description) had commonly two *cloistered* open *courts*, one serving for *women* side, and the other for the *men*: who yet perchance now adayes would take so much separation unkindly. Howsoever, by this means, the reception of *light*, into the body of the building, was very prompt, both from without and from within: which we must now supply either by some open *form* of the fabric, or among graceful refuges, by *Tarrasing* any *Storie*, which is in danger of darkness, or lastly, by *perpendicular lights*, from the *roof*: of all other the most natural, as shall be shewed anon. for the second difficulty: which is casting of the *stair-cases*; that being in itself no hard point, but only as they are incombrances of room for other use: (which lights were not) I am therefore aptly moved here to speak of them. And first of offices.

I have marked a willingness, in the *Italians artisans*, to distribute the *Kitchen*, *Pantry*, *Bakehouse*, *washing rooms*, and even the *buttery* likewise, underground, next above the *foundation*, and sometimes level with the plain, or *floor* of the *cellar*: raising the first *ascent* into the house *fifteen foot* or more for that End, which besides the benefit of removing such *annoyes* out of fight, and the gaining of so much more room above, doth also by elevation of the *front*, add *majesty* to the whole *aspect*. And with such a disposition of the principal *stair-case*, which commonly doth deliver us, into the *plaine* of the second *storie*, there may be wonders done, with a little room, whereof I could alleadge brave *examples* abroad; and none more Artificial, and Delicious, than a house built by *Daniele Barbaro Patriarche* of *Aquileia* before mentioned, among the memorable *commenters* upon *Vitruvius*. But the *definition* (above determined) doth call us to some consideration of our own country, where though all the other pettie *offices* (before rehearsed) may well enough be so remote, yet by the natural *hospitality* of *England*, the *buttery* must be more visible, and we need perchance for our *raunges*, a more spacious and luminous *Kitchen*, then the foresaid *compartition* will bear; with a more competent nearness likewise to the *Dining room* or else besides other inconveniences, perhaps some of the dishes may straggle by the way; here let me note a common defect, that we have of a very useful *room*, called by the Italians *Il Tinello*; and familiar, nay almost essential, in all their great *Families*. It is a place properly appointed, to conserve the meat that is taken from the table, till the *waiters* eat, which with us by an old fashion, is more unseemly set by, in the mean while.

Now touching the distribution of *Lodging* chambers; I must here take leave to reprove a fashion, which I know not how hat prevailed through *Italie*, though without ancient examples, as far as I can perceive by *Vitruvius*. The thing I mean, is, that they so cast their *partitions* as when all *doors* are open a man may see through the whole *house*, which doth necessarily put an intolerable servitude upon all the *chambers* save the *Inmost*, where none can arrive, but through the rest, or else the *walls* must be extreame thick for secret passages and yet this alsdo will not serve the turne, without at least *three* doors to every *room*: a thing most insufferable, in cold & windy regions, and everywhere no small weakening to the whole *work*; therefore with us that want to cooling, I cannot commend the direct opposition of such *overtures*, being indeed merely grounded upon the fond ambition of displaying to a *stranger* all our *furniture* at one *sight*, which therefore is most maintained by them that mean to harbor but a few; whereby they make only advantage of the *vanity*, and seldom prove the *inconvenience*. There is likewise another defect (as absurdities are seldom solitary) which will necessarily follow, upon such a servile disposing of inward chambers. That they must be forced to make as many common great *rooms*, as there shall be several *stories*; which (besides that they are usually dark, a point hardly avoided, running as they do, through the middle of the whole *house*) do likewise devoure so much place, that thereby they want other *galleries*, and rooms of *retreate*, which I have often considered among them (I must confess) with no small wonder; for I observe no *Nation* in the world, by nature more *private* and *reserved*, then the *Italian*, and on the other side, in no *habitations* less *privacy*; so as there is a kind of conflict, between their *dwelling* and their *being*: it might here perchance be expected, that Ii should at least describe (which others have done in *draughts* and *designs*) divers *Forms* of *plants* and *partitions*, and varieties of *inventions*; but speculative *writers* (as I am) are not bound, to comprise all particular cases, within the Latitude of the *subject*, which they handle; general lights, and *directions*, and pointings at some faults, is sufficient. The rest must be committed to the sagacity of the *Architect*, who will be often put to divers ingenious shifts, when he is to wrestle with scarsitie of *ground*. As sometimes to damme one room (thought of special use) for the benefit and beautie of all the rest; another while, to make those fairest, which are most in *sight*, and to leave the other (like a cunning painter) in shadow, *cum multis alys*, which it were infinite to pursue. I will therefore close this part touching *compartition*, as cheerfully as I can with a short description of a *feasting* or *entertaining room*, after the *Egiptian* manner, who seem (at least till the time of *Vitruvius*) from the ancient *Hebrewes* and *Phenicians* (whence all knowledge did flow) to have retayned, with other *sciences*, in a high degree, also the *principles*, and practice if this magnificent *art*. For as far as I may conjecture by our Masters Text, lib6 cap 5 (where as in many other places he hath tortured his interpreters) there could no *form*, for such a Royal use, be comparably imagined, like that of the foreside *Nation*, which I shall adventure to explain.

Let us conceive a *Floor* or *Area* of goodly length, (for example, at least of 120 foot) with the *breadth* somewhat more then the half of the *longitude*, whereof the reason shall be afterwards rendred. About the two longest *sides*, and *head* of the said *room*, shall runne and order of *pillars*, which *Palladio* doth suppose *Corinthian* (as I see by his design) supplying that point out of *Greece*, because we know no *order*, proper to *Egypt*. The fourth *side* I will leave free for *entrance*: on the foresaid *pillars* was laid an *architrave*, which *Vitruvius* mentioned alone: *Palladio* adds thereunto (and with reason) both *freeze* and *Cornice*, over which went up a continued *Wall*, and therein, half or three quarters *Pillars*, answering directly, to the order below, but a fourth part less, and between these half *columns* above, the whole room was windowed round about.

Now, from the lowest *pillars* there was laid over a *Contignation* or floor, borne upon the outward *wall*, and the *head* of the *columns* with *tarrace*, and *pavement, sub dio* (said our Master) and so indeed he might safely determine the matter in *Egypt*, where they fear no *clouds*: therefore *Palladio* (who leaved this *tarrace* uncovered in the middle, and *ballised* about) did perchance construe him rightly, though therein discarding from others: always we must understand a sufficient breadth of *pavement*, left between the open part and the *windows*, for some delight of *spectators*, that might look down into the *room*: the *latitude* I have supposed contrary to some former positions, a little more than the half of the length; because the pillars standing at a competent distance from the outmost *wall*, will by interception of the *sight* somewhat in appearance diminish the breadth ; in which cases, (as I have touched once or twice before) *Discretion* may be more licentious then *Art*. This is the description of an *Egyptian* room, for *feasts* and other *lollities*. About the *walls* whereof we must imagine entire *satues*, placed below, and illuminated by the descending light, from the *terrace*, as likewise from the *windows* between the half *pillars* above: so as this *room* had abundant and advantageous *light*; and besides other garnishing, must needs receive much *state* by the very height of the *roof*, that lay over two orders of *column*s: and so having runne through the four parts of my first general *division*, namely, *foundation*, *walls*, *appertions*, and *compartitions*; the *house* may now have leave to put on his *hatte*: having hitherto been uncovered itself, and consequently unfit to cover others. Which point though it be the last of this *Art* in execution, yet it is always in *Intention* the first. For who would build but for *shelter*? Therefore obtaining both the *place*, and the dignity of a *final cause*, it hath been diligently handled by diverse, but by none more learnedly then *Bernardino Baldi* Abbot of *Guastalla* (before cited upon other occasion) who doth fundamentally, and *mathematically* demonstrate the firmest *knitting*s of the upper *timbers*, which make the *roof*. But it hath been rather my *scope*, in these *elements* to fetch the ground of all, from *Nature* herself, which indeed is the simplest mother of *art*. Therefore I will now only deliver a few of the properest, and (as I may say) of the naturalist considerations, that belong to this remaining *piece*.

There are two extremities to be avoided in the *cover*, or *roof*: that it be not too *heavy*, nor too *light*. The first, will suffer a vulgar objection of pressing too much the under-work. The other, contained a more secret inconvenience; for the *cover* is not only a bare defense, but likewise a kind of *Band* or *Ligature*, to the whole *fabric*, and therefore would require some reasonable weight. But of the two extremes, a house *top-heavy* is the worst. Next there must be a care of *equality*, that the *edifice* be not pressed on the one side more than on the other; and here *Palladio* doth wish (like a cautious *artisan*) that the inward walls might bear some good share in the burthen, and the outward be the less charged.

Thirdly, the *Italians* are very precise in giving the *cover* a gracefull *pendence* or *slopenesse*, dividing the whole breadth into *nine* parts; whereof tow shall serve for the elevation of the highest *toppe* or *ridge*, from the lowest. But in this point the quality of the *region* is considerable: for (as our *Vitruvius* insinuated) those *climes* that fear the falling and lying of much *snow*, ought to provide more inclining *pentices*: and *comelinesse* must yield to *Necesity*.

These are the useful cautions which I find in *authors*, touching the last *head* of our division, wherewith I will conclude the first *part* of my present *Travaile*. The second remained, concerning *Ornaments* within, or without the *fabric*; a piece not so dry as the meere contemplation of proportions. And therefore I hope therein, somewhat to refresh both the *reade*r, and myself.

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And here I will end the second part touching ornaments, both within, and without the fabric.

Now as almost all those, which have delivered the elements of logic, do usually conclude, with a chapter touching method; so I am here seized with a kind of critical spirit, & desirous to shut up these building elements, sit some methodical direction how to censure fabrics already raised: for indeed without some way to contract our judgment, which among so many particulars would be lost by diffusion; I should think it almost harder to be a good censured, then a good architect: because the working part may be helped with deliberation, but the judging must flow from an extemporal habit. Therefore, (no to leave this last piece without some light) I could wish him that commit to examine any noble work, first of all to examine himself, whether perchance the fight of many brave things before (which remained like impressed forms) have not made him apt to think nothing good, but that which is the best; for his humor were too sowre. Next, before he come to settle any imaginable opinion, let him by all means seek to inform himself precisely, of the Age of the Work upon

	which he must pass his dome. And if he shall find the apparent decayes to exceed the proportion of time; then let him conclude without farther inquisition, as an absolute decree, that either the materials were too slight, or the seat is nought. Now after these premises, if the house be found to bear his years well, (which is always token of sound constitution). Then let him suddenly runne backwards, (for the method of censuring is contrary to the method of composing) from the ornaments (which first allure the eye) to the more essential members, till at last he be able to forme this conclusion, that the work is commodious, firme and delightful; which (as I said in the beginning) are the three capital conditions required in good buildings, by all authors both ancient and modern. And this is, as I may tearme it the most scientificall way od censuring. There are two other which I must not forget. The first is Georgio Vassari, before his laborious work of the lives of Architects, which is to pass a running examination over the whole edifice, according to the properties of a well shapen man. As whether the walls stand up right upon clean footing and foundation; whether the fabric be of beautiful stature, whether for the breadth it appear well burnished, whether the principal entrance be on the middle line of the front of face, like our mouths, whether the windows, as our eyes, be set in equall number and distance on both sides, whether the offices like veines in our bodies, be usefully distributed, and so forth. For this allegorical review may be driven as far as any wit will, that is at leasure. The second way, is in Vitrivius himself, lid 1 cap 2. Where he summarily determineth six considerations, which accomplish this whole art. Ordination Disposition Eurythmia Symmetria Décor, and Distribution Whereof (in may conceit) we may spare him the first two; for as far as I can perceive, either by his interpreters, or by his own text (which in that very place, where perchance he should be clearest, is of all other the cloudiest) he meant nothing by ordination, but a well settling of the model or scale of the whole work. Nor by disposition, more than a neat and full expression of the first idea or design thereof; which perchance do more belong to the artificer, then to the censurer. The other four are enough to condemn, or absolve any Fabric whatsoever. Whereof eurytmia is that agreeable harmony, between the breadth, length and height of all the rooms of the fabric, which suddenly where it is taken every Beholder, by the secret power of proportion: wherein let me only note this, that though the least error or offence that can be committed against fight, is excess of height; yet that fault is nowhere of small importance, because it is the greatest offence against the purse. Symmentria is the convenience that runneth between the parts and the whole, whereof I have formerly spoken. Décor is the keeping of a due respect between the inhabitant, and the habitation. Whence Palladius did conclude, that the principal entrance was never to be regulated by any certain dimensions; but by the dignity of the master; yet to exceed rather, in the more, then in the led is a mark of generosity, and may always be executed with some noble emblem, or inscription, as that of the Conte di Bevilacqua, over his large Gate at Verona, where perchance had been commited a little disproportion. Patet Ianua:cor magis. And here likewise I must remember our ever memorable sir Philip Sidney, (whose wit was in truth the very rule congruity) who well knowing that Basilius (as he had painted the state of his mind) did rather want some extraordinary forms to entertain his Fancie, then room for courtiers; was contented to place him in a star-like lodge; which otherwise in severe judgment of art had been and incommodious figure. Distributio is that useful casting of all rooms for office, entertainment, or pleasure, which I have handled before at more length, then any other piece. These are the four heads which every man should runne over, before he passé any determinate censure, upon the works that he shall view, wherewith I will close this last part, touching ornaments. Against which (me thinks) I hear an objection, even from some well-meaning man; that these delightful crafts, may be divers ways ill applied in a land. I must confess indeed, they may be a lascivious, and there may be likewise a superstitious use, both of picture and of sculpture: to which possibility of misapplication, not only these semi-liberal arts are subjected; but even the highest perfections, and endowments of nature. As beauty in light woman, eloquence in a mutinous man, resolution in an assassinate, prudent observation of hours & humours, in a corrupt courtier, sharpness of wit and argument in a seducing scholler; and the like. Nay, finally le me ask, what art can be more pernicious, then even religion itself, if itself be converted an instrument of art: therefore, *ab abuti ad non uti, negatur consequential.* Thus having stitched in some sort together, these animadversions, touching architecture, and the ornaments thereof; I now feel that contemplative spirits are as restless as active; for doubting with myself, (as all weakness is jealous) that I may be thought to have spent my poor observation abroad, about nothing but stone and timber, and such rubbage; I am thereby led into an immodesty of proclaiming another work, which I have long devoted to the service of my country; namely a Philosophical Survey of Education, which is indeed, a second Building, or repairing of Nature, and as I may term it a kind of Moral Architecture; whereof such notes as I have taken in my foreign transcursion or abodes, I hope to utter without public offence, though still with the freedom of a plain Kentish man In the meanwhile I have let these other Gleanings fly abroad, like the bird out of the ark, to discover what footing may be, for that which shall follow.
COMENTARIOS	Es el primer libro original en inglés, aunque no es enteramente original ya que es un extracto de otros tratados de construcción, sobretodo de Vitruvio, al que considera “El maestro”, de todas formas cuando llega a las chimeneas o a los tejados se nutre de otras fuentes como de l’Orme porque los italianos no saben de esas cosas debido a la diferente climatología. Sigue un orden bastante lógico aunque a veces parezca que va de un tema a otro, e introduce

	opiniones aquí y allí, de forma contundente. La idea es hacer fácil, el tratado de Vitrubio, a la par que evitar lo que a la arquitectura inglesa no le interesa, evidentemente el tema está relacionado con la climatología y las diferentes costumbres, que obligan a que la vivienda tenga otro tipo de estancias.

AUTOR	Sir Balthazar GERBIER
TÍTULO	THE FIRST AND SECOND PART OF COUNSEL AND ADVICE TO ALL BUILDERS: FOR THEIR CHOICE OF THEIR SURVEYORS. CLERKS OF THEIR WORKS. BRICKLAYERS, MASONS, CARPENTERS, AND OTHER WORKMEN THEREIN CONCERNED…
AÑO PUBLICACIÓN	London 1663
REFERENCIAS EN:	
NOTAS SOBRE EL LIBRO	(En este caso las notas las he traducido directamente porque me resultó más fácil a la hora de tomar los apuntes) El libro se dirige: ➢ A los reyes para que se construyan palacios de acuerdo con San James. ➢ A los Lores para que sus casas sean un reflejo de lo que representan. De aquí pasa a explicar los conceptos de la línea, la curva el arco órdenes: cada quien sabe el tamaño de ventanas que necesita y con referencia a las teorías de los palacios los deja para gente más elevada: *en el momento de leerlo saqué la impresión de que podía estar hablando en tono burlesco, aunque por lo visto la opinión de la señora Harris esto se podría referir al palacio de Salomón y las teorías de Villalpando.* Según este primer libro hay tres puntos capitales en la construcción: SOLIDEZ (SOLIDITY), CONVENIENCIA (CONVENIENCY) Y ORNAMENTACIÓN (ORNAMENT). ▪ Las puertas han de ser buenas para pasar por ellas. ▪ Los constructores que no tienen en cuenta las paredes y tratan las columnas como los órdenes confunden solidez con ornamentación y conveniencia. ▪ Los constructores han de ser guardianes de las casas; han de tener conocimiento de la naturaleza para saber cuánto material han de necesitar (para evitar pérdidas de tiempo y materiales). ▪ Se ha de saber colocar los elementos: una puerta no se coloca dando el viento a la chimenea; las ventanas se han de colocar de forma que el aire y la humedad no apaguen el fuego. ▪ Puertas, chimeneas y ventanas han de estar en el sitio adecuado. El hueco de la chimenea no ha de ser exorbitado; porque la parte alta cuando cae puede romper tejados y matar a la gente en sus casas. ▪ Desde una chimenea aproximadamente dos pies más alta que los Cantos de la cubierta de un Edificio que no es sobresaliendo de la aguja de la Iglesia ▪ Critica los órdenes y la belleza de Italia, entra por la vista pero el resto de los sentidos está más dispuesto a aceptar las comodidades de puertas, ventanas, chimeneas y escaleras. ▪ Cuidado con las escaleras han de ser proporcionadas a los hombres: “No hay ningún hombre de miembros proporcionados (y de entrada galante) pero levanta sus dedos del pie al menos cuatro pulgadas, cuando hace el paso fácil y ordinario, de modo que si dos pasos (cada cuatro pulgadas de alto) han de ser dieciocho pulgadas amplias, o profundamente, las cuales hacen fija y treinta pulgadas los dos (la justa medida de hombres dos pasos) de forma que puedan ascender desde el primer piso a la planta más alta, como si anduvieran a nivel del suelo” ▪ No tiene que tener a cubierto, no ventanas a los lados. ORIENTACIÓN. CIMIENTOS. Habla de madera de roble, en las zonas de rio (como Venecia y Ámsterdam) Hay que realizar una buena prospección antes de colocar el edificio: con bosques, agua cercana y no demasiado lejos ni demasiado cerca de la ciudad. ▪ Intentar que no haya cambios durante el proceso de obra. ▪ Las ventanas de estructura ventana de bisagras metálica se oxidan y nunca cierran herméticamente. ▪ Se decanta por las ventanas de madera. ▪ Tabiquería: los ladrillos se han de unir con mortero el cual no ha de rebosar. ▪ La manera de preparar la cal, debe ponerse esto en cisterness el un más alto que el otro y después fija el tiempo moneths (la cal heving evacuó su putrefacción) restos purificados y luego ellos mezclan dos partes de cal con una parte de la arena, y hace aquel mortero fuerte y puro. ▪ Cimientos grandes y profundos, y dejar las paredes levantadas sobre los cimientos descansan y colocan un bien mientras antes de que ellos continúen a la segundo piso. ▪ Cuidado con los cambios. ▪ La fabricación de arcilla. ▪ Piedra libre, la piedra de Portland trabaja bien, se puede realizar buena unión con los ladrillos. ▪ Calcular gastos previamente. ▪ No construir hasta que se haya comprado.

- Habla de palacios (pag 29): han de ser sólidos, con suelo espacioso; primeras plantas abovedadas mejor que planas.
- Establos
- Tejados del palacio
- Usa varios ejemplos de palacio entre ellos San Lorenzo del Escorial; las Tullerias.
- Buena proporción de una habitación.

"Dios está en un arco iris, no en un arco de madera DOUVILY KNIGHT"

En el segundo volumen: en sus objetivos incluye:

- La elección de un topógrafo (surveyer).
- Elección de un buen encargado de obras (clerck of the Works).
- El deber de todo Jefe de trabajo.
- Las proporciones de los 5 órdenes.
- Temas que han de estar en la mente de los consttructores
- Datos y precios de los materiales y de los diferentes trabajos que atañen a la construcción.
- Para esos que no saben si construir o no (como esos que se casan y se arrepienten)

1.- El arquitecto ha de tener en cuenta el terreno en el que se edifica realizando distinciones entre la de ciudad y la del campo y estudiar los alrededores:

- si se necesitan molduras
- los ornamentos han de ser moderados.
- los salientes de las ventanas y sus inconvenientes.
- como se han de colocar las ventanas
- evitar ridículos ornamentos.
- los órdenes se han de observar desde la parte frontal del edificio.
- saber donde se colocan los balcones.
- concerniente a la parte alta del edificio sin barandillas ni pasamanos.
- el uso de la perspectiva.
- puertas y ventanas proporcionadas.
- limpiar los morteros por encima de las cornisas.
- para dimensionar la piedra hay que tener en cuenta los órdenes.
- de los deberes y viejas costumbres.
- de la colocación de las puertas
- de la inconveniencia de elevar los hogares en las chimeneas.
- el uso de los espacios entre chimeneas
- las habitaciones, con qué tipo de suelo se han de pavimentar.
- no se han de colocar particiones de madera en la planta baja.
- los escalones han de ser profundos y bajitos.
- la planta baja ha de ser la menos dañada por el fuego.

2.- El jefe de obra ha de saber el coste de los materiales y los precios de todas las cosas pertenecientes a la construcción; saber donde están los mejores y el periodo en el que es mejor para trabajar; evitar retrasos en los diferentes procesos.

- que los carpinteros no hayan de esperar a los albañiles, ni a albañiles a masones.
- debe anotar en su libro los materiales y todas las necesidades que necesite. Distribuirlas ordenadamente y pensar que nunca hay suficientes clavos, y es obligación del encargado ser discreto en la distribución de ellos a los carpinteros, cuyos bolsillos participan para ampliar sus estómagos.
- sus ojos deben observar las manos de cada uno de los trabajadores, incluso aquellos que trabajan en las alcantarillas y sus fosas.
- hay que tener el material recogido para evitar daños.
- los albañiles han de estar lejos de los huecos de cimentación.
- el mortero ha de estar bien colocado, no ha de ser desigual en grosor.
- observar que los ladrillos parecen sólidos, por su color.
- los masones no deben trabajar con piedras con vetas.
- porque las ventanas han de ser luminosas.
- la correcta altura de las ventanas.
- dimensiones de los pedestales.
- proporcionar siguiendo los órdenes.
- que los carpinteros sean buenos en el manejo de la madera.
- el encargado ha de controlar a los carpinteros a la hora de montar la viga principal, en sus anclajes, para apoyar en la pared de la mejor manera.
- y las uniones.
- la altura de las puertas.
- ha de ser muy cuidadoso de no sufrir que ningún carpintero tire madera debajo de la chimenea con madera debajo, porque se puede prender fuego y quemar hasta los cimientos.
- los andamios para sostener pisos y los andamios para techar las habitaciones han de ser de 30 pies de ancho.

También incluye definiciones de trabajo de fontaneros, como se han de realizar los cimientos, como se trabaja con ladrillos quemados, que hay que preguntar precios, estimarlos; los trabajos de ebanistería; tejados, particiones, suelos, morteros, yesos, trabajo de herrero, y el trabajo de los masones.

COMENTARIOS	El libro al que se hace referencia en el título en realidad son dos, ya que, tiene como introducción *“A brief discourse concerning the three chief principles of magnificent building. Viz. Solidity, conveniency, and ornament”*. Y luego una segunda parte en la que se da consejo directo de cómo llevar a cabo la obra y escoger a todo el personal. El primer libro tuvo una primera edición en 1662, en la edición que se puede consultar, es un libro de pequeñas dimensiones tipo Moleskino, el segundo libro, también tiene un tamaño moleskino, aunque la edición que se consultó es la que se encuentra en la RIBA y es la es el que he estudiado en profundidad, contiene como introducción el primero y luego añade un índice y ordena todos los temas importantes en la construcción. Es un libro que trata del proceso de construcción desde que el Contratista/constructor se decide a hacer una obra hasta el final: edificio construido. En él incluye todos los oficios desde el más importante que sería el de arquitecto/surveyer (vuelvo a pensar que la definición de surveyer en España se ajustaría más a los trabajos que realiza un aparejador o arquitecto técnico que no a los de un topógrafo). Es sorprendente hasta el detalle al que llega

Nota: es la ficha del trabajo final de máster, porque las notas se han ido extrayendo directamente del volumen de Almudena Grandes (2007) en el que hay transcripciones de los dos libros de Gerbier.

AUTOR	Roger North	
TÍTULO	“OF BUILDING: CURSORY NOTES OF BUILDING OCCASIONED BY THE REPAIS, OR RATHER METAMORFOSIS, OF AN OLD HOUSE IN THE COUNTRY (Reserved for private reflection, if not instruction, to such as succeed in it).	
AÑO PUBLICACIÓN	1695-6	
HABLA DE_		
Dedicatoria		
A quien va dirigido/Prefacio		Empieza con dos historias anecdóticas sobre construcción, para ilustrar lo que viene.
NOTAS SOBRE EL LIBRO	<1>It is a manifest infelicity that happens to building; all men pretend to judge and think themselves masters of it, and very few have an idea so just as to satisfie either themselves or others, with what is done. <2> Upon the subject of beauty, I urged that in nature, the distinction of handsome and ugly had no place, but arose by use and the reason of things. Now in building there is order, uniformity and strength (p13)	A pesar de que se podría considerar la edificación como un acto de vanidad, busca argumentos que la favorezcan. 1.- Habla de la vanidad de la edificación, que provoca, pero que por otro lado permite alojar a familiares y amigos confortablemente. 2.- Las tentaciones del constructor, sus placeres. El de poder ver la construcción nacer, ordenar como se ha de hacer. 3.- Los beneficios para el público ya que es una forma de caridad, ya que los materiales de construcción excepto la madera han de ser trabajados por el hombre, eso significa que ganarán dinero para alimentar a sus familias. 4.- Habla de que diseñar y ejecutar algo es un gran placer y tiene algo que no se puede describir, que tiene que ver con ser y aspirar al sabor de la creación, el conocimiento del poder todopoderoso. 5.- Considerar la utilidad de la edificación, que se decora con lo que es bueno, que defiende de la violencia y el engaño, y en las adecuadas latitudes proporciona alojamiento a nosotros, a nuestros amigos y familia. Entra en el “gusto” de la gente, nadie es ajeno a una forma de vida, el problema es que cada uno tiene una. Acaba diciendo que se puede saber mucho de la persona en función de la casa que habita. Da ejemplos, varios de lo que quiere decir. Por lo visto entra en un debate sobre la belleza, que es lo que hace algo bello o no según nuestros gustos, llega a la conclusión de que: Usando el símil de la música, los sonidos repentinos que no tienen nada de regular como un portazo nos disgustan, en cambio sonidos repetidos gradualmente, como el tic-tac de un reloj, nos relaja. Y por otro, lo que nuestro cerebro entiende nos gusta y lo que no entiende nos disgusta y a partir de ahí sigue. (TRIADA???) Entra en una disquisición sobre los 3 conceptos, y acaba hablando sobre los órdenes y los diferentes ornamentos en la edificación, incluye crítica al gótico (p22) Entra en las personas que llevan a cabo la construcción. Como contratar a la gente que ha de llevar a cabo el trabajo en función del tipo de trabajo y del propietario, intentando ahorrar, comenta que si se tienen las ideas claras casi es mejor no contratar a un profesional. Pero que en cualquier caso la opinión del propietario es importante.

	The first point which offers first to gentlemen who are inclined to build, is whether he shall begin a design new from the ground or repair his house. And this will not trouble him much, unless the old house be of good material , that will either stand as it is or endure battering, and after all alterations, be considerable in saving of charge, and have a full proportions, so as not to spoil what you add of new to it. And if a person can judge so well of his house to know, whether all, or any, and which of it is worth keeping, he may be trusted with the following ménage, for that judgment is nice. Many out of avarice in keeping an old stair or stack diminutive cast or other, to humour an old scrap. Others neglect wholly very substantiall old houses, which are convertible with little charge to good and modern use and forme, and out of an humor affecting novelty, pull all downe. The mean between these two, is the subject for a just understanding to determine, and depends upon a skill in general, no rules can be layed downe for direction; therefore I must leave this point to discretion and suppose an old house convertible to good forme and use, before the question comes, whether it be best to work upon that, or one wholly new.	
		Entra en un seguimiento de los pros y los contras, de la casa nueva o de la reforma o restauración de la misma. En realidad apoya la rehabilitación: Que acaba diciendo
	Having spent so much paper, about preferring the repairing and mending old houses, before that of building from the ground new, I shall next discoursing of mending well.	
		Para evitar problemas mayores, hay que considerar los siguiente.
	1.- Consider well your own ambition, that is what sort of housing you desire, which I must always allow to be more than is stricktly needful according to your circumstances, else a farme is equal to the best. The distinction of well borne and breed, is by elegant and neat living. And then consider your estate if it hat such luxuriant spare benches as may be lopt off to render the rest more flourishing. If the latter be a plaine case, you may venture on any thing. If not, have great care of engaging beyond a power to stop,, in case the times or any other accident proves cross to your porpose. And this was one of my chief invitations to men old rather than build new, which I shall not repeat, but add, that if your aim be low, and at moderate things, you may the better build new, than if you aim at somewhat great and relieve. For that is purchased cheaper and safer in the mending, than the building projects. 2.- when you are sure of your own mind and aim, consider well your old house, if that be in case; if it be very narrow, and low, so as not capable of taking good forms within as well as without, or if it be of a material, that is either rotten, or not fit for breaking, as many times the case is, it is a vanity to bestow more upon it than is called necessary repairs, and ordinary decorums, to take away offence, while you use it. And if the dwelling be fixed to your ground or near it, it is much better to pull all down, than to pretend to alter, which many are satisfied of by experience, and too late repentance. In such caseeither all new, or if that may nor quadrate with your affairs, then rest contented with your gransire's old house, whereof the antiquity hath both excuse and reverence; and so vain expence is prevented, as that is always which fails ot its end, credit, purchasing in lieu of that, censure as well as charge; and this premio is seldom wanting.	

	3.- then you have to consider next what qualifications, or assistances you will have wherewith to manage your work. It is much best, as I have shewed, to be architect and designer yourself, at least so farr as may serve your owne porpose. If not, it is very needful to have some builder (if not a surveyor) at hand always to be at the head of the business, so that you leave nothing to the discretion od workmen; else their errors, or numerous questions will cofound you. And without some apposite means of this kind it is better to sitt still, than doe much in building or altering. (notes)	
Casa Ikea		
COMENTARIOS	Es muy filosófico, razona sobre todas las cosas, parece que te estás leyendo el "Discurso del Método" de Descartes, claro que él era filósofo… Habla de los materiales, pero da un punto de vista totalmente distinto, no te explica la ejecución sino que es lo que se ha de evitar para que salgan bien. Es como un listado de todo lo que tienes que observar para evitar que te engañen, y utilizar buenos materiales. Es como si hiciera una ISO de los materiales. A veces cuando habla de cómo has de replantear los planos de la casa, que puntos de vista has de tomar, se mete en la piel del personaje: le has de dar vueltas a tus necesidades y cuanto espacio necesitas para llevarlas a cabo, a partir de ahí ver lo que tienes en el edificio, y cuáles van a ser los cambios. Que los dibujas, los piensas les das vueltas, pides la opinión de todo el mundo y aún así te pasas noches sin dormir pensando que se te escapa algo. Al final te sale un diseño, que con suerte, si los trabajadores son hábiles llevarán a cabo, pero plantea que lo ideal es que se esté al pie del cañón siguiendo la obra, para que no se desvíe de lo que tienes tú en mente. Después habla de ejemplos de casas, de lo que salió bien, y lo que salió mal; y además te da la que, según él es la distribución perfecta. Al final hay una serie de artículos sobre arquitectura. 1.- Sobre la arquitectura gótica. *Recordatorio: No se ha leído el libro original, se han sacado las notas de una edición comentada de Colvin and Newman de 1981.*	

Notas: Ficha North 1695

I would willingly add some examples of forms of houses amendable, with the nearest and best method of doing it. But the sorts of houses in England are so various, and hard to describe in words, than I cannot without much time and pains attempt it with any satisfaction. One sort I will venture on touch upon, and that is both frequent in England and very troublesome to mend. And that is what they call the half H, a front and two wings all single building. This form is fit for a college or hospital, to be divided into cells, and chambers independent of each other; but nor for a dwelling house, that ought to have a connexion, and unity, without crossing to and fro from one part to the other, thro the air, and abroad; and that cannot be afforded in such houses. And it falls out that the singleness of the building makes the wings look narrow. Such inventions were for want of the art, of disposing lights, and roofing commodiously any broader fabric, which are now of ordinary practice, but not known in former times. It is usual to make the parade rooms in the middle or front, and the apartments in the wings, so you have breadth and height, which much accomodes the new design. And that I think is best cast, by doubling the front, within from wing to wing. This gives a range of rooms with vistos from side to side and you may take this range either your principal, or secondary, as you find fittest. And as for the wings, such as are left, if any be still prominent, they fall well to represent pavilions, and will be of use and service in the design of the house, for closets, inner rooms, or the like, and may be ornamentally distinguish in the roof.

There may be houses of this sort, that will need less alteration and some more; the conditions of the fabric, and the builder's aim and purse, are the ingredients composing design.

The last and principally advice I have to give a reformer of an old house, is in the first place to be well acquainted with the place, and then settle your contrivance, putt in draught so as it may be considered and reflected on from time to time by yourself, and made intelligible in order to have the opinion and advice of others. And after this draught hath bin made and altered, as will happen many times, you may begin to think it is neer its perfection in the design. It is so hard to imagines to oneself all the occasions and advantages of room, as practise will suggest, that continual changes of fancy will obtrude, nay even at meals or half asleep, some discoveries will arise, most important, not thought of in all your intention of study, which you would not have overseen. Then your draught is ready to receive and keep in your remembrance what you continually gather by thinking. And this will not fix suddenly; an opiniative artist shall pronounce, and snuff if he be disputed with; he will not take the time, and deliberation, or be amiss. Therefore I must needs recommend a slow series of thought and continual reflection, and committing to draught and then judging and altering, as occasion shall require, and this in order to reasonable content, when things will discover themselves in the life, that lay concealed in the portrait or image of your building, and you must be prepared a forehand to bear some oversights, and to be satisfied, that they are in thing not very material or essential, as will happen upon precipitating your project. And the best remedy I can propose is this, that notwithstanding all your thinking and drawing, reserve a scope to alter in circumstantial from time to time, as the work goes on. As in the disposition and partition of rooms, employment of waster corners, and many little contrivances; which will be most usefull in practice, and scarce discernable in draught, or obvius to thought beforehead. Let nothing be finally determined but what is done; make no alteration, but where the trouble and charge is small, and the use very great, and not in things than make much appearance.

After such draughts as these, brought to the utmost perfection you can give them, you may, if you think the charge *tanti* have a specie-model made, exactly to resemble the life, wherein yourself, friends and workmen, may inspect and judge; and many doe not take an idea from draught, but must have the species presented. This will improve your designed and easy you in directing the workmen whose *grossiereté* is difficult to be instructed from a draught in plan. But if you are by yourself, I think the charge of that may be spared. For it is a want of application of thought, not to perceive from draught, as well as model, any design of building, and erect it in your mind sufficiently clear and distinct for your judgement and use. And being continually at your work to observe and direct, the artificers will not run into errors, as when left to themselves. In which case is almost necessary you should have a specie-image to guide them. It is wonderful what a vivid representation of building may be made in plano. I have made the erection, of the uprights; and by the help of perspective, delined a flying prospect of each story, representing the view one hath, that looks into a model, to my entire content, and in farther exactness had bin required I could have as well done it, as sometimes for exercise and trial, I have drawn the image of a line of rooms, as they would appear, if the walls were taken down and floors lonely standing. Those who have proved the pleasure of this exercise know the fullness it hath; and are truly epicureans in industry.

When this thinking part, and drawing our model is over, I would have our friend set to provide materials; but I must not forget to admonish him one thing, which is, that he be sure to make his design large enough, and up to the height of his present ambition, as well as prospect of ever desiring, according to the circumstances, he shall have clear reason to limit himself by; and not to contract it for any present humour or fancy that it will be sufficient for him. The reason is that it may happen he may desire some enlargement; and increase of family or business may require it. Then if his model be perfect and closed, it is probable he cannot enlarge without deforming the whole. Whereas if he design large at first, he need build no more than he hath occasion for, and do the rest when opportunity serves. So he is sore not to deforme his model by any future additions. And he may go on doing upon his model, taking lonely care that whatever he doth be a part of it, though perhaps occasion break the direct order of proceeding. If all your structure be part of your model, you may join and close it, and add the embellishment when you please; and in the end, if you live and have means to accomplish it, you are sure of content. And in this method you shall walk safe, and by steady perseverance in your purpose, at length attain much more than you would have thought possible ever for you to compass.

It is observable, that this work of mending old requires much more art and invention, than designing new houses. I mean not here, common repairs, but the thro reform of an old house so as to make it modern and elegant in its face and use. In a new design some one thought governess the whole; as the placing the grand rooms and apartments are laid out, and the order of the stories and roof settled, other rooms and conveniences must take their places accordingly, and giving way to their betters, be disposed where they will fall with most accommodation to the family. This occasion much cobbling about the inferior members, whose apertures must conform to decorum without, however deform within. And in this after the principals fixed, the rest is no pain to the invention, the main lines govern and there's and end. But in regulating the old, every corner and place demands a distinct consideration, how the best conversion and application may be. And it is not easy to imagine how a dexterous contriver shall improve a place to useful ornamental purposes, and so aptly fitted as if such had bin the original design of it; and bring 1000 of ordinary judgements to bear, few or none shall discover it. And farther, there is more art to cover faults, than to compose perfections. The latter may be done by authentic patternes and rules; but the other hath no pattern nor rule, but is the product of original skill. Old houses will have, to the present esteem, gross faults; and an artist by disposing the adjacent parts, both hides, and with small additions renders them ornamental; at least to such eyes as are not very nice, or who have no hints of the defect given to draw the observation that way. A juggler, to conceal the action of one hand, points with the other earnestly to the roof. This draws away the spectators eyes. The like is done in building; when faults cannot be taken away, they must be disguised, and covered, or the eye averted by some more engaging part.

<MATERIALS>

I shall next set down some notes of what I have observed touching materials. And first.

OF BRICK

It is best husbandry to make it, for if nothing else be saved, nearness of carriage is gain enough. But there is farther too easy the charge, the clearing of foul grounds of bushes, brush, or whines, and the making a larger brick which will rise in your work faster than sale brick. In burning in a clamp and coal is good, for the bricks are piled, and may be taken or let stand. But in taking observe always to clear the ground, and shovel the dust away clean to the bottom before new branches are made, else much brick will be buried in dust. If by kiln and light fire, the firing must be fresh and dry. It hath most force when just dry; if it be whited, that is dryed, before setting, and not be set too close. And slow burning and long is best, and leave not off, till the fire and flame come out freely at the top thro all the brick. A small kilne and 1 pipe is best, without your building eats very fast, as if it be all new brick, then the kilne must be large and many hands employed. But the small burns oftner, surer, and wastes not fire so much.

The brick-makers are a bad, and thievish sort of men, so are not to be trusted with advance. If the earth be stony, they will scarce every pick it well enough, and, if not well followed, doe their work very ill, and lay the fault on your side. They will burne too fast, and leave off too soon, steal all they can find, and run away on the first trust worth breaking. You contract by the 1000- I give 5,6 d in a stony earth, and 4d for drawing out the kilne. Bricks are either sandy, or clay. The former hold weather well, and doe not scale in frost; they burne rotten, and doe not glaze or melt, therefore a slack burning is better with them than others, and the fire must be slow. Of the clay some weather well, being very hard like sinders; others scale with frost intolerably, but are fine and hard in the hand. And were I to chose, I would have the sandy brick rather than any, but the sindery clay. And in brickmaking, if the charge will be availe, nothing better than covering the stakes, or rows of bricks for drying and covering the kline. If wet comes during setting, it mush hurts the ware, unless covered. Earth dug in early winter to take the frost is best, because it makes and moulders with less labour. And of all thing avoid marle or chalk stones, which spoyl all. Bricks rubed and gaged are a fine but a weak and decaying work, much worse than plain.

TIMBER

In London and the coast northward deal is of great use; it is equal to any, for inward work, especially beams, because they have a spring, and rise against their weight which no other wood will do, and if red and rozeny, serve tolerably in roofs; but nothing but oak will bear the ground. There are some young deals that are brought over with great timber, they call deal poles, which serve for out housing, where strait spars are needful.

Ash, (if winter-felled) and elme, will also serve in inward work, where no wet comes. Ash is apt to worm if sappy. Elme cut dry or wet, lasts but not alternately. People will last long, kept dry; and, to say truth, almost any wood, except such as worms. Oak is the proper building timber on which you may depend, saving sap, which will rot from its company in the least wet.

In buying, oak standing is for timber-masters that can guess at measure as a butcher at the weight of a beast. But lying common measure is best for a gentleman; for being brought home and contrived by himself yields advantage by the chips, and waste, if any be; but building in one place or other usually eats clean. The error of girt measure is the buyer's advantage; but it will be more when the seller is not careful to cut off such pieces, as according to the rule of girting cast advantage very much from him. Carriage is a weighty article in all building, specially timber, and nothing needs conduct more than that. If you will take timber ready sawed, and so delivered in scantlings at your work, it will not come for 1.4d or 1.8d foot solid; running measure, without great caution, is a cheat, and will surprise you. And measure by reducing to feet solid, is subject to this disadvantage; that the sap and the waxes will arise to much, and is all loss. But having great and small, wany and square one with another, it is the best way for such as do not manage and contrive for themselves. Whatever the timber is, keep it as much from wet as you can, especially if lime be near, or the wett passeth from it.

LIME.

The hard stone is incomparably best, but all countries have it not, and are content with chalk, which with sharp sand makes a good body, but of itself will never harden beyond the stone of which it is made. Walls do well, with the mortar made fresh and layed hot from the slaking. But then the lime must be good, and slack soon. Generally is the best way to pan up the lime towards winter to be used in building next summer, and it shall be found that all the unslaked parts will be buttery, and slaked, which is great gain as well as good for the work. But all persons have not means to conduct for the best, and must do according to circumstances. The bubbling of ceilings and rendring, as also mortar scaling in walls, is from the lime slaking too late in the work. Therefore where the lime is hardest, it needs most lime and water to slake it well. Quick lime powdered and put in water, is a cement for quick working anything fine.

STONE.

Of stone equarre, or ashler, I have little to observe, being not used in our country in common building; but mostly flint; and that is a very good and durable material for building, as any whatever, although it doth not make so fair a shew. It is necessary to mixt brick with it for turning the coins and some bandage while the wall is green. It is wrought with a stiff mortar, least the weight above croud out the lower courses and it is not good to rise too fast, but let the lower part harden somewhat, before the upper presseth too much. There is a sort near the coast called pebble, taken from the sea beach, that is wrought lapping the mortar about each stone, very stiff, so that one would wonder it holds its place, but is very strong. And in all rough flint work there is much of that lapping the mortar, and it is observed that stone never lys well, that doth not swim in mortar, not touching any other. There is in Norfolk of old used a sort of fine flint-work, and some very exquisite; they break the flint, and by breaking the edges, bring it near a square, and so lay it with a black face. And in all flint work it is good to fill the joints with shivers, thrust in, which makes the mortar set an binds the wall.

COVERING.

Whatever is layed on the timber and lathing should be oak. Stone slat is a very durable covering. Next that, ely-tile, knowne by the white colour, is best; unless slak-burnt, and then it scales and is stark naught. Of the sandy tile, that in Essex, is best; Norfolk hath none good, but some are made and used, for want better. Thatch is so ruinous a covering, that it is fit lonely for cottages, and mean outhouses; those of greater account as barns and stables, and granerys, are better covered with dutch tyle, which will ly flatter than trenchar-tyle, and weather well. They may be layed in mortar, or pointed at the back; else the snow will drive in, as abroad; for they will not fit exactly. Some are made in England, but none so good as in Holland, if tolerable, and in Norfolk not such. If not the best, they are the worst covering. In lathing for flat tile, always observe to counter lath; that is nail a lath in the midst between every spar, cross all the lath. This is a strength more than is easily conceived, but is rarely done unless contracted for. And of coverings next to lead (the charge of which is not for private persons to sustain) reed is most durable, but not being so elegant, is used for the greater out housing, and none better. It is also used for head farmhouses and without objection, but for danger of fire, nothing catching from a candle readyer than that. And for that reason it is usually spartled, that is plaistered with mortar. Where any sort of tile is used, it is very good to hipp with milled lead, but care must be taken to bind it well and fit spaces, or the wind will raise it, 3lb to the foot will do, and the binding may be a plate of iron to go cross it, to keep it downe or else a slip of cast led doubled, which is stiff enough. This milled lead is beatable close to the tile, with less hazard of breaking than other stiffer lead is. If lead be used for guttering, as is most necessary in double roofs, now used, lay one sheet dripping downe upon another, and not strait sodered, for the stretching and warping od the lead will crack it, when there is not scope to yield. You may soder the drip, and it will be more secure against overflows. And it is good to let the sheets rise as high under the tiles, as conveniently may be done, for the same reason. If lead is to be sodered on a flat, let not the soder rise upon the sheets, but cut a grove under in the wood, and after the lips beaten together into it soder them. Lord Alington's house at Horseheath, hath all the sheets devided by a crevise, and so carrys the water small gutters under each crevise, to maines, and out at one vent. But this is nece and apt to prove ill.

WATER.

The conduct of water from an house, is a matter that deserves care and contrivance as much as anything whatever. For when it is left to dripp round, and sometimes with short-eaves, it is a great annoyance to the windows, and walls of the house; and however cast farther off either by long eaves or pipes to the grounds, it is and inundation every showre, and makes the house and island. It is observed that walls of brick will filtrate from the bottom to the top, and wett the very walls plates. Therefore it imports to clear well the water off, that the habitation might be wholesome. And in this is done by all sorts of walls more or less.

Either the ground will drein itself, or not, where the former is, the work is easy, for if there be no fall to carry of the water, there may be caverns made, and covered with brick, as is done at all the corners of Chelsea Colledge, and the water conveyed in shall sink away , and keep the neer grounds dry. But if there be no such expedient, a fall may be purchast by digging draines to a farther distance, and it is a bad brick will last ages, and being arched and earthed over are no inconvenience, nor eye sore, but open draines are intolerable, because cattel will be ever filling them up, and they will stink most offensively.

I will sometimes happen, that a reasonable fall is had from one side or quarter of an house and not from the other, which notwithstanding the fall draining one side, shall be annoyed by wet. My advice in that case is, to bring the water all too some common channel, and so lead it to the lower ground from the body of the house, and not vent it abroad, till it comes to the dreining side. For compassing this, the whole house must be battlemented or corniched; the latter is more in use. And in the middle, neer some waste-wall, ehere the nost recess of the houseis, contrive a maine gutter large, to pass along thro the out wall, to vent the water by a sess-pool, and large pipe downe, and so under ground away. And from the cornishes convey the water by some covert gutters to this maine; all which may be done, if thought of in time, and taken into your contrivance. The cautions are to make gutters large and deep enough; and if one passeth into another, for that will swell. It is a ver great inconvenience to suffer a dripp about an house, it is not onely foul and unwholesome but hinders plants growing, and whatever the charge is, there is no blame, the use is so great.

VOULTS AND ARCHES.

There will be occasions sometimes for archin as for cellars, and grotts, and if your fancy so directs, a fire-tight room. It is not unreasonable, to desire a place, where anything may be put, which you would not have subject to the casualty of fire.

As to arches in general, it is fit to know, where the pinch and strain of them ly's, that they may be sufficiently fortified to stand. I do not approve flat arches over windows, but rather scene-arches, being about a sextant , for those are not indecorous, because reasonable. The flats are less decorous, because weaker, both to the eye and in reality. The ancients thought it no disgrace to shew an arcuate discharge in the body of a wall. It looked like care, and government, and not ignorance in the work; the flats, if water comes at them, are apt to decay, unless very well wrought. And no flat arch is good that is not massive, and full of visible strength , which ly's most in the deepness of the frame specially at the key; of this observe that I made at the gate of middle Temple, and the weaker are seen at the Westminster gates by Whitehall. The latter are so wide to be offensive, and the wonderment at the work, which is much made of, doth not compensate.

The pinch of most sorts of arches, especially the semicirculars, lyed in the shoulder; there it is apt to crush within rise up. So that if it be fortified there all is safe, and until it be so done by filling or abutment, it is not good to strike the centres. The long way and ellipse pinched in the shoulder very much, and if you would examine this force, take this rule.

Describe the out and in sweep lines of your arch such as include your compass work, and then drawn lines from all (or equidistant) points of the put ward tangents to the inward, and where those run together thickest, is the greatest strain of the arch, and where most force bears.

Observe in this arch, the pressure opens in the joints at D so there no crowd is, and they close at A, but the crowd is onely the weight of the key stones. But at A and B the crowd is most, being of all the superstructed weight, and if the material be to weak it crushes there; and at E the arch is apt to yield outwards, or rise. If this rule be applied to other figures, as the long-oval, it will be found that upon the returne at the shoulder, is vast hudle of force, which the lines discover. And in the scene arch, the thrust ly's all at the impost of the arch; and as the arch is flatter it runs onto the meer abutment, so that a flat arch (as it is termed) is no other then a wedge.

The reason of this is, that weight ly's upon that body that most immediately susteines it. That which hath no void, in the perpendicular of it, ly's upon a plane base. Then as the weight is made to overhang, its pressure is by the perpendicular, but cannot be supported there, because it is void. Then it must fall upon the next solid contiguous to it, which is a strain line, as neer the void as is possible. As what support hath the point C? it cannot be sayd by E which is less under it, and nearest to its tendency by the perpendicular , and so of all other points, in the whole substance of the arch.

Now here observe the crush of the substance, and the abutment have each their designations in this sceme. For the crush is made by a contraction of the weight in the arch CE into the lesser arcuate space F.G. wherefore the crush upon that is more, than the weight of the material, on its owne substance, without the disadvantage. And if the material gives away, it is in that space FG, but the abutment, if one perfectly true were to be made in this area, it must be stop against the thru sod all the lines between H and I, and although the line IK be the impost or base f the arch, yet it hath a thrust also upon it to drive it outwards. But K H is merely thrust outward. Therefore the guard must be a sufficient stop against the lines H I which secures the arch in all events. And goes all upon the abutment, as it is in the flat arch.

The same rule that holds for abutting and securing and arch for carrying a wall, holds for volts. For if it be a long vault, it is onely extended in length, from one face to another, all circumstances else alike. (...)

OF WALLSS, AND PARTICULAR FOUNDATIONS

I would not mention things obvious in books however material, for I make not a collection of any thing, but my owne observations of things less common. As to walls, nothing is so material, as to draw in the superstructure, that it doth on no account overhang but fall within the base. But this must have bounds; for too much spreading, is useless, and demands a distinct covering to weather it, in Queenstreet, the houses had an order of pilasters, which overhung the wall underneath, and weakened the houses; the lord Conway's was regulated in that, as may be seen; and the rest must follow in line. It is also very imprudent to hang much weight aloft, by massif gables, cornishes, and battlements; if they may be avoided. For those moved by the weather, and other accidents, have force and sway to carry the shake too far and weaken the wall. Fascias are much used, but between every story is too much, and neither ornamental nor useful; a man wears but one girdle. Common builders clap them between every story, they know not why. It is certain they weaken a wall, for they can scarce be so well weathered, but water will insinuate to the wall there, and if not well weathered, with lead at least, the expressly spoyl the wall.

The great distress of fence walls is the want of good coping. About Chelsea College, wood painted is the coping, which doubtless is good, and lasting. Ordinarily, the head overhangs for a drip, and is then gathered in, by bricks layd aslope flat; and a range of others level a-top. If the bricks and mortar be not excellent, this is a bad way, for the mortar decaying with the wet, the bricks slip, and the wall is exposed, for which nothing is worse, than water getting to the centre. And some are so foolish, to frame their coping bricks, so that the joints point inwards, which will lead in the water. A better way is to set the bricks on edge, and so a brick corner makes the point at the sumit of the wall. Mortar is not to be trusted to, in the leading wall; for in England rain and frost, will get the better of it. Those who have compass bricks made to set on edge upon the wall, with the round upward, find that the joints being strait from the top to the bottom of the head, the water hath a strait course down and will insinuate itself to the wall. Against which I ordered walls, with good effect, thus; after the wall levelled 2 sallying courses; then 2 courses set off on each side each a inch or better, then a course of brick on edge, which also set off and inch on each side, and lastly a course of flat brick on length. This defends the wall because the joints are broke and no one over another, but solid against joint to stop the water, and the compage of them is so bound and level, that, if it were compiled without mortar, or all the mortar fell out, the ahead would stand. And this is necessary to be done, where brick, as mine is, sucks water; for when frost comes upon them wet, they will, upon thaw, part from the mortar. Stone is the best coping, but of that some, as the Kitton, will pass water, and spoil a wall at first if not prevented; which is done by oyling, and if that be to costly, flet milk and quick lime. In time when a crust gathers it weathers well enough. If walls are such that frost must hurts them, as when done with pebble or flint where the mortar ir more exposed than the stone, nothing is better than to thatch the first winter with straw or brakes, and cope next spring. For the wet running continually from the head, the frost will never find the wall other than wett, and so hurt it; but if it be thatch't, with eaves overhanging much, then the water of the head as also the slope falling of rain will not annoy it so much. And if one winter be gained without ruin, they are secure for ever, and the more time they stand the stronger they are. Brick walls endure the frost much better then stone, both because the joints are thin, and not in such massy lumps of mortar as stone walls have, and because they suck the moisture and dry sooner; for this reason it is that brickwork is done in some places, as in London all winter, but during hard frosts.

As t foundations, the cheif care is where one side is earth bound, and the other not, as in cellaring. If the material be not good, the wall is apt to split and give way inwards. So at settings off. If it be not done gradually, but all at once, as where it may be done at 2, 3 or 4 courses, it is better than at one. The difference appears in the margin. The latter bears the weight upon the whole base, the other upon part, but thrusts out the other.

The cheif imploy if a foundation, is to be a firme, and immovable foot to set and huge weight upon, for long continuance. And this cannot be had, neer the surface of the earth, because the soil is not so firme, nor is it so abbuted laterally as deeper, but subject to squeeze from under its weight. And the frost and weather hath too much power to dissolve all cement neer the surface, therefore is necessary to go down deep, to have a sound foot, safe, and well abbuted laterally. For this reason also, the trench should be filled with masonry, to the upright od the digging, and that spread no more than is needful, and not be left to be filled afterwards with mould. But if the soil be not secure from wet, and you would keep the wall underground dry, some have advised to leave a space, and ram well the void good clay.

One thing I think unusual I have found out and practised, for retrenchment of charge in foundations where lime is dear. The bulk and coursness of the work there, devours more lime than a whole wall superstructed. And in raising up old foundations I have observed an incredible hardness and bond of the work, from age and continual moisture, so that I have esteemed such indurate strength superfluous. For when the wall is earth bound on all sides, so that it cannot spread, and frost comes not to moulder, it is enough, if the material will cohere, and not dissolve from itself. Therefore I used clay, till I came neer the surface, and expect full strength and duration from it. For after each course layed ramming brought the clay to fill all the joints, squeezing into every void; more than this in common fabrics, is certainly a charge not necessary. Another thing is considerable laying foundations; most lay the first course in mortar, which is needless, and a considerable loss. Let the first course by layd upon the gound, and if stone well rammed down.

CHIMNEYS, SMOAKING AND CURES.

Nothing about an house is more important to be well executed than chimneys; for they are a beauty within, and (if seen) without, and the carrying smoak, or not, a consequence that either makes an house delightful, or intolerable.

I shall not meddle with the common rules about chimneys extant in books, but some incidents of newer invention. Corner Chimneys are much in use; but for want of right judgement, when proper, and how, often spoil rooms. 1.- they warme a room, because it heats the sides, whereas a flat chimney heats onely over against, which is so far off as to be little warmed. 2.- they are a compendium. For 4 rooms on a floor may be served with one stack, but if flat, but two, without leading the tunnels farr along the wall, which thickness the wall and looseth room. 3.- they stand in a waste place, a corner, and destroy not room so much as if flat, for then the setting forewards, as is necessary, intrencheth on the best room very much. These are the commendations. But after all I must rather recommend flat chimneys, where your room will fittly receive them. And that distinction is made chiefly by the largeness or smallness of the room. For if a room be large, the corner chimney is a pinch of which there is no need, and is therefore an eyesore. 2.- it is too far from the light, and for that reason, inconvenient. 3.- a flat chimney is plast in your eye at the entrance and is the best ornament the end of a room is capable of. And after all the striving of artists to set off angle chimneys, they are not such decorum to a room, as a flat chimney in true place.

Therefore I confine angle chimneys to small rooms, or where space is strait, so that the fabric will not receive them in the right place flat wise. And in such rooms as withdrawing rooms, and closets, they are most useful. For there is scarce a side, at least that where the chimney should be, but hath a door, or window. And then, if there be a chimney also, there will be no room for the company free about it, but the angle gives that room. And where such chimneys are made, and any thing of ornament extraordinary is sought, let me advise not to carry up the face to the ceiling, so as to cut off an angle at the ceiling, then which nothing more deformes a room, but run in the tunnel soon to the wall, and let the mantle fall back with decent shape, and cease in a pedistall, and statue or flower pott; and then the upright walls take place, and maintain the square of the cornish, which is ever required, and aggreable to be in view.

The common faults of angle chimneys, are that of cutting the square of the room, at the ceiling, as well as at the floor, and also the making them too large, which certainly spoyls a room; for a great cant in a small place is a monster. The invention itself is a pinch, so littleness becomes it. This is much the case of most houses in London, contrived by tradesman, and builders; for they have a notion that angle chimneys are fashion, and built them with the same demensions as is usuall for flat chimneys, which should not be. A corner chimney big enough to roast and boyl, is a strange, but ordinary sight in such houses.

As to the smoking of chimneys, I conceive it is form 3 causes, 1.- littleness of the tunnel, 2.- eddys about the fireplace, 3.- stooping winds without.

1.- littleness of the tunnel will make a chimney smoak, because the quantity of air, which the heat works into a current, cannot pass fast enough out above; and then the superfluity recoyles into the room. 14 inches tunnel is usuall; where the fires are greater, as in kitchens, nore room, or rather a double tunnel is necessary. This mischief is found when folk will carry a tunnel in a wall that is too thin for it, and in the late London houses, where to gratifie the humour of the present time, every closet high and low must have a chimney; and so the tunnels are pinched into so little room that they will not carry smoak at all.

2.- eddys. These are very accidentall, for sometimes the pointing of a door shall sweep out the smoke from the chimneys, and a great current of air trough a room by opposite doors, shall draw the rest, and draw downe the chimney. And most frequently there is eddy in the waste, and wings of a chimney, which happens when the hollow hath not a due proportion, and is drawn together too suddenly; then the stream of air doth not lick all the walls, but meeting with stop, eddys, and comes forth at the corners. And if a tunnel were set off at once square witout slope, it would not carry the smoke, but that which stops against the flat above, recoils into the room. Then if the slope be too sudden, it is all one in its degree.

3.- lastly, a stooping air without is the worst of faults. For that shall drive so violently downe a chimney as to carry the fire from the hearth, and is very hard to cure or relieve. It is occasioned by adjacent buildings, and the position of hills. A reflection of some winds from higher building, will sometimes bear downwards into a chimney; and the like of trees or hills. Nothing is wholsomer to chimneys, than a free air, and a plaine country. Houses that stand on the sumitt of a cliff, where the country on one side is plain, and there a precipice, as Beavoir Castle, Windsor, &c shall allwais smoak, when the wind comes the flat towards the valley. For the wind at the edge, begins to stoop, and so the edge of the hollow tunnel takes it, and drives it downe into it. At Beavoir many inventions have bin, but none effectual to cure it. At Windsor it is not so bad, because opposite to the cliff the country riseth againe; so the wind doth not stoop so much.

As to cures, the cause knowne points to. If that can be removed, or enervated, the work is done. As 1.- make a wind store, to cure the littleness of the tunnel. For the strength of the blowing, gets the better, and makes amends in the swiftness of the draught. Other expedients in a less degree may be had in like kind, as a double back with slits, or making up the cheecks, and the like as occasions shall require. 2.- for eddys, changing doors, or the former contractions, made doe. 3.- and as to the faults without, by reflexes or stooping, the have screens to turne allwais backing the wind with fanes to governe them. Some cover the flat, and let out the wind laterally, others let in pipes into the shaft pointing upwards; and nothing but proof will determine the effect, for sometimes they will make a cura and often not, the securest way is to erect a tunnel, of brick or tin, so as to surmount, if it may be, the inconvenience.

THE REGULAR ORDERS

OF LIGHTS

Some things will hold proportion with the bodies of men, and not the grandure of the fabic, and of that sort is light. For howsoever great an house is, the windows must not exceed 4 ½ or 5 foot wide. Else it is a breach and not a window. A man approaching a window expects it to be of usual size, and if exceed, then he thinks of weakness in the fabric by such an a perture, and also of needless extent, and that less would serve and be stronger. For he looks not at it, comparing with the rest of the house, but with himself, who presents himself at it. But in public building, where the windows are to light the space, and not to be accessible, as in churches, windows hols proportions with the fabric; but it is otherwise, where men dwell and come too ordinarily. A small or ordinary room should not allow above 4 foot to the windows. I know it is an error, to affect much light, and wee confess it, by darlnight o'lights again with curtains; it is rare to see a want of light, where the sky appears; it is walls, building and trees, which taking away the sky's light, darken a room, and not the smallness of the aperture.

This mistake of over lighting an house, which is both cold, and bad for the eyes, came in upon the reform of building in Europe after the Gothic arrived at its utmost refinement. The castle-manner used in these countries in elder time, when wars forrein or intestine were almost perpetual, used very small windows; and those took place even in churches, as may be seen in the eldest models. Peace and plenty made way for luxury in buildings as well as in other things, and then they left the castle manner, and fell into a contrary extream, of making an house like a bird cage, all window. The French buildings were so, and we followed, and, as in other foorlerys, out-did them. The degrees of change were, whilst all the panels of light were round-headed, to increase the number, and from 2 onely in a window as the use was, they came to 4 and 6 and then to have 2 ranges of them one over another. Then the round heads grew strait, but the number of lights increast and multiplied, so that our great dining room for dancing in the reigne of Elizabeth and James I wanted no windows, where it was possible to have any, and the roof stand. The Italians always kept to their single apertures viz. the long square, filled with monton and transom. And at one time, such windows were made in England. I am informed that the byres in my lord North's house in Kirtling is the first building in England, where they were used. The Lord keeper North's house at Wroxton, had great rooms caged by windowing; and being to be finished up, I urged very much, to have above half the lights stoopt up, and it made the rooms cannot exceedingly better, and if I had had my will, more had bin served so. Light is a good thing, and illustrious, therefore men are apt to say there cannot be to much of it. The reasonableness of small lights, used in churches built a *la regolare*, is seen by the other extream in our plaister churches in London, where the white walls and much window, makes it a pain to sit in them. The best Gothic churches are almost all light, but then they took it down by painted glass in the windows, scarce ever found wanting in them. This made the light moderate and solemn; but our churches are for light like amphitheaters built abroad.

The Italians allow to the height of their lights but 2 squares; we desire more. In hot countries much light is more inconvenient than in cold. The arabs have but small hole of one light, at the upper corner of a large room, northwards; because they find, wherever lights is, heat will be. The Arab phisitians sayd keep your sick of the small pox from light, than is cool, and wee, following them, shut out light and so kept them hot; a strange mistake practist oen the lives of men, for several ages, and but latly oppugned by Doctor Sydneham, and overturned. We that are a cold climate can bear higher lights, and they are decoruous, by the procerity of them, and also they light the roof. And for that use the Italians use a freese or small light apart above the other, which is not so stately as tall windows are, and on the outside look small, like the ports of a ship. In a high room, it is almost necessary to advance light to it some way or other, unless it stand by water, and then the sky reflecting from that will be sufficient.

Sky lights serve for staires, and servants rooms, and are but a shift at best; therefore should not appear in principal places; which makes me wonder that the best and newest houses in Norfolk, lord Toundsend's, and Sir Jacob Ashley's, are no better served in their principal staircases; for those should be perfect in all respects, being a place all of notice and observation.

To conclude this discourse of lights, I must needs recommend cupola-lights, for reflectorys and dining rooms. They are very ornamental in staires, but side lights are better, being brisker. They do well in a grand sale, but nowhere better than in the eating room. The reason is, that they are indifferent to all the company, and promote society by equal observation to and of all. In a side-light room, those that sit averse are not observable to those that face the light. And a raised light is an advantage to feature, for it lays the shadow of the prominencys downewards, and strong, which sets of the lights in each object. And it is not considerable that being well windowed, they evaporate the smell of meat and keep sweetness in the room.

OF UNITY AND VARIETY

These we hear of in the discourses of plays, poetry, and painting. The first cants it into a devision by time, place, and fable. And in that and the epic poetry, demand unity, yet allow for variety by plots and episodes, which yet must hand upon the main. So the painters will not have a clutter, but some principal thing, at first view eminently cheif, to which all the other figures must relate. It is the same for building, and, to say truth, all things of delight in the world. The rule is not from men's invention, but from nature, and truth, as it is found the best and most experienced senses will dictate. The reason is what I hinted at first, that pleasure from without consists in exercising the understanding without pain, and not in tormenting it, without any, or hard-gained satisfaction. If a play be double, that is 2 storys without dependence on each other, the audience is distracted which to attend, and when one comes, it breaks off the attention to the other, and hath the same disturbance at every transition. So 2 pictures in one is unlike nature, for we cannot look at 2 things at once. So in building, 2 different manners and ranges in one house, as if two houses came together, and justled, is disagreeable. And yet this doctrine of unity must not exclude variety, but artists must find out such as will divert, and not devide, and that is the consummate height of art.

In the gothic times, structures of great pomp and strength were made, but failed in the way of setting off their fronts and views. They continued ranges of the same heights and order into great length, not breaking the course, or intermixing anything great in the way of ornament; I say great, for of small ornaments, which I esteem trifles, (of which) they had enough and too many. But those take not the eye at any distance, where a building should be viewed. It may be they made no account of anything without, so the room within was agreeable. As we see in most cathedrals, Westminster Hall, King's College chapel, of which the later is much the faires, and set off with 4 turrets at the corners, but nothing else. It is certain that no true beauty is found in the out-line of a Gothic building, and chiefly because they used no breaks for variety in their ranges. A long building, consisting of bays of the same invention continually repeated, is a dull object. A long walk however well plated, is not compleat without opening, and crosses, to interrupt the sameness of it, by new views. The dullest road I ever saw was a fenbank, where for 5 or 6 mile the landscape had no change; and was like travelling in a trunk, seing onely a small hole at the end. Of the modern fabricks, Hampton Court, hath this fault conspicuously. It is new built, but the old had a better view, for that had gate towers, and some risings, but this is all of an height: balustred, flat, which looks like combs stuck at the top, and a series of round windows, like the ports of a ship. Bridewell hath a better face, where is a midel , and 2 ends raised above the rest, and the middle above the others, and all joined with the lower order; and that, for too much length, is broke uniformely on each side with a setting out, and frontone. So Chelsey College hath an order of columns in the middle, and 2 pavilions which terminate the wings. The mere observation of that fabric, is a sufficient instruction in this matter for it must needs occur, that if any range in that buildind had bin all of the same height and manner, it must have been very dull.

Of the ancient, fabricks, there are 2 sorts, which seem to contradict this doctrine of variety, that is their temples, and amphitheatres, both of which had no variety of parts, but when thro with one and the same order and manner. I must needs grant, that the danger of introducing variety is great, least trifling be the consequence. And singleness and plaineness where the order is great and good, is a virtue, and if a fault, the best of errors. The temples were single things, which spoke but one single use, that is sacrifising. To what end should that be broken? Why should hipps and valleys and gutters be made in a roof, to gaine no good, but onely to make a figure without, and imply no sort of advantage within? So also in a small dwelling house, what needs breaks? One pile and one covering is sufficient; if a porch be in the middle, to wether the door, it is enough and justifies an ornament, as a lofty pediment, to set it off. And where country are warne, and open walk in the middle. This plaineness is without question commendable. But what is that to a greater extent of building such as Bedlam, Chelsea Colledge, or Hampton Court, which speaks a provision to be made for various and numerous sorts of people; and is rather a compound than simple fabric. Wherefore singleness doth not become it, as it doth a church or small house.

The amphitheatres were all of a peice without, and I believe they were content with a moderate beauty, where there was such vast magnitude and strength to be provided. I believe it will not be controverted, but if those buildings instead of 3 or 4 orders one above another, had bin composed with one order onely, carrying a stately intableture, with fit apertures, and broke forewards ornamentally on each quadrant, they had bin more beautiful; and if prime and perfect beauty had bin the aim, as it was in the building temples of the gods, they had not bin set off as they were, *tale quale*. And this argues for breaking the height into several orders. The whole was made for seats and stairs which stairs were in the hollow under the seats, and it was fit to make walks and windows, upon several landings, for the people to spread and evaquated by. Which several ranges of windows, or arches, did not so well consist with one great order, which should have had but one aperture in the height, because more ranges of apertures speak several stories, and single columns but one, so that there was reason to break the orders. But the strickt rule of beauty is not to be taken from them; nor is there any thing exquisite in the proportions, however artists have given themselves the trouble to describe them.

THE DISTRIBUTION

First, the middle is most considerable in every building; and ought to be set off with a large and massy frontone, that speaks, entrance porch, or covering, all that is necessary to invite persons to approach and enter. This is necessary, whether columned or not, and however a break foreward doth well, it may be without even that, provided the springers of the frontone Cornish are over a solid, and not in the upright of a void. This supposeth a range cross the house a thwart; and shews a composition by designe for putting all well together. And nothing is more stately. It was such a grandure, that the Romans granted the priviledge of having fastigium domus, as an honour, or reward of merit.

This is very well bears a cupola to rise in the middle; in great designes, that should not be omitted. But I cannot recommend it in private houses, being a leaky shaking business, and in no sort worth the charge of the making and keeping. If there be a prospect, few care to mount so high for the sake of it; and no oven is more insupportably hot than such a place in summer. In short it is a trifle for shew but important for mischief, and none but such as know little of them will care to have to doe with them. It is reported that the lantern at Lambeth upon the hall, cost 1500 £, before it could be made weather-tight. Chelsea Colledge is a model I must always appeal to, for the best forme of this, and other members. And when that lantern or cuppolo was put up, I was sorry it had no better foundation than wood, but few if any alive will discover that defect by any decay.

After this, and house may have the wings plain or set off with pavilions. The later is much more beautiful, for it looks like strength, abutting both ends of the fabric, and shews a compact firmeness of the whole. These are called pavilions, and formerly wings. The manner of forming a tabernacle os state, is by joyning single pavilions, by tent-gallerys, and have fronts all ways, being a great pavilion in the midst, and 2 lesser at each corner. They may be made of the same height with the house, and compast by the same running Cornish; or they may be made to rise higher, but the pick of the roof must range. And this will fall out well, when the middle onely, and not the wings hath a deep sparr, with lucerne windows, for then the windoing of the upper story of the pavilions may range with the lucerne windows in the middle and the Cornish with the Cornish of them. And then the upper rooms will have square windows in an upright wall, and may borrow height of the roof space by ceiling joists well placed, and be much improved, and no garret. It is to be noted that the Cornish of the pavilion will dy against the roof of the middle and the Cornish of that against the wall of the pavilion. That this invention will succeed well I know, having practised it in my owne house, with much content. I found it necessary to use breaks in this manner, to remove the fastidious view of a plain and too great length the house had before. Winchester house, tho unfinished, shews a very reasonable model; for the vastness of the house is accommodate with lights and entrances, by several breaks in the front, still opning wider forewards; it is a pity it never was finished. Building too plain and deep, will want light and many accommodations, which breaks afford. I doe not allow that pavilions stoop below the fabric; for then garrets will range with principal rooms, and cannot be well. It is much better to set them full a story higher, and pass the Cornish of them over the ridge of the middle. But the portico may stoop. And the point of its frontone may doe well, to range under the Cornish of the middle; but it is much better to break from that forewards, and the covering coincide with the middle roof, for that will give a magnitude to the collumniation, than which nothing more becomes. And the portico will darken the house less, for its roof being set higher, and the order of the cornich correspond strait, all which quadrates with the decorum of building, that much consist in level ranges.

It hath bin the use of the Italians, and ill imitated in England, by some fond surveyors, to set the portico into the house, as wee find at Greenwich, the Queen's house, which looks toward the observatory, and sir John Maynard's house in Gunnersbury, which looks upon Brainford road. This robs the house of principal room, and interrupts the file of rooms, which is a prime beauty, and which is worse it darkens the best rooms. As at Gunnersbury, the dinning-room hath no light but from this portico, which is almost as bad as secondary light, and certainly dull and improper. In Italy, this is proper and usefull, because it abates heat, and averts the force of the sun's light, which is offensive; and is also fresco and aireoso; not so aggreable here as with them, but a few times; wee have generally speaking, too much air, and too little heat, and therefore need not spoil and order of rooms to obtain one and abate the other.

I have often wished to see an house built alla moderna, composed of greater and smaller orders of rooms compact well together, with regard to use, state, and decorum, but am not so happy. I offered a little at it in my owne. Mr. Guy's house at Tring, is new, of sir Chr. Wren's invention, and hath many elegant dispositions but wants that. The country model, and that of a suburb villa, are different. The former partakes of the nature of a court, as a lord of a manor doth of regality, and should, like the court, have great rooms to contein numbers, with fires suitable and other conveniences, according to his condition. A villa, is quasy lodge, for the sake of a garde, to retire to injoy and sleep, without pretence of entertainment of many persons; and yet in this age, the humour takes after that, and not the other. And the inconveniences are not dreamt of till experience shews them. The ancients, I mean our elder country men, took another course; they built in different orders, so as to accommodate all orders of persons and occasions; of this among many other instances I shall mention Audley Inn House; which hath a court at first entrance, of low building and portico walks, which serves for passer tiempo and lodging of officers and servants. The next court is for parade , and a loftier order. This may be esteemed out of fashion, but is not to be for disesteemed, when reason justifies it. For what is more necessary to a numerous court, than walks, and numerous apartements; and to dispose in them in order so that you have a pompous walk, from the port to the grand-sall, the building raising as you advance; and no fitting demand of such as family left open and unsupplied? The house of my father, now my lord North and Grey's at Catlidge, hath this proposition of greater and lesser building nobly performed. I doe not find such and elegance in the outward forme, as latter ages have introduced; but nothing of lofty and noble, or what indicates such character of mind, conjoined with usefulness within, is wanted there. And if wee observe the buildings from the age of Henry VIII downe to Charles II, wee shall perceive more of the august than in any time before or since. I might point to a great many houses, Burleigh by Stamford, Hampton Court, New hall, &c. not to forget my father's, which demonstrate this judgement; for even there is such a string od rooms, fronting east,, and ending north, with 2 turrets, which contein hall, butterys, chapel, great parlor, 2 withdrawing rooms, as are not to be ordinarily matched.

The latter ages have bin more addicted to a city life, after the French way. And that recourse to London, hath encouraged the trade of building, and that led into ways of compendium and thrift for gain sake; and not onely seats of late built, the same method is practised, to the abolishing grandure and statlyness of that sort the former ages affected.

AN ACCOUNT OF THE SEVERALL MODES OF HOUSES (...)

REQUISITES ABOUT AN HOUSE

Having spoke of severall usages in building in the generall, and given some instances of houses, fallen in my way to observe, concluding with my own, I shall proceed and take notice, of many lesser incidents, which will occur to a builder to think of, and determine, about fitting his house, before he can have his peace; and shall not pass by matters of general importance as they occur, respecting substance rather than method.

1.- situation. Let it be dure south possible. I mean so as the best rooms, which are usually the front, have that prospect. The reason is obvious: there is less venom, and hurt in those winds than the opposite. And fear no heat, (which is in truth more troublesome than winds where in extream,) for the sun fall (s) not early in the morning nor is late in the evening in the summer time upon that situation, and when it comes on it is high, and shines not much into the room, specially when at the warmest pitch, noon. But in an east or west situation the summer sunevery shining morning and evening makes the chambers furnacehot. And in winter the south rooms hath the low sun at noon, being then comfortable, while east and west hath scarce any, but on the contrary, the east, north and of them-composed-winds, which are not easy.

2.- position. This must be governed by the place pitched upon for an house. It was the usage in ancient times, to build low, and neer water, but that is found or thought unwholesome, and the next course is to take the other extream and built, as our agr doth, upon the summit of hills, where they are intolerably exposed to weather. The mean is best, the side of a hill, a little rising, and not far from the bottom. Here the winds are broke, and the bottome serve to embellish the garden. Yet if I were to choose for a perfection, it should be such situation as Somerset House is: an avenew upon a level, and so come into the cheif story first, with a flat entrance, and passing to the windows, you find yourself one, or a pair of staires high. For it could be, servants should not live above but underneath; for all offensive thing fall, rather than rise, and their noise by stirring is troublesome. And it cannot any way be compast better than this.

3.- Divers countries have their characters, good and evil; so the choise must be as the person affects. A rising mountainous country hath the advantage in prospect and fountains, and a disadvantage in riding, and travelling. A plain the contrary. A medium is the best, but of the two extreams I should choose the plain; for that gives more conveniences of life than the other. An hill for strangers is best, because it lays a fair landscape afore them, which being new is very diverting, but to the owner that sees it dayly, it is little better than a dead wall. The plaines are most fertile and easy in all respects, and to the inhabitants have as pleasant views as the hills to their people. But that which is most considerable in favour of the plaines is, the air is more wholesome and the winds less troublesome and maligne than upon the hills. Charleton and Greenwich Castle were esteemed unwholesome, but the towne good air. The reason given was the vapours were more sublised high than low; there they were waterly, and not so piercing. So at Scandaroon the lodging aboard is safe, but ashore death to Europeans. And tho in the plaines the winds are constant and stirring; yet they are even and not pent, as they are upon the hills which makes the noise as well as the force of them offensive to the inhabitants. One thing is principally to be regarded in plaine countrys and that is drein of water. Some plainers are subject to inundations, as marsh countries, and in time of drought have no water, or that which is very unwholesome; this condition of a situation is to be avoided, as a pest, and nothing but necessity or a traduced patrimony, that a man loves for name and ancestor's sake, could incline a man to keep such a seat.- *guai a quel Uccello che in cattiva valle nasce*. Some places are not marchy, but low and rich, yet offended with water, because there are not lower grounds to drein it. This is a bad choise, because a little raised would take away that the newsance, and yield all the conveniences. Wet that stands in the soil, and not to be dreined away, is a great offence to a seat especially if it be of brick, or sucking stone. For the water will filtrate from the ground to the roof, and make the walls moist, foul, and the dwelling unwholesome. Some situations are so unhappy to have either no water, from the soil, or that which is bad or brackish. And yet for the sake of rents, or paternal love, men endure them. They are capable of a thro cure by rain banks, which gives me occasion to discourse of them, and the lonely cure of bad or no water in the soil.

4.- Rain water preserved is pure beyond the exception. It hath a good spirit, as appears by its aptness to corrupt, and the nourishing of vegetables; but is void of all those alloms and salts which the percolated water od the soil is tainted with, as appears by the common well and spring water, which will not mix with anything tasting od sulphur, as soap, oyl, &c. Nay in medicine, apothecarys are accustomed to counterfeit rain water, by distilling, but which is the better of the two, common water fresh fallen, or their cold distilled waters from milk or insipid simples, I will not determine. In fine, if there were no more in the case than to collect and contein a body of water, the heavens affording it at certain times of the year, it is but the making and huge cistern to contein it. But it so falls out that rain water standing in the air, especially in lead which heats, if it be not prevented by art, will first contract a filme, which shall grow thicker, and dilate in a sort of vegetable slime, producing continually other foulness and greens, the whole mass becoming fedid, and unfit for any use whatsoever.

This is prevented several ways. 1. By holding it in a large reservoir upon the soil, which we call ponds, and in vast quantitys succeds well, otherwise not. Some soils will contein the water, others not, so this is practicable onely in the former. The cause that this keeps the water sweet, is partly the soil is cool, and partly the winds continually stir it, which breaks the beginnings of corruption, and grouths on the surface which tend to corrupt the whole. For wee see as ponds are larger the waters in them are more defecate and limpid, and as they are lesser, and covert, they green and putrifie. But after all in extream dry years this expedient, tho the most common, and useful in clay countries, hath its defects. For the best od their waters shall be repleat with animals living and dead, which cannot be wholesome; and therefore such years about autumne are aguish and sickly, purely from the water, as I conjecture. 2. By artificial cisterns. Those may be either above ground or under, and made either of lead or brick and tarrass (terrazzo). If above ground, the water will soon corrupt and stinck, especially in lead, which the sun heats, and that is a perfect digestive to induce corruption. Therefore ledd cistern above ground serves for spring or pump water, to contein it for use; but rain will not last at all in it. A brick and lime cistern is a little better, but will not doe for long continuance; and such are used for soap boyling, malting, and such pasing business well enough. So that it must be concluded that no rain cistern will serve the intent unless it be kept under ground. And for the manner of making them, we may best refer to the practice in divers places, where they have bin and are used.

In Venice the cortile of the house, is hollowed and covered with great stones and gravell, thro which all the rain water that falls from the house percolates, and so is purged of some slimyness, which is the seminall of vegetation of the body of the water. And many have for this reason put sand into cisterns, but whether is hath such effect or not I cannot resolve; I believe it cools and breaks the water, and so far helps it.

At Bristoll they make them under ground in their yards, but not very large. They have a very hard stone, and make lime of the same, which together hold the water very well. They use pumps to draw it out, which is not so well. Here they use it for washing and brewing, but as to the taste, they provide form springs.

In Constantinople the are made with greatest art. The water of the soil there is worse than brackish, so they can have no wells; and the aqueducts, doe not supply Pera, where the English merchants live, therefore they make for all uses, as well drinking as other occasions, subterranean receptacles for water, the method of which is this. First they secure a drein for the water without, and hollow round their cistern for it to pass away, because there is more danger that the outward water should come into the cistern, than that the water within should goe out. Then they built with brick or stone, and lime a square wall and volt it, leaving onely a small hole for a bucket at the top. After this they plaister the wall very well top and bottom, using this course; first they trowel it every day very hard over and over again, so long as the plaister sweats, which will be ten or 14 days. And after the wall sweats no more, (such is the nature of it), it falls to sucking, and draws as hard as it before put out. Then they feed it continually, that is every day, with oyl, and trowel it in like manner, until it will suck no more, which will last as long, and upon this labour and care the goodness of the work depends. They make a little sinking under the bucket-hole for convenience of cleaning, and erect a well frame over, and the work is done. They let in no water of the summer-months, but of the winter, and of snow as much as they can. That it least subject to corrupt. The water will be noisome form the oyl at first, but in time that wears off. And sometimes a sort of worme breeds in it, and for destroying them, they put in small fishes taken in the Hellespont, who being more hungry than ordinary (as I suppose in that cold place) eatem up, and than dy and waste; for they never could find what became of them. Another great care was to take the water out with a bucket (there of copper) and not by pump. And for this, they say, the use of a bucket, by beating the surface of the water, and so hindering the inceptives of the corruption, keeps the water sweet. But a pump stealing out the water silently and without concussions letts it corrupt upon the surface. When the water grew low, and needed recruit, they drew it all out and then slaves went down with mopps, and washed clean the sides and bottom, and with the aid of the hole below in the midst laded out the last drop. They sayd a plug and drein was not so good because it would be leaky.

As to the effect, all that have lived there say there could not be cooler and sweeter water, than they had, by the means of these cisterns thus managed. And surely men are much to blame, who lived in bad soyl for water, who doe not supply it form the heavens, in this , or some such manner. Men may by ingenuity meet with all inconveniences. And none is greater, than bad water, for in my judgement diseases in counties commonly ascribed to the air, doe more often proceed from the waters than from that.

5. among the requisites of houses, offices abroad have considerable interest to be regarded. For convenience in them is a preventive profit; for the want of the is a recall cause of much waste, and never failing excuse for servants in being guilty of it. These are store houses, laundry, brew house, daiery, barnes, stables, neat houses, and swine stys, as also places for poultry. Of which Ishall discourse a little in their order, being things, which however despised by some fine-folks, as mean and vulgar vares, yet by the wise , who forecasts the felicity of families as well as to prevent all wants and miserys that are sequel of vanity and supineness, are most intirely regarded. And if I have here made a larger catalogue, than everyone hath to do with, each may take his proper part, as fortune, or affection engageth, and be troubled with no more. But before I come to the particulars, I would to observe, that the seat of a country gentleman, who lives as the policy of this nation, and the interest of his estate requires, with full managery in husbandry, grazing or both, cannot be easy, unless it be a sort of a village or rather city, with monarchic government limited by law. That is, many sorts of persons, imployed in several kinds of affairs, disposed and directed all to one end, the good of the master, and themselves. And that these may be all well acomodated, is the result of the master's care.

(1) laundry is and office wholly of weomen; and the men, however oddicious to aid their sweethearts, should not be allowed to frequent there, because all they doe, is not so much in advance, as the impertinent conversation hinders the buissness od the family. The incidents to a laundry are 1. A drying room, which is best over head, and must have a thro air; 2. A drying-yard, which must be adjacent, and with a door to it from the laundry. Hedges of prim are best; thorn tears linen, and box is slow of grouth, and not sweet. And if an easement be provided

there, it credits the disposer, as much as a place of more note, for reasons apparent enough. 3. Within, copper which may be come at almost round, large dressers and good lights for smoothe upon, cisterns for holding water, soft and hard; the former for ludder (lather), and the latter to wrince. And the easier the water is layed in the better. Place for coals, or wood, to avoid dirt; but above all good floor and dreins, that no water may stagnate, for nothing is more noisome than stale sudds. It should stand off from the house, and yet not farr from the kitches, because maid-servants are often imployed in the house as well as there. If soft water is not easily had, it is good to lay in rain water, which will hold sweet from week to week. It is not to be too-strait, because the dealing is with hot liquors, and they may pass about easily, and width of room makes the place more aiery and cool. It is expedient to have a frame with cords stretched, frequent upon it, to let downe from the ceiling with pullys, as big as the room will admit, for drying in foul water.

2. Store houses. These in my judgement should be altogether in one ordinance of building, and devided so as severall sorts of materials should kept by themselves. And here I doe recommend such laboratorys as the master can please himself with, whether smith's, turning, or joinery work, &c. And however many are too nice for mechanic exercises, I am of opinion such are for most part either uncapable of so much ingenuity, or else are for most part more foolishly diverted. A forge is an useful place, either for a storehouse od iron ware, or to keep downe smith's bills, by dispatching slight jobs, either by day work, or as servants of themselves will doe many such things of they have means. Another office may be for glazing, with a storehouse for all lead and glass. Another may serve for joinery and turning, and be the storehouse for all sorts of useful pieces of wood. The glazing room, if large enough, may serve for oyl, and colours. But a main office of use is the carpenter's, one of which trade is perpetually necessary in a gentleman's house, and being ingenious will work about mills, pumps, wheeling, joinery or anything, and keep down bills, which are like weeds, luxuriant and destructive if not kept downe. This is a storehouse for board, timber and all grosser woods for uses of all the managery. And it is good to have a covered sawpit annexed, which must have a roof so upheld as not to hinder rolling of timber to it. I must not omit one storehouse, as necessary as any else, and it is for all sorts od things, that are not but may possibly be needed; which is to be like a country shop, or haberdasher, which men go to when they want anything. Here are to be ropes, pullys, broken furniture, chaines, pitch, and all manner of odd things. The importance od this to an house time and experience will approve.

4. stables. These are ordinarily so well contrived because the men of best geniuses and estates delight in horses, and to be provident for them, that the less is to be observed. Onely I shall not pass by one great tho common error found in great men's stables, and that is drawn in by pride; I mean the laying all in one long range, without breaking the file of horses by partitions, or making several stables. This looks great, but the master's ostentation is not for the horses' health; the place is cold and noisy, nothing stirs but the whole room is disturbed, and horse is a watchful (...)

5. Barnes. This are a great easy in husbandry, for one than hath a pleasure (as most have) in the fruits of their labours, cannot be content to see corne perish, with wet and evermin, as will happen by laying abroad in uncertain times. And this is so much the worse, as the people of a country are less dexterous in stacking. In the west and north of England, the use of

stacking is so constant, that people care not for barnes but onely to thresh; and I may assigne for reasons that it is so, 1. That in the west harvest is early, and the corne is commonly good and clear, that there they have not such nice weather, as in some other places; and the cropps not being bulky they lay up it shall take wet, and not well quit the cost of stacking. More northward, the harvest is backward, and the corne foul enough; and laying abroad is very wholesome, to prevent heating; and the thrift of landlords has not afforded barnes; so the people have found out ways of making up their stacks with tolerable security; and that is done by building them upon posts which they call hovels. And these are so ordered, as to prevent vermin within, as mice and rats, as well as cattle and fouls without from doing hurt, and their corne is better aired and kept, especially wheat and oats, which the intestine vermine love, than in barnes; and therefore the country men will not use barnes if they might have them.

(...)

6. Brewhose. That is a necessary tho cumbersome office, and formerly took up very much housing. Now of late years, things are ´disposed better. And I made and house of 24 foot by 20, which brued 12 hogshead and had above half the room to spare. The copper was mounted high, and was served with coal, in a by place without butts open to the room, and a cock let go the water and liquor from it. On one side was a led cistern that held 20 hogsheads. The water was laid into that, and it rose but a foot over ground. From hence the water was pump into the copper. Then the mash tubb received it from the cock, and from that it sank into an underbeek, from whence the pump raised it again to the copper, and the cock let that go into the coolers. Those were 2: one lay over the other about 3 foot, and the lower lay 4 foot over the guile-tubb, which was set into the ground in clay. Then the cock let go the boyled liquor into the cooler, and from thence it past to the second and so into the guile tub. And on the other side opposite to the cistern was a place to set what tubs there might be occasion for, and the pump, which was managed (being copper and very heavy) by a double tackle to the top of the room, was set it, and raysed the wort from thence also into the copper; so all the transitions were done either by pumping or letting run. Then I conveyed the working beer from the guile tub, to the seller in pipes made square of slitt deal, and fitting each to other, to be taken away and laid by when not used.

(...)

7. Daiery hath 3 divisions. Outward, for warm and salpping buissness, inward, for milk and cream, which must be kept very cool and clean. Is is so nice, than any nastyness within small will conduce to tainting sower the milk and the cream. Lastly cheese chamber, which is best over both the other. There is little nicety in the composition of these, for any sort of room capacious enough may be adapted to the use; for all the vessels and utensils are moveable, except shelves. Cool and sweet are the main points, which a north situation, shaded by trees a little towards the east and west compasseth; and lying commodious to the milking yard, makes all well.

8. dovehouses. These are no less profitable to injoy than artificial to be made, however ordinary to be met with. They thrive best in the corn champain countries. Woodlands harobour houkes, the desperate enimys of these poor birds that inhabite with us. And it is for that reason not to pitch their houses too far from company, but in a mediocrity. If they are

among too much buissness and noise, they will be frighted. If retired, the hauks will be too saucy; the passing of men to and fro frights them. And the lovre should not be lower than the adjoining buildings, and nearest trees; for the hauks will have an advantatge.

AUTOR	Vincent Scamozzi/ John Brown/William Leybourn (Philomath)	
TÍTULO	THE MIRROR OF ARCHITECTURE OR THE GROUND-RULES OD THE ART OF BUILDING, EXACTLY LAID DOWN BY VICENT SCAMOZZI, MASTER BUILDER OF VENICE. Whereby the principal points of architecture are easily and plainly demonstrated for the benefit of all lovers and ingenious practitioners in the said art. With the description and use of a Joint-Rule, fitted with lines for the ready finding the lengths and angles of rafters, and hips, and collar-beams, in any square or beveling roof at pitch; and the ready drawing the architrave, frieze, and cornice in any order. With other useful conclusions by the said rule. By John Brown. FOURTH EDITION Whereunto is added a compendium of the Art of Building. Giving a brief account of the names, natures and rates of all the materials, belonging to the erection of an edifice; and what quantity of each sort will be needful for the building of any house where by estimates, valuations and contracts may be made between measure the works of the several arcificers belonging to buildings; and what method and customs are observed therein. By William Leybourn	
AÑO PUBLICACIÓN	London 1700 (4th Edition)	
HABLA DE_		
Dedicatoria		
A quien va dirigido/Prefacio	To the lovers of architecture.	Tratado que habla de los órdenes en la arquitectura, cuyo mejor exponente es el arquitecto Vicent Scamozzi. Y un añadido de el total y mejorado compendium de arquitectura para trabajadores y constructores
NOTAS SOBRE EL LIBRO		Hasta la página 40, habla de los órdenes y de las cubiertas, como dibujarlas, y hay ilustraciones sobre el tema (las de los órdenes están al final) Al principio de la pág 41 empieza el compendio sobre arquitectura y empieza con el estudio del terreno para los cimientos.
Casa Ikea	(pg 41) THE GROUND RULES OF ARCUITECTURE COLLECTED FROM THE BEST AUTHORS AND EXAMPLES, BY THAT LEARNED AND INGENIOUS GENTLEMAN SIR HENRY WOTTON, IN HIS ELEMENTS OF ARCHITECTURE. NOW CONTRATED FOR PUBLICK BENEFIT. (…) (Pg 57) ARCHITECTONICE: OR A COMPENDIUM OD THE ART OF BUILDING. Giving a brief account of the names, natures, qualities, quantities and rates of all the materials belonging to the erection of any edifice; and what quantity of each sort will be needful for the building of any house, great or small. Whereby estimates, valuations, and contracts may be made between builder and workman, without any great damage to either. And also, how to measure the works of the several artificers belonging to building; and what method and customs are observed therein. With the description and use of a convenient five or ten foot rod; in taking dimensions, and casting up of the contents of all artificers works. And in the measuring of angles; whereby the true ground plot of any building, with yards, gardens, &c may be made.	Incluye diseños de escaleras y chimeneas
COMENTARIOS		

Notes: Leybourn Brown

There are several rules or precepts laid down by architects concerning the art of well building; as that it be in a good and healthy air, not subject to foggy noisiness, or mineral exhalations, or malign influence; that it be not far from Navigable River, or arm of the sea; that it have a pleasant prospect, and the first salutation of spring: but, I pass over these, accounting them rather wishes tan precepts.

Other rules there are touching the placing of the several parts of the building: as that all the principal chambers of delight, all studies about libraries be towards east, the morning being friend to the muses; all offices that require heat, as kitchings, stillatories, stoves, rooms for baking, brewing, washing or the like, towards the south. All that need a cool and fresh temper, as cellars, pantries, butteries, granaries to the north; as also repositories for works of rarities in pictures, or other arts that require a steady light. But in this, regard is to be had to the Nature of the Region, every nation being tied above all rules, to a Discretion of Providing against their own inconveniencies.

(… talk about materials and forms) We ought likewise to avoid enormous heights of six or seven stories, as well as irregulars forms, and the contrary fault of low distended fronts is unseemly; or again when the face of the building is narrow and the Flank deep. Thus much for the general figuration or aspect of the work.

Now concerning the parts in several, all the parts of every fabric may be according to Baptista Alberti comprised under five heads, and they be these.

The foundation, the walls, the appertions or overtures, the compartition and the cover

About all which I purpose to gather the principal rules, and as I pass along, touch the natural reasons of art.

First, concerning the foundation, which require the exactness care; for if that happen to dance, it will mar all the mirth in the house. Therefore that we may found our habitation firmly, we must first examin the bed of earth upon which we build, and then the underfilings and subastraction, as the ancients did call it, advising us not to rest upon any appearing solidity, unless the whole mould throught which we cut have likewise been solid. But how deep we should go in this search, is not certainly determined, depending more upon discretion than regularity, according to the weight of the work; yet Andrea Palladio alloweth a sixth part of the height of the whole fabric, unless the cellars be underground; in which case he would have us found somewhat lower.

Some Italians do prescribe, that when they have chosen the floor or plot, and laid out the limits of the work, we should first of all dig suillage of the house, whence may arise a double benefit for both the nature of the mould or soil would be safely searched, and moreover those open vents will serve to discharge such vapours, as having other-ways no issue, might peradventure shake building; this is enough for the natural grounding, which though it be not a part of the solid fabric, yet it is here fittest to be handled.

Now followeth the substruction or the ground-work of the whole edifice, which must sustain the walls, about which are these rules, first that the bottom be precisely level, where the Italians therefore commonly lay a platform of a good board, then that the lowest ledge or row be merely of stone, and the broader the better, closely laid without mortar, which is a general caution for all parts in building that sociable, and if any where unfit confiners, than most especially in the foundations, thirdly, that the breadth of the substraction be at least double to the insistent wall, and more or less as the weight of the fabric shall require; for discretion may be freer than art.

Now the foundations being searched, and substraction laid, we must next speak of the walls.

Walls are either entire and continual, or intermitted, and the intermissions be either pillars or pilasters; concerning the entire walls there are these considerations. That the walls be most exactly perpendicular to the ground-work; for the right angle (thereon depending) is the true cause of stability both in artificial and natural positions, a man likewise standing firmest when he stands uprightest. That the massiest and heaviest materials be the lowest, as fitter to bear than to be born. That the work as it riseth, diminisheth in thickness proportionally for ease both of weight and of expence. That certain ledges of more strength that the rest, be interlayed like bowes to sustain the fabric from total ruine, if the under parts should decay. Lastly, that the angles be firmly bound, which are the nerves of the whole edifice, and therefore are commonly fortified by the Italians even in stone, yielding both strength and grace. And so much touching the entire or solid wall.

The intermissions (as hath been said) are either pillars or pilasters.

Pillars, which are commonly called columns, of them there are five orders.

The Tuscan, the dorick, the ionick, the Corinthian. And the compound Order, or as some call it, the roman, others more generally the Italian

In which five order I will first consider their communities, and their properties.

Their communities (as far as I observe) are principally three: first, they are all around; for though some conceive Columna Atticurges mentioned by Vitruvius, to have been square pillar, yet we must pass it over as irregular, never received among these orders, no more than certain other licentious inventions of wreathed and vined and figured columns.

Secondly, they are all diminished or contracted insensibly more or less, according to the proportion of their heights from one third part of their shaft upwards, which philander doth prescribe by his own precise measuring of the ancient remainders as the most graceful diminution. And here I must blame a practice familiar in some places, of making columns swell in the middle as if they were sick of some timpani, unseemly to the very judgement of sight, and contrary to the original and natural type in trees, which at first was imitated in pillars, as Vitruvius himself observed.

Thirdly, they have all their under settings or pedestals in height, a third part of the whole columns comprehending the base and capital, and their upper adjuncts, as architrave, friese, and Cornish, at 4th part of the said pillar. Which rule of singular use and facility I find settled by

Jacobo Baraccio, a very good author. These are their most considerable communities and agreements.

Their proprieties or distinctions will best appear by some reasonable and plain description of them all with their architrave, friese and cornishes.

First, therefore the Tuscan is a plain massy rural pillar, resembling some sturdy well-limbed labourer homely clad, as Vitruvius makes the comparision: the length thereof shall be fix diameters, or as Scamozzi makes it, six and half of the grossest of the pillar, being a very natural proportion. The distance of the intercolumniation may be near four of his own diameters, because the materials commonly laid over this pillar, were rather of wood than stone through the lightness whereof the architrave could not suffer though thinly supported , nor the column itself being so substancial . The contration a lost shall be (according to the most received practice) one forth part of his thickness below. To conclude, the Tuscan is of all the rudest pillar, and his principal character simplicity.

The dorique order is the gravest that hath been received into civil use, preserving its comparison of those that follow a more masculine aspect, and little trimmer that the Tuscan that went before; save a sober garnishment now and then of lyons heads in the Cornish, and of trigliphs and metopes always in the frize, sometimes likewise, but rarely channeled, and a little slight sculpture about the hypotrachelion or neck under the capital; the length seven diameters, and according to Scamozzi, seven and half, his rank or degree is the lowest by all congruity as being more massy that the three, and so better able to support. The intercolumnation thrice as much as his thickness below; the contraction alost one fifth of the same measure, he is best known by his place when he is in company, and by the peculiar ornament of his frieze before mentioned when he is alone.

The ionique order doth represent a kind of feminine slenderness, not like a light huswife, but in a decent matron-like dressing. The length eight diameters in degree as in substantialness next above next above the dorique, sustaining the third, and adorning the second story, the intercolumniation two of his own diameters, the contraction above one sixth part perpetually channeled like a thick plaited gown; the capital dressed on each side, not much unlike women's wires in a spiral wreathing, which they call the ionian volute; the cornice indented; the frieze swelling like a pillow, this are his best characters.

The Corinthian is a column lasciviously decked like a curtizan, and therein participiating (as all inventions do) of the place where they were first born, Corinth having been without controversy one of the wantoness towns in the world. This order is one of nine diameters, his degree on stage above the ionique, and always the highest of the simplest orders. The intercolumnation two of these diameters, and a fourth part more, which is of all other the comliest distance. The contraction one seventh part. In the Cornish both dentils and modiglions. The frieze adorned with all kinds of figures and various compartments. The capital cut into one of the beautifulest least that nature doth yield, which is the acanthus o branca ursina, bears foot. In short, as plainness did characterize the Tuscan, so must. Delicacy and variety the Corinthian piller, besides the height of his rank.

The last is the compounded or Roman order; his name being a brief of his nature; for this piller is nothing in effect byt a medly od all the precedents ornaments, and though, the most richly trimmed, yet the poorest in this that he is a borrower of all his beauty. His length a mean between the ionique and Corinthian, according, to Scamozzi; thought some will have him the highest, as of 10 diameters, the intercolumnation somewhat less than two diameters, the contraction one eigth part less above than below, his degree should be the highest, but few palaces antient or modern exceed the third of the civil orders; you may easily know him by the mixture of his ornaments. And so much touching the five orders columns, which I shall conclude with two or three not impertinent cautions.

First, that where more of these orders than one shall be set in several stories or contignations, there must be an exquisite care to place the columns precisely one over another, that so the solid may answer to the solid, and the vacuities to the vacuities; as well for beauty as strength of the fabric; and by this caution the consequence is plain, that when we speak of the intercolumnation or distance which is due to each other, we mean in a Dorique, Ionical, Corinthian Porch, or cloister, or the like of one contignation, and not in storied buildings.

Secondly, let the columns above be a fourth part less than below, faith Vitruvius; which doth appear a strange precept, and would seem reasonable rather to make them a fourth part bigger, because according to the optical rule that the higher they are the less the diminution a lost should be, because the eye doth naturally contract all objects more or less according to their distance; but Vitruvius acquits himself like a wise mechanic; the natural reason before the mathematical.

A third caution shall be, that all the project or jutting parts (as they are termed) be very moderate, especially the cornishes of the lower orders; for while some think to give them a beautiful and royal aspect, by their largeness they sometimes hinder both the light within, and likewise detract much from the view of the front without. I need say no more concerning columns and their adjunts, only answer one familiar objection; it will perchance be said, that this doctrine touching the five orders were fitter for the quarries of Asia which yielded127 columns of 60 foot high to the Ephesian Temple, or for Numidia where the marbles abound, than for the spirits of England, who must be contented with more ignoble materials. To which I answer, that this need not discourage us. For I have often at Venize viewed with much pleasure and antiporch after the Greek manner, raised by Andrea Palladio upon eight columnsof the compuded order, the basis of stone witout pedestals, the shafts or bodies of meer brick 3 foot, and half thick in the diameter below, and consequently thirty five foot high, than which mine eye hath never yet beheld any columns more stately of stone or marble; for the bricks having been first formed in a circular mold, and then cut before their burning, into four quarters or more, the sides afterwards join so closely, and the points concentre so exactly that the pillars appear one entire piece; which short description I could not omit, that thereby may appear how in truth we want rather art and stuff to satisfy our greatest fancies.

After Pillars the next in order are pilasters, touching which I briefly collect these notes. Pilasters must not be too tall and slender, left they resemble pillars; nor too dwarfish and gross, lest they imitate the piles or peers of bridges; smoothness doth not so naturally become them as rustic superficies, for they aim more state and strength than elegancy. In private buildings they ought not to be narrower than one third, nor broader than two parts of the whole vacuity between pilasters and pilaster; but those than stand at the corners, may be allowed a little more latitude by discretion for strength of the angles; in theatres and amphitheatres, and such weighty works, Palladio observed then to have been as broad as the half, and now sent with him, that their true proportion should be and exact square; but for lessening expence and inlarging of room, they are commonly narrower in flank than in front. Their principal grace doth consists in half or whole pillars applied unto them; in which case it is well noted by authors, that the columns may be allowed somewhat more than their ordinary length, because they lean unto do good supporters. And thus much shall suffice touching pilasters, which is a cheap and a strong, and a noble kind of structure.

(…) Archs and vaults

Thus of my first partition of the parts of every fabric into five heads; having gone through the two former, and been incidently carried into this last doctrine touching arches and vaults, the next now in order are the apertions, under which term I do comprehend doors, window, stair-cases, chimneys or other conducts; in short, all inlets or outlets, to which belong general cautions.

First, that they be as few in number, as moderate in dimension, as possibly may consist with other due respects; for in a word, all openings are weakening.

Secondly, that they do not approach too near the angles of the walls, for it were indeed a most essential solecism to weaken that part which must strength all the rest; a precepts well recorded but ill practiced by the Italians themselves, particularly at Venice, where I have observed divers pergola or meniana (as Vitruvius seemeth to call them, which are certain ballised outstandings to satisfy curiosity of sight) very dangerous set forth upon the very point itself of the mural angle.

Before I come to the casting and comparting of the whole work (being indeed the very definitive sum of this art , to distribute usefully and gracefully a well chosen plot) I shall collect some notes belonging to these particular overtures.

Of doors and windows, these inlets of men and light I couple together, because I find their due dimensions brought under one rule, by Leon Alberti (a learned searcher) who from the school of Pythagoras (where it was fundamental maxim, that images of all things are latent in number) doth determine the comliest proportions between breadths and heights, namely the symmetry of two or three in their breadth and length in others the double, as 2 to 4, there will indubitably result from either a graceful and harmonious contentment to the eye. Our master Vitruvius seems to have been an extream lover of luminous rooms, and indeed I must confess that a frank light can misbecome no edifice, yet on the other side we must take not heed to make a house all eyes like argus, which in northern climates would be too cold, in southern too hot. Besides there is no part of building more expenceful that windows, or more ruinous, not only for that vulgar reasons as being exposed to all wind and weather, but because consisting of so different and unsociable pieces, as wood, iron, lead and glass, and those small and weak, and easily shaken.

Of doors there is this distinction; somewhere called forest, some value; those, as the word may seem to import, did open outwards, these inwards, and were commonly of two leaves or panes (as we call them) thereby requiring indeed a lesser circle in their unfolding, and therefore much in use among the Italians at this day. But I charge tham with a imperfection, for though they let in as well, yet they keep out worse.

Of stair-case. To make a compleat stair-case is a curious piece of architecture; the vulgar cautions are these:

That it have a liberal light against all casualties of slips and falls.

That the space above the head be large and airy, because a man doth spend much breath in breathing.

That the half paces be well distributed at competent distances, for reposing on the way.

That to avoid encounters, and besides to gratifie the beholder, the whole stair-case have no niggard latitude, that is, for the principal ascent in royal buildings at the least ten foot.

That the breadth of every single step pr stair be never less than one foot, nor more than 18 inches.

That they exceed by no means half a foot in their height or thickness, for our legs to labour more in elevation than in distention.

That the steps be laid where they joint somewhat sloping, that the foot may in a sort ascent and descent together; which though observed by few, is a secret and delicate deception of the pains in mounting.

Lastly, to reduce this doctrine some natural, or at least mathematical ground, Vitruvius borrowed these proportions that make the sides of a rectangular triangle; that is, three for the perpendicular from the stair-head to the ground, 4 for the ground line itself or recession from the wall, and 5 for the whole inclination or slopeness in the ascent. There are likewise spiral or coclstairs, and sometimes running bout the pillar. Sometimes vacant, wherein Palladio (a man very expert in this point) was wont to divide the diameter of the 1^{st} sort into three parts, yielding one to the pillar, and two to the steps of the second, into 4 whereof the gave 2 to the stairs, and 2 to the vacuity, which had all their light from above, and this exact oval is a master-piece. You have here inserte the types of several stair-cases with their ichnography; one whereof is a piece of rarity, being a pair of double stairs, whereon 2 persons, the one ascending and the otherdescending, shall not come at one another, made by Piedro del Bergo, and Jean Cossin at Sciamburg in France in the king's palace.

Describe a semicircle for the ichnography, which divide in 12 equal parts, and in it describe a smaller circle as at C. For the bigness of the newel drawn lines from those divisions in the great semicircle into the semicircle made for the bigness of the newel, so will that semicircle also be divided in 12 equal parts; then on every of the points in the great semicircle erect perpendiculars, and those perpendiculars shall shew the ends of each respective step; as the perpendiculars at II bounds the outward end of the first step, the perpendicular at 22 bounds the 2nd step, &c to 24, which makes good a whole circle in the ichnography, and perpendiculars erected from the inner semicircle, mark on the newels the ends of the same steps: work the same way with the steps on your right hand. The newel is pierced through in divers places to let in light.

Of Chimneys, the Italians who make frugal fires, are not in this case the best counselors, therefore from them we may better learn how to raise fair mantles within, and how to disguise gracefully the shafts of chimneys abroad; therefore I shall lay down the observation of Phil de L'Orme, a man diligent in this part of work.

First he observed that who in the disposition of the building will consider the region and the winds that ordinarly blow from this or that quarter, might so cast the rooms, which need most fire, that he should little fear the incommodity of smoke. But if the error lies in the structure itself, the he makes a logical enquire, that either the wind is too much let in above at the mouth of the shaft, or the smoke stifled below. If none of these, then there is a repulsion of the fume by some higher hill or fabric that overtops the chimney; if likewise not this, then he concludes that the room is little and close, so as the smoke cannot issue wanting a supply of air; and so having a natural reason of the cause, we may apply sutable remedies.

Touching conducts for the suillage and other necessities of the house, (which how base soever in use, yet for the health of the inhabitants are as considerable as the rest) I find in authors this counsel, that art should imitate nature un those ignoble conveyances and separate them from fight (where there wants a running water) into the most remote, and lowest, and thickness part of the foundations, with secret vents posting up through the walls like a tunnel to the wild air aloft.

Thus, having considered the apertions and overtures according to their particular requisites, I come to the contexture of the whole work under the term of compartition, into which (being the mainest piece) I cannot enter without a few general precautions.

First, let no man that intendeth to build, settle his fancy upon a draught of the work in paper, how exactly soever measured or neatly set off in perspective, without a model or type of the whole structure, and of every parcel or partition in board or wood.

Next, that the said model be as plain as may be without colors or other beautifying, left the pleasure of the eye preoccupate the judgment.

Lastly, the bigger this typeis, the better; not that I would persuade a man to such and enormity, as that model made by ant labaco od St Peter's Church in Rome containing 22 foot in length, 16 in breadth, and 13 in height, and costing 4184 crows, the price of a reasonable chapel. Yet in a fabric od 30 or 40000/ 30/ may be expended in and exact model, for a little penury in the premises may easily breed some absurdity of far greater charge in the conclusion.

Now after these premonishments, I come to the compartition itself, by which id understood a graceful and useful distribution of the whole ground-plot, both for rooms of office, and of reception or entertainment, as far as the capacity thereof, and the nature of the country will comport.

The gracefulness will consists in a double analogy or correspondency, est between the parts and the whole, whereby a great fabric should have great partitions, great lights, great entrances, great pillars or pilasters; in sum, all the parts great. The next between the parts themselves, not only considering the breadth and length as before when we spake of doors and windows, but likewise their height, a point hardly reducible to any general precept.

(…) partitions theories.

And do having run through the four parts of may first general division, namely foundation, walls, apertions, and compartition: the house my now have leave to put on his hat, having hitherto been uncovered itself, and consequently unfit to cover others; which point, thought it be the last of this arts in execution, yet it always in intention the first; for who would build but for shelter? I shall now only deliver a few of the properest, and (as I may say) naturallest consideration that belong to this remaining piece.

There are two extremities to be avoided in the cover of roof, that it be not too heavy or too light, the first will suffer a vulgar objection od pressing too much the under-work. The other containeth a more secret inconvenience, for the cover is not only a bare defense, but likewise a kind of a band or ligature of the whole fabric, and therefore would require some reasonable weight; but of the two, a house-top heaviest is the worst, next, there must be a care of equality, that the edifice be not pressed on the one side more than on the other. And here Palladio doth wisely advise that the inward walls might bear some good share in the burden, and the outward be the less charged. Thirdly, the Italians are very careful in giving the cover a graceful pendence or slopeness, dividing the whole breadth into nine parts, whereof two shall serve for the elevations of the highest top pr ridge from the lowest. But in this point, the quality of the region is considerable; for as our Vitruvius insinuateth those climes that fear the falling and lying of much snow, ought to provide more inclining pent-houses, and comeliness must yield to necessity.

Thus have you briefly laid down, from the best authors, the ground-rules of the art of building; which being well considered, may be of great use to the ingenious architect in the managing of any Royal or Noble Design.

ARCHITECTONICE; OR A COMPENDIUM OF THE ART OF BUILDING

Of timber, and carpenters work.

The timbers most useful for building are oak, firm and elm, but the chiefly the two first, namely oak for outsides of the roofs, and fir for partitions, doots and floors; these timber trees ought to be felled in autumn, and any time of the winter season; because then the trees recover from the roots, that strength and foundness, which in the spring and summer, was dilated into leaves and fruits. And the best time for to sell timber for building, is in the wane of the Moon; because the moisture (which is most apt to rot wood) is then consumed.

Your timber being feleed, let it be removed to some place free from the extremity of the sun's heat; and also from the wind and rain.

Timber ought not (especially oak) to be wrought very wet, nor too dry, for too wet makes it more apt to rot, and too dry, more hard to work: and it will not be dry enough to saw into planks for door-cases and windows, in less than three years.

Timber is sold by the load, which contains fifty cubical (or solid= foot, and each foot 1728 cubical (or solid) inches. And 20 solid foot of timber, sawed into such scantlings as shall be hereafter prescribed, will compleat a square of 10 (which is 100 foot) of the outside carcass od an ordinary Timber Building.

For the price of the load of rough timber fit for building, it is very uncertain; as from 20 shillings to 50 or 55 s the load.

Rought timber bought for building, is to be sawed into several scantlings; greater or lesser, according to the bignessof the structure therewith to be erected, and the several members (or timbers) belonging to the erection od any building whatsoever, are:

- summer or girders.
- Gysts or joists at full length, to bear in the walls
- Binding joists
- Trimming joists
- Wall-plates or beams
- Purlynes of oak
- Principal rafters of oak
- Single rafters
- Principal dischargers to rest upon peers.

The several members (whether oak or fir) are to be sawed in their squares, according to their lengths, as the largeness of the building shall require; and the scantlings following, are fitted for all edifices great or small: as

Sumers or girders.

In Length from,	foot	must be in their squares		and		inches
	14 to 16		11		8	
	16 to 20		15		9	
	20 to 25		14		10	
	25 to 26		16		12	
	26 to 28		17		14	

Joist, at full length (to bear in the wall

In Length	12 foot	must be in their squares	8	and	3	inches
	11 foot 6 inches		7		3	
	10 foot 6 inches		6		3	

Binding or trimming joists.

In Length	7 foot	must be in their squares	6	and	5	inches
	9 foot 9		7		5	
	11 or 12 inches		8		5	

Wall-plates and beams

In Length	15 foot	must be in their squares	7	and	5	inches
	16 foot		10		6	
	17 foot		8		6	

Purlynes

In Length, from	15 foot 6 inches to 18 foot 6 inches	must be in their squares	9	and	8	inches
	18 foot 6 inches to 21 foot 6 inches		12		9	

Principal rafters.

In length, from	12 foot 6 inches	to	14 foot 6 inches	One side cut taper, from	8 to 5 inches	And thick on the other side	6 inches
	14 foot 6 inches		18 foot 6 inches		9 to 7 inches		7 inches
	18 foot 6 inches		21 foot 6 inches		10 to 8 inches		8 inches
	21 foot 6 inches		24 foot 6 inches		8 and ½ inches		8 ¼ inches
	24 foot 6 inches		26 foot 6 inches		13 to 9 inches		9 inches

Single rafters

In Length,	6 foot 6 inches	must be in their squares	4	and	3 ½	inches
	8 foot		4 ½		3 ¾	
	9 foot 6 inches		5		4	

Principal discharges

Of any length, from 10 foot and upwards (to rest upon peers or wood or stone, in the first story of brick buildings) must have in their squares 13 and 12 inches, or 15 and 13 inches.

The timber members for your building being thus prepared, these rules are to be observed in the disposing of them.

1. That no timber be laid within 12 inches of the fore side of any chimney jamb.
2. That all joist on the back of a chimney be laid with a trimmer, at 6 inches distance from the back.
3. That no timber be laid within the tunnel of any chimney.
4. That no joists or rafters be laid a greater distance that 14 inches.
5. No joist ought to bear at longer length than 10 foot; not single rafters at more than 9 foot.
6. All roofs and frames for windows ought to be of oak.

7. No summer or girders ought to lie over the head of the doors or windows in brick buildings.
8. No summer or girder to lie less than 10 inches into the brick-wall; nor no joists less than 8 inches.

It is said before, that about 20 solid foot of timber will compleat one square; or 100 foot of the timber work of any edifice great or small, that is of the outside frame partitions, the roof, and the floors; for workmanship whereof and timber, it is various, from 15 to 20 shillings the square, to 30 or 40 shillings the square according to the goodness and largeness od the timbers, and the framing of the roof is valued at 4 or 5 shillings in the square, more than the sides, floors and partitions.

The boarding of floors is a work distinct from the timber flooring, and this is measured by the square of 10 foot also, but within the walls.

Floors for the most part are laid with deal boards, which are sold by the hundred, 120 to the hundred, at various prices, according to their length and goodness; as from 4 and 5 pounds to 8, 9 or 10 pounds, and upwards the hundred: but for laying on floors, in plaining, joining and laying the boards, the common allowance is 4 or 5 shillings the square; besides nails, of which 200, that is 240, is a compleat Allowance.

Of other carpenter work in houses, both great and small.

1.- of doors, doors made of plain whole deal, and rabited, are for stuff, nails and workmanship, valued at 3 pence or 4 pence the superficial foot: but double doors, battoned, and made wainscot fashion, they may be worth 7 pence the foot: for the cases of such doors above-mentioned, in the price of these you may rise or fall at pleasure.

2. – shop-windows, these will be afforded at the same rate as plain or battoned doors, besides the iron work, as bolts, staples, hinges, locks, keys, latches, chains, &c.

3.- Window-frames, these are usually agreed for by the number od lights contained in each frame; so that a window-frame of oak should have 6 lights in it, and be double rabited, it would be worth 18 shillings; that is 3 shillings for one light , for stuff and workmanship; and the same for frames consisting of more or fewer lights.

4.- Of stairs and stair-cases, and ordinary pair of stairs, of about 6 or 4 foot, with flyers and winders made of elm boards, are accounted to be worth 2 shillings 6 pence, or 2 shillings 8 pence the step, for boards, workmanship and nails. But if the materials be found, then 9 pence or 10 pence a step is sufficient. But for Stair-cases, which have an open newel from the top to the bottom, with a landing at every sixth or eight step; and the going being about three foot and a half all the way: these stairs with rails, ballastars, string-boards, posts, balls, pendants, and such other ornaments, may very well be worth 4 shillings 6 pence, 5 shillings, or 6 shillings the step.

There are divers other timber-works belonging to some buildings, which are done by the carpenter, carver and joiners, as these, viz.

Doors and door-cases, with their ornaments; chimney pieces and their ornaments; outside doors and door-cases; cornices and guttering; cantaliver and modellion; and plain cornices; pediments over doors; spurs, peers, pilasters, &c. Of these some are valued by the piece, dearer or cheaper according to their largeness, goodness of the stuff, and curiosity in workmanship: others are measures and rated by the foot running measure; of which more hereafter.

Of bricks, and bricklayers work

Bricks are made of reddish earth, wich ought to be digged before winter, but not made into bricks till spring season. The goodness of brick-earth is various, and the well ordering of it as uncertain.

In every brick-kill (or clamp) are three sorts of bricks: those next the fire are best burnt, and such as have naturally much Nitre, or salt-peter in them, will, with the violence of the fire run, as if glazed over; and this sort, some call clinkers. The next to these in the kill or clamp, are the best for general uses. The outermost in the clamp are the worst; where the salt-peter is not digested for want of heat; and these will molder away like dirt, with the least moisture: and this sort they call samel (or sandal) bricks. And it is observable; that, while bricks are burning, that side of the clamp next the wind are the worst of all; the heat being driven from thence.

Bricks are sold by the thousand, which makes tow load.

The general rates for making of bricks, is 4d. 5d. or 6d. the thousand, for the molder only; and a days work is commonly 9000; but a dexterous workman will make about 14 or 15 thousand in a day.

The moulds, in which bricks are moulded (or made) ought to be (by statute) within, in length 9 inches, in breadth 4 inches and a half, and in depth 2 inches and a quarter. Bricks made in such a mould (the earth being first well tempered) dried and burnt, they will be less and lighter; yet they shrink in thickness but little, in breadth less, and in their length not discernable. The weight of bricks is uncertain; the ponderosity of earths being uncertain; yet commonly one brick will weight about 5 pound; and will contain; yet commonly one brick will weight about 5 pound; and will contain in solid measure, 90 cubical inches, and from some moulds 100. And these bricks (one with another) laid in morter, and well jointed, 13 of them will make a quine, peer, or pedestal, on foot solid, or equal thereto in solid measure.

A wall of one brick and a half thick, with the joint, will be in thickness 14 inches, or very near; and in this, according to the fore mentioned proportions, 150 or 160 bricks, will lay a yard square, measured upon the face of the building; and to the square of 10 foot (which is 100 square feet) usually are allowed 1700 or 1800 bricks: and 4600 or 5000 bricks, will completely lay, erect or build one rod, pole or perch square; which rod, pole or perch contains in length (according to the statute) 16 foot and a half; whose square is 272 foot and a quarter, superficial measure, which is 30 yard and a quarter.

I have herein delivered numbers, according to each quadrat od quantity; because in this, there can be no exactness discovered; and that for several causes (although from one and the same mould and clamp) as the bricklayers hand and morter may vary: many bricks are warped in burning; some miscarry in every load, or 500 bricks. The tally or tale (for the most part) too little, if not well looked after; and besides all these uncertainties, when bricks are dear, and lime cheap, the workmen (by the great) will use more morter, and make the ampler joists, which is much worse for the building.

This things being considered; when all materials are ready, a workman which labourer, (in whole work upon solid plain) will lay in one day 1000 bricks, and some 12 or 1500.

The value of the bricklayers task-works is various, according to the place and charge of the materials; the rates being uncertain every year, but:

In new work five pound, or five pound then shilling the rod square, (or 272foot superficial measure upon the face of the wall) is usual.

Or, two pound ten shilling the rod, and the bricks laid in at the builder's charge.

But to erect new structures, by taking down old walls; it may be worth three pound, or three pound ten shillings the rod square: for that in taking down the walls, and clearing of the bricks, there is much time spent, and also more morter used in laying them again, than in new work.

All brick-work (according to these rules and rates) are supposed to be 14 inches (or one brick and a half) thick, which is the standard thickness. – If they be thinner, they must be reduced to that thickness, as shall be taught how to do, when we come to treat of measuring of brick work.

But, (in the mean time) note, that in buildings that are not above two stories with the ground room, and not exceeding 20 foot to the rayson-plate, and upon a good foundation, the length of two bricks or 18 inches for the heading-course, will be sufficient for the ground-work of any common structure; and 6 or 7 courses above the earth, to water table, where the thickness of the walls are abated (or taken in) on either side the thickness of a brick, namely two inches and a quarter.

But for large and high buildings, of three, four or five stories with the garrets: the walls of such edifices ought to be, from the foundation to the first water-table, three heading course of bricks (or 28 inches) at the least; and at every story a water-table or taken in on the inside for the summers and joists to rest upon, laid into the middle, or one quarter of the wall at least for the better bond. But as for the innermost or partition walls, one brick and a half will be a sufficient thickness: and for the upper stories a nine inches (or brick at length) wall will well suffice.

The rate and price of bricks by the thousand is very uncertain, in respect of workmen's wages, the convenience of carriage, and the price of fuel to burn them with: but I never did know them cheaper than 9, nor dearer than 18 shillings the thousand delivered in any port of London: and at this time bricks made at home, will stand the maker of them (besides his ground) for digging, molding, straw and fuel to burn them in, between 5 and 6 shillings the thousand.

Chimneys in buildings, are sometimes measured and paid for by the rod, as other bricks-work is; or else paid for by the fire-hearths, at so much a fire-hearth, which various, as from 20 to 50 shillings the hearth.

Of laths and lathing for tyling

Laths for tyling ought to be hearth of oak, of which the statute approves of two sorts, the one of 5, the other of 4 foot in length, and sold by the bundle, not differing in price or quality, but in quantity, the longer sort having but five score to the hundred, the shorter six score.

To the longest laths, 500 lath-nails is the common allowance, and to the shorter 600, that is 720 nails to each bundle of laths, six score to the hundred, and ten thousand nails to a sum, in number 12000. One bundle od the longest laths extended makes 500 foot, the other 480. Every of these laths ought to be in breadth one inch and a half, in thickness half an inch, but are usually less, and never exact, either in their tale measures. Both these sorts of laths are necessary, because all rafters are not spaced alike, nor yet the proportions strictly observed in every one and the same roof.

Of laths there are three kinds; namely, heart of oak, sap-laths and deal-laths; from one shilling, to two shillings six pence the 100, or bundle. The two last sorts are used for ceiling and partitioning; and the first for tyling only.

The proportions for tyler's lathing is various; as sometimes 3 inches and half, sometimes 4 inches; and in both, there ought to be a counter-lath between every two rafters: to every 1000 of tyles is allowed usually one peck of tyle-pins, from 2 shillings to 4 shillings the bushel. – four buschels od lime, and 6 or 8 bushels od sand will make mortar sufficient for lay 1000 tyles; and sixty tyles will cover one square yard at a seven inch gauge, and 12 foot square (which is 144 foot) will require near 1000 tyles: but the square od 10 foot (which is 100 foot) and the usual measure for tyling in task-work, will require but 660 or 666 tyles: and commonly one od these squares is accounted a days work. – moreover, the barge courses, and gable ends of all buildings, ought to be struck with lime and hair-morters, to prevent the wind for ripping up the tyles.

Of tyles

Tyles are of several sorts, but all made od the same earth, but better than brick-earth, and something near the potters-earth. According to the statute of 17 edw. 4 cap 4. Earth for tyles shall be cst up before the first of November, shired and turned before the first of February, and not made into tyle before the first of March, and shall likewise be tried and severed from stones, marlne, marlne and chalk.

Of plain tyles

By the fore-mentioned statute, a plain tyle shall contain in length ten inches and a half, in breadth six inches and a quarter, and in thickness half an inch and half a quarter at the least. One of these tyles will contain in superficial measure 65 inches, in solid measure 48 inches; and one of them will weight about 3 pounds and a half: one thousand of these tyles go to one load. And for the making of 1000 of these tyles, 2 shillings, and 2 shillings six pence is a usual price; but the price of 1000 tyles is various.

Of roof or ridge tyles

These tyles are made of the same earth as the plain tyles, and one of them (by the fore-mentioned statute) should contain in length thirteen inches, and in thickness the same with plain tiles. In some places 5, 6 or 7 of them are allowed into every thousand of plain tyles; but if bought by themselves, they are sold at 20 or 25 shillings the hundred. Their form are like unto a panel, and their breadth between the points 8 or 9 inches.

Of gutter-tyles

Besides these, there are other tyles made properly for gutters in cross-buildings, in vallys, and gathered end, &c. they are in the form of triangles, circular at their bases, they are about 10 inches deep. There are corner-tyles also, which are more flat than the other, and rounded off at the upper angle, to lie the better and closer on the sleeper; they have pin holes in them at their acute angle. These are usually sold at two pence or three half-pence the tyle, or for between 10 and 15 shillings the 100.

Of crooked, pan or Flemish-tyles.

These tyles are used in covering od shades, lean-too's, and all kind of flat roofed buildings. These tyles are for the most part laid dry, without any morter; yet sometimes pointed within-side.

These tyles are usually in length 14 inches and a half, in breadth 10 and a half. The laths whereon the hang, by a knot of their own earth, are 10 or 12 foot in length, in breadth one inch and a half, and in thickness one inch. These laths are usually sold at 2 pence or 3 pence the lath, or at 10 or 13 shillings the 100.

The gauge for nailing these on with four-penny nails, is 10 inches and a half; their breadth when laid 8 inches. One lath serves for one yard square of tyling; and 150 tyles and 10 laths will cover one square (or 100 foot) of this kind of tyling.

A great covering od these spends but little morter (if ponted) and but little time in lying. The price of these tiles in most places id about 7 or 8 shillings the 100.

Of lime, sand, and mortar

Stones whereof lime is made, are either digged out of the hills, or taken out of the rivers: that lime must be best which is made of the hardest, found and white stone; and being burnt, remains a third part lighter than the stone. All digged stones are better to make lime than gathered stones, and from a shady and moist pit than from a dry. All stones are sooner or later burnt, according to the fire which is given them; but ordinarily they are burnt in three-score hours. Stones being burnt, wet them; but pour not all the water on at once, but at divers times and frequently (that they may nor burn) till they be well tempered. Afterwards, put them in a moist and shady place without any moisture, only cover them lightly with sand; and by how much the more they are steeped, so much the more tough and better they will be.

Of sand there are three sorts; that is to say, pit sand, river-sand, and sea-sand; pit-sand is of all, the best: of all pit-sand the white is the worst; and of river-sand, that from the stream, which is found in the falls of water is the best, because is most purged: the sea-sand is worst of all. The pit-sand, because it is fat and though, is therefore used in walls and vaults. The river-sand is very good for covering or rough-casing of walls. All sand is good in its kind, if being squeezed and handled it crackles; and if being put upon a white clothe, it neither stains nor makes it soul. That sand is bad, which mingled with water, makes it dirty and muddy, and which hath been a long time in the air; because it will retain much earth and rotten humor.

For to make morter, you must so mix the sand, that taking of pit-sand, you must put three parts thereof to one of lime: if river or sea sand, two parts to one of lime will be sufficient.

The common allowance for lime is, one quarter, or eight bushels heaped measure, to every thousand of bricks; or one hundred and a half to rod square. One hundred of lime, is in many places 25 bushels, valued from 8 to 12 shillings; to which, the usual allowance for morter, is two load of sand, and that at one shilling, or one shilling and six pence the load bringing in: and for digging a cubical yard four pence or six pence.

Of slate or slating

Covering with slate is very neat, especially the blue slate, cut into long squares of scallops and is usual in summer and banqueting houses in gardens: but as this covering is neat and handsome, so also it is very chargeable; for roofs covered with slate must be first boarded over, the slates hanged upon tacks, and laid with fine mortar than tyles.

This kind of covering with slates, is valued by some from 3 to 6 shillings the yard square; or by the square 10 foot (that is 100 foot) at one pound ten shillings, at two pounds five shillings, and at three pound the square (or more) in some places.

But if these slates be rudely cut and carelessly laid (in respect of form) it is then accounted a cheaper covering than with plain tyles, especially in those countries where the earth affordeth plenty of them.

Of shides or shingles

Shingles called also slate or shides of wood, are quartered oaken boards, sawed to a certain scantling, but usually rift about an inch thick at one end, and made like wedges about 4 or 5 inches in breadth, and 8 or 9 inches long. This kind of covering is very chargeable, and seldom used, but in covering of the roofs and churches, and pyramidal steeples.

For the covering with these, first, they must be well boarded over; that done, the shingles are fastened to those boards with four penny or six-penny nails in every course, at a certain gauge; as admit four inches broad, and laid at four inches gauge, the square is 16 inches; by which divide 1296 (the number of inches in a square yard) the quotient will be 31, the number of shingles allowable to every square yard of covering; and the like number of nails will serve to tack them on.

Of lead

Of lead there are three sorts: white, black and ash-colour; the white is more perfect and precious than the black; and the ash-colour between both. Lead is digged either in great lumps, found by themselves, or in small pieces which shine with a certain blackness, or else in very thin fleaks amongst the rocks. All sorts of lead will easily run, because, with the heat of the fire it melts before it be red-hot; and put it into a very hot furnace it lofeth its nature and strength; for one part is changed into litharge, and the other into drofs. Of these sorts of lead, the black is soft, and therefore easily wrought with a hammer or mallet; it dilates much, and is very heavy; the white is harder and lighter; the ahs-coulour is much harder than the white, and of middle weight between both.

Covering with lead is the most magnificent, and is generally used for covering of churches, princess palaces, castles, and great mens houses. It is generally laid almost flat to walk upon, allowing the water a little fall to the battlements, thence privately to descend in pipes.

This material is often used for gutters in ordinary tyled buildings, to conduct the water from the house unto some convenient place to fall into: and sheets of lead for this service are always run the thinnest, being more pliable for the plumber. Every square foot of such lead is valued to weigh 6 or 7 pounds if old, 8 or 9 pound a foot if new: but as for the other sheets for covering, each square foot is estimated to weigh 8, 9, 10 or 11 pound if old, and 11 or 12 pound the foot square is new, and if very good; and 112 or one hundred gross will cover one yard, or 9 foot square.

The worth of lead in pigs is uncertain; as from 10 to 20 shillings the gross hundred, that is from 10 to 20 pounds the tun; but in exchanging of old lead for sheets new run there is commonly allowed 3 shillings in every hundred weight gross, for waste and workmanship.

Covering with lead is valued at 13, 14, or 15 shillings the yard square; or between 7 and 8 pounds the square of 10 foot, besides sawder, at 9 pence or 10 pence the pound weight, as it is allayed with lead, and sealed: for tin is 10, 11, or 12 pence the pound neat.

Of iron

Iron is no where found and digged pure; but when digged, it is purged by fire, to the end it may be so melted, that it may run; so that before it be cool, the foulness may be taken away; but after it is purged and cooled, it heats well, and becomes soft and easie to be wrought, and beat out with the hammer; but it will not easily melt. It is a sign od the goodness of iron, if in mass, you see the veins continued straight without interception; and if the ends of the piece be clean and free from soil; because the said veins shew if the iron be without knots and puffs; thus may you understand the middle by the ends; but being wrought into plates, either square or other form, id the sides be even, you may conclude it to be all alike good, the plate having equally endured the hammer.

The uses of this metal in buildings are many; for it are made nails, hinges, door-chains, doors, grates, dogs, hangers for sings, balconies, &c.

This metal being wrought by the smith into dogs, iron bars, staples, large hooks and hinges, grates, &c. the usual rate is 3 pence half penny, or 4 pence the pound. But for small and neat hooks, hinges, bolts, staples, &c. various, as from 4 pence to 8 pence the pound.

Casements are not usually made by the pound weight, but valued according to their bigness, largeness, strength and goodness od their locks, as from 3 shillings to 20 shillings the casement.

Diverse other works about building are made of iron, as locks and keys, balconies, gates, sing-irons, all whose prices are as various are they may be made in substance, goodness and neatness.

Of pargetting

Pargetting or plaistering is of divers kinds. As, (1) with lime and hair, morter laid upon bare walls, at 3 pence or 4 pence the yard. (2) Upon bare laths, as in partitioning and plain cialings, from 8 pence to 14 pence the yard square. (3) Rendring in partitions, at 2 pence or 3 pence the yard (4) rough cast upon heartlaths, from 1 shilling to 3 shillings the yard square. (5) plaistering upon brick-work, with finishing morter, in imitation of stone-work, from one shilling to 18 pence, or 2 shillings the yard square, or more. (6) And the like upon heart-laths, at 18 pence, 2 or 3 shillings the yard square.

In all these works, the scaffolding is to be considered; and the quantity of lime and fine sand for finishing morter must be equal.

Of priming or painting of outside-works

Painting of outside-works; as doors, shop-windows, window-cases, pediments, architraves, friezes and cornices, and all other timber-work which are exposed to the weather, ought at first setting up to be primed with Spanish brown, Spanish white, and red lead (about a 5^{th} part) to make the other two colours to dry, well growned with lintseed oil, will make excellent primer: then afterwards with the same colour (but much more whiter) for second primer; and lastly, with fair white, made of white lead, and about fifth part in quantity (not in weight) of Spanish white.

Outside-work thus coloured, may be afforded for 3 pence, or 3 pence hal-penny the yard square, for every time laid over.

Window-frames of 2, 4, or 6 lights, are not usually measured, except they be very large; but valued at 3 pence, 4 pence and 6 pence a light; and every casement at three half pence or 2 pence the casement; and iron bars at 1 penny or more, if very large.

Of glass, and glassing

Glass, when melted, is run into tables; those in England of and equal size, containing about 5 square feet; five and forty of these tables are called a case of glass, which weighs about two hundred pound weight. The price uncertain; as from 300 to 40 shillings the case; and to cut one case into quarries diamond fashion, with halves and quarters, will be worth 6 or 7 shillings. These quarries, for the most part, are 6 inches in length from one acute angle to the other, and in breadth from obtuse angle to obtuse angle 4 inches; so that each quarrie contains 12 superficial inches: for glassing with these quarries, lead, banding and setting up, the joints sawdered, and casements pinned, being included, the usual rate is about 5 pence the foot square.

Normandy, or French glass, is much thinner, clearer, and more transparent than English glass; this glass is much dearer, as quantity for quantity, for there are but twenty five tables in a case.

This French glass is, for the most part, cut into long squares; not only for common windows but for sash-lights also; which are much dearer than the glassing with lead.

Of paving, the several sorts thereof.

Paving with rough or rag-stone is the cheapest of all pavements; valued from 12 pence to 15 pence the yard.

Paving with pebble-stones laid in gravel; for materials and workman-ship may be worth 15 or 18 pence the yard square.

Paving with common bricks. this kind of paving is usual for cellers, wash-houses, sinks, fire-hearts, and such-like: of bricks, 30 of them (if made by statute) will pave one yard square.

Paving with Flemish bricks. the paving with these bricks is neater and stronger than common, or clay bricks: they are of a yellowish color; they must be laid in sand; each brick is 6 inches and a quarter long, 2 inches and a half broad, and 1 inch and a quarter thick; now allowing one quarter of an inch for the joint; then 72 of them will pave a yard square; but if they be set edg-ways, then to pave a yard square, will require one hundred bricks; - these bricks are usually sold at 2 shillings the 100, and 4 pence, 5 pence or 6 pence the yard square for laying them.

Paving with square tyles: these are made in moulds as bricks are, and are od several sizes viz. 6, 8, 10 or 12 inches square, in value from 6 shillings, to 12 shillings the hundred; and to know how many of either of these sorts of tyles will pave any pavement.

<table>
<tr><td rowspan="4">Note that</td><td>36</td><td rowspan="4">Tyles of</td><td>6</td><td rowspan="4">Inches square, will pave one square yard.</td></tr>
<tr><td>21</td><td>8</td></tr>
<tr><td>13</td><td>10</td></tr>
<tr><td>9</td><td>12</td></tr>
</table>

Paving with broad stone, taken out of quarries (commonly called free-stone) and cut into lengths and breadths promiciously, and in thickness about 2 or 3 inches. This kind of paving is laid in common yards and passages, before shop-doors and stalls, &c. and is worth for the stone fitting, and laying in mortar about six pence, 5 shillings 3 pence, or 6 shillings the square yard. Some there are of these stones cut perfectly square, as paving tyles are, but much bigger, as 18, 20, 24, inches square, and upwards: but these, as they are neater, so they are dearer; some pavings with these, being worth 12 pence the foot, or 9 shillings the yard square; but 15 or 16 pence the foot, if the stones be good and well polished, as they ought to be for kitchens, daries, and neat private places.

Paving with (rigate) commonly called fire-stone; is good for chimney fire-hearths, ovens, stoves, &c. and this is somewhat dearer than common purbeck pavement.

Paving with marble, of all other the most beautiful; of which there are several sorts; as white, black and grey; some pavements (as in foot places before chimneys) are, laid all of one sort color, and in one entire stone, others of two colours laid square, or chequer-wise, the side od one by the side of the other; others are laid arrace-wise of two colors, laid angle to angle; and this last is the neater: but there are may be diverse forms contriver to lay them in. As you may see in several chancels, in the quire of St. Paul's cathedral, and in the Royal Exchange in London, and divers other places: this kind of pavement is valued from 2 shillings to 3 shillings the foot square, and upwards, according as it is well laid and polished.

How to measure the works of the several artificers relating to the building of any edifice, great or small

A PARTIR DE ESTE PUNTO EXPLICA COMO HACER MEDICIONES, LOS CUADROS PARA CÁLCULOS Y HAY UNAS LÁMINAS EXPLICATORIAS DE LOS ÓRDENES DESCRITOS AL PRINCIPIO DEL VOLUMEN.

ES UNA FORMA DE COMPLETAR EL ANTERIOR.

<table>
<tr><td>AUTOR</td><td colspan="2">Joseph Moxon, fellow of the Royals Society, and Hydrographer to the late King Charles.</td></tr>
<tr><td>TÍTULO</td><td colspan="2">MECHANICK EXERCISES: OR THE DOCTRINE OF HANDY-WORKS: APPLIED TO THE ARTS OF SMITHING, JOINERY, CARPENTRY, TURNING, BRICKLAYERY. TO WHICH IS ADDED MECHANICK DYALLING: SHEWING HOW TO DRAW A TRUE SUN –DYAL ON ANY GIVEN PLANE, HOWEVER SCITUATED; ONLY WITH THE HELO OF THE STRAIGHT RULER AND A PAIR OF COMPASSES, AND WITHOUT ANY ARITHMETICAL CALCULATION</td></tr>
<tr><td>AÑO PUBLICACIÓN</td><td colspan="2">)</td></tr>
<tr><td colspan="3">HABLA DE_</td></tr>
<tr><td>Dedicatoria</td><td></td><td></td></tr>
<tr><td>A quien va dirigido/Prefacio</td><td>(…)
That geometry, astronomy, perspective, musick, navigation, architecture, &c. are excellent sciences, all that know but their very Names will confess; yet to what purpose would geometry serve, were it not contrive Rules for Handy Works? Or could Astronomy be known to any perfection, but by instruments made by hand? What Perspective should we have to delight our sight? What Musick to ravish our ears? What navigation to guard and Enrich our country? Or what architecture to defend us from the inconveniences of different weather, without manual operations? Or how waste and useless would many of the Productions of this and other counties be, were it not for Manufactures.
To dive into the Original of the mechanicks is impossible, therefore I shall not offer at it</td><td>Los trabajos mecánicos (MECHANICS) los origina el hombre, y su necesidad de crear instrumentos para dominar la naturaleza.
Se pregunta cuál de esos trabajos mecánicos es el primero y se responde que el de Herrero, ya que son los que a partir del hierro hacen el resto de instrumentos.
Da un rodeo hacia los nativos de América, que tiene flechas de madera pero que en el momento en que descubren el hierro, se pasan a él.
Justifica el título, porque HANDY-WORKS y no HANDY CRAFT, y porque empieza con los herreros en lugar de empezar con la carpintería de vigas</td></tr>
<tr><td>NOTAS SOBRE EL LIBRO</td><td>(No Index)
(1) OF SMITHING, in general.
Defintiion: is an art-manual, by which an irregular Lump (or several lumps) of Iron, is wrought into and intended Shape.
(...)
➢ Of setting up a Smith’s Forge.
➢ Of the Anvil
➢ Of the Tongs
➢ Of the Hammer, and the Sledge
➢ Of the Vice
➢ Of the Hand-vice
➢ Of the Plyers
➢ Of the drill and drill-bow.
➢ Of the screw plate and its Taps
➢ Of forging in general
➢ Of the several Heats Smiths take of their iron
➢ Of Brazing and Soldering
➢ Of several sorts of iron and their proper uses.
➢ Of filling in general.
➢ Of the making of Hinges, locks, keys, Screws, and nuts, small and great.
➢ The manner of riveting.
➢ The making of screws and nuts.</td><td>Justifica explicación sobre las herramientas.</td></tr>
</table>

	> The rules and manner of cutting worms upon great screws. (1.1, pag 39) the making of Jacks and bullet-molds, the twisting of iron, and case-hardning it , with the use of some tools not treated of before: also of the several sots of steel, the manner of softening, hardening and tempering them. ➢ Of jacks. ➢ Of the square and its use. ➢ The manner of making molds to Cast leaden Bullets in. ➢ Of the twisting of iron. ➢ Of case-harding ➢ Of several sorts of Steel in common use among Smiths. ➢ The rule to know good steel by. ➢ Of nealing of steel. ➢ Of Harding and Tempering Steel (2) The art of Joinery (p 63) Definition: Is an art manual, whereby several pieces of wood are so fitted and joined together by straight-line, squares, miters or any bevel, that they shall seem one entire piece. ➢ The name of the Joiners tools described in plate IV. ➢ BBBB Plains of several sorts as B1 ➢ Of setting the iron ➢ Of the jointer ➢ The use of the strike-block ➢ The use of the smoothing-plane ➢ The use of Rabbet-plane. ➢ The use of the plow ➢ Of molding –planes. ➢ Of grinding and whetting the iron, and other edge-tools. ➢ Of Chiffels of several sorts and first of formers ➢ Of the paring-chissel. ➢ Of the skew-former ➢ Of the morterss-chissel. ➢ Of the gouge. ➢ Of the square and its use ➢ The manner of Plaining and trying a piece of stuff-square. ➢ To frame two quarters square into one another. ➢ Of the miter square, and its use. ➢ Of the bevil ➢ Of the mitter-box. ➢ Of the gage ➢ Of the piercer ➢ Of the gimblet ➢ Of the augre ➢ Of the hatchet ➢ The use of the saw in general. ➢ The use of the pit-saw, marked M, in plate 4. ➢ The use of the whip-saw. ➢ The use of the hand-saw, the frame or bow-saw, the tenant-saw. ➢ The use of compass-saw ➢ Of the rule ➢ Of the compasses ➢ Of the glew-pot ➢ Of the chusing and boiling gglew ➢ Of using the glew ➢ Of the waving engine ➢ Of wainscoting rooms	Los diferentes tipos de “Jacks” y herramientas. Términos usados en carpintería.

	(3) Applied to the art of house-carpentry (p117)	En este capítulo entra diciendo que siente decepcionar a los carpinteros pero que no cree necesario volver a explicar las reglas de la arquitectura que ya están suficientemente explicadas en muchos libros de arquitectura, que al final dará una serie de nombres a los que acudir. Además entra a explicar porqué primero trata la "joinery" y después "carpentry" pues porque la primera es, como trabajo manual mucho más exacta, y además las herramientas que se usan en las 2 son prácticamente las mismas.
	➢ Of several tools used in carpentry, that are not used in joinery. And first of the ax ➢ Of the adz, and its use ➢ Of the carpenters chisel in general. ➢ Of the ripping chisel, and its use. ➢ Of the draw-knife, and its use. ➢ Of the hook-pins, and their use ➢ Of the level, and its use ➢ Of the plumb-line, and its use. ➢ Of the hammer and its use. ➢ Of the commander, and its use. ➢ Of the crown, and its use. ➢ Of the drug and its use. ➢ Of the ten-foot rod, and thereby to measure and describe the ground-plot (**) ➢ Of foundations (**) ➢ Of framing for the floors (**) ➢ Of setting up the carcass ➢ Of Window-frames. ➢ Of stair and stair-cases ➢ Of flooring of rooms ➢ The hanging of doors, windows&c.	Vocabulario sobre carpintería de casa…
	(4) Applied to the art of Turning. ➢ 1 of the lathe; of the legs, or stiles ➢ 2 of the cheeks ➢ 3 of the puppets ➢ 4 of the horn ➢ 5 of the pikes and screw ➢ 6 of the rest ➢ 7 of the side-rest. ➢ 8 of the treddle and cross-treddle ➢ 9 of the pole ➢ 10 of the side rest ➢ 11 of the bow ➢ 12 of the great wheel. ➢ 13 of the treddle-wheel. ➢ 14of the string. ➢ 15 of the seat. // ➢ II. of gouges III. of flat chissels IV. of hooks V. of grooving hooks and grooving tolos VI. of mandrels ➢ 1of flat mandrels. ➢ 2 of pin-mandrels. ➢ 3 of hollow-mandrels. ➢ 4 of screw mandrel ➢ 5 of sockets, or Chocks, belonging to the screw-mandrel. VII. Of collers VIII. Of the mawl. IX. Of the hatchet, drw-knife and cleaving-knife. X. Of the chopping-block. XI. Of the calipers XII. Of the drill-bench	

	XIII. Of turning a cylinder in soft wood. XIV. Of turning flat boards XV. Of turning hard wood and ivory XVI. Of Turning long and slender work of ivory. XVII. Of the brasiers lathe and turning tools; and their manner of using them XVIII. Of turning small works of brass, or other metal. XIX. Of laying moldings either upon metal, or wood, without fitting the work in lathe. XX. To turn several globes or balls of ivory within one another, with a solid ball in the middle. XXI. To turn a globe with several loose spheres in it, and solid cube, or dy, in the middle of it. XXII. To turn a cube, or dy, in an hollow globe, that shall have but one hole on the outside to work at. XXIII. Of turning oval work. XXIV. Of rofe-work. XXV. Of turning swash-work (5) Applied to the art of bricklayers work I. Of materials. ➢ Of bricks. ➢ Tiles ➢ Morter ➢ Laths ➢ Nailes ➢ Tile-pins II. Tools used in brick work. III. Method of working.	Vocabulario, no tan amplio como los anteriores No tiene vocabulario
Casa Ikea	(notes)	
COMENTARIOS		

Notas Moxon Modificada (1703)

(**)p 126-128

We shall begin therefore to measure the ground-plot, to which carpenters use a ten-foot rod for Expedition, which is a rod about an inch square, and ten foot long; being divided into ten equal parts, each part contains one foot, and is divided into 24 equal parts, and their subdivisions.

With this rod the measure the length and breadth of the Ground-plot into feet, and if there be odd inches, the measure them with the two-foot-rule. Their measure they note down upon a piece of paper, and having considered the situation of the sides, east, west, north and south, they draw on paper their several sides accordingly, by a small scale, either elected, or else made for that purpose. They may elect their two –foot rule for some plots; for an inch and an half may commodiously serve to set off one Foot on some small ground-plots, and then you have the inches to that foot actually divided by the marks for the half quarters on the two-foot rule. But this large scale will scare serve to describe a ground-plot above ten foot in length, because a small sheet of paper is not above 15 or 16 inches long, and therefore one sheed of Paper will not contain it, if the ground-plot be longer: therefore if you for two inches, a sheed of paper will contain 20 foot in length: and if you make every half quarter of an inch to be a scale for four inches, a sheet minishing the scale, the sheet of paper will contain a greater number of feet.

But having either elected, or else made your scale, you are to open your compasses to the number of feet on your scale your ground –plot hath in length, and then transfer that distance to your paper, and to draw a straight line between the two points, and mark that straight line with east, west, north and south, according to the situations of that side of the ground-plot it represents. Then again open your compasses to the number of feet on your scale one of the adjoining sides contains, and transfer that distance also to your paper, and note its situation of east, west, north and south, as before. Do the like by the other sides; and if either a quirk or any addition, be added to the building, on any side of your ground-plot, you must describe it also proportionably.

Then you are to consider what apartments, or partitions to make on your ground-plot, or second, or third story, and to set them off from your Scale, beginning at your intended front.

(…)

And thus you are also to describe by your scale your front, and several sides on the carcase; allowing the principal posts, enterduces, quarterings, braces, gables, doors, windows, and ornaments, their several sizes, and the true Positions by the scale: each side upon a paper by itself: unless we shall suppose our matter-workman to understand perspective; for then he may, on a single piece of paper, describe the whole Building, as it shall appear to the eye at any assigned station.

(**) Of foundations. P.128-130

Having drawn the draft, the master-workman is first to cause the cellars to be dug, if the house shall have cellars, And then to try the ground, that it be all over of an equal firmness, that when the weight of the building is set upon it, it may not sink in any part. But if the Ground be hollow or weaker in any place, he strengthens it, sometimes by well ramming it down, and leveling it again with good dry earth, lime-core, rubbish, &c. or sometimes with well planking it; or most securely by driving in Piles. But driving in of Piles is seldom used for timber houses, but forstone, or brick houses, and that but in few places of England neither, but where the ground proves Fenny or Moorish. Therefore a farther account shall be given of Foundations, when I come to exercise upon masonry, &c.

Then are the Celler-walls to be brought up by a Brick-layer with brick; for small houses two thick, or three or four bricks thick, according to the bigness of the house, and quality of the ground, as I shall shew when I come to exercise of bricklaying.

But if the house be designed to have no cellars (as many country houses have not) yet for the better securing the foundation, and preserving the timber from rotting, master-workmen will cause three, or four, or five course of bricks to be laid, to lay their ground-plates upon that Foundation.

The foundation being made good, the Master-workman appoints his under-workmen their several scantlins, for ground-plates, principal posts, posts, bressummers, girders, trimmers, joysts, &c. which they cut square, and frame their timbers to, as has been taught in the several exercises upon joinery, (whither I refer you) and there set them up, each in its proper place, according to the draft.

The draft of a foundation I have described in Plate 10, according to scale of eight foot in an Inch; where you have the front AB 20 foot long, the sides AC and BD 50 foot long. The shop, or first room, EF 25 foot (as aforefaid) deep I make the first Room a Shop, because I intend to describe Shop-windows, Stalls &c. though you may build according to any other purpose: the kitching, or Back room F F 15 foot deep. A Buttry or Closet, taken out the yard, marked G 10 foot, and 8 foot wide: H a setting off in the yard, 4 foot square for the House od office I leaving way in the shop for stair-case 6 foot square, M leaving way in the Kitching 6 foot deep, and 4 foot wide for the chimney.

I do not deliver this draft of partitions for the most commodious for this ground-plot, nor is the house set out designed for any particular Inhabitant.

<u>(**) Of framing for the floors (p.131)</u>

The four plaetes AB, AN, NO and BO, lying on the foundations, are calculates Ground-plates. They are to be of good Oak, and for this size of building about eight inches abroad, and fix inches deep are to be framed into one to another with tenants and mortesses. The longer ground-plates AN and BO are commonly tenanted into the front and rear ground-plates AB and NO, and into these two side-ground-plates are mortesses made for tenants at the ends of the Joysts, to be fitted somewhat loosly in, at about ten Inches distance from another, as in the draft. These ground-plates are to be bored with an inch and half augre, and well pinned into one another round oaken Pins, made tapering towards the point, and so strong, that with the hard blows of a Mallet, they may drive stiff into the Augree-hole, and keep the tenant firmly in the mortess. (…)

But before they pin up the frame of ground-plates, the must in Summer marked PP, and the girders QQ, and all the Joysts marked aaaa, &c. and the trimmers for the stair-case, and Chimney-way marked bb, and the biding joysts marked cc, for else you cannot get their Tenants into their respective Mortess-holes. But they do I say fit all these in, while the frame of ground plates lies the respective tenants in to their respective mortesses, which when all is done, they frame the Raising-plates just as the ground-plates are framed; and the frame of the roof into the raising-plates with beams, joysts, &c.

The summer is in the ground-plate placed at 25 foot distance from the front, and is to be of the same scantling the principal plates are of, for reasons as shall be shewn hereafter: and the girders are also to be of the same scantlings the summers and ground-plates are of, thought according to the nice rules of architecture, the black girder need not be so strong as the front-girder, because it bears but at 14 foot length, and the front-girder bears at 24 foot length; Yet carpenters (for uniformity) generally make them so, unless they build a House by the great, and are agreed for the sum of money, &c.

16. Of setting up the carcass.

Though the ground-plates, girders, etc. Be part of the carcass, yet I thought fit in the last section they should be laid, before I treated the superstructure, ahich I shall now handle. The four corner posts called the principal posts, marked AA, should be each of one piece, so long as to reach up to the beam of the roof, or raising-plate, and of the same scantling the ground-plates are of, viz. 8 inches broad, and 6 inches thick, and set with one of its narrowed sides towards the front. Its lower end is to be tenanted, and let into a mortess made near the corner of ground-plate frame; and its upper en hath also a Tennant on it, to fit into a mortess made in the beam of the roof, or rasing-piece.

At the height of the first story up this principal posts, must be made two mortesses, one to recive the tenant at the end of the bressummer that lies in the front, and the other to entertain the tenant at the end of the bressummer that lies in the return-side.

Two such mortesses must also be made in this principal post at the height of the second story, to receive the tenant at the ends of the bressummers that story.

Though I have spoken singularly one Principal post, yet as you work this, you must work all four principal posts; and then set them plumb upright, which you must try with a plumb-line described in plate 8.

Having erected the principal posts upright, you must enter the tenants of the bessummers into their proper mortesses, and with a Nil or two (about a single Ten or a double ten) tack one end of a deal Board, of some other like piece of stuff to the bressummer, and the other end of the framed work of the floor, to keep the principal posts upright, and in their places. Then set up the several Posts between the principal posts; but these posts must be tenanted at each end, because they are no longer than to reach from story to story, or from Entertise to entertise, and are to be framed into the upper and under Bressummer. If the entertises be not long enough they set up a Principal post between two or three lengths, to reach from the ground-plate up to the raising-plates.

It is to be remembered, that the bressummers and girders are laid flat upon one of their broadest side, with their two narrowed sides perpendicular to the ground-plot; but the joysts are to be laid contrary: for they are framed so as to lie with one of their narrowest sides upwards, with their two broadest sides perpendicular to the ground-plot. The reason is, because the stuff of the bressummers and girders are less weakned by cutting the mortesses in them, in this position, than in the other position; for as the tenant for those mortesses are cut between the top and bottom sides, and the flat of the tenants are no broader than the flat of the narrowest side of the joyst; so the mortesses they are to fit into, need be no broader than the breadth of the tenant, and the tenants are not to be above an inch thick, and consequently the mortesses are to be made with an inch mortess-chissel, as was shew in joinery p. 86 for great care must be taken that the bressummers and girders be not weakned more than needs, left the whole floor dance.

These tenants are cut through the two narrowest sides, rather than between the two broadest sides, because the stuff of the girders retains more strength when least of the grain of the stuff is cut: and the tenants being made between the narrowest sides of the joyces, requires their mortess-holes no longer than the breadth of that tenant: and that tenant but an inch wide to receive it; so that you mortess into the girder no more than three inches wide with the grain of the stuff, and one inch broad contrary to the grain of the stuff. But should the tenant be cut between the two broad sides of the joists, the mortess would be three inches long, and but one inch broad, and consequently, you must cut into the Girder three inches cross the grain of the stuff, which would weaken it more than cutting six inches with the grain, and one inch cross.

But it may be objected that the tenants of the joist being so small, and bearing at an inch thickness must needs to be weak.

Answer, first, though the tenants be indeed but an inch thick, and three inches broad; yet the whole bearing of the joyces do not solely depend upon their tenants; because the girders they are framed into prove commonly somewhat wainny upon their upper sides, and the joysts are always scribed to project over that Waynniness, and so strengthen their bearing by so much as they project over the Roundness or waynniness of the upper side of the girder.

Secondly, the floor is boarded with the length of the boards athwart the joists, and these boards firmly railed down to the joists, which also adds a great strength to them.

Thirdly, the joists are seldom made to bear at above ten foot in length, and should by the rule of good workman ship, not lie above ten inches asunder at the most: so that this short bearing and close discharging of one another, renders the whole Floor firm enough for all common occupations. But if the joyces do bear at above ten foot of length, it ought to be the care of the master-workman to provide stronger stuff for them, viz. Thicker and broader. If not, they cut a tusk on the upper side of the tenant, and let that tusk into the upper side of the girders.

Having erected the principal posts, and other posts and fitted in the bressummers, girders, joists &c. upon the first floor, they pin up all the frame of carcass-work. But though the girders and joists described for this first floor, lie proper enough for it; yet for the second story, and in this particular case, the joysts lie not proper for the second story; because in the second story we have described a balcony.

Therefore in this case you must frame the front-bressummer about seven inches lower into the principal posts: because the joists for the second floor are not to be mortessed into the bressummer to lie even at the top with it, but must lie upon the bressummer, and project over it so far as you design the balcony to project beyond the upright of the front: and thus laying the joists upon the bressummer renders them much stronger to bear the balcony, than if joists were tenanted into the front of the bressummer, and so project out into the street from it.

But the truth is, though I have given you a draft of the joists lying athwart the front and bear for the first floor, you may as well lay them range with the two sides of the first floor. But then the bressummer that reaches from front to rear in the middle of the floor must be stronger: and girders must then be tenanted into the bressummer, and the ground-plates at such a distance, that the joists may not bear at above ten foot in length. And the tenants of the joists must be tenanted into the girders, so that they will then lie Range with the two sides.

But, a word more of the bressummer: I say (as before) the bressummer to bear at so great length must be stronger though it should be discharged at the length of the shop, (viz. At 25 foot) with a brick wall, or a foundation brought up of brick. But if it should have not discharge of brickwork, but bear at the whole 40 foot in length, your bressummer must be yet considerably stronger than it need be, where it to bear but 25 foot in length; because the shorter all the bearings of timbers are, the firmer the bear. But then the fraiming work will take up more labour; and in many Cases it is cheaper to put in stronger stuff for long bearings, than to put a girder between, to discharge the length of the joist to be framed into the girders.

But to make short of this Argument, I shall give you the scheme of scantlings of timber at several bearings for summers, girders, joists, rafters, &c. as they are set down in the act of parlia. For the rebuilding the city of London, after the late dreadful fire: which scantlings were well consulted by able workmen before they were reduced into an act.

GENERAL RULES.

In every foundation within the ground add one brick in thickness to the thickness of the wall (as in the scheme) nexta above the foundation, to be set off in three courses equally on both sides.

That no timber be laid within twelve inches of the fore side of the chimney jambs; and that all joists on the back of the chimney be laid with a trimmer at six inches distance from the back.

That no timber be laid within the tunnel of any chimney, upon penalty to the workman for every default ten shillings, and ten shilling every week it continues un reformed.

That no joist or rafters be laid at greater distances from one to the other, than twelve inches; and no quarters at greater distance than fourteen inches.

That no joists bear at longer length than ten foot; and no single rafters at more in length that nine foot.

That all roofs, window-frames, and celler-floors be made of oak.

The tile-pins of oak

No summers or girders to lie over the head of doors and windows.

No summer or girder to lie less than ten inches into the wall, no joists than eight inches, and be laid in lome.

But yet the carcass is not compleated, till the quarters and braces between the principal posts, and posts are fitted in; window –frames made and set up, and the principal rafters, purlins, gables, &c. are also framed and set up. The manner of their pitch and scantlings you will see in Plate II. And the reasons for several pitches you may find among books architecture. But the names of every member you will find in the alphabetical table at the latter end of these exercises on Carpentry, referred unto by letters and arithmetical figures in the plate aforesaid.

But now we will suppose the carcass is thus finished. The bricklayer is then to bring up the chimneys and afterwards to tile the house. And then the next work the carpenter has to do, is to bring up the stairs, and stair-cases, and afterwards to floor the rooms, and hang the doors, &c. For should the either bring up the stairs and stair-cases, or floor the rooms before the house is tiled, or otherwise covered, if wet weather should happen it might injure the stairs, flooring, &c.

A, the ground –plate or ground-sell.

BB, BB, the principal posts.

CC, the biding intertises, or indeed, more properly interduces, bressummers, firders.

D, beam of the roof, bressummers, or girders to the garret floor.

EE, principal rafters, FF, bressummers.

G, plate of raising-piece, also a beam.

Aa, jaums or door posts, bb, braces; cc, jaums; d, top-rail of the balcony; ee, bottom-rail of the balcony; fff, posts of the balcony; ggg, banisters; hh, bressummers for the shop-windows;

H. king-piece or joggle-piece.

i.i, struts; kk, top-beams, collar-beam, wind-beam, strut-beam; lll, door-head.

II, The feet of principal rafters.

K. The top of the rafters.

IIK, the gable-end.

LL, Knees of the principal rafters, to be made all of one piece with the principal rafters.

M, the fust of the house.

NN, Purlins.

OO, Shop-windows.

PP. Flaps or falls.

mmm, Quarters; nn, jaums of the window; oo, back and head of the window; pp, transums; qq, munnions; rr, furring, or shreadings.;

V. Single light windows or luteons.

sss, rafters.

16. of Window-frames.

In brick buildings the window-frames are so framed that the tenants of the head-fell, ground-fell, and transom, run though the outer jaums about four inches beyond the; and so they are set in a lay of morter upon the brickwall, before the peers on either side is brought up, at about three inches within the front; so that the brick-work over the head and about the jaums defend it from the weather. Then the bricklayer brings up the peers on both sides, so that the four ends or tenants that project through the outer jaums being buried and trimmed into the brick-work become a fastning to the window-frame.

But if the window-frame stands on a timber –house, the head and ground-fell are sometimes tenanted into posts of the carcass; and then the posts of the office of the outer jaums of the window-frame; and the head and ground-fell, and posts or jaums, are rabbetted about half and incho on the outside of the front, to receive the pane of glass that is fitted to it. And thus (as I faid) the posts become part of the window-frame.

But the better way is to frame a window as the brick-work window, and to project it an inch and a half beyond the side of the building, and to plaister against its sides, for the better securing the rest of the carcass from the weather.

The window-frame hath every one of its lights rabbetted on its outside about a half and inch into the frame, and all these rabbets, but that on the ground-fell, are grooved square, but the rabbets on the ground-fell is bevelled downwards, that rain or snow, &c. may the freelier fall of it. Into these Rabbets the several panes of glass-work is set, and fastned by the glasier.

The square corners of the frame next the glass is bevelled away both on the out and inside of the building, that the light may the freelier play upon the glass. And upon that bevel is commonly stuck a molding (for ornament fake) according to the fancy of the workman, but more generally according to the various Mode of the times.

Of stairs and stair-cases

Several writers of architecture have delivered different rules for the height and breadth of steps, and that according to the several capacities of the stair-cases. They forbid more than six, and less than four inches for the heighth of each step, and more than sixteen, and less than twelve, for the breadth of each step. But here we must understand they mean these measures should be observed in large and sumptuous buildings; but we have here proposed and ordinary private house, which will admit of no such measures, for want to a room. Therefore to our present purpose.

The first and second pair of stairs the steps shall be about 7 ½ inches high, and 10 inches broad. The third pair stairs each step may be about 6 ½ inches high, and 9 ½ inches broad. But this rule they do, or should follow, viz. To make all the steps belonging to the same pair of stairs of an equal height; which to do, they first consider the height of the room in feet and odd inches, if any odd be, and multiply the feet by 12, whose product, with the number of odd inches, gives the sum of the whole height in inches; which sum they divide by the number of steps they intend to have in that height, and the quotient shall be the number of inches and parts that each step shall be high. Or, if they first design the heighth of each step in inches, they try by arithmetic how many times the height of a step they can have out of the whole height of the story, and so know the number of steps.

Stairs are either made about a solid Newel, or an Open Newel, and sometimes mixt, viz. With a solid newel for some few steps; then straight of foreright ascent with flyers upon the side of the square open newel, and afterwards a solid newel again. Than reiterate &c.

The last, viz the mixt neweled stair, are commonly made in our party-walled houses in London, where no light can be placed in the stair-case, because of the party-wall, so that there is a necessity to let in a sky-light through the hollow newel: but this sort of stair-cases take up more room than those with a single solid newel; because the stairs of a solid newel spread only upon one small newel, as the several foulds of the fans woman use spread about their center: but these because they sometimes wind, and sometimes fly off from that winding, take therefore the more room up in the stair-case.

The manner of projecting them, is copiously taught in many books of architecture, whether I refer you: yet not to leave you wholly in the dark, i shall give you a small light into it. And first on the solid Newel.

(...)

18. Of flooring of rooms

Though the carpenters never floor the rooms till the carcass is set up, and also inclosed by the plaisterer, less weather should wrong the flooring; yet they generally rough-plane their boards for flooring before they begin anything else about the building, that they may set them by to the season: which thus they do, they lean them one by one on end aslant with the edge of the board against a Bauk, somewhat above the height of half the length of the board, and set another board in the same posture on the other one another; then on the first side the set another board in that posture, and on the second side another, till the whole number of boards are set an end; being set in the posture, there remains the thickness of a board between every board all length, but just where they cross one another, for the air to pass through to dry and shrink them, against they have occasion to use them: but they set them under some covered shed, that the rain or sun comes not at them; for if the rain wet them, instead of shrinking them, it will smell them; or if the sun shine fiercely upon them it will dry them so fast, that the boards will Tear or Shake, which in vulgar English Split or Crack. (...)

19. The hanging of doors, windows, &c.

The floors being boarded, the next work is to hang the doors, in which those there be little difficulty, yet is there much care to be taking, that the door open and shut well.

If the door have a door case (as chamber doors, and closed doors commonly have) the jaums of the door-case must stand exactly perpendicular which you must try by the Plum-line, as by 8 and the head of the door-case or entertise must be fitted exactly into the rabbets of the door-case. But yet they commonly make the door about one quarter of an inch shorter than the insides of the jaums of the door-case, least if the boards of the floor chance to swell within the sweep of the door, the bottom of the door should drag upon the floor.

They consider what sort of hindges are properest for the door they are to hang. When they have street door (which commonly is to take off and lift on) they use Hooks and Hindges. In a battend-door, back-door, or other batten-door, or shop-window, the use cross-garnets. If a framed door, side Hindges: and for cupboard Doors, and such like, duf-tails. (See the description of these hindges in number 1 fig.1, 5, 6) But what for of hindges soever they use, they have care to provide them of a strength proportionable to the size and weight of the door they hang with them. Well-made hindges I have described num 1 fol 20 whither to avoid repetition I refer to you.

(explanation of terms used in carpentry)

Of turning

As by placing one Foot of a pair of compasses on a plane, and moving about the other Foot or point, describes on that plane a circle with the moving point; son any substance, be it wood, ivory, brass, &c. picht steddy upon two points (as on Axis) and moved about that Axis, also describes a circle concentric to the axis: and an edge-Tool set steddy to that part of the outside of the aforesaid substance that is nearest the axis, will in a circumvolution of that substance, cut off all the parts of Substance that lies farther off the axis, and make the outside of that substance also concentric to the axis. This is a brief collection, and indeed the whole sum of turning.

Now, as there is different matter, or substance, to be turned, so there is also different ways and different tools to be used in turning each different matter.

The different matters are soft wood, hard wood, ivory, brass, iron, &c. each of which (when I have described the turners tools for soft wood) I shall discourse upon.

Of bricklayers work

Bricklayers work is an art manual, which joins several bodies so together, that they adhere like one entire body.

Whether the white mason, which is the hewer of stone, or the red mason, which is the hewer of brick, be the most ancient, I know not: but in holy Writ, we read of making of bricks, before we read of Digging or Hewingof stones; therefore we may suppose the red mason (or bricklayer) to be the most ancient.

The method that I shall use in treating this art shall be this.

First: I will shew what materials they use, and their composition.

Secondly, I will treat of their tools, and describe their names and uses.

Thirdly, I will declare their method of working, both, in bricks, tiles, &c.

And First of materials:

Which are Comprised under six heads: (1) Bricks; (2) Tiles; (3) Morter; (4) Laths; (5) Niles; (6) Tile-pins

And first of foundations

It is usual, and also very convenient, for any person before begins the Erect a Building, to have designs or Draughts drawn upon paper or vellum, and also if it be a large Building, to have a model of it made in Wainscot; in which designs and model of it be a large building, to have a model of it made in Wainscot; in which designs and model, the ground plat or ichonography of each floor or story, is delineated an represented: as also the fashion and form of each front, together with the windows, doors, and ornaments if they intend any, to wit, Facias, Rustick, Quines, Architraves, Friezes and cornices, are to be shewn in the draughts or designs of the uprights or ortographyes.

If more Fronts than one be shewn perspectively in one draught, then this called scenography, which is not easy understood, except by the those who understand the rules of perspective.

Therefore it will be more intelligible to the several workmen to have a draught of eacho front in a paper by itself, and also to have a draught of the ground-plat or ichonography of every story, in a paper be it self; because many times the conveniences, or contrivances in one story, differs from those in another, either in biguess of chimneys, or division of the rooms, some being larger in one story than another, and sometimes have more chimneys in one story than in another, &c.

All which things being well considered, and drawn on papers, or a model made thereof, before the building is begun, there will be no need of alterations, or tearing and pulling the building to pieces after it is begun; for besides the hindrance of the procedure of the work, it makes the building lame and deficient, nothing being so well done, when this put up, and pulled down, and set up again, as if it were well done at first.

Besides it makes de workmen uneasy, to see their work, in which they they have taken a great deal of pains, and used a great deal of art, to be pulled to pieces.

The drawing of draughts is most commonly the work of a surveyor, although there be many master workmen that will contrive a building, and draw the designs thereof, as well, and as curiously,a s most surveyors: yea, some of them will do it better than some surveyors; especially those Workmen who understand the theorick part of building, as well as the practick.

And now concerning the foundations

After the cellars are dug, if there are to be any, or if none, after the trenches are dug, in which the walls are to stand; the master-bricklayer, or else his foreman (which ought to be an ingenious workman) must in the first place try all the foundations in several places, with an iron croe, and rammer, or indeed, with a borer (such as well-diggers use, to try what ground they have to produce water) to see whether the foundations are all found, and sit to bear the weight which is to be set upon them. If he find any part of the foundation defective, he ought to dig it deeper till he comes to firm ground; or if it proves to be loose, or made a Ground to a great depth, then he must take care to make it good sufficient to carry its weight by art, which may be done several ways.

Fist, if the foundations be not very lose, and insufficient, it may be good, by ramming in great stones with a heavy Rammer, the stones being placed close together, and about a foot wider on each side of the trench than the width of the walls is to be; because all walls ought to have a basis, or footing, at least 4 inches on a side broader than the thickness of the wall; which stones being well rammed, and the basis being 8 inches more in breadth than the thickness of the wall, and this 8 inches being set off, about one inch, or one inch and an half at a time on both sides (that so the middle of the wall may stand on the middle of the basis) may make the foundation good, and able to bear its burden.

But if the foundation be somewhat worse than as aforesaid, then he must get good pieces of Oak, whose length must be breadth of the trench, or about two foot longer than the breadth of the wall, which must be laid cross the foundation about foot asunder, and being well rammed down, lay long Planks upon them, which planking need not be the length of the cross pieces, but only 4 inches of a side wider than the basis, or footing of the walls is to be, and pined of spicked down to the pieces of oak on which they lye.

But if the foundation be so bad that this will not to do, then he must provide good piles made of heart of oak, of such a length as will reach ground, whose diameter must be about ½ part of their length, which must be drove or forced down with a commander, or engine for that purpose, and they lay long planks upon them, and spike or pin the planks to them, and the better it will be.

Moreover, if the foundation be faulty but in here and there place, and there be good ground in the other partsof it, you may turn arches over those insufficient places, which will discharge and take off the weight from the loose places.

And when you make these arches to shun the difficulty of the Earth, and to save the charge of expence, the must be made of bricks and morter that are very good, and well wrought, that they do neither settle nor give away.

You may observe for the greater strength of these arches, or discharges, to make them higher than a semicircle, or half round, if the work will admit of it, and to make the same, of Portions of Arches: as in plate 3. Fig. 4. You may see, they are described from an equilateral triangle; that is to say, supposing the breadth of the arch between the piers to be AB; with this width, and from the points A and B, make the two portions of the arches AC and BC; this rising so high, adds great strength to the arches to resist, or carry the weight which they are to bear.

The ancient architect Leon Baptista Alberti advises when the earth on which we would make pillars or piers is of equal resistance, that is to say, not good, to turn arches inverted, or upside down, and says, by this mean one pillar shall bear no more weight than another, when the earth that is underneath is not so strong, or that it bears more than another part; which he doth thus.

Having wrought up the pillars, or piers, as high as is necessary from the foundation make form these piers inverse arches, as ABC in plate 3 fig 5 whose joints tend to the centre D.

By this construction he pretends for example, that if the pier F hath a worse foundation, or hath a greater weight, that is to say, is more charged than the other piers, this charge, or weight, will be stopped, or stayed by the inverse archers ABC, IHK, because the earth which is under this arches keeps the piers in the same height, that is to say, that they shall not sink.

But he must also suppose that this earth is as firm as that of the foundation of the piers, or at least it must made so.

The ingenious surveyor mr. Hook, made use of this artifice, as I informed, in building the Lord Montague's brave house in Bloomsbury, in the county of Middlesex, and where he was then surveyor.

The foundation being all made firm, and levelled, the Master-Bricklayer, or his foreman, must take care to see all the foundation set truly out, according to the design of the Ground-plat, or Cellar-floor, and that all his walls be made of the same thickness as they are in the Design; which is very difficult to do, to wit, to take the true thickness of the walls from a design that is drawn to a small scale, because the breadth of the points of the compasses will vary somewhat; therefore this advisable for him that draws the draught, to set the dimensions in figures to each wall, chimney, window, &c. and then the workman cannot so easily, make a mistake.

And because the well-working and bonding of brick-walls conduces very much to their strength, I will here add some necessary rules to be observed in the laying of bricks, to make the walls and strong durable.

Fist, that the morter be made of well burnt good lime, and sharp sand, and that it have a due proportion of sand, that is to say, if it be very sharp, a load of sand, being about 36 bushels, is sufficient for an hundred of Lime, being 25 bushels, or a hundred pecks, (for I imagine that the word hundred of lime is used, because it contains an hundred pecks, and that in old time they used to sell, is by peck, but now by the bushel) to wit, to one bushel of quick lime, a bushed and half of sand.

But if the sand be not very sharp, then you may put a greater quantity of sand, for morter which hath its due proportion of sand, is stronger than that which hath less sand in it, although some think otherwise.

Secondly, when you flack the lime, take care to wet it every where a little, but do not over-wet it, and cover with sand every laying, or bed of lime, being about a bushel at a time as you flack it up, that so the stream, or spirit of the lime, may be kept in, and not flee away, but mix it self with the sand, which will make the morter much stronger, than if you flack all your lime first, and throw on your sand altogether at last, as some use to do.

Thirdly, that you beat all your morter with a beater three or four times over before you use it, for thereby you break all the knots of lime that go through the sieve, and incorporate the sand and lime well together, and the air which the beater forces into the morter at every stroak, conduces very much to the strength thereof.

If I might advise any one that is minded to built well, or use strong morter for repairs, I would have them beat the morter well, and let it lie 2 or 3 days, and then beat it well again when this to be used.

Fourthly, if you lay brick in hot dry weather, and be it some small piece of work that you would have very strong, dip every brick you lay, all over a pale of water, which will make the wall much stronger than if the bricks were laid dry. The reason why I mention deal of trouble to wet them for much work, or a whole building, and besides it makes the workmen fingers fore: to prevent which they may throw pales of water on the wall after the bricks are layed, as was done at the building of physicians college in warwick-lane, by order of the surveyor which was the aforesaid ingenious Mr. Hook, if I mistake not.

Fifthly, cover all your walls in the summer-time to keep them from drying too hastily, for the morter doth not cement so strongly to the bricks when it dries hastily, as when slowly.

Sixthly, be sure to cover them very well in the winter-time, to preserve them from rain, snow and frost, which last is a great enemy to all kinds of morter, especially to that which hath taken wet just before the frost.

Sevently, in working up the walls of a building, do not work any wall above 3 foot high before you work up the next adjoining wall, than so you may join them together, and make good bond the work: for this an ill custom among some bricklayers, to carry, or work up a whole story of the party walls, before the work the fronts, or other work adjoining, that should be bonded or worked up together with them, which occasions cracks and settling in the walls.

Eightly, take care that you do not lay joint on joint, in the middle of the walls, as seldom as may be, but make bond there as well as on the outsides; for I have seen some, who in working of a brick and half wall, have laid the header on one side of the wall, upright upon the header on the other side of the wall, and so all along through the whole course, which indeed necessarily follows from the inconsiderate setting up of the quine at Toothing; for this common to tooth in the stretching course two inches with the stretcher only, and the header on the other side, which causes the headers to lye joint in joint in the middle of the wall, as in plate 3 fig 1 you may see.

Whereas if the header of one side of the wall, toothed as much as the scretcher on the other side, it would be a stronger toothing, and the joints of the headers of one side, would be in the middle of the headers of the course they lye upon of the other side as plate 3, fis, 2.

All that can be said for this ill custom os working is this, that the header will not well hang two inches over the bricks underneath it; i grant it will not, but then it may be made, by having a piece of fir, or any other wood of the thickness of a course of bricks, and two inches broad, and lay it on the last Toothing course to bear it, or a bat, put upon the last toothing, will bear it till the next quine is set upon it, ans then the bat may be taken away.

Ninthly, the same inconveniency happens at an upright quine in a brick and half wall, where this is usual to lay a closier next the header on both sides of the wall, and in so doing this joint in joint all the length of the wall, except by chance a three quartern bat happen to be laid.

To prevent which inconveniency, and to make the wall much stronger, lay a closure on one side, and none on the other; but lay a three quarter bat at the quine in the stretching course, and in the heading course adjoin an heather next to the header at the quine, as you may see it done in plate 3 fig 1 and 2.

(...)

Tenthly, in summer time use your morter as soft as you can, but in the winter time pretty stiff or hard.

Elevently, if you build in the city of London, you must make all your walls of such thickness as the act of parliament for rebuilding of the said city enjoyns, but in other places you may use your discretion.

(...)

And be it further enacted. That the said houses of the first and least fort of building fronting by streets or lanes, as aforesaid, shall be of two stories high, besides cellars and garrats; that the cellars thereof 6 foot and half high, if the springs of water hinder not; and the first story be 9 foot high from the floor to the seeling; and the second story 9 foot high from the floor to the seeling; that all walls in front and reer as high as the first story, be of the full thickness of the length of two bricks, and thence upwards to the garrats of the thickness of one brick and half; and that the thickness of the garrat walls, on the back part, be left to the discretion of the builder, so that the same be not less than the length of one brick; and also that the thickness of the party walls between these houses of the first and lesser sort of building, be one brick and ½ as high as the said garrats, and that the thickness of the party wall in the garrat, be of the thickness of the length of one brick at the least.

And be further enacted, that the houses of the second sort of building fronting streets and lanes of note, and the river of Thames, shall consist on three stories high, besides cellars and garrats as aforesaid; that the cellars thereof be 6 foot and ½ high, (if the springs hinder not) that the first story contain full 10 foot in height from the floor to the seeling; the second full 10 foot, the third 9 foot; that all the said walls in front and reer as high as the first story, be two bricks and ½ thick; and the thickness of the garrat walls on the back part be left to the discreation of the builder, so that the same be not less than one brick thick: and also that the thickness of the party-walls between every house of this second, and larger sort of building, be two bricks, thick as high as the first story, and thence upwards to the garrats, of the thickness of one brick and ½.

Also, that the houses of the third sort of buildings, fronting the high and principle streets, shall consist of 4 stories high, besides cellars and garrats as aforesaid,: that the first story contain full 10 foot in height from the floor to the seeling; the second 10 foot and ½ the third 9 foot; the fourth 8 foot and ½ : that all the said walls in front and reer, as high as the first story, be of two bricks and ½ in thickness, and from thence upwards to the garrat floor, of the thickness of one brick ½ : that the thickness of the garrat walls on the back part be left so the discretion of the builder, so as the same, be not less than one brick: and also that the party-walls between every house, of this third and larger sort of building, be two bricks thick as high as the first floor, and thence upwards to garrat floor, the 1 1/2brick in thickness.

And be in further enacted, that all houses of the fourth sort of building, being mansion houses, and of the greatest bigness, not fronting upon any of the streets or lanes as aforesaid; the number of stories, and the heigh thereof, shall be left to the discretion of the builder, so as he exceeds not four stories.

Also the same act enjoins, that no timber be laid within 12 inches of the foreside od the Chimney jambs; and that all joist on the back of any chimney be laid with a trimmer, at six inches distant from the back: also, that no timber be laid within the tunnel of any chimney, upon penalty to the workmen for every default ten shillings, and ten shillings every week it continues unreformed.

Twelfthly, when you lay any timber on brickwork, as torsels for mantle-trees to lye on, or lintels over the windows, or templets under girders, and any other timbers, lay them in loam, which is a great preserver of timber, for morter eats and corrodes the timber; likewise the joist ends, and girders which lye in the walls, must be loamed all over, to preserve them from the corroding of the morter. Some workmen pitch the ends of the timber that lye in the walls to preserve them from the morter.

In the next place you shall have the ground plat of a building, and its explanations.

In plate 4, you have the draught of a ground plat of a building, which is 25 feet, both in the front and Reer Front; and 40 feet in the flank or depth: the front and reer front walls are 2 bricks and ½ in thickness, the flank walls are 2 bricks in thickness, as you may prove by the scale of feet and inches annext to the design.

You may imagine this designto be the ground floor, having no cellar beneath it: and the height of the story between the floor and the seeling to be 10 foot; and becausewe do suppousethis building to have houses adjoining it on each side, therefore we have drawn the stair-case with an open nuel to give light to the stairs; but if the house had stood by itself, without other houses adjoining, then we might have had light on the stairs from the flank wall.

Explanation of the design.

F. The front

R. Reer front.

B. Flank walls.

A. Piers of brick.

W. Windows of timber.

D. Door-cases of timber.

O. Chimneys.

C. Jambs of chimneys.

H. Open nuel to give light to the stairs.

K. Clossets.

L. A brick and half wall between the closets.

a. Funnels or tunnels of chimneys.

1. 2. 3. 4. &c. Steps of stairs called fliers.

8. 9. 10 &c. steps of stairs called winders.

e. timber partitions.

The scale contains 32 feet, with a Diagonal Line to shew the inches in a foot: for example, if you would take of 8 inches, take the interval from 8 in the horizontal line to the Diagonal line, and that is 8 inches: from 3 in the horizontal line to the diagonal line, is 3 inches, and so of the rest.

In the next plate you have the orthography, or upright of this ground plat, and this the explanation thereof, with a scale of feet and inches annext threto,

Explanation of plate 5.

A. The water table.
B. First fascia.
C. Second fascia.
D. Three plain courses of bricks onver the arches.
E. Cornice.
F. Chimnies.
G. Gable-end.
H. Streight Arches.

W. Shas frames

S. Shas lights.

K. Door-case.

L. Window-lighte over the door.

The scale of feet and inches being the same as in the ground plate of plate 4. I need not say any thing concerning it, because I have there shew the use of it. (p.267)

(...) Mouldings and arches.

I shall conclude this exercise with the art of making two sorts of cements, for the cementing bricks. (p.286)

There are two sorts of cement, which some bricklayers use in cementing of bricks for some kind of mouldings, or in cementing a block of bricks, as they call it, for the carving of scroles of capitals or such like &c. one is called cold cement, because the former is made and used without fire; the cold cement being accounted a secret, is known but two few bricklayers, but the hot cement is common.

To make the cold cement.

Take ½ a pound of old Cheshire-cheese, pair of the rine, and throw it away, cut or grate the cheese very small, and put it into a pot, put to it about a pint of cows-milk, let it stand all night, the next morning get the whites of 12 or 14 eggs, then take ½ a pound of the best unslackt or quick lime, that you can get, and beat it to powder in a morter, then first it through a fine hair sieve into a tray or bole of wood, or into a Earthen dish, to which put the cheese and milk, and stir them well together, and so use it; this cement will be a white colour, but if you would have it of the colour of the brick, put into it either some very much, but only just to colour it.

To make hot cement

Take one pound of rozin, one quarter of a pound of bees-wax, half an ounce of fine brick-dust, half an ounce of chalk-dust, or powder of chalk, fist both the brick-dust and chalk-dust, through a fine hair sieve (you may beat the brick and the chalk in a morter, before you fist it) boil altogether in a pipkin, or other vessel, about a quarter of an hour, stirring it all the while with an iron or a piece of lath or such like, then take it of, and let it stand 4 or 5 minutes, and this fit for use.

Note, that the bricks that are to be cemented with this kind of cement must be made hot by the fire before you spread the cement on them, and then rub them to and fro on one another, as Joiners do, when they glew two boards together.

AUTOR	Giacomo Leoni
TÍTULO	THE ARCHITECTURE OF PALLADIO; IN FOUR BOOKS: CONTAINING A SHORT TRETISE OF FIVE ORDERS, AND THE MOST NECESSARY OBSERVATIONS CONCERNING ALL SORTS OF BUILDING, AS ALSO THE DIFFERENT CONSTRUCTION OF PRIVATE AND PUBLICK HOUSES, HIGH-WAYS, BRIDGES, MARKET-PLACES, XYSTES, AND TEMPLES, WITH THEIR PLANS, SECTIONS AND UPRIGHTS. TO WHICH ARE ADDED SEVERAL NOTES AND OBSERVATIONS MADE BY INIGO JONES, NEVER PRINTED BEFORE/ REVISED, DESIGNED AND PUBLISHED BY GIACOMO LEONI
AÑO PUBLICACIÓN	Londres 1715
REFERENCIAS EN	
Hanno-Walter Kruft	
Dora Wiebenson	
David T. Yeomans	
Eileen Harris	
NOTAS SOBRE EL LIBRO	The first book. **Ch I.** of things considered and provided before one begins to build. 1. The plan and the upright of the Edifice we propose to erect. Three things: Convenience, Solidity and Beauty > *Commodious*: when every part of it has it proper place and situation. (…) nor less than these require: as when the Halls, Rooms, Closets, Galleries, Cellars, Garrets are well disposed, and in their proper places. > *Solidity*: depends on the care of erecting the walls very plum, and thicker below than above, with good and shout foundations: taking care that the pillars above be exactly perpendiculars over pillars below, and that all the openings, doors and windows, be above the other, so that the solid be upon the solid, and the void upon the void. > *Beauty*: it consists in a exact proportion of the parts within themselves, and of each part with the whole. After the Draught or the model. The charges of the whole are to be diligently computed and all requisite materials timey provided, that nothing be deficient, or hinder the finishing of the work. **Chap II.** Of Timber (according to Vitruvius Book 2 Chap 9) you must get in Fall or Winter, wane of the moon and be free from certain Moisture. **Chap III.** Of Stone, si es natural (que pueden ser duras o blandas) o artificiales llamadas quadrels similares a ladrillos. Es un estudio de las piedras cuando se han de cortar dependiendo de sus características. **Chap IV.** Sand: Pit-sand (the best), River-sand and Sea-sand (the worse). There are Puteolana which makes the mortar stronger. **Chap V.** Lime: Mortar is 1 lime/3 Pit-sand/2 of River-sand or Sea-sand. **Chap VI.** Metals => Iron, Lead and Cooper. Iron fits to make: Cramps, Spikes, Nails, Hinges, Bolts, Chains, Locks, and the like works. Lead serves to cover magnificent Palaces, Towers, Churches, and other Public Buildings; it makes gutter pipes to convey water. Cooper: cover public Buildings. The ancients=> sort of hook, or cramp with it to fasten the stones one with another; by the help of those cramps, a building was rendred a great deal stronger and more durable. The cramps we now most commonly use are made of iron, but the ancients made them oftener of cooper, because that metal, being not subject to rust, it lasts longer. **Chap. VII.** Of the qualities of the ground, wherein Foundation are to be laid. Foundations- basis. The Architect therefore ought to be extraordinary nice in the letting of the foundations, sine in some places it is solid enough from the nature of the soil, and in other places it is necessary to be mad by Art. Natural foundation=> soil=> rocky or soft sandy stone, or gravel, capable to bear the greatest building, both in land or water. But if natura no Foundations=> passed by arts. (avisa de que si se ha de cimentar en agua o tierra hay que ver las características).

	Chap VIII. Of the foundations- twice as thick as the walls => larger in a soft and loose ground, or where great weight to be supported. And must to be plane. Ancients pave the place with Tivertine Use Piles=> Foundations are arched like bridge and the walls are built over the arches. Chap IX. Of Several sorts of Walls (aparejos) six: Reticulata- network // quadrels or bricks//cement// rustick: various stores // square stones // rimpiuto or coffen- work. (Diseños extraños, no tienen claro lo que significa). Chap X: Of the method which the ancients did practise, in erecting their Stone buildings. Hace una oda a las construcciones de piedra por parte de los antiguos pero en un momento dado opina que no se ha de ir en detrimento de los muros de ladrillo entre otras cosas, porque permiten hacer chimeneas. Chap XI. Of the diminution of the walls and the parts of the sine. First Story < 1,5 < Foundations // 2nd story <1/2 than 1st Story /… till the top. With discretion, not too much thin, used pyramidal form. Angles must be strong for that windows must be far from angles. Chap. XII. The five ordres used by ancients. Chap. XIII. Swelling and diminution of columns; of intercolumn and Pilasters. Chap. XIV- Chap XIX. Orders and Pedestals. Chap. XX.- Errors introduced into Architecture. Desproporción cornisa/columna. Chap XXI. Of Galleries, Entries, Halls, Antichambers, Chambers, and of their several proportions. Galleries: in the tore, or back front of the house, or it only is intended, it must be in the middle; if two, they are to be places in the wings. They serve for may uses, as walking, eating, and other diversions. They are made larger or lesser according to the greatness and convenience of the Building, but ordinarily they ought not have less than 10, nor more than 20 foot in breadth. Halls, Entry: Serves in a house as a Public places => first presentation. In Halls you can doo sorts of ceremonial Feasts, as Weddings, banquets, Comedies and such past times. The more spacious they are more commodities. Length of hall no less than the double of its breath, but the nearer they come to a square. The Antichambers and Chambers ought to be so divided and disposed, that they may fall on each side of the entry and of the hall, taking care that those on the right hand may exactly answer those on the left => Simetria for that the walls may bear equally the Burthen of the roof: because if the chambers were on one side larger than the other, this (considering the closeness of the walls) would bear more of the weight; and other, being proportionably weacker, would occasion many inconveniences, the ruin of the whole fabric. Chap XXII. Of Floors and Cielings. Floors=> Out of Morter made of beaten cement and fine sand, or with River Pebbles or Padoua Stone-lines; all well mixt together in spring or summer. Materials for Cielings => Joyst separeit 1,5 make nice. Or Planks. After that Pintures. Chap XXIII. Of the Heigh of Chambers. Chap XXIV. Of the divers sort of Arches. Chap XXV. Of the measures of Doors Windows (Vitruvius 4th Book ch 6) Chap XXVI. Of Ornaments of Doors and Windows. Chap XXVII. Of Chimneis. Funnels in the thickness of the wall=> Carry them to the top, and higher to the Ridge. Neither, too wide or too narrow. Chimneis top, muss be broader, and free from any combustible. Chap XXVIII. Of Stair-Cases and their different sorts, of the number and proportions of their steps. Great care taken in the well placing of Stair-cases, a particular place must be marked out, that no part of the Building should receive any prejudice by them. There are three openings necessary to a Stair-Case. 1. Door way that leds to them, which the more it is in sight, the better it is, and I hightly approve that it be in such a place , where before one comes to it, may be seen the best part of the house; for although the house should be little, yet at this rate it will appear much larger: therefore the said door must be obvious, and easy to be found. 2. Of the Windows. They give light, they must be in the middle. 3. Landing place. Stair Case will be perfect, if they are spacious, light and easy to ascend; as if, in some sort, they seem to invite People to mount. They must be narrower than 4 foot, 2 persons meet, commodity pass one by the other. Arches under the steps are made so large as to hold some grounds, or other necessary things, and convenient likewise for the Persons that come up and down, if the stair are not too step, nor the steps too high. Therefore they must be twice as long as broad. Steps height => 6 Inches; lower musn't chiefly be so too long and continued star; no less than 4 Inches. The breadth larger a foot, nor more than 1,5 foot. 11-13 steps in each. Strait - Winding. Chap XXIX. Of Roofs => función: evitar los elementos. Raised higher or lower depend the Countries. In German are higher and made of pieces of Wood singles. Sufficient current for water. Nine parts: 2 of which will be sufficient. Therefore pitch because it was done of a fourth, the roof would be to stiff; and in making it only of a fifth, it would be so flat, that the tyles and the snow must lye too heavy upon them. Guttes are commonly made round the houses to convey off the Rain water by pipes, or

	Spouts: and over these ought to be laid at least a foot and a half of wall, because they will be not only there bey the stronger; but this will preserve the Timber against the rain, and the moisture of the weather. There are many ways of framing the timber of the Roofs but when the middle walls bear the girders, they are easily laid on; and this what I do much approve, because the out walls are less pressed, and if any of the Girder should happen so rot, the Roof would not be so much danger. BOOK 2=> The design of several Houses which he has built either in Town or in the Country. Chap I. The Good grace, Suitableness, and Proportions which ought to be observed in Private Buildings. Symetria. Chap. II. Of the composition or distribution of Chambers and another Places. PB (Underground): Cellars, Wood-Houses, Pantries, Kitchen, Servands, halls, landries, Ovens. Si se hace un sótano para estas dependencias, se evitan inconvenientes y el moho. Convenient Partitions for Closets, Libraries, House-Furniture. Summer-room: large and spacious => North. Winter-Room: small and to the South-West. Studies and closets must have the same prospect. Morning is the best moment. Chap III. Construction Houses in Town. Hall high // Kitchen separate // Near the great Stair is the house of office, which to the body of the house, does not give any smell, being in a place where on the sun thus not shine, and having vents walls in the thickness of the wall from the bottom of the house, through which the Offensive smell evapórate. Chap XII. Of the situation which ought to be chosen for country houses. A convenient distance. Near a River. Away from death or stagnents waters => worst of air (agua buena). Donde no estorben animals. No cerca de los bosques porque se pierden vistas. Chap XIII. Of the compartments of Country houses. Hay de 2 tipos, para el propietario y su familia, y para el granjero. BOOK 3=> Of ways, streets, bridges, Squares, Basiliques or Courts. BOOK 4=> Of the Pantheon and Temples. Acaba con un glosario. La Mitad del Libro está en Francés (traducción)
COMENTARIOS	Es un libro muy grande, difícil de manejar, pero contiene todo el saber constructivo del momento, está bastante bien estructurado, aunque como sucede frecuentemente no haya índice. Muchas partes interesantes, fácil de seguir.

<table>
<tr><td>AUTOR</td><td colspan="2">Nicholas Hawksmoor // John James // James Gibbs</td></tr>
<tr><td>TÍTULO</td><td colspan="2">THE BUILDERS DICTIONARY: OR, GETLEMAN AND ARCHITECTS COMPANION. EXPLAINING NOT ONLY THE TERMS OF ART IN SEVERAL PARTS OF ARCHITECTURE, BUT ALSO CONTAINING THE THEORIE AND PRACTICE PF THE VARIOUS BRANCHES THEREOF, REQUISITE TO BE KNOWN BY MASONS, CARPENTERS, JOINERS, BRICKLAYERS, PLAISTERERS, PAINTIERS, GLAZIERS, SMITHS, TURNERS, CARVERS, STATUARIES, PLUMBERS &C. ALSO NECESSARY PROBLEMS IN ARITHMETIC, GEOMETRY, MECHANICS, PERSPECTIVE, HYDRAULICS, AND OTHER MATHEMATICAL SCIENCES. TOGETHER WITH THE QUATITES, PROPORTIONS, AND PRICES OF ALL KINDS OF MATERIALS USED IN BUILDING; WITH DIRECTIONS FOR CHOSING, PREPARING, AND USING THEM: THE SEVERAL PROPORTIONS OF THE FIVE ORDERS OF ARCHITECTURE, AND ALL THEIR MEMBERS ACCORDING TO VITRUVIUS, PALLADIO, SCAMOZZI, VIGNOLA Y M. LE CLERC&C.
WITH RULES FOR THE VALUATION OF HOUSES, AND THE EXPENCE CALCULATED OF ERECTING ANY FABRICK, GREAT OR SMALL.
THE WHOLE ILLUSTRATE WITH MORE THAN TWO HUNDRED FIGURES, MANY OF THEM CURIOUSLY ENGRAVEN ON COPPER PLATES: BEING A WORK OF GREAT USE, NOT ONLY TO ARTIFICERS, BUT LIKEWISE TO GENTLEMEN AND OTHERS, CONCERNED IN BUILDING &C.</td></tr>
<tr><td>AÑO PUBLICACIÓN</td><td colspan="2">1734 (2 volúmenes)</td></tr>
<tr><td colspan="3">HABLA DE_</td></tr>
<tr><td>Dedicatoria</td><td>We have perused these two volumes of the Builder's Dictionary, and do think they contain a great deal of useful knowledge in building business. NH; JJ; JG
(…)
This is easy to conclude from hence, that convenience should still be the builder's first view: every structure is raised to answer a particular end; and the most obvious and simple means are always the best to obtain it. When such a plan as this is uniformly and consistently laid; when all its uses may be comprehended at single glance, and all appear undeniably reasonable and perfect; then the artist is at Liberty to add grandeur and elegancy to strength and propriety, and finish the whole with the full splendor of beauty and grace.
(…)
The design of this dictionary is chiefly for the assistance of such, who study the mechanical part of building, and will be the greatest service to all professions that have any relation to it; the elements of the art will be fully explained, and in so regular Method too, that it can hardly be in the power even of a Novice to mistake. Neither is it impossible that the most finished artist, or most perfect critic, should stand in need of its help: it will serve at least , as a kind of remembrance, or common-place book, where all their knowledge lies regularly digested, and may be referred to with ease and pleasure.</td><td></td></tr>
<tr><td>A quien va dirigido/Prefacio</td><td>The design of this dictionary is chiefly for the assistance of such, who study the mechanical part of building, and will be the greatest service to all professions that have any relation to it; the elements of the art will be fully explained, and in so regular Method too, that it can hardly be in the power even of a Novice to mistake. Neither is it impossible that the most finished artist, or most perfect critic, should stand in need of its help: it will serve at least , as a kind of remembrance, or common-place book, where all their knowledge lies regularly digested, and may be referred to with ease and pleasure.</td><td>A partir de ahí habla, de los nombres que han influido en este arte (le Clerc, entre otro) y de las ciencias de la arquitectura, que son la aritmética, la geometría, masonería (formación de arcos y bóvedas) "levelling" e hidráulica, mecánica, diseño, sencillez, perspectiva,</td></tr>
</table>

	Upon the whole, nothing by nature, and long study of the antient and modern structures, will enrich the mind sufficiently to excel in this noble art; and this Dictionary will be found a proper key to explain their beauties, as well as a needful caution to avoid their defects. To conclude; we have nothing more to add, but our grateful acknowledgments to those gentlemen and artist, who have favoured us with their assistance in this useful undertaking; and we hope our labours will lie secure from censure at least, if they may not be judged altogether worthy of applause.	decoración,
NOTAS SOBRE EL LIBRO	Directions to the Binder, for placing the plates.	Y empieza el diccionario, que mejor se sigue a través de las notas (he apuntado los términos que consideré importantes en el de Neve lo cual permite la comparativa.
Casa Ikea		
COMENTARIOS	Como sigue la estructura de un dicionario, no numeran las páginas; 2 volúmenes doble moleskino, muy manejables, con ilustraciones básicas.	

NOTAS BUILDER'S DICTIONARY (1734)

ABACUS, (definición de abacus en los distinto órdenes)

ABIES (no está)

ARCHITECT, (escrito en griego. A master workman in a building: he who designs the model, or draws the plot, plan or draught of the whole fabric; whose business it is to consider the whole manner and method of the building; and also to compute the charge and expence. In the managing of which, he ought to have regard to its due *situation, contrivance, receipt, strength, beauty, form,* and *materials*.

The name architect, is also used for the Surveyor, or Superintendant of an edifice, the management being wholely committed to his circumspection; wherefore he ought to manage the whole affair prudently and advisedly, with the utmost caution, that all matters may be ordered and disposed, (in all circumstances) so as to answer the owner's design, and be consentaneous to reason.

But notwithstanding the care of the whole fabric be incumbent on this surveyor, or superintendent, yet Sir Henry Wotton advises the having a second superintendant, (or officinator, as is called by Vitruvius) whose business is to chuse, (or examine) and sort all the materials for every particular part of the building.

Vitruvius enumerates 12 qualifications requisite for a complete architect,; that he be docile and ingenious, literate, skilled in designing, in geometry, opticks, arithmetic, history, philosophy, music medicine, law and astrology.

The most celebrated ancient architects are Vitruvius, Palladio, Scamozzi, Serlio, Vignola, Barbaro, Cataneo, Alberti, Vida, Bullant, De Lorme, and many others.

ARCHITECTONIC, that which builds a thing up regularly, according to the nature and intentions of it. The term is usually applied to that plastic power, spirit, or whatever else it be, which hatches the Ova of Females into living creatures, which is called the Architectonic Spirit, yet it is also applied to the chief Overseer of Buildings, or architect.

ARCHITECTURE, the art of building, or mathematical science, which teaches the art of erecting edifices proper either for habitations or defence; being a skill obtained by the precepts of geometry; by which it gives the rules for designing and raising all sorts of structures, according to the rules of Geometry and proportion, and contains under it all those arts which contains under it all those arts which conduce any thing to the framing houses, temples, &c.

The scheme or projection of a building is usually laid down in three several designs or draughts.

The first is a plan, which exhibits the extent, division, and distribution of the ground into apartments and other conveniences.

The second shews the stories, their heights, and the outward appearances of the whole building: and this is usually called the design or elevation.

The third is commonly called the section, and shews the inside of the fabric.

From these three designs, the undertaken frames a computation of the charges of the whole building and the time requisite to complete it.

As to the antiquity of architecture; architecture is scarce inferior, in point of antiquity, to any other arts. Nature and necessity taught the first inhabitants to the earth to build or set up huts, tents and cottages; from which in process of time, they gradually advanced to raising more regular and stately dwellings, set off variety of ornaments, proportions, &c. (A partir de ahí empieza con la hª de la arquitectura con Villalpando y el templo de salomón)

ASHLAR, a term used by builders, which they mean common freestones, as they come out of the quarry, of different lengths and thicknesses. Nine inches is the common thickness.

As to the price of ashlars, Mr. Wings says, that the commonly value them in rutland at 3d the foot in the quarry.

In Sussex and Kent, the commonly sell them by the load, being a common or ordinary sort of stone. About eighteen or twenty foot makes a load; which, if they come rough from the quarry, cost about 3 d a foot, laid down at the place where they are to be used; but if they are ready scapted, they are reckoned at 4d the foot.

But if they are bought rough at the quarry, they may be had at 2d foot; but if scapted 3d. (…) diferentes precios de ashlar.

ASPHALTUM, (n está)

ASSEMBLAGE, the joining or uniting of several things together; also the things themselves to joined or united: of which assemblages, there are divers kinds and forms used by joiners, as with mortoises, tenons, dove-tails &c.

Assemblage of orders (…)

ATTIC, signifies something relating to attica, or the city of Athens.

Attic is also used in architecture for a kind of building, wherein there is no roof or covering to be seen; thus called, because usual at Athens.

Attic, or Attic order (…)

The name of Attic, is also given to a whole story, into which, this order enters; this little order being always over another that is greater.

(…)

Attic of a roof, is a kind of a parapet to a terras, platform, and the like.

Attic continued, is that which encompasses the whole pourtour of a building, without any interruption, following all jets, the return and pavilions, &c.

Attic Interposed, is one situate between two tall stones, sometimes adorned with columns or pilasters.

Attic base, (orders…)

BAKE-HOUSE, is a room of office, or an apartment belonging to noble buildings, in which an oven is built.

As to the position, is ought (according to the rules laid down by Sir Henry Wotton) to be placed on the south side of any building.

BALCONY, a projecture beyond the naked of a wall or building, supported by pillars or consoles, and encompassed with a balustrade. Or it is a kind of open gallery for people to stand in, to behold any public shew, as pageants, cavalcades, public entries of ambassadors, &c. in cities; or for taking the air.

This jutty or projective building is usually placed in the middle of the front of a house, or public hall, &c. if there be but one; and is usually level with the first floor, up one pair of stairs.

Some of these are made with wood, and others with iron; wooden balconies consist of rails and balusters; and so sometimes do those of iron; but at other times, are made of cast-iron, of various figures in semi-relief; and some again, of wrought iron, in crailed work, of flourishes, in different forms, according to the fancy of the workman, &c.

As to the price, wooden balconies are commonly paid for by the yard, from 3s to 5 s per yard, according to the workmanship the carpenter bestows upon it.

Those of iron are commonly paid for by the pound or hundred weight, from 4 d to 8 d. per pound, according to the curiosity of the workmanship.

It may be proper here, to take notice of what sir Henry Wotton says concerning all in-lets and outs-lets, such as balconies, windows, 6c. that they ought not to approach too near to the corner of the walls; it being and essential error, to weaken that part which strengthens all the rest.

This says he, is a precept well recorded, but ill practiced, even by the Italians themselves, particularly in Venice; where he had observed divers pergola, or maucina (as they seem to be called Vitruvius) which are certain balustraded out-standings, made for standing in, to a satisfy the curiosity of the sight, very dangerously set forth upon the very point itself of the mural angle.

M. Le Clerc says, the parts of a balcony are the terrats, the balustrade, that incloses it, and the consoles which support it; or, to explain himself the more accurately, a balcony is a piece of architecture raised in the air, inclosed with a balustrade, and supported by a little entablature, whereof the cornice, or uppermost part, makes a terras; the frieze and architrave being only continued at the bottom and sides; and the whole balcony further supported by consoles.

The frieze is made with a little sweep, that the zocle of the pedestal above may not appear ill supported; and that the console coming to contract, or straighten itself, at the bottom, may do it the more gracefully; without which, it would appear too heavy.

The height of the consoles may be equal to their projecture; but it will be an addition both to the beauty and the strength if the work, if they made higher.

A balcony may be continued quite through the façade of a building, by adding consoles, from space to space; to be disposed between the windows, which will be underneath.

He is of opinion, that iron balconies will do much better than those of stone, as being lighter, and less subject to decay; which, if they be gilt, the will be exceedingly magnificent, and a very proper ornament for a palace.

BAR (ver bars)

BARBICAN/BARBACAN, Some derive it from the French; but others, of barbacane, Italian) a canal, or opening left in the wall, for water to come in and go out at, when buildings are erected in places liable to be overflowed; or to drain off the water from a terras. It is also used to signify an outwork in a building.

BARGE-COUPLES

BARGE-COURSE, (with bricklayers) a term used for part of the tiling which projects over without the principal rafters, in all sorts of buildings, where there is either a gable, or a Kirkin-head.

BARN Mr. Worlidge advises as to the situation of barns, that it will be very inconvenient to build Barns, or Stables, or Places for the like Uses too near to the Dwelling-house; because Cattle, Poultry, &c. require to be kept near to barns &c. which would be an annoyance to the house.

As to the Princes of Framing, &c. the carcass of a barn has been built for 3s. 6d per square, for carpenters work alone; and 8 s per square has been given for carpenters work, the felling, hewing, and sawing of his timber-boards, and finding nails.

Some workmen say, that the charge of a square of building of the timber-work of a timber barn may be computed in the manner following; viz 4s a square for the sawing boards (considering that they lap over another) and the staving of the logs 2 s square; for sawing the timber members, 3s 6d a square; for framing the carcass, from 4s to 7s a square for the value of the timber, reckoning the price of the timber from 12s to 21s, per ton; and one ton to make 3s square of frame in barn-work.

Rough timber, is that unhewed or unsquared; and ton of rough timber, has been reckoned equal to a load of hewed. From these computations, we may compute the whole value of a square of such timber work to be worth fron 3s 6 d to 16 s 6d per square.

BAR-POST, s sort of posts of which, and five rails or bar,, serve instead of a gate, for an inlet into fields and other inclosures: these posts consists each of five mortoises; and the posts are usually six foot, or six foot and a half long, four of which stands above the ground.

These posts are, in some places, made by the piece, viz a penny or three halfpence per post hewing, and a halfpenny per hole, for mortifing.

BARS, of iron, upright ones for windows; their usual price is three pence halfpenny, or four pence a pound in London.

BASALTES

BASON, a reservatory of water, as the bason of a jet d'Eau, or fountain; the bason of a port, Bath &c, which Vitruvius calls Labrum.

BATTEN DOORS, are such as seem to be wainscot ones, the panels are grooved into the framing ; but in these , they first joint and glew the boards, which are cut to the full length and breadth of the door-case; which gluing being dry, they traverse them over with a long plane; and being smoothed, the battens are fitted on, on the front side. And these are called single batten-doors; for there are others, called double batten-doors, viz such as are battened on both; though this is but rarely done.

But are battened doors, which are called double doors, such as front or outer-doors; which are usually made of whole deal, and afterwards battened on the outside, and pieces, four or five inches broad, mitred round the edges on the inside of the door; and then it is lined cross the door betwixt these pieces, with thin slit-deal, which renders it level with the mitred pieces.

Some doors have been lined with pieces laid beveling, and not at right angles, but near mitre to the sides of the door; and when all has been plained off level, it has been divided into rhombuses, and struck with a pencil, and round-headed nails driven in at the angles of the rhombuses, which added something of beauty of the work.

This way of lining upon the doors, viz, pointing from the lower corner behind, towards the upper corner before, seems to be a good way to prevent a door from sagging or sinking at the fore-corner, when ever the joints shall happen to unglue.

As to the Price of Batten doors, for the workmanship of making batten-doors of slit deal, about an inch in thickness (or of thin whole deals), glued and battened on one side; 4s per door, is a moderate price between master and workman: but for such as have been mentioned above (which are for front and other outer doors, viz both battened and lined are worth 7s per door, fro workmanship.

BEAM, in a building is the largest piece of wood in a building. Which always lies cross the building on the walls, and serving to support, the principal rafters of the roof, and into which the feet of the principal rafters are framed.

No building has less than two of these beams, viz one at each head. Into these, the girders of the garret-floor are also framed; and if the building be of timber the teazle-tenons of the posts are framed.

The teazle-tenons are made at right angles to those which are made on the posts to go into the raisons; and the relish or cheats of thes teazly-tenons, stand up within an inch and half the beam is cauked down (which is the same thing as dove-tailing across) till the cheeks of the mortises in the beam conjoin with those of teazle-tenons on the posts.

As to the size of beams. The proportion of beams in or near London, are fixed by a statute or act of parliament for the rebuilding of the city of London, after the fire in 1666, and were appointed to be of the following scantlings.

A beam fifteen foot long, must be seven inches on one side its square, and five on the other; if it be sixteen foot long, one side must be eight inches, the other six; if seventeen foot long, one side must be ten inches, and the other six; and so proportionable to their lengths. In the country, where the wood is more plenty, they usually make their beams stronger.

Sir Henry Wotton advises, that all beams, summers and girders, be made of the strongest and most durable timber.

Herrera inform us, that in Ferdinand Cortez's palace in Mexico, there where seven thousand beams of cedar: but then he must be understood to use the word beam in a greater latitude than it is used with us. The French, under the word Poutre which signifies a beam, take in not only the pieces which bear the rafters, but also all those which sustain the joists for the ceilings.

Some French authors have considered the force of beams, and brought their resistance to a precise calculation; as particularly, Mr. Varignon, and M. Parent; the system of the latter of which is as follows:

When two plans of fibres, which where contiguous before, are separated in a beam, which breaks parallel to its base, (which is supposed to be a parallelogram) there is nothing to be considered in this fibres, but their number, bigness, and tension, before they are broken and the lever, by which they act; all these together making the resistance of the beam remaining to be broke.

Then suppose another beam of the same wood, where the base is likewise a parallelogram, and of any bigness, with regard to the other, at pleasure. The height of each of these, when laid horizontal, being divided into an indefinite number of equal parts, and their breadth into the same number, in each of their bases will be found and equal number of small quadrangular cells, proportional to the bases of which they are parts; then these will represent little bases; or, which is the same thing, the thickness of the fibres to be separated for the fracture of each beam, and the number of cells being equal in each beam, the ratio of the bases of both beams will be that of the resistance of their fibres, both as to number and thickness.

Now the two beams being supposed to be of the same wood, the fibres most remote from the points of support, which are those which break the first, must be equally stretched when they break.

Thus the fibres, v.g. of the tenth division, are equally stretched in each case, when the first breaks; and in whatever proportion the tension be supposed, it will be still the same in both cases; so that the doctrine be entirely free, and unembarrassed with any system of physicks.

Lastly, it is evident, that the levers, by which the fibres of the two beams act, are represented by the height of their bases; and consequently the whole resistance of each beam is the product of its base by its height, or, which id the same thing, the square of the height being multiplying by the breadth, which holds not only of parallelogrammick, but also of elliptical bases.

Hence, if the basis of two beams be equal, thought both their heights be unequal, their resistance will be as their heights alone; and consequently one and the same beam laid on the smallest side of its base, will resist more than when laid flat, in proportion, as the first situation gives a greater height that the second. And thus and elliptical base will resist more, when laid on its greatest axis, than on its smallest.

Since beams equal in length, it is the bases which determine the proportion of their weights or solidities; and since their bases being equal, their heights may be different; two beams of the same weight, may have resistance different to infinity. Thus if in the one, the height of the base be conceived infinitely great, and the breadth infinitely small; while in the other;, the dimensions of the base are finite, the resistance of the first will be infinitely greater than that of the second, though their solidity and weight be the same.

If therefore, all required in architecture were to have beams capable of supporting vast loads, and at the same time have the least weights possible, this is plain they must be cut thin as laths, and laid edge-wise.

If the bases of the two beams are supposed to be unequal, but the cum of the sides of the two bases equal v. g. if they be either 12 and 12 or 11 and 13, or 10 and 14&c. so that they always make 24; and further, if they are supposed to be laid edge-wise, persuing the series, it will appear, that in the beam of 12 and 12, the resistance will be 1728, and the solidity or weight 144, or that in the last, or in 1 and 23, the resistance will be 529, and the weight 23; therefore the first, which is square, will half the strength of the last with regard to its weight.

Hence, M. Parent remarks, that the common practice of cutting the beams out of trees as square as possible, is ill husbandry; and thence he takes occasion to determine geometrically, what dimensions the base of a beam to be cut out of any tree proposed, should have, in order to its having the greatest resistance possible; or which is the same thing, a circular base being given, he determines the rectangle of the greatest resistance that can be inscribed, and finds that the sides must be nearly as 7 to 5; which agrees with observation.

Hitherto we have supposed the length of the beams to be equal; if be unequal, the bases will resist so much the less, as the beams are the longer.

To this it may be added, that a beam sustained at each end, breaking by a weight suspended from its middle, does not only break not only at the middle, but at each extreme; or if it does not actually break there, at least, immediately before the moment of the fracture, which is that of the equilibrium between the resistance and the weight, its fibres are as much streatched at the extremes, as in the middle; so that of the weight sustained by the middle, there is but one third part that acts at the middle to make the fracture; the other two only acting to induce a fracture in the two extreams.

A beam may be supposed to be either loaden only with its own weight, or with other foreign weights, applied at any distance, or only with those foreign weights. Since, according to M. Parent, the weight of a beam is not ordinarly above one seventieth part of the load given to sustain it, it is evident, that in considering several weights they must be all reduced by the common centre of gravity.

M. Parent has also calculated tables of the weights, which will be sustained by the middle in beams of various bases and lengths, fitted at each end, into walls, on a supposition, a a piece of oak of an inch square, and a foot long, retained horizontally by the two extreams, will sustain three hundred and fifteen, pounds in its middle before it breaks; which, it has been found by experiments, that it will. See *the memories of the French Academy, anno 1708*.

BED of stone, (in masonry) a course or range of stones; and the joint of the bed is the mortar between two stones, placed over each other.

BED_MOULDING/BEDDING MOULDING, a term used by workmen to signify those members in a cornice which are placed below the coronet: and now, a *bed-moulding*, with joiners, usually consists of these four members, and *ogee*, a *lift*, a large *Boultin*, and another lift under the coronet.

BIGA

BIDING JOISTS, are those joists in any floor, into which the timmers of stair-cases (or well-holes for the stairs) and chimney-ways are framed. These joists ought to be stronger than common joists.

As to the scantling and size of these, as well as other timber members, it was settled by and act of parliament before the rebuilding of London; according to which contain in length

<table>
<tr><td>feet</td><td rowspan="4">Must be in their squares</td><td>inches</td><td rowspan="4">and</td><td>inches</td></tr>
<tr><td>7</td><td>6</td><td rowspan="3">5</td></tr>
<tr><td>9</td><td>7</td></tr>
<tr><td>11, or 12</td><td>8</td></tr>
</table>

So large they were ordered to be, and not less; but probably, they might be as much bigger as they pleased.

BOARD-MEASURE, to measure a board, is nothing else but the measuring a long square. (exemple)

BOARDING OF WALLS, See *Weather Boarding*

BOULDER-WALLS, a kind of walls built of round flints or pebbles, laid in a strong mortar; used where the sea has a beach cast up , or where there are plenty of Flints.

As to manner of building these walls, a bricklayer which has been used to this kind of work, says, that in this work they always use a very strong stiff mortar; and that if they can so order it, they always work two at it at time, one at one side of the wall, and the other at the other; and one to the right hand and the other to the left hand; and that therefore it is best if one of the workmen be left handed: that they have a hod of mortar poured down on their work, and so they spread it betwixt them, each spreading in towards his own side, and then lay their boulders or flints. He adds that they had need have a good length of work before them, for they work but one course in height at a time; for if they should do more, it would be apt to swell out at the sides, and run down; and for that reason are obliged to work continually lengthways. And that if this work be done in misty weather, it is very difficult to make it stand.

As to the price of this work; it is commonly done by the square, or hundred foot, for which their usual price is twelve shillings for workmanship only.

BREST-SUMMERS, in timber buildings, are pieces in the outward parts of a building, into which the girders are framed in all the floors but the ground floor, then they call it at the cell; and garret-floor, then it is called a beam.

As to their size and square, it is the same according to the act of parliament, with that of girders; which see.

It is here to be observed, that it is not here meant, all the pieces which have girders in them, (and are not in the garret, or ground-floor) but all such as are in the exterior part of the building; for the pieces in the internal part of the building, into which the girders are framed, are called summers,

Mr. Leybourn says that the *brest-summers* in London, are measured by the foot, running measure; but it is uncertain, whether he means only for the work of timber, or both.

Com. Comer says, that *brest-summer*, in London are valued by the solid foot; if oak, 3s per foot; and if of Fir, 2s.

BREW-HOUSE, Sir *Henry Wotton* in his *Elements of Architecture*, says, that all offices which requires heat, as Brew-houses, Bake-houses, Wash-houses, Kitchens, and the like, ought to be placed in the south part of the building, if the position of the house, in respect of the High Street, or the like, will admit of it; for it would be but an odd contrivance, if a house stood on the north-side of a high-street, to place all the offices in the front of it; and it would be very ridiculous, to pass through a bake-house, brew-house, or wash-house, into rooms of entertainment in a Nobleman's or Gentleman's house.

BRICKS, are fat, reddish earth, formed into long square, four inches broad, and eight or nine long, by means of a wooden mould, and then baled or burn in a kiln, to serve for the uses of building.

Bricks are of a very antient standing, as appears from sacred history (…)

But here in England, they are for the most part made of a yellowish-coloured fat earth, somewhat reddish, vulgarly called loam.

As for those bricks made in England, they should not be of sandy earth, which will make them both heavy and brittle; nor must the loam be too fat, which will make them crack in drying; they should also be made either in the spring or autumn.

Mr. Leyburn says, that the earth for bricks ought to be digged before winter; but not made into bricks till the spring season.

When bricks have been made, they should be sheltered from the sun, if it be to hot, but yet must be exposed to the air to dry. If they be made frosty weather, the must be covered with sand, and in hot weather, with wet straw.

Of their kinds and appellations. *Bricks*, among us, are various forms, dimensions, uses, method of making, p lace where, &c. Those from their form, are *compass-bricks*, of a circular form, used in steyning of walls. 2. Concave, or Hollow bricks, on one side flat, like common brick, on the other, hollowed. They are used for conveyance of water. 3 feather edged bricks, which are, like the common statute-bricks, only thinner on one edge, than the other, and are used for penning up the brick-pannels in timber-buildings. 4 triangular bricks.

I. Those from their dimensions are, the great and small, or statute, and didoron, tetradoron and pentadoron.
II. Great bricks, are twelve inches long, six broad and three thick; the weight of one is about fifteen pounds, so that a hundred pound, and a thousand of them fifteen thousand pounds.
III. Those from custom are, statute and cogging-bricks. cogging-bricks are used for making the intended work under the copying of walls built with great bricks.
IV. Those from the method of making are made in a place prepared on purpose for them, near the building they are to be used in. Statute-bricks, or small common bricks, ought to be nine inches long, four and half broad, and two a half thick.
V. Those from the place, where, or by whom are Dutch, or Flemish, these are used in paving yards, or stables, and for soap`-boilers fats and cisterns.
VI. Those from their use, are *buttress* or *pilasters*, *coping* and *paving-bricks*. *Buttress or pilasters bricks*, which are of the same dimensions with the great bricks, only they have a notch at one end of half the breadth of the brick. Their use is to bind the work at the pilasters of fence-walls, which are built of great bricks. *Coping bricks* are formed on purpose for coping-walls; *paving bricks*, or tiles, are of several sizes in several counties and places.
VII. Those from accident, are *clinkers*, *samel* or sandal. Clinkers are such bricks, as are glazed by the head of the fire, in making. Samel or Sandal-bricks, are such as lie outmost in a kiln or clamp, and consequently are soft and useless, as not being thoroughly burnt.

(…)

(things worthy to be observed in buying and laying of bricks)

I. As to buying. The seventh number will be a sufficient direction to any workman, (who does not understand it) to chose good bricks. and in the 16th section of bricks, viz, under the head of statute-bricks, there are directions as to the number of bricks, that will make an square or rod of work; though this is impossible to be exactly certain to a very few; because, first, the workman's hand may vary in laying the mortar. Secondly, many bricks may warp in burning; and the seller will bring you some such. Thirdly, some will be broken and spoiled in the carriage. Fourthly, you will often find the tale deficient, if you be not extraordinary careful.

And besides this, when bricks are dear, and lime cheap, and you put your work out by the grear, or by the measure, and the workman is to find materials, he, except he be well looked after, will use the more mortar, and the fewer bricks, making large joints, which is a defect in any building.

II. As to laying bricks, which is a thing of no small consequence in any building, in order to the well-working and bonding of brick-work (or as it is called by some workmen, breaking of joint), conduces very much to its strength. It will not be therefore improper to add some particular directions concerning it, which have been recommended by experienced workmen.

1. Take care to procure good strong mortar. See MORTAR.
2. If your bricks are laid in winter, let them be kept and laid as dry as possible. If they are laid in summer-time, it will quit cost, to employ boys to wet them; because being wetted, they will unite much better with the mortar, than if they were laid dry, and will render the work much stronger.

   But if it shall be objected, that if the building be large, it will be a great deal of trouble to wet all the bricks, by dipping them in water; and also that it will make the workmens fingers fore in laying them.

   To prevent this inconveniences, water may be thrown on each course of bricks after they had be laid; as is said to have been done by the order of the ingenious Mr. Robert Hook, the surveyor, at the building of the physician's College in Warwick-Lane.
3. If bricks are laid in the summer-time, don't fail to cover them, to prevent their drying to fast; for if the mortar dry to hastily, it doth not cement so firmly to the bricks as when it dries leisurely.
4. If the bricks are laid in the winter-time, take care to cover them well, to defend them from rain, snow, and frost; the last of which is mortal enemy to all mortar, specifically to all such as has taken wet just before the frost seizes it.
5. Take care that bricks be not laid joint on joint on the middle of walls, but as seldom as may be; but let there be good bond made there, as well as on the outsides: for some workmen, in working a brick and half wall, lay the header on one side of the wall, perpendicular on the other side of the wall; and so all along through; which indeed, necessary follows, from the unadviced setting up for quoin at a toothing; for it is common to tooth in the stretching –course, two inches with the stretcher only; and the header on the other side to be perpendicular over the header on this side; which causes the headers to lie joint in joint in the middle of the work.

   Whereas if the header on one side of the wall, were toothed as much as the stretcher on the other side, it would be stronger toothing, and the joints of the headers on one side, would be in the middle of the headers of the course they lie upon on the other side.

All that can be pretended in excuse of this ill practice in working thus, is it: that the header will not hang two inches over the bricks underneath it.

This, indeed, is an objection: but yet the inconveniency may be avoided without much difficulty, viz, as follows; by having a piece of wood of the thickness of a course of bricks, and two inches broad, and laying it on the last toothing- course, to bear it, or a brick-bat, put upon the last toothing, will bear it, and then the bat may be taken away.

6. The same inconvenience, at an upright quoin in a brick and half wall; where it is usual to lay closer next the header, on both sides of the walls; and in so doing, this is joint in joint all the length of the wall, except by chance, a three-quarter bat happen too be laid.

   In order to avoid this inconveniency, and by that means to make the walls much firmer, lay a closer on one side; but lay a three-quarter bat on the stretching-course, and join a header next to the header, at the quoin in the heading-course.
7. Also in two brick-walls, it will be the best way in stretching-courses, in which stretching is laid on both sides the walls next the line, to lay also stretching in the middle of the wall, and closers to eachs stretching-course which lies next the line.

(What number of bricks may be laid in a day)

A bricklayer and his labourer (all their materials being ready) will lay in cay about a thousand bricks, in whole work, on a solid plain; and some dextrous bricklayers will lay twelve, and some fifteen hundred.

(Of facing timber-buildings with bricks)

This may be more properly called casing; it being covered all over the outside with bricks, so that no Timber is to be seen. The manner of performing it, is follows; viz, all betwixt the timber and the wall is a brick's length thick, (or nine-inch brick-wall) but against the timber, the wall is but four inches and a half, or a half brick thick, beside the timber.

But experienced workmen do not approve of this method; because the mortar does so much corrode and decay the timber.

An experienced bricklayer says, that in pulling down work at *Eridge-place* (which is one of the Lord *Abergavenny's* Country Seats) the timber was extreamely corroded and eaten by the mortar.

BRICK-KILN (no)

BRICKLAYERS work, (WHAT) In the city of London &c. it consists of several kinds, viz, walling, tiling, chimney-work, and paving with bricks and tiles.

But in the country, it is common for the bricklayers trade to comprehended those of the masons and plaisterer also: but I shall here consider it only as to the particular branches of walling, tiling, chimney-work, paving, &c.

(notas de como facturan y los tipos de trabajo)

BUILDING, is used to signify both the constructing and raising of an edifice; in which sens it comprehends as well the expences, as the invention and execution of designs.

In building there are three things to be considered; viz, first commodity or conveniency. Secondly, firmness. Thirdly, Delight.

To accomplish which Ends, Sir Henry Wotton considers the whole subject under two heads, viz, the seat or situation, and the work.

1. As for the seat; either that of the whole is to be considered or that of its parts.
2. As to the situation, regard is to be had to the quality, temperature, and salubrity or healthfulness of the air; that it be a good healthy air, not subject to foggy noisomeness from adjacent fens or marshes; also free from noxious mineral exhalations: nor should the place want the sweet influence of the sun-beams; nor be wholly destitute of the breezes of wind, which will fan and purge air; the want of which would render it like a stagnated pool, or standing lake of air, and would very unhealthy.
   Pliny advices not to build a country-house too near a fen or standing-water; not yet over-against the stream and course of a river, because the fogs and mists which arise from a large river, early in a morning, before the day-light, cannot chufe but very unwholesome.
   Dr. Fuller advices chiefly to chose a wholesome air: because, says he, the air is a dish one seeds on very minute; and therefore it had need be fabulous.
   Cato, advices, that a country-house have a good air, and no to lie open to tempests, seated in a good soil, and let it exceed therein, if you can; and let it stand under a Hill, and behold the south in healthy place.
   As to commodiousness, or convenience, Sir Henry Wotton advices, that the house or seat have the convenience of water, fuel, carriage &c. that the way to it be not too steep, and of an incommodious access, which will be troublesome both to the family, and the visitants. And as for the convenience of being supplied with necessaries, it should not to be seated too far from some navigable river, or arm of the sea.
   Wood and water, says Dr. Fuller, are two staple commodities.
   As for the Water; the want of it is a very great inconveniency, the detriment of many houses to which servants must bring the well upon their shoulders.
   And as too wood; where a place is bald of wood, no art can make it a periwig in haste.
   Optical precepts, or maxims. Such I mean, says Sir Henry Wotton, as concern properties of a well-chosen prospect; which may be stilled the royalty of the sight. For as there is a lordship (as it were) of the feet whereon a man walked with much pleasure about the limits of his own possessions, so there is a lordship likewise of the eye which being a ranging and imperious (I had almost said) usurping sense, cannot endure to be circumscribed within a final space, but must be satisfied both with extend and variety; yet on the other side, I find vast and indefinite prospects, which

drown all apprehensions of very remote objects condemned by good authors, as if some part of the pleasure (whereof we are speaking) did thereby perish.

Agreeableness and pleasantness of prospect is to be valued.

Dr. Fuller says, a medley view (such as land and water, at Greenwich) best entertain the sight, refreshing the weary beholder with change of objects: yet, says he, I know a more profitable prospect, where the owner can only see his own land round about him. And to this head of situation, he adds as follow:

A fair entrance with an easy ascent, gives a great grace to a building, where the hall id a preferment out of the court, the parlour out of the hall; not (as in some old buildings) where the doors are so low, that Pigmies may stoop; and the rooms so high, that the giants may stand a-tiptoe.

A political precept: that great architect Sir Henry Wotton says, one private caution, which I know not well how to rank among the rest of the precepts, unless I call it political, is this, viz, by no means to build too near a great neighbor; which were to be as unfortunately seated on the earth, as mercury is in the heavens; for the most part ever in combustion or obscurity, under brighter beams than his own.

Contrivance; the situation being fixed on, the next thing in order is contrivance; which being a thing of great moment in this affair of building, before it is extred upon, it will be necessary to give some few general precautions.

First, let no person, who intends to build a structure that shall be either useful or ornamental, begin without the advice or assistance of a surveyor, or master-workman, who understands the theory of building, and is capable of drawing a Draught or model according to the rules of art.

In a Draught (which may serve indifferently well in small buildings) there ought to be the ichonography of each floor, and also the orthography of each face of the building, viz, the front, the flanks, and the rear.

But if the artisan be well versed in prospective, then more than one face may be represented in one diagram stenographically.

In contriving these designs, whether by draught or model, the quality of the person, for whom the edifice is to be erected is to be considered, in regard to the ichonographical plots specially.

For Noblemen have occasion for more rooms of office, than other persons of a meaner degree. All which ought to be designed according to their most convenient occasions; with their lengths and breadths according to proportion. Likewise the ichonography of all chimneys, both as to the length and breadth of the hearths, jaumbs, bed-places, and stairs; and the width of all doors, and windows, in each contignation or floor.

And if it be required, in timber buildings, the length, breadth, and thickness of ground-plates or cells, brest-summers, (and in all, whether timber, brick, or stone buildings) the dimensions of summers, girders, trimmers, or joists.

Also in the upper floor, the scantling of dragon-beams, raisons, or raising pieces, or wall-plats, &c.

And also the thickness of partitions, walls, &c in brick or stone fabric.

All which, and all other parts (whether in the ichonography, or orthography) of buildings, ought to be represented; as also ovens, stoves, broilers, furnaces, coolers, fats for brewling, &c. with their just measures to the best advantage, as to conveniency, health, strength and ornament.

All which dimensions ought to be set in the proper places to which they belong in the diagrams in characters; because if the schemes be not very large, it will be very difficult to take the dimensions of the smaller parts nicely, if not of the great ones themselves; for it will scarce be practicable, to take either of them to an inch, nor perhaps, to two, three, or four inches, according to the diagram may be amplitude.

In the Orthographycal schemes, there must be true delineations and dimensions of each face, and all its concomitants, as doors, windows, balconies, turrets, or cupola's, chimneys-shafts, fascias, rustic quoins, architraves, friezes, pediments, pilasters, columns, shells over doors, lanthorns, and all other ornaments.

If it be a timber building, all the members in that face ought to have their several sizes in characters, and true positions by scale.

As for example: the ground-plates or cells, introduces, brest-summers, beams, principal posts or braces, quarters, prick-posts, or window-posts, jaumbs, or door-posts, or puncheons, king-pieces, or joggle-pieces, struts, collar-beams, door-heads, principal rafters, &c.

The ichonography, orthography, and stenography of the stair-case may also be delineated, and all its parts, as handrails, risers, nofeing of the cover or top, string-board and mouldings on it, as cartouzes, balusters, pendents, &c. with their true positions, forms, and dimensions; all which, if they be carefully done by a ingenious surveyor, a workman will hardly be like to commit any blunder.

Sir Henry Wotton advises as to his matter, as follows:

First, let no man who intends to build, settle his fancy on a draught on paper or velum of the work or design, how exactly soever delineated or set off in perspective, without a model or type of the whole structure, and of every parcel and partition, aither of pasteboard, or wainscot.

Secondly, le the model be as plain as may be, without colours, or other beautifying least the pleasure of the eyes preoccupate the judgement.

Thirdly and lastly, the bigger this type is, so much the better it is: not that I would persuade any man to such enormity as that model made by Antonio labaco, of St. Peter's church in Rome, containing twenty-two feet in length, sixteen in breadth, and thirteen in height, which cost four thousand one hundred and eighty four crowns, the price of a reasonable chapel; yet in fabric of forty or fifty thousand pounds, there may very well be thirty pounds expended in procuring an exact model; for a little penury in the premises, may easily create some absurdity or error of a far greater charge in the prosecution, or at the conclusion of the work.

What sir Henry Wotton here advices, id very requisite, especially for large and sumptuous buildings, either public, or private; but it is not worth the while to be at charge of a model for every little dwelling-house which men built for their own conveniency.

I shall here add as to the conveniency, what is recommended by sir Henry Wotton, that the Chief rooms, studies, libraries, &c. should lie towards the east; that those offices which require heat, as kitchens, a brew-houses, bake-houses, and distillatories,

to the south; those which require a cool fresh air, as cellars, pantries, granaries, to the north; as also Galleries for paintings, museums &c. which require a steady light.
He tell us, the antient Greeks and romans generally situated the fronts of their houses towards the south; but the modern Italians vary much from this rule.
And, indeed, as to this mater, regard must still be had to the country, each being forced to provide against its inconveniencies: so that good parlour in Egipt, might make a good cellar in England.
The situation being fixed on, and the design and contrivance designed, the next thing to be considered, is the work itself; under which the principal parts are first to be considered; next the accessories and ornaments.
Under the principals are, first, the materials; next, the form and disposition.
As for the material, they are either stone, as marble, freestone, brick for the walls, mortar, &c. or of wood, as fir, Cyprus, cedar for posts and pillars of upright use; oak for summer, beams, and crop-work, or for joining and connection.
As to the form or disposition of a building, is either simple, or mixed.
The simple forms are either circular or angular; and the circular ones either compleat, as just spheres; or deficient, as oval ones.
(…)
As for the angular forms, sir henry Wottom observes, that building neither loves many nor few angles. The triangle is condemned above all others as wanting both capaciousness and firmness; as also not being capable to be resolved into any other regular figure in the inward partitions besides its own.
As for forms of building of five, six, seven, or more angles, they are much fitter for fortifications, than civil buildings.
There is indeed, a celebrated building of Vignola at Caparole, in the figure of a pentagon; but the architect had very great difficulties to grapple with as to the disposition of the lights and the saving the vacuities.
So that such buildings seem rather for curiosity than conveniency. And for this reason, rectangles are generally chosen, as being a medium between the two extreams.
(…)
As for the second division, or parts of a building, they are comprised by Baptista Alberti, under five heads, viz, the foundations, the walls, the apertures, the compartitions, and the covering.

1. As for the foundations, Vitruvius orderers the ground to be drug up to examine its firmness, that appearing solidity is not to be trusted, unless the whole mold cut through be found and solid; this is true , the does not say to what depth it ought to be dug. But Palladio determines it to a sixth part of the height of the building.
   And this is called by Sir Henry Wotton, the natural foundation, where on the subtraction or ground-work is to stand to support the walls; which he calls, the artificial foundation.
   This then is to level; the lowest ledge or row of stone, only close laid with mortar; and by how much the broader it is, by so much will it be the better; but at least, it should be twice the breadth of the wall.
   Some advise, that the materials below, be laid just as they come out of the quarry; supposing that they have the greatest strength in the natural posture.

De Lorme enforces this by observing, that the breaking or yielding of a stone in this part, but the breadth of the back of a knife, will make a cleft of more than half a foot in the fabric above.

As to pallification, or pilling the ground-plat, which Vitruvius does much commend, I shall say nothing here, because that is require only in moist marshy ground; which, for building, should never be chosen; nor perhaps, are there any instances of pallification practiced, but where they were obliged to it by necessity.

As for walls, they are either entire and continued, or intermitted; and the intermissions are either columns or pilasters.

Entire or continued walls are, by some variously distinguished, according to the quality of the materials, as they are either stone, brick &c. other only consider the position of the materials, as when brick pr square stones are laid in their lengths, which sides or heads together; or their points conjoined together like network. See MASONRY.

The great laws of walling are, 1st that the walls stand perpendicularly to the ground of all stability. 2ndly, that the massiest and heaviest materials be the lowest, as fitter to bear than to be born. 3rdly, that the work diminish in thickness, as it rises, both for the easy weight and expence. 4thly, that certain courses or lodges, of more strength than the rest, be interlaid like bones, to sustain the fabric for the total ruin, if some of the under parts chance to decay. 5thty and lastly, that th angles be firmly bound. They being the nerves of the whole fabric: which are usually fortified by the Italians on each side the corners, even in Brick building, which squared stones; which add both beauty and strength.

The intermissions of walls, as has been before mentioned, are either columns, or pilasters; of which these are five orders, viz, the Tuscan, Doric, Ionic, Corinthian and composite. All which are distinctly treated under their respective articles.

Columns and pilasters are frequently formed archwife, both for beauty and grandeur.

As for apertures, they are either doors, windows, stair-cases, chimneys, or conduits for the suillage &c. all which you may see consider under their proper heads.

And as to the last, art should imitate nature in these ignoble conveyances, and conceal them from the sight, where a running water is wanting, into the most remote, lowest, and thickest part of the foundation, with secret vents passing up through the walls like a tunnel to the open air. Which is recommended by all the Italians, for the discharge of noisome vapours.

As to compartitions or distribution of the ground-plot into apartments, &c. Sir Henry Wotton lays down these preliminaries. That the architect do never fix his fancy on a paper-draught, be it set off never to exactly in perspective, much less on a mere plan, without a model or type of the whole structure, and every part of it, either a pasteboard or wood.

In the compartitions itself there are two general views, viz, the gracefulness and the usefulness of the distribution for the rooms of office and entertainment, as far as the capacity of it, and nature of the country will allow.

The gracefulness will consist in a double analogy or correspondency. First, between the parts and the whole; by which a large edifice should have large partitions, entrances, doors, columnus, and, in short, all its members large, proportional to building.
The second analogy is between the parts themselves, not only considering their lengths and breadths, as we speak of doors and windows. But here, says sir Henry, enters a third respect of height, a point; I confess, faith he, scarce reducible to any general precept.
The antients determines their rooms which where oblong, by double their breadth, and their height by half their breadth and length added together.
When they would have the room a perfect square, they made their height, half as much more as their breadth: But the moderns dispense with these rules sometimes squareing the breadth, and making the diagonal of it measure of the height, and sometimes more. This deviation from the rules of the antients is ascribed to M. Angelo.
(…)
But what is here mentioned is scarcely now practiced, unless it be a noblemen's house; who will have a hall, &c. higher pitched than the rest of the rooms in the building; and sometimes a dining-room; or else, for the most part, all the rooms of a floor are of an equal height; and this seems to be the most commodious method; because in this case, there is no loss of room, as there must necessarily be, where one room is open almost to the top of the house, as may be observed in some old buildings; and then the floor of the second story will lie level and even, and not in the old method of steps out of one room into another.
As to the height of the rooms, that is various amongst us, according to the persons for whim they are built, and the customs of the place. In the country, common timber buildings are usually about seven feet one third, or eight foot at the most betwixt the floors.
The second sort of houses in the country is about nine feet between the floors; which for the most part is the pitch of the rooms at *Tunbridge-Wells*.
The third sort in the country, (viz. in Kent and Sussex) are gentlemen seats; which for the most part are ten or twelve feet high, such as are new buildings. But in old stone buildings, it is common to be much higher, viz, fourteen or sixteen feet.
By act of parliament, for building of London, there where reckoned four rates of houses, viz.

the	1 2 3 4	rate	2 3 4 5	Foot at discretion &c.
the	1 2 3 4	Rates, cellars in height betwixt floor and ceiling	6 6 6	And a half foot at discretion &c.
the	1 2 3	Rate, first story.	9 10 10	Foot at discretion &c.

	4			
the	1 2 3 4	Rate, second story	9 10 10	Foot and a half at discretion &c.
the	1 2 3 4	Rate, Third story	9 9 9	Foot and a half at discretion &c.
the	3 4	Rate, fourth story	8 ½	Foot and a half at discretion &c.

The second consideration, as to the compartments, is the usefulness; which consists in having a sufficient number of rooms of all kinds, with their proper communications, and without distraction.

Here the chief difficulty will be in the lights and stair-cases.

The antients were pretty easy as to both these, having generally two cloistered open courts; one for the women's side, and the other for the men. Thus then the reception of light was easy into the body of the building, or by graceful refuges or breaks, by terrassing a story in danger of darkness, and by abajours or sky-lights.

As for casting the stair-cases, it may be observed, that the italiasn frequently distributed the kitchen, bake-house, buttery, &c. under-ground, next above the foundation; and sometimes level with the foot of the cellar, raising the first accent into the house fifteen feet, or more; which besides the removing of annoyances out of sight, and gaining so much room above, adds a majesty to the whole fabric, by elevating the front.

Sir H. Wotton observes, that in England the natural hospitality will not allow the buttery to be so far out of sight; besides, that more luminous kitchen, and a shorter distance, are required between that and the dining-room that compartition will admit.

In the distribution of Lodging-rooms, it is a popular and antient fault, especially among the Italians, to cast the partitions so, that when the doors are all open, a man may see through the whole house; which is founded on an ambition of shewing a stranger all the furniture at once; which is an intolerable hardship upon all the chambers, except the innermost, into which a person cannot come, but thought all the rest, unless the walls be extreme thick for secret passages: nor will this suffice, unless there be three doors to each chamber, a thing inexcusable, except in hot countries.

Besides, it is weakening to the building; and the necessity which it occasions, of making as many common great rooms as there are stories, which devour a great deal of room, which might be employed in places of retreat; and also must likewise be dark, as running through the middle of the house.

In the Compartition, the architect will have occasion for frequent shifts, through which his own sagacity, more than any rules, must conduct him.

Thus he will frequently put to struggle with scarcity of ground; sometimes to damn one room for the benefit of the rest, as to hide a buttery under a stair-case &c. At

other times, to make those the most beautiful which are most in sight, and to leave the rest, like a painter, in the shadow, &c.
As for the covering of a building, this is the last in execution, but the first in intention: for who would build but to shelter?
In the covering of roof, there are two extremes to be avoided; which are the making it too heavy or too light. The first will press too much on the under work; and the latter has a more secret inconvenience; for the covering is not only a bare defence, but a bond or ligature to the whole building.
Indeed the two extremes, a house top-heavy is the worst.
Care ought to be taken, that the pressure be equal on each side: and *Palladio* wishes that the whole burthen may not be laid upon the outward walls; but that the inner may likewise bear their share.
The Italians are very curious in the proportion and gracefulness of the pent or stopeness; and divide the whole breadth into nine parts, whereof two serve for the height, or highest top or ridge from the lowest; but in this point, regard must be had to the quality of the region: for, as *Palladio* intimates, those climates which fear the falling of much snow, ought to have more inclining pentices than others.
As to the accessories or ornaments of a building they are fetched from sculpture and painting.
(…)
To make a judgment of a building, Sir Henry Wotton lays down the following rules:

1. That before a person fixes upon any judgment,, he be informed of its age; that if the apparent decays be found to exceed the proportion of time, he may thence conclude, without farther inquisition, that either the situation is naught, or that the materials or workmanship are too flight.
2. If the building be found to bear its years well, then let the viewer run back from the ornaments and things that strike the eye, the more essential members, till he is able to form a conclusion, that the work is commodious, firm and delightful; which are the three qualities of a good building, which have been laid down at first, and agreed on by all authors.

This he accounts the most scientifical way of judging.

Vassari proposes a third, viz, by passing a running examination over the whole building, according to the structure of a well-made man; as whether the wall stand upright upon a clean footing and foundation; whether the building be of a beautiful stature; whether it appear well burnished as to the breadth; whether the principal enterance be in the middle line of the front or face, like our mouths; whether the windows be set in equal number and distance on both sides like our eyes; whether the offices are usefully distributed, &c, like our veins.

Vitruvius recommends a third method of judging, summing up the whole art under these six heads.

1. Ordination, or the settling the model or scale of the work.

2. Disposition, i. e. the just expression of the first design of the building (which two Sir Henry Wotton id of opinion the might have spared) as belonging rather to the artificer than the censurer.
3. Eurithmy, i.e. the agreeable harmony between the length, breadth, and height of the several rooms &c.
4. Symmetry, os the agreement between the parts and the whole.
5. Décor, which is the true relation between the building and the inhabitants: from whence Palladio concludes, the principal entrance ought never to be limited by any rule; but the dignity and generosity of the master.
6. Distribution, i. e. the useful casting of the several rooms for offices, be corresponded enough, although they be various, provided persons do not run out intoe extravagant fancies, when they are contriving how to divide and cast the work.

Enormous heights of six or seven stories are to be avoided, as well as irregular forms, and so on the contrary, should low distended fronts, they being unseemly. And again, when the face of a building is narrow, and the flanks deep.

As to the modern way of building in England compared to the antient.

In comparing the modern English way of building with the old one cannot but wonder at the genious of those times. Nothing is, or can be more pleasant than height; nor anything more conducive to health, than a free air; and yet in old times, they were wont to dwell in houses, most of them with a blind stair-case, low ceilings, and dark windows; the rooms built at random, without any thing of contrivance, and often with steps from one to another; as if the people of former ages were averse to light and good air; or were pleased with playing at hide-and-seek.

Whereas on the contrary, the genius of our times is altogether for light stair-cases, fine sash-windows, and lofty ceilings.

And such has been of late the industry of our builders, in relation to compactness and uniformity, than a house, after the new way, will afford as many more conveniences, upon the same quantity of ground.

The contrivance of closets, in most rooms and painted wainscot, now in so common use, are likewise two great improvements, the one for conveniency, and the other for the cleanliness and health: and indeed, for so damp a country as England is, nothing could be better contrived than Wainscot, to ward off the moist effluvia of damp walls.

In a word, for a handsome accommodations, and neatness of lodgings, London has undoubtedly gained the pre-eminence of all places in Europe.

The greatest objection against the houses in the city of London (being for the most part of brick) is their slightness, occasioned by the landlords.

So that few houses, at the common rate of buildings, last longer than the ground-lease; and that is commonly about fifty or sixty years. And if there happens to be a long continuance of excessive heat in summer, or of cold in winter, (thought, indeed, those extremes happen but seldom with us) the walls being thin, become at last so penetrated with the air, that it must needs make the inhabitants uneasy.

But then this manner of buildings is very much to the advantage of builders, ad such trades as have relation to them; for they scarce ever want work in so large a city, where houses are here and there always either repairing or rebuilding.

Again, the plaistered ceilings, which are so much more used in England, than in other countries, do by their whiteness, make the rooms much lighter, and are also excellent against the ravages of the fires; they also stop the passage of dust, and lessen noise over head, and render the air sometimes cooler in summer-time, and warmer in winter, because they keep out cold air better than boarded floors alone can do.

Dr. Fuller says, he who alters and old house is tyed as a translator to the original, and is confined to the fancy of the first builder. Such a man would be unwise to pull down a good old buildings, perhaps, to erect a worse new one. But those who erect a new house from the ground, are worthy of blame, if they make it not handsome and useful, when method and confusion are both on a price to them.

I shall here propose a cheap contrivance in building, which some approve of, viz.

Raise the walls with bricks, where bricks may be had, making firm and strong quoins, at the corners of the house, of sufficient strength to support the floors and roof, or the main beams of it; he walls may be built square, and the walls between them, built of the same materials, and worked up together with the qnoins, leaving one half of the extraordinary breadth of the quoins without, and the other, within the wall, whereby there will be much charge saved both in materials and workmanship, and yet the building be firm and strong.

Some general rules to observed in building.

These which follow, were stablished by Act of Parliament, before the rebuilding of the city of London after the fire.

First, in every foundation within the ground, you must add one brick in thickness to the thickness of the wall next the foundation to be set off, in three courses equally on both sides.

Secondly, no timber must be laid within twelve inches of the foreside of the chimney jaumbs.

Thirdly, that all joists on the back of the chimney, be laid with a trimmer at six inches distance from the back.

Fourthly, that no timber be laid within the funnel of any chimney, upon penalty of ten shillings to the workman, and ten shillings every week it continues unreformed.

Fifthly, that no joists or rafters be laid a greater distances from one to another, than twelve inches; and no quarters at greater distance than fourteen inches.

Sixthly, that no joists bear at longer length that nine foot.

Seventhly, that all roofs, window-frames, and cellar-floors, be made of oak.

Eighthly, that the tile-pins be made of oak.

Ninthly, that no summers or girders in brick buildings, do lie over the heads of doors or windows.

Tenthly, that no summers or girders do lie less than ten inches into the brickwork; nor no joists less than eight inches, and that they be laid in Lome.

Also come advise that all tarsels for mantle-trees to lie on, or lintels over windows, or templers under girders, or any other timber, which must lie in the wall, be laid in Lome, which is a great preserver of timber; whereas mortar eats and corrodes it.

Some workmen pitch the ends of timber which lie in the walls to prevent them for the mortar.

As to the surveying of building, I shall touch briefly on it. As to the method by which the manner and form taking dimensions, will appear, that is, as follows: (measurements) (…)

BUTTON

BUTMEN(ts) are those supporters or props, on or against which the feet of arches rest. Also little places taken out of the yard or ground-plot of a house, for a buttery, scullery &c.

BUTTERY, in the houses of noblemen and gentlemen, is the room belonging to the butler; where he deposits the utensils belonging to his office; as table-linen, napkins, pots, tankards, glasses, cruets, salvers, spoons, knives, forks, pepper, mustard, &c.

As to its position *Mr. Henry Wotton* says, it ought to be placed on the north side of the building, which is designed for the offices.

We, in England, generally place it near the cellar, viz. the room commonly just on the top of the cellar-stairs-

BUTTRESS, a kind of butment built archwife, or a mass of stone, or brick, serving to prop or support the sides of a building, wall &c. on the outside, where is either very high, or has any considerable load to sustain on the other side, as a bank of earth &c.

They are also used against the angles of steeples, and other buildings of stone, &c. on their outside and along the walls of such buildings, as have great and heavy roofs, which would be subject to the thrust the walls out, if they were not thick, if no buttresses were placed against them.

Buttresses are also placed for a support and butment, against the feet of some arches, that are turned across great halls in old palaces, abbeys, &c, and generally at the head of stone buildings, when there are large crocket windows; and they are also placed for butments to the arches of these buildings.

CABINET, the most retired place in the finest apartment of a building set apart for writing, studying, or preserving anything that is precious. A complete apartment consists of a hall, antechamber, chamber, and cabinet, with a gallery on one side.

CALIDUCTS, a kind of pipes and canals, disposed along the walls of houses and apartments, used by the ancients for conveying heat to several remote parts of the house, from one common furnace.

CALX, (no)

CAMBER-BEAMS a piece of timber in a edifice, cut arching, or archwise, or with an obtuse angle in the middle, commonly used in platforms, as church leads and on other occasions, where long and strong beams are required. A chamber-beam being much stronger than another of the same size; and being laid with the hollow side downwards, (as they generally are) they represent a kind of arch.

CAMES, the small slender rods of cast leads, of which the glaziers make their turned lead. For their Lead being cast into slender rods, of twelve or fourteen inches in length, are called cames; and sometimes they each of those rods a came, which when it has been afterwards drawn through their vice, makes their turned lead.

CANAL OF LARMIER

CANTHERUS

CANTONED, in architecture is when the corner of a building is adorned with a pilaster, and angular column, rustic quoins, or any thing that projects beyond the naked of a wall.

CARCASE, is the shell or ribs of a house, containing the partitions, floors and rafters made by the carpenter; or it is the timber work (or, as it were, the skeleton) of a house, before it is lathed and plastered. It is otherwise called the framing.

The price of framing. Some workmen say, that the price of framing the carcase of a house, (in the country) is about eight shillings per square, if the workman pay for the sawing of the timber; and if he does not, about four shillings and sixpence per square.

CARPENTERS work, in a building, includes the framing, flooring, roofing; the foundation, carcase, doors, windows, &c.

(measuring and prices)

CARPENTRY, is the art of cutting, framing, and joining large pieces of wood for the uses of building; it is one of the arts which is subservient to architecture, and is divided into a branches, viz, house-carpentry and ship-carpentry. The first is employed in raising, roofing, flooring, &c. of houses, &c. And the second, in the construction or building of vessels for the sea, as ships, barges, &c.

The rules and practices in carpentry, are much the same with those joinery, as to sawing, plaining, mortifing, tenanting, moulding, seribing, paring, and so also are the tools or instruments used by them, and likewise the stuff or materials. All the difference between the two arts consists in this, that carpentry is used in the larger, stronger and coarser work; and joinery in the smaller and more curious.

Fr. Pyrard says, that the art of Carpentry is in its greatest perfection in the Maldives Islands; he observes that their works there are so artfully managed, that they will hold tight and firm without either Nails or Pins; and that they are so ingeniously and curiously put together, than no person can take them to pieces, but one who is acquainted with the mystery.

(prices)

CAVASION, in architecture, a term used to signify the under-digging or hollowing of the earth for the foundation of a building. This, Palladio says, ought to be the sixth part of the height of the whole building.

CEILING, the upper part or roof of a lower room, or a lay or covering of plaister over laths nailed on the bottom of the joists, which bear the floor of the upper room, or on joists put up for that purpose, and called Ceiling-joists, if it be in a Garret.

These plaisteres ceilings are much used in England, and more than in any other country, nor are they without the advantages, they making the rooms lightsome, are excellent in case of fire, stop the passage of the dust, and lessen the noise over head, and in the summer-time, make the air of the rooms cooler.

Of measuring Ceilings; this sort of work is usually done by yard (containing nine superficial feet) and in taking the dimensions, if the room be wainscotted, they consider how far the cornice bears into the room, by putting a stick perpendicular to the ceiling, close to the edge of the uppermost part of the cornice, and measuring the distance from the perpendicular stock to the wainscot; twice which distance is deducted from the length and breadth of the room taken upon the floor, and the remainder gives the true length and breadth of the ceiling; which if it be taken in feet, as it most usually is, the one being multiplied into the other, and the product divided by 9 gives the content in yards square.

As to the price (…)

(…)

CELLARS, are the lowest rooms in a house; the ceilings of which lie level with the surface of the ground on which the house stands, or at most, but very little higher.

As to their situation: Sir Henry Wotton says, they ought, unless the whole house be cellared, to be situated on the North side of the house, as standing in need of cool and fresh air.

Of digging them; they are usually dug by the solid yard, which contains twenty-seven solid feet; and therefore the length, breadth, and depth being all multiplied together, and the product divided by 27, the quotient will give the content in solid yards.

CEMENT/CIEMENT/CIMENT, in the general of the word, signifies any composition of glutinous or tenacious nature, proper for binding, uniting, and keeping things cohesion.

Cement, in architecture, is a strong sort of mortar, used to bind or fix bricks or stones together for some kind of mouldings; or in cementing a block of bricks (as they call it) for the carving of capitals, scrolls, or the like.

It is of two sorts; one called hot cement, and the other cold cement, because the hot cement is made and used with Fire; and the cold cement is made and used without fire.

To make the hot cement, take a half pound of bees-wax, and ounce of the fine brick-dust, an ounce of chalk-dust or powdered chalk; fist both the brick-dust and chalk through a fine hair-sieve (the brick and chalk may be beat in a mortar, before it is fisted). Let all these be boiled together in a pipkin, or other earthen vessel for about a quarter an hour, keeping it continually stirring with a piece of iron or lath, then take it off, and let it stand four or five minutes and it is fit for use.

The bricks which are to be cemented with this kind of cement, must be hot by the fire, before the cement is spread on them; and after that, be rubbed to and fro one upon another , after the same manner that joiners do, when they glue two boards together.

The cold cement is less used; and is accounted a secret known but to few bricklayers.

It is made after the following manner:

Take a pound of old Cheshire Cheese, pare of the rind, and throw it by, then cut or grate the cheese very small, put it into a pot with a quart of cows milk; let it stand all night, and in the morning, take the whites of twenty-four or thirty eggs, and a pound of the best unflacked or quick lime, and beat it in a Mortar to a very fine powder, fist it in a fine hair-sieve, put the cheese and milk to it in a pan, or bowl, and stir them well together with a trowel or such like thing, breaking the knobs of the cheese, it there be any, then add the whites of eggs, and temper all well together, and it will be fit for use.

This cement will be of a white colour; but if you will have it of the colour of brick, put into it, either some almegram, but not too much, but just enough to given a colour.

CHALK, a white substance usually accounted as a stone; though Dr. Slare thinks there is not sufficient reason for it; since it having been examined by the hydrostatical balance, it is found to want much of the weight and consistence of a real stone.

Chalk is of two sorts, the hard dry strong stone, used in making lime; the other is a soft unctuous chalk, used for manuring lands; easily dissolving with rain and frost.

CHAMBER, in a house, or building, is any room situate between the lowermost (excepting cellars) and the uppermost rooms. So that there are in some houses two, in others three or more stories of chambers.

Sir Henry Wotton directs, that the principal chambers fro delight be situated towards the east.

As to the proportions: the length of a well proportioned lodging should be the breadth and half of the same, or some amall matter less; but should never exceed that length. As for the height, three fourths of the breadth will be a fit height.

CHIMNEY, that part of a room, chamber, or apartment, wherein the fire is made.

Chimneys consists of these following parts: the jambs or sides coming out perpendicularly, sometimes circularly, &c. from the back, the mantletree, which rests on the jambs; the tube or funnel which conveys away the smoke; the chimney-piece or molding, which is on the foreside of the jambs over the mantletree, and the hearth of the fire-place.

Palladio lays dawn the following proportions for the breadths and depths of chimneys on the inside and for that height to the mantletree.

Chimneys in	**breadth**	**height**	**depth**
Halls,	6, 7, or 8 feet	4 ½ , or 5 feet	2 ½ or 3 feet
Chambers,	5 ½ , 6, or 7 feet	4, or 4 ½ feet	2, or 2 ½ feet
Studies and wardrobes	4, 4 ½ , or 5 feet	4, or 4 ½ feet	2, or 2 ½ feet

Wolfius orders the breath of the aperture at bottom to be to the height as three to two, to the depth as four or two.

In small apartments the breadth is three feet, in bed-chambers four, in larger apartments five, in small banqueting-rooms five and half, in large six.

But the breadth must never exceed two and half, less there being too much room for air and wind, the smoke be driven into the room: nor must the height be too little, less the smoke miss its way, and be checked at first setting out.

The same author advices to have an aperture, through which the internal air may, on accasion, be let into the flame to drive up the smoke, which the internal air may, on occasion, be let into the flame to drive up the smoke, which the internal air would otherwise be unable to do.

Some makes the funnel twisted, to prevent the smoke's descending too easily; but the better expedient is to make the funnel narrower at bottom than at top, the fire impelling it up more easy when contracted at the bottom; and in mounting it finds more space to disengage itself, and therefore will have less occasion to return into the room.

Mr. felibien orders the mouth of the tube, or that part joined to the chimney-back, to be a little narrower than the rest; that the smoak coming to be repelled downwards, meeting with this obstacle, may be prevented from getting into the room.

To prevent smoaking chimneys, Mr. Lucar advices to leave two holes, or make two pipes in the chimneys one over the other on each side, the one flopping upwards, and the other downwards,; through these holes or pipes, says he, the smoke will easily pass out of any funnel which way so ever the wind blows.

Philipe d'Orme advices to provide a hollow brass ball, of a reasonably capacity, with a small hole in one side for the putting in water, ot be hung up in the chimney, at a height a little above the greatest flame, (with the hole upwards) by an iron wire that shall traverse the chimney a little above the mantletree; where, as the water grows hot, it will rarely and drive through the aperture or hole in a vapory steam, which will drive up the smoke that would otherwise linger the funnel.

Some think it would be better if this brass ball were made with a short nose to screw off when it is to be filled with water; and then the hole at the end of this nose need not be bigger, than that at the small end of a tobacco-pipe.

It also may be proper to have two of these balls, one of which may supply the place of the other when it is exhausted; or, upon occasion, to blow the fire in the mean time.

Others place a kind of moveable vane or weather-cock on the top of the chimney; so that what way so ever the wind comes, the aperture of the chimney will be screened, and the smoke have free egress.

Indeed the best prevention of smoking chimney seems to lie in the proper placing of the doors of a room, and the apt falling back of the back, and due gathering of the wings and breast of the chimney.

Rules about timbers near chimneys, it is a rule in building that no timber be laid within twelve inches of the foreside of the chimney jambs; that all the joists on the back of any chimney be laid with a trimmer, at six inches distance from the back; that no timber be laid within the funnel of any chimney

CHIMNEY-HOOKS, are hooks of steel and brass, put into the jambs of chimneys, into each jamb one, for the handle of the fire tongs and fire pan to rest in.

CHIMNEY-JAMBS, are the sides of a chimney, commonly standing out perpendicularly (but sometimes circularly) from the back, en the extremities of which the mantletree rests. See CORNER-STONE.

Measurement of chimneys. (…)

In the year 1713 was published a French book, entitled, *la Mechanique du Feu*; or the art of augmenting the effects, and diminishing the expence of fire, by Mr Gauger, which was since published in English by Dr. Defaguliers; in which the author examines what dispositions of chimneys are more proper to augment the heat; and also proves geometrically, that the dispositions of parallel jaumbs, with the back inclined as in the common chimneys, is less fitted for reflecting heat into the room, than parabolical jaumbs, with the bottom of the tablette horizontal.

He also gives several constructions of his new chimneys, and the manner of executing or making them.

(…)

Mr. Gauger has given us a new treatise of chimneys, and has shew a way how to build them for the most convenientcy. He has shewn you how you may readily light a fire, if you have it always blaze , what wood you should burn, how to warm you on all sides, though never so cold, and yet without scorching, how always to breath fresh air, and of what degrees of height you please; how to keep the room ever free from smoking, and without any damp; and how to put out a fire that has catched the funnel of a chimney in a moment.

All these conveniencies depend upon the disposition of the hearth, jaumbs, and the funnel upon an iron or copperplate, applied in such manner, that it leaves a void space behind, through which the external air that should go into the room passes, and warms, upon a trap which serves instead of a pair bellows, upon a bascule or swipe, which is fitted to the funnel of chimneys; and the particular way of forming the upper end of the funnel of some chimneys.

A model of a hearth and jaumbs for the increase of height.

Suppose the space between the extremities of the jaumbs, taken on the side of a room be 4 feet, and depth of the chimney twenty inches, which is the common size of chimneys; and if there are those which are larger or smaller, they increase or diminish the lines by which they would determine.

Take a board, suppose AB, b a, four foot long and twenty inches broad, whose sides must be drawn by a rule one upon another, or a square draught made in the middle of M of the side B b, mark the length MC eleven inches, and from C, mark upon the same side, the length CG, which must be four or five inches long.

From the point H draw Hp, by a rule upon the line GHA: from the point G draw also Cp, by your rule upon the line BM, upon the point P, where these two lines draw by the rule, meet as in a centre; and from the distance PH, or PC, describe the arch HC: do the same thing on the other side M h, in order to describe the line c h a.

Then, within three inches of this rectangular figure, trace another as at Z, 3 inches long, and two and half broad. These two rectangular figures ought to answer to the middle M of Cc, cut off the draught upon the board marked A H, Cm, c h a; and so you will have your Model for the chimneys.

The great rectangle X will serve as a Model for the ash-pan, which must be dug in the hearth, of a convenient depth, if you have a mind to have one.

The small rectangular figure z serves to be a model for a pair of bellows of a new invention.

The hearth is to be opened here; and this opening is to yield a passage to the wind that comes from the street, or some other convenient place, by the means of a funnel or pipe concealed in the floor of the room.

This hole or opening is to be furnished with an iron, or copper frame; to which is fastened a small trap-door, that shuts close, and lies open towards the fire; the sides of the frame and trap are made slope and bevel-wise; on the side opposite to the turning-joint or hinge, with which the trap-door is fastened to the frame, is placed a small button, that you may lift this trap-door with the tongs; and you may put on a button: there will be below on both sides the trap, a small part of a circle, whose centre must touch the hinge, that the wind may not get out another way than before, and towards the fire, when the trap-door is lifted up; and to the end it may be kept open to such a height as you think proper, and yield more or less wind; two small springs must be fastened under the frame, each of which must rest upon some parts of the circle, and press them so, that the trap-door may be kept up.

Let the bottom of the tablet or little board placed parallel to the horizon, according to its breadth, or level that way; for it may be arched; and it must not be above ten or twelve inches distant from the bottom of the chimneys, to the end that the funnel of the chimney may have no more breadth in that place.

If the funnel is loose, you must have languets or tenons on the sides, in some parts of the circles, from the top of the jaumb to the floor.

In building or forming the bottom of the chimney, so that the air may come into the room hot, you must make use of a single copper or iron plate or back made of several sheets about your feet long, and three and a half high; furnished with several iron bands, which must be five feet broad, and not so high by ten inches, as the great; apply them to it in such a manner, that the first band may reach from the top to within ten inches of the bottom, that the second may have the same distance from the top as the first has from the bottom; that the third be placed in the same manner as they first, are representated in the first figure.

It would be convenient, if you can, to hollow the wall as much as is necessary, that the back may not be too forward; but be that as it will, there must be made, as it were, two gutters and inch deep in the wall, which may answer the tenons that may enter in, which are to be filled with very fresh mortar, and a space must be left between the wall and the back, four inches deep.

It would, perhaps, be more convenient to make a caisse or box of iron, furnished with tenons of the dimensions aforesaid, and to fasten it in the bottom of the chimney; you may also order as many little cells as you please, but there must not be sewer than ten or twelve inches distance between the tenons; and matters must be so contrived, that the second little cell be bigger than the first, and the third than the second and so the rest.

This box should have but two openings; one at the bottom, at D, and the other on the opposite side above, at R.

In framing the chimney, you must make a conduit-pipe, which must be open to a Street on court, and be about a foot square; this pipe will convey the cold air as far as D, yet not without the use of the particular instrument at R before described. From D, it enters into the box, where it runs windingly through all the cells formed by the tenons or languets, it grows warm there, and comes out at the hole R, at the corners of the tablet; insomuch, that the heat of the room may be augmented od diminished, according as you partly stop or open the hole, which need be but two inches diameter.

If you have a mind to heat some particular part of the room, suppose a person sick in bed, you may apply a tin pipe to this hole, by which you may also convey the warm air into another room; perhaps, a leather, or pasteboard one may do.

Lastly, if the heat is not sufficient, you may cause the little cells of this box to pass under the tablet.

When once the work described is understood, there will be no difficulty to make it serve in all parts of the hearth, where you thing it may contribute to increase the heat.

But if you cannot possibly be able to adjust the little cells in the bottom of the chimney, you must content your self to do it in the jaumbs, under the hearth and little board.

As to the forming of the upper part of the chimney, to prevent the smoking, you must first observe, that your chimney be not commanded by any thing; that is, that there are no buildings about it higher that the funnel: you must also place your funnels one by the sides of another, as the common practice is. Suppose that the funnel within be thirty inches long, and the breadth ten, make a ledge of two inches, flopping underneath, quite round and within; the opening will be no more than twenty-six inches long, and six broad; divide this length into three parts by two positions, each of four inches; the lowermost part of which will descend anglewise into the pipe; each of three openings will be fix inches square.

Make three curtailed square and hollow pyramids the basis of each of which within will be eleven or twelve inches square, and the height from twelve to fifteen inches; divide this upper opening by small languet of two or three inches in height, which you are to place different ways; you are also to apply and fix these three pyramids near to another, ever the three openings you have a contrived on the top of the funnel of the chimney. If the opening of the chimney is to small, which is scarcely to be supposed, you must lessen the apertures od the pyramids; and if it be too big, you must enlarge them, or instead of three, use four.

These pyramids may be made of tin, clay or potters earth, baked, as you do other earthern ware.

You may sit a cap to these pyramids, made in such a manner that being higher, it may serve to suspend a body above the opening of the pyramid, made in the form of a triangular prism, one of the angles of which must be turned towards the upper openings of the pyramids, and the smoak gets out though the sides. It will be best to make all those pieces of tin.

The swipe is an iron-plate, placed in some part of the funnel of the chimney; it should be exactly of the length and breadth of that place, where you put it, that it may stop it exactly.

To the middle of this swipe two trunnions or knobs are to be fitted, which are put into the wall; by the help of which, you may fit it where you please to have it; and draw it with two wires that are fastened to both ends.

This swipe being shut, keeps the heat in the room, when the fire is covered, and there is no smoke: it likewise hinders the smoke of the neighbouring chimneys, to enter in, as it very often happens when there is no fire in the hearth; you may likewise use it to extinguish it; when a chimney is set on fire, having no more to do, than to take out the coals or hot embers, and shut the swipe.

The wood most proper to burn, is that which is called float-wood; which has less heat, and burns quicker than new wood.

Float, beech, or bakers billets, burn faster than the other.

Green wood will not burn so well as dry; it grows black in the fire, causes much smoke, and is hard to be lighted. Whitewood, and the poplar, birch, alpen, &c. are the worst of all woods to burn.

If there is a distinction to be made between oak, young oacks burn and heat much, the old grows black in the fire, makes a fort of scaled coal, that yields no heat, and is soon put out.

Thus in using oak for firing, you must chose billets of three or four inches diameter. The oak, whose bark is taken off for the tanners use burns well enough, but yields very little heat.

(…) (buscar dibujos)

CISTERNS, Is properly used for a subterraneous reservoir of rain-water; or vessel made to serve as a receptacle for rain or other water, for the necessary uses of a family.

If you would make your cistern under the house, as a cellar, which is the best way to preserve water for culinary uses; then lay the brick or stone with terras, and it will keep the water very well.

Or you may make a cement to join your brick or stone withal, with a composition made of made of slacked fisted Lime and linseed oil, tempered together with tow or cotton-wool. The bottom should be covered with sand, to sweeten and preserve it.

Or you may lay a bed of good clay, and on that lay the bricks for the floor; then raise the wall around about, leaving a convenient space behind the wall to ram in clay, which may be done as fast as the wall is raised; so that when it is finished, it will be a cistern of clay walled with bricks; and being a cellar, the brick will keep the clay moist, (although it shall sometimes be empty of water) that it will never crack.

(…)

Thus in a garden, or other place, may such a cistern be made, and covered over, the rain-water being conveyed thereto by declining channels running to it. Also in or nears houses, may the water that falls from them, be conducted thereto.

CONDUCTS/ CONDUITS, suits or gutters, to convey away the suilllage of a house. Also canals of pipes for the conveyance of water or other fluid matter.

Sir Henry Wotton says, that in the first place, art should imitate the nature, in separating those ignoble conveyances from the sight; and (where a running water is wanting) they should be placed in the most remote, and lowest part of the foundation, with secret vents passing up through the walls (like a tunnel) to the wide air; which all Italian artist commend for the discharge of noisome vapours.

DESIGN, in architecture, &c. is the draught, or the thought, plan, geometrical representation, distribution and construction of a building, &c.

In building, the term inchnography may be used, when by design is only meant the plan of a building, or a flat figure drawn on paper. And when some side or face of the building is raised from the ground, we may use the term Orthography; and when both front and sides are seen in perspective, we may call it scenography.

DETACHES,

DIGGING, the digging of the ground for the cellars, and for the foundations of buildings, is commonly done by the yard solid, containing twenty-seven solid feet, which is commonly counted a load.

Therefore take the dimension in feet, multiply the length by the breadth, and the product by the depth, and then divide the last product by 27 and the quotient will give the content in solid yards.

DOORS, in architecture, are apertures in walls, to give entrance and exit into and out of a building, or an apartment of it.

It is laid down as a rule, that the doors of an house be as few in number, and as moderate in dimensions as possible: for, in a word, all openings are weaknings.

Secondly, that they do not approach too near the angles of the walls, it being a very great solecism to weaken that part which should strengthen all the rest.

A precept well recorded, but illy practiced by Italians, particularly at venice.

Thirdly, that the doors, is possible, be placed over one another, that void may over void, and full over full; which will be a great strengthening to the fabric.

Fourthly, that, if possible, they may be opposite to each other, in such manner, that one may see from one end of the house to the other; which will not only be very graceful, but most convenient, in respect that it affords means of cooling the house in summer, by letting the air through the house; and by keeping out the wind in winter, which way soever it fit.

Fifthly, it is not ornamental, but very secure, to turn arches over doors; which will discharge them in great measure, of the superincumbent weight. The proportion of doors is adjusted by that of a man.

In large buildings they must always be larger than in small; but should not be less than six foot high in any, to admit a man of just stature erect and as the breadth of a man with his arms placed a kembo, is nearly subduple his height, the width ought never to be less than three feet.

Some architects give us these dimensions following:

In small buildings the breadth of the door, four feet, or four and a half; in middling buildings, five or six; in large ones, seven or eight; in chambers of the first story, three and half, three and three fourths, or four; on the second four, or four and a half; and of the third, five or six; in churches, seven or eight; in gates, nine, ten, or twelve. Hence their height is easily determined, except for the gates of cities, which should only be four fifths of their breadth.

Palladio has an observation, that the principal door, or entrance of an house must never be regulated by any certain dimensions, but by the dignity of the person who is to live in it; yet to exceed rather the more than the less is a token of generosity, and may be executed with some noble emblem, as that of the conte di Bevilacqua, over his large gate at Verona, where a little disproportion had been committed, patet janna cor magis.

As to the price of doors (…)

Mr. Le Clerc says, when a little door is made in front of an ordinary, but regular building, it should be raised to the just height of the windows that accompany it; but its breadth must a little exceed that of the window, least while it is adjusted to the rest of the building, it appear ill-proportioned in itself.

If it is defined to have the door adorned with an order of columns, it must be raised higher.

A geometrical rule for a door or a window.

The breadth being given, take three times for side of a square, and draw the diagonals, whose intersection will be the centre of the pediment's arch; then from the top of the pediments, draw lines to the opposite angles of square, and their intersection with the diagonals is the height of the door.

The breadth of the door being divided into six, one is for the breadth of the architrave a, one third to the space x, two thirds to the pilaster b,; the plinth c is two thirds high; the height of the kneel r of the architrave is twice its breadth; the height of the frize d is equal to the breadth of the architrave, and the cornice e one fourth higher; the length of the truss f is from the top of the frize to the bottom of the kneel. For the several members, divide the breadth of the architrave a into six parts,, giving half part to the bead, one and a half to the first face, half part to the small ogee, two to the second face, one to the ogee, a half part to the fillet.

For the projection, the first face is a half part, the second face one, and the whole two.

For the plain cornice b, divide the height into eight parts, giving one and one fourth to the cavetto, one fourth to the fillet, two to the corona, three fourths to the cima reversa, one fourth to the fillet, one and half to the cima recta, and a half part to the fillet. For the projections, the cavetto hath one and a half, the ovolo two and a half, the corona five and half, the cima reversa six and a half, and the whole eight.

For the dentil cornice c, divide the height into ten parts, giving one and one fourth to the ogee, one fourth to the fillet, one and a half to the dentils, (whose breadth is two thirds of their height) one fourth to the fillet, one and one fourth to the ovolo, one fourth to the fillet, two and one fourth to the corona, three fourths to the cima reversa, one fourth to the fillet, one and a half to the cima recta, and a half part to the fillet. For the projections, the ogee hath one and a half, the dentils two and a half, the ovolo four, the corona seven and a half, the cima reversa eight and a half, and the whole ten. See the plate.

DORMANT/DORMER, in architecture, is the window made in the roof of the house, or above the entablature, being raised upon the rafters.

Dormers are commonly rated at so much per piece.

Dormant-tree is a name given by workmen to a great beam lying cross a house, commonly called, a summer.

DOVE-TAILS

DOVE-TAILING, in carpentry is a manner of fastening boards (or other timber) together, by lettering one piece into another, in the form of the tail of a dove. It is the strongest of the kinds of jointing or assemblages, wherein the tenon, or piece of wood which is put into the others goes widening to the extreme; so that it cannot be drawn out again by reason the extreme or tip is bigger than the hole.

It is called by the French, queue d'aronde, i. e. Swallow-Tail; which name is also used by the English themselves in fortification.

DRAGON-BEAMS are two strong braces or struts which stand under a brest-summer, meeting in an angle upon the shoulder of the kingpiece.

DRAUGHT/DRAFT, in architecture, is the figure of an intended building described on a paper; in which is laid down, by scale and compasses, the several divisions and partitions of the apartments, rooms, doors, passages, conveniencies, &c. in their due proportion to the whole building.

Is customary, and also exceeding convenient for an person, before he begins to erect a building, to have designs or draughts drawn upon paper or wellum, wherein the ichonography or ground-plot of every floor or story is delineated or represented, as also the form of fachion of each front, with the windows, doors, ornaments, &c, in a orthography, or upright.

Sometimes the several fronts, &c. are taken represented in the same draught, to shew the effect of the whole building, which is called scenography or perspective.

But this is not being easily understood, except by those who understand the rules of perspective, therefore it will be more intelligible to the several workmen, to have a draught of each front, in a particular paper by itself; and also a draught of the ichonography or ground plot of each floor or story, in a paper by itself; because oftentimes the contrivance and conveniences of one story differ from those of another, either as the largeness of the chimneys or divisions of the rooms, some being larger in one story than another, &c.

All which things being well considered and drawn on paper before the building is begun, these draughts will be a great guide to the workmen, an save them a great deal of time in contriving their work; and besides, there will be no need of alterations, or pulling the building to pieces after it is begun; which besides the hinderance of the procedure, makes the building lame and deficient; nothing being so well done, when it is put up, and pulled down, and set up again, as if it were done at first.

EAVES, in architecture, is the margin or edge of the roof in a house; being the lowest tiles, slates, or the like, that hang over the walls, to throw off water to a distance from the wall.

Eaves-lath, is a thick featheredged board, generally nailed round the eaves of an house for the lowermost tiles, slates or shingles to rest upon.

Eaves-lath are commonly sold for three half-pence or two-pence per foot, (running measure), according as they are in goodness.

EMBRASURE, in architecture, is the Enlargement made of a gap or aperture of a door or window on the inside of a wall.

Its use is to give the greater play for the opening of the door, wicket, casement &c. or to take in the more light.

The embrasure coming flopping inwards, renders the inner angles obtuse, when the wall is very thick, they sometimes make embrasures on the outside.

EMPLECTON-WORK

FABRICK, the structure or construction of any thing, particularly a building, as an house, hall, church, &c.

FLOORS in architecture, is the underside of the room, or that part whereon we walk.

Floors are of several sorts. Some of earth, some of brick, some of stone, and some of wood.

Carpenters, by the word floor, understand as well the framed work of a timber, as the boarding over it.

Earthen floors are commonly made of loam, and sometimes (for floors to make malt on) of lime and brook sand, and gun-dust, or anvil-dust from the forge.

FOOT, is a measure consisting of 12 inches, supposed to be the ordinary length of the foot of a man.

FOUNDATION, is that part of a building, which is under ground or the mass of stone, brick, &c which supports a building, or upon which the walls of a superstructure are raised or it is the cosser or bed dug below the level of the ground, to raise a building upon; in which sense, the foundation either goes to the whole area or extent of the building; as when there are to be vaults, cellars, or the like, or it is drawn in cuts or trenches, as when only walls are to be raised.

The foundation is properly so much of the masonry, or bricklayers work as reaches as high as the surface of the ground, and ought always to be proportioned to the load or weight of the buildings that it is to bear.

Sometimes the foundation id massive, and continued under the whole building, as in the antique arches and aqueducts, and some amphitheatres: but it is more usually in spaces or intervals, either to avoid expence, or because the vacuities are too great a distance, in which latter case, they make use of insulated pillars, bound together by arches.

Of digging for, and laying of foundations.

There are several things to be well considered in laying the foundations of a building, the most material of which are here extracted from the best architects antient and modern.

That we may found our habitation firmly, requires the exacted care: for, says Sir Hernry Wotton, if the foundation dance, it will marr all the mirth, in the house.

Therefore, says that excellent architect, we must first examine the bed of earth upon which we are to build, and then the under fillings or substruction, as the antients called it.

For the former, we have a general precept in Vitruvius, twice repeated by him as a point indeed of main consequence; substructionis fundationes sodiantur, si queant inveniri ad solidum & in solido: by which, he recommends not only diligent, but even jealous examination what the soil will bear; advising us not to rest upon any appearing solidity, unless the whole mould through which we cut, have likewise been solid.

But he has no where determined how far we should go in this search, as perhaps depending more upon discretion than regularity, according to the weight of the work.

But yet Palladio has ventured to reduce it to a rule; and allows a sixth part of the height of the whole building for the cavatione, i.e. hollowing or under-digging, unless there be cellars under ground; in which case, he would have it somewhat lower. See sir Henry Wotton's elements of architecture.

Palladio also say down several rules to know if the earth be firm enough for the foundation, (without artificial helps), by observations from the digging of wells, cisterns, and the like, (which he would have ti be done in the first place) and from herbs growing there, if there be such as usually spring up in firm ground; also if a great weight be thrown on the ground, it neither founds not shakes; or if a drum being set on the ground, or lightly touched, it does not resound again, nor shakes; or if a drum being set on the ground, or lightly touched, it does not resound again, nor shake the water in a vessel set near it. These says he, are signs of firm ground but the best way to discover the nature of the soil, is to try it with iron crow, or else with borer, such as is used by well-diggers.

Architects ought to use the utmost diligence in this point; for, of all the errors that may happen in building, those are the most pernicious, which are committed on the foundations; because they bring with them the ruin of the whole building; nor can they be amended without very great difficult.

Foundations are either natural or artificial: natural, as when we build on a rock, or very solid earth; in which case, we need not seek for any further strengthening; for these, without digging, or other artificial helps, are of themselves excellent foundations, and most fit to uphold the greatest buildings.

But if the ground be sandy or marshy, or have lately been dug, in such case, recourse must be had to art, in the former case, the architect must adjust the depth of the foundation by the height, weight, &c. of the building; a sixth part of the whole height is looked upon as a medium; and as to thickness, double that of the width of a wall is a good rule.

If you build upon mossy and loose earth, then you must dig till you find sound ground.

This sound ground (fit to uphold a building) is of divers kinds; (as Alberti well observes) in some places it is so hard, as hardly to be cut with iron, in other places very stiff, in other places blackish, in others whitish, (which is accounted the weakest), in others like chalk, and in others sandy; but of all these, that it the best that requires most labour in cutting or digging, and when wet, does not dissolve into dirt.

If the earth to be built on is very soft, as in Moorish grounds, or such that the natural foundations cannot be trusted, then you must get good pieces of oak, whose length must be the breadth of the trench, or about two foot longer than the breadth of the wall: these must be laid cross the foundation, about two feet asunder, and being well rammed down, lay long planks upon them; which planks need not lie so broad as the pieces are long but only about four inches of a side wider than the basis or foot of the wall is to be, and pinned or spicked down to the pieces of oak on which they lie.

But if the ground be so very bad, that this will not do, then you must provide good piles of oak of such a length as will reach the good ground, and whose diameter must be about one twelfth part of their length. These piles must be forced or drove down with a commander, or machine or engine for that purpose, and must be placed as close as one can stand by another; then lay long planks upon them, and spike or pin them down fast.

But if the ground be faulty, but here and there a place, and the rest of the ground be good, you may turn arches over these loose places, which will be discharge them of the weight.

You must not forget to place the piles not only under the outer walls, but also under the inner walls that divide the building; for if these should sink, it would be a means to make the outer wall crack, and so ruin the whole building.

Having thus far considered the bed of earth on which the building is to be erected, we shall next consider the substruction, as it was called by the antigens, but the moderns generally call it the foundation.

This is the ground-work of the whole edifice which must sustain the walls, and is a kind of artificial, as the other was natural; as to which these things that follow, are the most necessary to be observed.

First, that the bottom may be exactly level; therefore lay a platform of good board.

Secondly, that the lowest ledge or row be all stone, (the broader the better) laid closely without mortar; which is a general caution for all parts of a building that are contiguous to board or timber; because lime and wood are utter enemies to one another; and if unfit confiners any where, then they are more especially so in the foundations.

Thirdly, that the breadth of the substruction be at least double the breadth of the wall that is to be raised upon it.

But even in this case, art ought to give way to discretion; and the substruction may be either broader or narrower, according as the goodness of the ground, and the ponderosity of the edifice requires.

Fourthly, that the foundation be made to diminish as it rises, but yet so, that there may be as much less on the one side as the other; so that the middle of that above may be perpendicularly over the middle of that below: which ought in like manner to be observed in diminishing the walls above ground; for by this means, the building will become mush stronger then it would be, if the diminution were made any other way.

Fifthly, that you ought never to built upon the ruins of an old foundation, unless you are well assured of its depth, and that its strength is sufficient to bear the building.

Lastly, there is a curious precept in the writings of some ancient architects, that the stones in the foundations should be laid as they naturally lay in the quarry; they supposing them to have most strength in the natural position.

This precept is generally observed by all good modern architects, not only in the foundations, but also in all the parts of the superstructure; and that for a better reason than that bareconjecture, viz because they find the stones to have a cleaving grain, or that they are subject to cleave that way of the stone that lay horizontally in the quarry; and for that reason, if the horizontal position of the stones in the quarry should be placed vertically in the building, the super-incumbent weight would be apt to cleave them, and so render the building ruinous for, as it has been observed by Philip d'orme, the breaking or yielding of a stone in the foundation, although it should be but the breadth of the back of a knife, it will make a cleft pf more than half a foot in the fabric aloft.

In some places they found the peers of bridges, and other buildings near the water, on sacks of wool laid like matrasses, which being well pressed and greasy, will never give way nor rot in water.

FRAMING, of an house, is the carcase, flooring, partitioning, roofing, ceiling, beams, ashlering, &c. all together.

As to the carcase of a house, Mr. Leybourn says, than carpenters commonly work by the square of teen feet in erecting the carcase, that is, (as he says9 the framing and setting up with the partitions, floors, rafters, and such like; for which, he says, they have in running buildings from 15 to 20 s. the square, and some may deserve 30 s or more. And he adds, that to a square of good carcase, 20 feet of ground-roof timber may be allowed: and he adds, that to square a good carcase, 20 feet of ground-roof timber may be allowed: but it does not appear, whether he means that the carpenter sells, hews, and saws the timber into that price.

Some Sussex workmen have said, that they have but 8 s per square for framing the carcase of a housee, and sawing the timber; and but 4 s 6 d without sawing the timber.

As so the carcase of a Barn; some workmen say, that they have for framing of barns 3 s. 6d per square; and that the charge of the carcase of a barn may be thus computed, viz. 4s per square for sawing the boards, considering the slabbing and the boards lying one by another; 2 s per square for sawing the timber; 3 s 6 d per square for framing; and 4 s per square for the timber, reckoning at 12s per ton, and one ton to make three square of framing: so that the whole charge of the carcsae will be at least 13 s 6d per square; but if the timber be more that 12 s per ton, then the whole charge will be more than what has been before mentioned.

(different prices for Partitions, roofs, doors, windows…)

(…)

FUNNELS OF CHIMNEYS, the funnel is the shaft or smallest part from the waste, where it is gathered into its least dimensions.

Palladio directs, that the funnels of chimneys be carried through the roof, three, four, or five feet at the least, that they may carry the smoke clear from the house into the air.

He advises also that care be taken as to the width of them; for that if the be too wide, the wind will drive back the smoke into the room; and if the be too narrow, the smoke will not be able to make its way.

Therefore chamber chimneys must not be made narrower than ten or eleven inches, nor be broader than fifteen; which is the ordinary depth of the funnels of great kitchen chimneys, whose breadth is four or five feet within the work, from the place where the brest ends, to the top of the funnel.

Now the said breast reaches from mantle-tree to the ceiling or pitch of the arch, always diminishing within the work, till you come to the measures of depth and breadth before mentioned; and from thence to the end of the funnel, it must be carried up as even as it possibly can be; for if there be a failure in this, the smoke happens to be offensive.

FURRINGS, in architecture, is the making goor rafters feet in the cornice.

Thus, when rafters are cut with a knee, these furrings are pieces which go straight along with the rafters, from the top of the knee to the cornice.

Also when rafters are rotten, or funk hollow in the middle, there are pieces cut thickest in the middle, and tapering towards ach end, which are nailed upon them, to make them straight. Such pieces are called furs, and the putting them on, furring the rafters.

GALLERY, in architecture, is a covered place in a house, much longer than broad, and which is usually on the wings of a building, serving to walk in.

Gallery is also a little isle or walk, serving as common passage to several rooms, placed in a line or row.

Their length (according to Palladio) ought to be at least five times their breadth. They maybe fix, seven, or eight times their breadth, but must not exceed.

GATE, a large door leading or giving entrance into a city, town, castle, palace, or other considerable building; or place for passage of persons, or horses, coaches, or wagons, &c.

As to their proportion: the principal gates for entrance, through which coaches and wagons are to pass, ought never to be less than seven foot in breadth, nor more than twelve foot; which last dimension is fit for large buildings.

But as for common gates in inns, under which wagons go loaded with hay and straw, &c. the height of them may betwice their breadth.

(Prices) (…)

GIRDERS, in architecture, ase some of the largest pieces of timber in a floor, the ends of which are usually fastened into summers and brest-summers; and joists are framed in at one end to the girder.

The scantlings and size of girders and summers, upon the rebuilding of London, after a consultation of experienced workmen, were reduced into and act by the parliament, and are thus set down, as fit for all fabrics, great and small.

	feet		feet		feet		feet
Girders and summers, must be in length	10	to	15	And in breadth	11	In depth	8
	15		18		13		9
	18		21		14		10
	21		24		16		12
	24		26		17		14

How they are to be laid in the brickwork.

Nor girder or summer ought to be less than ten inches into the wall, and their ends must be laid in loam.

That girder and summer be of good hearty oak, as free from knots as may be; because that will be the least subject to break, and may with more safety be relied on in this cross and transverse work.

In as much as there is a moisture in timber, a certain ingenious modern builder advices that all bearing timber have allowed it a moderate camber or roundness; for till that moisture is in some sort dryed out, the said timber will sag with its own weight; and that chiefly is the reason why girders are trussed.

It is also to be observed, that all beams or ties be cut or forced in framing to a camber or roundness, such as an inch in the length of eighteen feet; and that principal rafters be also cut, or forced up to a camber or roundness, as before. The reason of this is, all trusses, though ever so well framed, by the shrinking of the timber, and weight of the covering, will fag, and sometimes so much, as to offend the eye of the beholder; so that by this preparation, your trust may ever appear well.

You should also observe, that all case bays, either in floors or roofs, do not exceed twelve feet, if possible; that is, do not let your joists in floors, you purlins in roofs, &c. exceed twelve feet in their length or bearing, but rather let their bearing be eight, nine, or ten feet.

Also in bridging-floors, do not place your biding or strong joists above four or five feet apart; nor let your bridgings or common joists be above twelve inches apart, that is, between one joist and another.

It should also be observed never to make double tenants or tenons for bearing uses, such as binding joists, common joists or purlins; for in the first place, it weakenessvery much whatever you frame it into; and, in the second place, it is rarity to have draught in both tenons, that is, to draw your joint close by the pin; for the said pin, by passing through both tenons, if there is a draught in each, bust bend it so much, that except the pin be as though as wire, it must needs break in driving, and consequently do more Hurt than good.

GLASS, a diaphanous or transparent body made by art, of sand and nitre, as Pliny says. It is also made of white glistering flints mixed with sal alkali, or the salt of the herb glasswort, or salt of fern-ashes, for common glass, some say.

M. Blancourt says, the venetians use white flints and also a rich sand, and likewise a sort of white marble. He likewise adds, that all white transparent stones, which will not burnt to lime, are fit to make; and that all stones that are fit to strike fire, are capable to made into glass.

A certain learned and curious author gives us the following characters of properties of glass, whereby is distinguished from all other bodies, viz.

1. That it is an artificial concrete of salt, sand, or stones.
2. That it is fusible by strong fire.
3. That when fused, it is tenacious and coherent.
4. That it does not waste or consume the fire.
5. That when melted, it cleaves to iron.
6. That when it is red-hot, it is ductile, and capable of being fashioned into any form, but not malleable; and capable of being blown into a Hollowness, which no mineral is.
7. That is frangible when thin without annealing.
8. That is friable when cold.
9. That it is always diaphanous, whether hot or cold.
10. That it is flexible and elastic.
11. That it is dissoluble by cold and moisture
12. That it is only capable of being graven or cut with diamond and emery.
13. That it receives any colour or dye, both externally and internally.
14. That it is not dissoluble by aqua fortis, aqua regia or mercury.
15. Neither acid juices, not any other matter, extract either colour or taste, nor any other quality from it.
16. If admits of polishing.
17. That is neither loses of weight nor substance, by the longest and most frequent use.
18. That it gives fusion to other metals, and softens them.
19. That it is the most pliable thing in the world; and that it best retains the fashion given it.
20. That it is not capable of being calcined.

21. That an open glass filled with water in the summer-time will gather drops of water on the outside, so far as the water on the inside reaches; and a man's breath blow upon it will manifestly moisten it.
22. Little glass balls, filled with water, mercury, or other liquor, and thrown into the fire; as also drops of green glass broken, fly asunder with a loud noise.
23. That neither wine, beer, nor any other liquor, will make it musty, or change its colour, nor rust it.
24. That it may be cemented, as stones and metals.
25. That a drinking-glass partly filled with water, and rubbed on the brim with a wet finger, yields musical notes, higher, or lower, as the glass is more or less full, and makes the liquor frisk and leap.

The sorts of glass.

There are various sorts of glass, which are made use of in the world; but a present, I shall only speak of those sorts of glass which glaziers commonly use in England; which are these following, viz, Crown glass, which is two sorts; 1 Lambeth and Ratcliff. 2 French or Normandy glass. 3. German glass of two sorts, white and green. 4. Dutch glass. 5 Newcastle glass. 6 Staffordshire glass. 7 Bristol glass. 8 Looking glass. 9 Jealous glass. Of which sorts, I shall treat succinctly in their order.

The method of working or blowing of window or table glass.

The method of making crow window glass, as now practiced in England, as has been (…)

GLAZIER'S WORK(…)

GUTTER (canaleta, canalón, alcantarilla), in architecture, are oa kid of valleys in the roofs of baildings, serving to receive and drain off the rain waters.

The gutters are of two kinds in respect to their position; for they are either such as come something near a parallelism with the horizon, or such as incline towards a vertical position to the horizon.

The first kind of gutters may be called parallel gutters, and may be distinguished into three sorts, which are covered with lead: for,

1st, either it is a gutter between two roofs, which stand parallel to each other, being made upon the feet of the rafters of two roofs, which meet together or,

2ndly, a gutter, where a building has a cantaliver or modillion cornice, which projects one foot and half, or two feet (according to the Design of the building) beyond the walls; then the roof is a set with the feet of the rrafters no farther out than the wall, but rather within it; so that the joists of the upper floor lie out beyond the walls, and also beyond the feet of the rafters, which is yet covered with lead.

The third sort of these parallel gutter are in flat roofs, which are usually called platforms; where are also gutters for the water that run from the platform to descend to, which is from thence conveyed of from the building, either by spouts or pipes.

Secondly, vertical gutters are such as are made by two roofs meeting, at right angles one to another, or (which id the same thing) made by the end of one roof joining to the side of another.

As for example: if a building be in the form of a Roman L, it is then common to have one gutter on the inside of the L; but if the building be in the form of a T, it has two gutters; but if the form of an H, it has four.

These gutters also are of two sorts, viz. either of lead or tile: all which shall be treated of in order.

Of the laying of parallel lead gutters.

In speaking to this head, I shall give a necessary caution, which is, viz. first to take care that the gutter-boards, &c. lie not too near parallel with the horizon; but in such position, that there may be good current, (as the workmen phrase it) for it be laid too near level, the water will be very subject to stand in phases, if the gutter chances to stick little in the middle, &c. which some gutters are apt to do: but this is according as they are posited in the building.

Some gutters have a layer of sand for the lead to lie upon; but there are two reasons that may render this method not approveable.

First, because some sorts of sand does very much corrode and decay the timber that lies near it.

Secondly, that when a gutter is laid on sand, but a very little squatting, viz by junping upon it with the heels of one's shoes, will make dents in it , and in those dents the water will stand; and this will be a means of decaying the lead the sooner.

In laying of leads for gutters upon boards, this is common for plumbers, to folder them, when they are so long, that a sheet of lead will not reach. To do this, they usually cut a channel cross the gutter-boards at the end of the sheet where the soldering is to be, and to beat down the ends of both the sheets (that are to meet there) into the channel; which when is done, there will remain a little cavity, which is filled up by the solder level with the rest, when it has been soldered.

The lead which is usually laid in gutters is that which weight about eight or nine pound to the foot. See Lead

Of vertical gutter.

These gutters are made either of lead, or tile. As to those made with lead, I shall forbear saying any thing, because they are almost the same in effect as the parallel ones. But, that unless the builder will be at the charge, they need not be altogether so thick for these vertical ones will last as long, if laid with lead of about six or seven pound to the foot, as parallel ones with lead of eight, nine, or ten pound to the foot.

Gutters laid with tiles, are also of two kinds: those made of concave or gutter-tiles, and plain tiles. Of which I shall omit speaking here, but recommend to the article GUTTER-TILES.

Plain tile-gutters are also distinguished into two sorts, viz. I. Plaint tile gutters, (properly so called) and, II. Point-gutters. Of both which I shall treat in their order.

1st, of plain tile.gutters, (properly so called).

I n these plain tile-gutters, there is a gutter-board laid, which raises them form pointing to an angle. And in laying on the tiles, the workman begins at one side of the gutter, and so works across, as if it were plain work, and then brings the next row of tiles back again; so that he works forth and back, or to and fro from right to left.

So that Gutters which are laid afeter this manner, are not angular, but of a kind of dissorted cuvilineal form; by which means they are not so subject to be furred up with the mortar which washes out of the adjacent tiles.

2nd, of three-point gutters.

These are the second sort of gutters, which are laid with plain tiles: in laying oof which they begin and lay one tile on one part of the roof, (it is no matter which part first) and lay one corner of the tile just in the middle of the gutter; and then they lay another on the other part of the roof, with its corner just in the middle of the gutter, also that the corner of the second tile is contingent with the first; and then lay another tile in the gutter, with its corner, as it were, betwixt the other two, and to them.

When they hav done thus, they proceed in the works, and lay a tile on each part of the roof, as before, and another betwixt them in the gutter, proceeding in their work in this manner, till they have finished the gutter. And this is what called a three-points-gutter: for three points, or angles of tiles, always come together, viz. one angle of three distinct rules, which makes it very uniform and handsome.

Here you are to take notice, that only three inches square of the middle tile is visible (if the gage be seven inches) the rest of that tile being coverrend with the next row of tiles above it.

But notwithstanding these gutters are very handsome, and if weel done, secure also; yet if they let the water into the house (by reason od some stoppage, or broken tile in the Gutter) they are very troublesome to mend.

Of measuring gutters or valleys.

(…)

GUTTER-TILES are whilst they are flat and plain, (before they are bent fit for the use they are intended), seemingly at a distance, a kind of triangle, with one convex side. But although they seen to be so at a distance, they are not in reality so; for they are of a quadrangular form, consisting of two straight sides, of about ten, or ten inches and half long, (for so much they ought to be), and of two circular sides, the one convex, the other concave; one about two inches. This is their form as to their edges or sides. I shall next describe the form of them, in respect of the plane; at the little end they are bent circular, and so likewise at the convex great end, at first like a corner tile; but then they bend the corners of the great end back again; so that if a person look against the edge of the broad end, it consists of a circular line betwixt two straight ones, like the upper part of the character of the sign libra: this, you must understand, is when you hold the concave side of the tile downwards.

These tiles are laid with their broad ends and hollow sides upwards.

As to the weight of gutter-tiles (…)

As to the price (…)

HEALING, in architecture, signifies the covering of the roof of a building, either with lead, tiles, slate, horsham stone, shingles, reeds, straw, &c.

HIPS, in carpentry are those pieces of timber which are placed at the corner of a roof. The hips are much longer than rafters, by reason of their oblique position; and are planted not with a right or square angle, but a very oblique one; and consequently are not, or at least ought not to be square at any angle, as rafters are not at all, but level at every one of them; and which is yet more, as refters have but four planes, these commonly have five. They are commonly, by country work-men called corners, and some call them principal rafters, and others sleepers.

The truth is, hips and sleepers are much the same, only the sleepers lie in the valleys, (and join at the top with the hips;) but those surfaces or planes which make the back of the hip, are the under sides of the sleeper.

The backs of a hip are those two superficies or planes on the outside of the hip, which lie parallel, both in respect of the length and breadth with the superficies of the adjoining side, and end of the roof.

Hip-mould is by some used for the back of the hip: but others understand it to mean the prototype, or pattern, commonly made of a thin piece of wainscot, by which the back and sides of the hip are set out.

I shall here give you the method of finding the length and backs of hips, &c. in square frames, and also of the rafters, diagonals, half diagonals, and perpendicular as follow:

As 20	feet	::breadth of the house:	
	15:00		Ten of the rafter.
	18:00		Ten of the hip
	11:18		Perpendicular
	28:20		Diagonal
	16:63		Nearest distance

Hip angles	At foot	38-22	Rafter angles	At top	41-50
	At top	51-28		At foot	48-10
	At back	116-12			

The angles are always the same in all square frames that are true pitch.

(…)

HOUSE, a habitation or place built with conveniencies for dwelling in; or it is a building wherein to shelter a man's person and goods from the inclemencies of the weather, and the injuries of ill-disposed persons.

In treating on this article HOUSE, I shall do these four things:

I. Discourse concerning the situation of a country-house.
II. Of the ground-work of houses.
III. Concerning building in London.
IV. Of party walls.

A country house, or pleasure house, in one built fro a person to enjoy and divert himself occasionally in.

This is the villa of the antient romans; and what in Spain and Portugal they call Quinta; in provence Cassine; in some other parts of France, closerie; and in Italy Vigna.

Of the site of a Country-house.

This is a thing principally to be aimed at in the site or situation of a country house or seat, that it have wood an water near it, thay being principal accommodations to a rural seat. If it cannot be conveniently built among trees, yet there are but few places where trees may not be speedily raised about it.

It is far better to have a house defended by trees than hills; for trees yield a cooling, refreshing, sweet, and healthy air, and shade during the heat of summer, and very much break the cold winds and tempests from every coast in the winter.

The hills according as they are situated, defend only from some certain winds; and if they are on the north side of the house, as they defend from the cold air in the winter, so they also deprive you of the cool refreshing breezes, which are commonly blown from thence in the summer.

And if hills be situated on the south side, it also then proves very inconvenient.

Besides, they yield not the pleasures and contentments, nor the varieties of delights to the ingenious rustic, as the tall plumps of trees and pleasant groves do.

Yet hills which are cloathed with coppices, or otherwise improved, are pleasant objects of sight, if they stand not too near a house.

A house should not be too low seated, since this would cause you to lose the conveniency of cellars: but if you cannot avoid building on low grounds, set the first floor above the ground the higher , to supply what you want to sink in your cellar in the ground; for in such low ans moist grounds, it conduces much to the dryness and healthiness of the air to have cellars under the house, so that the floors be good, and ceiled underneath.

Mr. Worlidge says, that houses built too high in places obvious to the winds, and not defended by hills or trees, require more materials to built them, and also more reparations to maintain them, and are not so commodious to the inhabitants, as the lower-built houses; which may be built at a much easier rate, and also as compleat and beautiful as the other.

Of the ground-work of houses.

In buildings or houses not above two stories with the ground room, and not exceeding twenty feet to the raison-place, and upon a good foundation, the length of two bricks, or eighteen inches, for the heading course, will be sufficient for the ground-work of any common structure; and six or seven courses above the earth to a water-table; where the thickness of the walls are abated or taken in on either side the thickness of a brick, namely, two inches and a quarter.

But for large and high houses or buildings of three, four, or five stories with the garrets, the walls of such edifices ought to be, from the foundation to the first water-table, three heading courses of bricks, or twenty-eight inches at least; and at every story a water-table or taking-in, on the inside, for the summers, girders, and joists to rest upon, laid into the middle, or one quarter of the wall at least for the better bond.

But as for the innermost or partition-wall, half a brick will be of a sufficient thickness; and for the upper stories, a nine-inch (or brick-length) wall will suffice.

The parts, proportions, &c. of the houses in London are regulated by a statute made for rebuilding the city after the fire, what here follows, is so much of the act as relates to the bricklayers work, the heights and number of stories, and thickness of walls, of the four several rates of houses, which is as follows:

And be it farther enacted, that the houses of the first and least sort of building, fronting by streets or lanes, shall be two stories high, besides cellars and garrets; that the cellars thereof be six feet and a half high, if the springs of water hinder not, and the first story being nine feet high from the floor to the ceiling, and the second story as much; that all the walls in fron and rear, as high as the first story, be of the full thickness if the length of two bricks; and thence upwards to the garrets, of the thickness of one brick and a half; and that the thickness of garret-walls on the back part be left to the discretion of the builder, so that the same be not less than one brick length; and that the thickness of the party-wall in the garret be of the thickness of the length of one brick at least.

And be it farther enacted, that the houses of the second sort of building, fronting streets, and lanes of note, and the river of thames, shall consist of three stories high, besides cellars and garrets; that the cellars thereof be six feet and a half high, (if the springs hinder not) that the first story contain full ten feet in height from the floor to the ceiling; the second full ten feet; the third nine feet; that all the said walls in front and rear, as high as the first story, be two bricks and a half thick; and the thickness of the garret-walls on the back part be less to the discretion of the builder, so that the same be no less than one brick thick; and also that the thickness of the party-walls between every house of this second and larger sort of building, be two bricks thick as high as the first story; and thence upwards to the garrets of the thickness of one brick and a half. Also that the houses of the third sort of building fronting the hogh and principal streets, shall consist of four stories high, besides cellars and garrets, as aforesaid; that the first story contain full ten feet in heigh from the floor to the ceiling; the second ten feet;

the fourth eight feet and a half. That all the said walls in front and rear as high as the first story, be two bricks and a half in thickness; and from rhence upwards to the garret-floor of the thickness of one brick and an half; that the thickness of the garret-walls on the back part be less to the discretion of the builder, so as the same be not less than one brick.

And also that the party-walls between every house of this third and larger sort of building be two bricks thick as high as the first floor, and thence upwards to the garret-floor, the thickness of a brick and a half.

And be it further enacted, that in all houses of the fourth sort of building, being a mansion houses, and of the greatest bigness, not fronting upon any of the streets or lanes, as aforesaid, the number of stories, and the height thereof shall be left to the discretion of the builder, so as the exceeds not five stories.

The same act also enjoints, that no timber be laid within twelve inches of the chimney jaumbs; and that all joists on the back of any chimney be laid with a trimmer at six inches distant from the back: alsdo that no timber be laid within the funnel of any chimney, upon penalty to the workman for every default 10 s. and 10 s every week it continues unterformed.

Thus far the act.

Note further, when you lay any timber or brick-work as taffels (or toffels) for mantle-trees to lie lie on, or lintels over windows, or templets under girders, or any other timbers, they must be laid in loam, which is a great preserver of timber; whereas mortar eats and corrodes it. Likewise the joists ends and girders, which lie in walls, must be loamed all over, to preserve them from the corroding of the mortar.

Some workmen pitch the ends of timber that lie in walls, to preserve them from the mortar.

Concerning party-walls.

In treating of these, I will present the reader with two different methods of valuing such walls, according to two different surveyors, viz. M. Leybourn and Mr. Philips.

And first, according to Mr. Leybourn.

He says, forasmuch as the building of London join one upon another, and almost every several house hath a distinct proprietor, the Parliament hath decreed, that the wall dividing the proprietors ground shall be built at the equal charge of both the owners; it will not therefore be unnecessary to shew how these party-walls are to be valued.

How all brick works, whether one, two, three, four, or any other number of bricks lengths in thickness, are all to be reduced into a thickness of a brick and half.

It hath been observed, (said he) that about 4500 of bricks, a hundred and a quarter of lime, two loads, and a half of sand, at 2s per load, will completely raise one rod of brick-work of a brick and a half in thickness.

	l	s	d
Now 4500 bricks, at 16s. per 1000, is	3	12	0

A hundred and quarter of lime at 10 s per hund	0	12	6
Two loads and a half of sand, at 3 s per load	0	7	6
In all	*4*	*12*	*6*

And thus much will a rod of Party-wall (the materials only reduced to a brick and a half thick) amount to, at the former supposed rates; to which may be added, for workmanship, 1l 8s which added to 4 l 12s will make 6 l.

So that every rod of party-wall, they allow 3l a-piece. Whence in a party-wall be measured to a brick and a half, be found to contain 16 rods, that 16 rods multiplied by the 3 l. will give 48l and so much id the one proprietor to allow the other.

But here you are to note by the ways, that although this rule here delivered be general, yet the price of the party-wall will be more or less according as materials shall be cheaper or dearer; fro sometimes a rod or wall of brick-work, of a brick and a half thick, will cost but 5 l. 10 s and then each proprietor must pay but 2l 15s per rod.

Thus far Mr. Leybourn. I shall next add Mr. Philips way.

Now (says he) having the dimensions, both the length and height of the cellar, and all other stories in the house, then the following tables will shew (according to the thickness of the wall) how many bricks your neighbor is to pay for towards his party-wall.

For which purpose, the ensuing tables will serve very well; for those walls, according to the act of parliament for that purpose, are to be made part of them two bricks thick, part of them one brick and a half thick, and part of them one brick thick.

Now knowing the number of bricks which go to making og the wall, you may easily compute the charge of the mortar and workmanship thereof, and from thence find the whole charge; which you will find (says he) about 30 s for every 1000 bricks.

This computation od Mr. Philip's being made when bricks were about 18 or 20 s per 1000, makes his price too great; which if they less, may not amount to buy about 25 or 26 s per 1000.

He proceeds to an example: as suppose a house of the third rate, the party-wall of which being 30 feet long, and you would know how many bricks are to be paid for towards this party-wall.

First, measure the cellar, where the party-wall is to be two bricks thick, the length of which is 30 feet and depth 7 feet; find this length in the first column, and the depth in the top of the table; and in the square of meeting in the table for one brick thick, you will find 2314 bricks are to be paid for.

Then proceed to the first story, which will be likewise 30 feet long, and 10 feet high, and also two bricks thick, the same table shews the allowance for this, which is 3306.

The second story also is 30 feet long, and 10 ½ high; but the party-wall is to be but a brick and a half thick, the half whereof is three fourths of a brick, yields for 30 feet long, and 10 feet high 2479.

And for half a foot more in height 124.

The third story is 30 feet long, and 9 feet high, being likewise a brick and a half thick; and for this the table shews the half to be paid for to be 2231.

The fourth story is 30 feet long, and 8 feet and a half high, for the 8 feet the table shews 1983; and for the half foot 124.

All which added together, make 12559, which are to be paid for the half of the party-wall; which, at 26l 6s 6d.

Thus you may see what any party-wall comes too, though your neighbor's house joins never so little or much to yours, as readily as you can by measuring by the rod.

And whereas the floors of the several stories add somewhat to the height, you may add something for them, according as you find them in thickness.

Lastly, for the garrets; the walls of which being but one brick thick, you may take half the number in the table of one brick's thickness, and add to the rest if the account.

All the difference that can be between neighbors herein, will be about the price of bricks, and the lime and workmanship; but if neighbors build together, they will easily determine it; but if they do not, yet the first builder is sufficiently provided by his workmen to rectify his charge, and by act of parliament is allowed full satisfaction, with interest from the Time of building.

By a statute made in 22 Car II. Cap II it is enacted, that no builders shall lay foundations, until the proper surveyors (appointed by the lord mayor of the city of London, Aldermen, and common-council) have viewed the same, and seen the party-walls and piers equally set out.

But before such survey is taken, the builders shall go to the chamberlain, and enter their names, and the places where their buildings are to be erected; and at the same time pay 6s 8d taking and acquaintance for the same; and upon the builders exhibiting the said receipt unto the proper surveyors, or any of them, they shall survey and set out the foundation within in three days after such request; and in default of payment, the chamberlain may sue for it before the mayor and Alderman.

As to party-walls: the better to prevent fire for having a free passage from house to house, it is enacted by stat. 19 car. II, That between every two houses there be shall be one party-wall of brick or stone, and of such thickness as hereafter mentioned.

And to prevent disputes between landlord and landlord, in respect to the expences thereof, it is hereby enacted, that there shall be party-walls and party-piers, set out equally on each builder's ground; and whoever first builds his house, shall be obliged to leave a convenient toothing in the extremes of his front and rear walls, that when his neighbor, or neighbors, is, or are disposed to build up his or their house, or houses, the walls of them may be incorporated, and firmly bound together.

Nor shall the second person build against the said party-walls, or on their own contiguous grounds, until they have paid the first builder the moiety of the charge of such party-walls, with interest at 6 per cent. From the beginning of first building: and provided that any differences arise concerning the value of such walls, they shall be referred to the Alderman of the ward and his deputy; and where one of them is a party, or where they cannot compose such difference the Lord mayor and court of Aldermen shall.

But by act made in the 7th year of queen Anne, intitled, an act for the better preventing of mischief that happen by fires, it is enacted, that the first builder shall be paid by the owner of the next house, after the rate of 5 l per rod, as soon as he shall have built the said party-wall.

And in consideration that divers new houses have been, and may erected singly on new foundations, within the limits of the cities of London and Westminster, or other parishes or places comprised within the bills of mortality, there was an act made in the 11th year of king GeorgeI. Intitled, an act for the better regulating of buildings, which strictly forbids a second builder or builders, whomsoever, to make use of, or take the benefit of such party-wall and fence-wall so first built, at the expence of the first builder; nor shall any such second builder or builders, his, her or their executors, on any account whatsoever, lay any wood,, or timber, or cut any hole for cup-boards, presses, &c, and in such party-wall, under the penalty of forfeiting the sum of 50l.

The thickness of party-walls, by 19 car II were appointed to consist of one brick and half in the cellars; and stories above ground, the garrets excepted, which were to be of one brick, or nine inches thickness only.

But by the acts made in the 6th and 7th of queen Anne, it is enacted, that from and after the first of may 1708, all and ever y house and houses, that shall be built or erected upon any foundations, either new or old, with the above limits, shall have party-walls between house and house, wholly of stone or brick, and of the thickness of two bricks length at least in the cellar and ground stories, and one brick and a half, or 13 inches upwards, from thence quite through all the remaining stories, unto 18 inches above the roof.

And to prevent the ill consequences that may arise from wood or timber laid in party-walls, which may communicate fire from one house into the next, it is enacted by the aforesaid act, of the 11th of king George I, That it shall not be lawful to make or have in any party-wall of any house, which after the 24th of June 1725. Shall be erected or built within the preceding boundaries or limits, any door-case, window, lentil, brest-summer, or story posts or plates whatsoever, unless where two or more houses are joined or laid together, and so used as one single house; and that to be no longer than during the time of such usage, upon pain or penalty, that the owner of every such house for every such offence, shall forfeit the sum of 50l.

And in consideration that party-walls built upon old foundations may decay, and become dangerous, and needful to be rebuilt; and whereas differences have, and may again arise between the two landlords, concerning the expences of taking down the same, shoring up the floors, and rebuilding them again; it is therefore by the aforesaid act enacted. That from and after the 24th day of June 1725, all and every person and persons, inhabiting in any place or places, in and about the cities of London and Westminster, or any other place or places comprised within the weekly bills of mortality, or within the parishes of st. Mary le Bone and Paddington, or within the parishes of Chelsea and St. Pancras, who shall built, or cause to be built, any house or houses, upon any foundation, old or new, and who shall find it absolutely necessary to take down any decayed party-wall between such house and the next adjoining house, full three months before such party-wall shall be begun to be pulled down to the intent that the same may be viewed by four able workmen, within the space of one month next after the service of such notice; which four workmen are to be equally appointed by both parties, that is each person to appoint two of them or more, if required, when they both do agree thereto.

But in case that the landlord or occupier of the next adjoining house, will not agree to the rebuilding of such party-wall, or walls, or is incapable of paying the immediate moiety thereto, and shall neglect to nominate and appoint, within three weeks next after the service of notice, as aforesaid, such workmen, that then the other of the said parties shall nominate or appoint four or more able workmen, who shall view the party-wall required to be taken down and rebuilt; which workmen, or the major part of them, shall certify in writing under their hands to the justices of the peace, I the next general or quarter sessions of the peace Holden for the city or county where such party-wall is situated and being, and that such party-wall is ruinous, and needful to be rebuilt, &c.

And provided that any person or persons whomsoever, shall think him, her, or themselves injured by such certificate, the said justices shall summon before them or more of the said workmen, or other person or persons whom they shall think fit, and shall examine the matter upon oath; and their determination shall be final and conclusive to all parties, without any appeal from the same.

But it is to be observed, that a copy of the workmen's certificate must be delivered to the occupier or owner of such next adjoining house, or less there, within three days after such certificate shall be made to the justices, as aforesaid; and if there shall be no appeal from the same within three months after, in every such café, if such landlord or occupier shall refuse or neglect to shore up and support his, her, or their houses, within six days after the expiration of the said three months notice, that then the first builder or builders, with his or their workmen, (giving notice as aforesaid), may lawfully enter into such house or houses (at all reasonable times), with workmen and materials, and therewith shore up and support the same; the expence whereof shall be paid by the landlord or occupier; as also the half expence of the party-wall built by the first builder, after the rate of 5 l per rod, for every rod of work contained therein.

And when the first builder shall be build the said party-wall, he shall leave at such next house with the landlord or occupier a true measurement of the quantity of brick-work contained therein, within ten days after such party-wall shall be so built and completed, of which one half moiety, at the rate aforesaid, as also the expence of shoring and supporting, shall be paid by the landlord or landlords thereof, or their tenants and occupiers, who are hereby empowered to pay and deduct the same out of the next rent that shall become due.

And provided, that neglect or refusal of the money so due be made, and remain unpaid for the space of twenty-one days after demand thereof; then it shall and may be lawful to and for such first builder, his, her, or their Executors and administrators, to sue such landlord or landlords for such sums so proportionably due, by action debt, or on the case, bill, plaint, or information, in any court of record at Westminster &c.

And here note, that the law here delivered relating to the rebuilding of decayed party walls, of either brick or stone, the same is to be understood and observed of old houses, where instead of having one party-wall between them, as this act directs, have two timber walls or partitions, one belonging to each house, and separate from one another; therefore be it understood on all sides, that whosoever, for the safety of his their houses, will put down his own wooden walls or partitions, and instead thereof build a party-wall of brick or stone, he or they are also empowered to pull down the next wooden wall or partition of the next adjoining house or houses, (if the landlord will not agree thereto), and proceed in every step, as before delivered for the rebuilding of decayed party-walls of brick or stone.

Which new-built wall must be placed equally on both premises, that is to say, half the thickness of the foundation on one landlords land, and the other half on the other; and that all settings-off in the foundations be equally the same on both sides, as directed in the beginning thereof.

The several rules of houses of buildings, appointed after the fire in 1666, were four.

First, those of allies, by lanes, &c were termed buildings of the first rate, and were ordained to consist but of two stories, exclusive of the cellars and Garrets, whose respective heights where settled as follows, viz, the height of the cellar is six feet and half, the height of the first and second stories each nine feet, and the height of the garrets at pleasure.

The scantlings appointed for the timber of these buildings, are as follows:

Summers or girders, whose lengths are not to exceed 15 feet, must consist of 12 inches in breadth, and 8 inches in depth or thickness; and wall-plates 7 inches by 5 inches.

Principal rafters, under 15 feet, to be 8 inches by 6 inches at their feet, and 5 inches by 6 inches at their top. Single rafters to be 4 inches by 3 inches; and joists, whose lengths are more than 10 feet, must be 7 inches deep, and 3 inches in breadth; excepting those for the garret floors, which must be 3 inches by 6 inches.

And here observe, Stat, 22, Car II that no joists or rafters be laid at greater distance from one to another, than 12 inches, and no quarters at greater than 14 inches.

Secondly, houses of the second rate are such as front streets and lanes of note, consisting of three stories in height, exclusive of the cellars and garrets.

The height of the cellars must be 6 feet and a half (if springs will allow it); the height of the first and second stories 10 feet each, the height of the third story 9 feet, and the height of the garrets at pleasure.

The scantlings appointed for the timber of these buildings are as follows.

1st For the floors.

Summers	10		15			11		8	
or girders	15		18		Must have	13	Inches	9	
in length	18	to	21	feet	in their	14	and	10	inches

form	21 24		24 26		depths	16 17	breadth	12 14	

Joists which bear 10 feet, must have in thickness 3 inches , and in depth	6 7 7 8 8	inches	Where the depth of the girder is	8 9 10 12 14	inches

Binding joists with their trimming joists, 5 inches in breadth, their depth equal to their own floors.

Wall-plates or raising-pieces and beams	10 8 7	inches	and	6 6 5	inches

Lintels of oak in the	First, second and third	Story,	8 5	and	6 4	inches

2ndly, for the roof.

Principal rafters, whose lengths are from	15	to	18	Feet must be at	Foot 9 Top 7	Inches and	7 inches thick
	18		21		Foot 10 Top 8	Inches and	8 inches
	21		24		Foot 12 Top 9	Inches and	8 ½ inches
	24		26		Foot 13 Top 9	Inches and	9 inches

Purlins, whose lengths are from	15 18	to	18 21	Feet must have in their squares	9 12	Inches by	8 9	inches

Single rafters, whose lengths do not exceed	9 6	Feet, must have in their squares	5 4	Inches by	4 3 ½	inches

Thirdly, buildings of the third rat, are such as front the most principal streets of trade, as cheapside, fleet-street, the strand, &c. consisting of four stories in height, exclusive of the cellars and garrets.

The height of the cellars are as in the last preceding, the height of the first story 10 feet, the second 10 feet and half, the third 9 feet, the fourth 8 feet and half, and the garrets at pleasure.

The scantlings of timber appointed for this third rate of houses, are the same of those of the second .

The fourth rate of houses being such as are appointed for persons of extraordinary quality, situate in magnificent squares, &c. may have the height of their stories, and scantlings of their timber at pleasure; but they must not exceed four stories in height, exclusive of the cellars and garrets.

And here is to be noted, that the height of the first floor over the cellars, in houses of the second and third rates, shall not be more than 18 inches, with a circular step without the building.

Scantlings of stone appointed for the first , second and third rates of buildings.

First rate.

<table>
<tr><td></td><td>inches</td><td rowspan="5">by</td><td>inches</td></tr>
<tr><td>Corner piers</td><td>18</td><td>18</td></tr>
<tr><td>Middle or single piers</td><td>14</td><td>12</td></tr>
<tr><td>Double piers between house and house</td><td>14</td><td>18</td></tr>
<tr><td>Door jaumbs and heads</td><td>12</td><td>18</td></tr>
</table>

Second and third rates.

<table>
<tr><td></td><td>feet</td><td rowspan="4">by</td><td>inches</td></tr>
<tr><td>Corner piers</td><td>2</td><td>6</td></tr>
<tr><td>Middle or single piers</td><td>1</td><td>6</td></tr>
<tr><td>Double piers between house and house</td><td>1</td><td>18</td></tr>
<tr><td>Door jaumbs and heads</td><td colspan="3">14 inches by 10</td></tr>
</table>

As to materials: and first quartering:

<table>
<tr><td rowspan="3">Single
double</td><td rowspan="3">Quarters whose lengths are</td><td>feet</td><td rowspan="3">Must have</td><td></td><td rowspan="3">And in breadth</td><td></td><td rowspan="3">Inches in thickness</td></tr>
<tr><td>8</td><td>3 ½</td><td>1 ¾</td></tr>
<tr><td>8</td><td>4</td><td>3 ½</td></tr>
</table>

Secondly, of laths

<table>
<tr><td rowspan="2">Laths whose lengths are</td><td>5</td><td rowspan="2">Feet, must heve one inch in breadth, and</td><td>¼</td><td rowspan="2">Of inch in thickness</td></tr>
<tr><td>4</td><td>½</td></tr>
</table>

As to the front and rear walls.

By the strat. 19 of car. II. Houses of the first rate shall have their cellar walls in front and rear two bricks in thickness, the first and second stories of one brick and a half, and the garrets of one brick only.

Houses of the second rate shall have their cellar walls in front and rear two bricks and a half in thickness, the first and second stories two bricks, the third story one brick and a half, and the garrets one brick only.

Houses of the third rate shall have their cellar walls in front and rear three bricks thick, in the first story two bricks and a half in the second, third and fourth stories and a half, and in the garrets brick only.

Houses of the fourth rate, being chiefly for noblemen, &c. have their thickness left to the discretion of the architect.

By stat. 7 of the queen Anne, no modillion or cornice of wood or timber should hereafter be made, or suffered to be fixed under the eaves of any house, or against any front or rear wall thereof, but the front and rear walls of every house and houses, shall be built intirely of brick or stone, (the windows and doors excepted) to be carried two feet and a half high above the garret floor, and coped or covered with stone or brick.

Also by stat, 7. Of queen Anne, it is enacted, that all jaumbs and backs of chimneys, which shall or may be built, shall consist of one brick in thickness at the least, from the cellars to the roof; that all the insides of such chimneys shall be four inches and a half in breadth; that all funnels shall be plaistered or pargetted within, from the bottom to the top; that all chimneys be turned or arched with a trimmer under hearths with brick, the ground floor excepted; and that no timber shall be nearer than five inches to any chimney, funnel or fire-place; that all mantles between the jaumbs be arched with brick or stone; and no wood or wainscot shall be placed or affixed to the front of any jaumb or mantle-tree of any chimney, nearer than five inches from the inside thereof.

That all stoves, boilers, coppers, and ovens, shall not be nearer than nine inches, at the least to the adjoining house; and no Timber or wood to be nearer than five inches to any fire-place or flue.

But by stat. 22 Car. II. It is enacted, that no timber be laid within twelve inches of the foreside of chimney jaumbs; and that all joists on the back of every chimney, on penalty to the workman for every default 10 s and 10 s more every week it remains unreformed.

(TABLES.)

HOUSING, with bricklayers, a term which they use when a tile or brick is warped, or cast crooked or hollow in burning, then they say, such a tile or brick is housing. Tiles are apt to be housing or hollow on the struckside (i.e. that which was uppermost in the mould) and bricks on the contrary side.

Some have made this observation, that tiles are always smoothest when burnt on the struck-side, by reason the sand sticks to the underside, which they strow on the stock of the mould, to prevent the earth sticking to it.

JAMBS

JOINERY, the art of working in wood, or of fitting and assembling various parts or members together: it is called by the French menuisire q.d. small work, by which it is distinguished from carpentry, which is conversant in larger and less curious works.

JOIST (in architecture9 are those pieces of timber framed into the girders and summers on which the boards of the floors are laid.

Scantling of joists at full length (to bear in the wall)

<table>
<tr><td rowspan="3">being</td><td>12 foot</td><td rowspan="3">Ought to be in their squares</td><td>8 inches and 3 inches</td></tr>
<tr><td>11 foot 6 inches</td><td>7 inches and 3 inches</td></tr>
<tr><td>10 foot 6 inches</td><td>6 inches and 3 inches.</td></tr>
</table>

And binding or trimming joists

<table>
<tr><td rowspan="3">Being in length</td><td>7 foot</td><td rowspan="3">Ought to be in their squares</td><td>6 inches and 5 inches</td></tr>
<tr><td>9 foot</td><td>7 inches and 5 inches</td></tr>
<tr><td>11 or 12 foot</td><td>8 inches and 5 inches</td></tr>
</table>

Their distance and position.

1. No joist ought to lie in a greater distance from each other, than 10 (or at most than 12) inches.
2. All joists on the back of a chimney, ought to be laid with a trimmer, at 6 inches distance from the back.
3. No joists ought to bear at a longer length than 10 foot
4. No joist ought to lie less than 8 inches into the brick wall.
5. Some carpenters furr their joists (as they call it) that is, they lay 2 rows of joists one over another; the undermost of which are framed level with the underside of the girder, and the upper-most (which lie cross the lower ones9 lie level with the upperside of the girder.

IRON, is a hard fusible and malleable metal, of vast use in building, and many other affairs of life.

It consists of an earth, salt, and sulphur; but all impure, ill mixed and digested, which renders it very liable to rust.

It is the hardest, driest, and most difficult to be melted of all metals.

It may be softened, by heating it often in the fire, hammering it, and letting it cool of itself; and is hardened by extinguishing it in water.

It may be rendered white by cooling it in sal armoniac and quick lime.

The strongest temper of iron, is said to be that, which it takes in the juice of strained worms.

Iron has a great conformity with cooper, so that they are not easily separated when soldred together.

Iron has also a great conformity with the loadstone. Rohault says, that it is itself and imperfect loadstone, and that if it be long time exposed in a certain situation, it becomes a real loadstone, and mentions the iron in steeple of Notredame at Chartres as an instance.

(the kinds of iron) there are several kinds of iron that have properties very different from another as:

1. English, which is coarse, hard and brittle, fot for fire bars, and other such coarse uses.
2. Swedish Iron, which of all others is the best, used in England. It is a fine, tough sort of iron, which will best endure the hammer, is softest to file, and in all respects the best to work upon; and therefore most coveted by workmen.
3. Spanish iron, which would be as good as the Swedish, were is not subject to red-sear, (as workmen phase it) that is, to crack between hot and cold; therefore when it falls under your hands, you must tend it more diligently at the forge. But though it be a good, though, soft iron, yet the workmen refuse it for many uses, because it is so ill and unevenly wrought in the bars, that it cost them a great deal of labour to smooth it; but it is good for all great works, which require welding as the bodies of anvils, sledges, large bell-clappers, large pestles for mortars, and all thick strong bars, 6c. but it is particularly chosen by anchor smiths, because it abides the heat better than other iron, and when it is well wrought, is the toughest.
4. German iron, which goes by the name of dort square, because it is brought hither from thence, and is wrought into bars of 3 quarters of an inch square; this is a bad, coarse iron, and only fit for ordinary uses,, as window-bars, brewers bars, fire bars &c.
5. There is another sort of iron for making of wire, which is the softest and toughest of all iron. This sort is not peculiar to any country; but us indifferently made, wherever iron is made, though of the worst sort; for this is the first sort that runs from the mine stone, and is reserved purely for the making of wire.

To know good iron. Generally speaking, the best iron is the softest and toughest, and that which when it breaks is of and even grayish colour, withcut any of those glittering specks, or any flaws or divisions, like those seen in broken antimony.

Therefore when you chose it, chose such as bows oftenest before it breaks, which is an argument of toughness, and see that it breaks sound within, of a graying colour, &c. And that there be no flaws or divisions in it; for these are arguments that this is sound, and has been well wrought at the mill. (…)

LATHS (for building)long thin and narrow flips of wood, used in tiling or walling, these are distinguished into 3 kinds, according to the different woods they are made of, viz heart of oak, sap-laths, and deal-laths, the 2 lasts sorts are used for ceilings and partitioning, and the first for tiling only.

Again, laths are distinguished into 3 kinds more, in respect of their lengths, viz into 5 foot, 4 foot, and 3 foot laths; though the statute allows but of 2 lengths, viz. those of 5 foot and of 3 foot, each of which are to be an inch and half in breadth, and half inch in inch in thickness.

All these sorts of laths are necessary, (especially in repairing of old buildings) because all rafters are no spaced alike, nor yet the proportion strictly observed in everyone and the same roof.

Bundle of laths. A bundle of laths is so many as are bound up together, and is generally called a hundred of laths; though of the 3 foot laths there goes 7 score or 140 to the hundred of bundle, and of the 4 foot laths, 6 score, but of 5 foot laths, there goes but just 5 score to the hundred or bundle.

The size of laths. The statute allows but of 2 sorts of laths, one of 5 foot, and the other of 4 foot length; of either sort each lath ought to be breadth and inch and half, and in thickness, half an inch; but they are commonly less, and are seldom exact, either in their Tales or Measures.

Of cleaving laths. Lathcleavers having cut their timber into lengths, they cleave each piece (with wedges) into 8, 12 or 16 pieces (according to the largeness if their timber) which they call bolts; (with their dowl-ax) by the felt grain (which is that grain which is seen to run round in rings at the end of a tree) into sizes for the breadth of their laths, and this work they call felting.

Then lastly (with their chit) they cleave their laths into their thicknesses, by the Duarter Grain which is seen to run in strait lines towards the pith.

Some say a foot of timber will make a bundle of a hundred laths; but this is not true, unless the laths be made very slight: it has been found by many experiments, that 40 foot ot oaken round timber will not make above 30 hundred, of which number above I third part, viz. above 10 hundred will be sap-laths.

LATHING, the price of lathing, plaistering, rendring and washing with size, is about 10d, 12 d, or a 14d, the yard, for materials and work.

LEAD (PLOMO), is a coarse, heavy, and impure metal, of all others the softest and most fusible, when refined; those who have analysed it, find it contains a little mercury, some sulphur, and great deal of bituminous earth.

Lead is found in various countries, but most plentifully in England. It is likewise found in several kinds of soils and stones, some of which contain besides gold, some silver and others tin, &c.

It is melted in a furnace provided for that purpose with a strong coal fire upon it. As it melts, it runs through a canal on one side of it, leaving the earth, stone and scoria with the ashes of coals.

It is purified by skimming it before it is cold, and by throwing suet and other fat bodies into it; some able naturalists have observed, that lead increases in weight, either in open air, or under ground.

Mr. Boyle observes this particularly of the lead of churches, which, he says, grows frequently both in bulk and weight, so as to become to ponderous for the timber that before sustained it; which some account from the impurity, heterogeneity, and loose texture of its parts, by means of which particles of the air getting admission within its pores, are attracted and easily assimilated to it.

But others who rely wholly on experience, absolutely deny the effect, as also that it is reproduced in mines before exhausted, by letting them lie long open to the air, which others assert.

Lead is found of a lighter or deeper colour, accordingly as it is more or less purified, though some make a difference in the colour of the ore, always esteeming that most which is whitest.

Lead is much used in building, specially for coverings, gutters, pipes and glazing.

Lead is either cast into sheets in a mold, or milled, which last is found by much the least serviceable, not only on account of its thinness; but also because this is so exceedingly stretched in milling, that when it comes to lie in the hot sun, it shrinks and cracks, and of consequence will not keep out the water.

The lead used by glaziers is first cast into slender rods, 12 or 14 inches long, called canes, which being afterwards drawn though their vice, comes to have a groove on either side for the panes of glass, and this they called turned lead.

There are 3 sorts of lead, white, black and ash-coloured, the white is more perfect and precious than the black, and the ash colour between both.

Of casting sheet lead. To do this, there is mould provided, which is something longer than the sheets are intended to be, that the end where the metal runs off from the mould may be cut off, because it is commonly thin and uneven, or ragged at the end.

This mould which is the exact breadth that the sheets are to be, must stand very even or level in breadth, and something falling from the end where the metal is poured in, viz. about an inch or inch and a half in the length of 16 or 17 feet.

This mould usually consists of several treffels, upon which boards are laid in a nailed down fast, and upon these at a due distance (according to the intended breadth of the sheets) the sharps are fixed.

These sharps are 2 pieces of well seasoned timber, of about 4 inches square, and 16, 17 or 18 foot in length, according to the size of the sheets.

But some having found and inconveniency in this method of fixing down the shafts, they only fix one of the sharps firmly, nailing the other on but slightly, and then the fix several pieces firmly to the boards, without the slightly fixed sharps, betwixt which and the sharp they drive to wedges, to make the sharps come nearer together, as they fee occasion; they having found by experience, that the moistened sand (when it has lain a while on the boards) makes the boards swell so much, that notwithstanding the nails, the sharps will be too far asunder.

At the upper end of the mould stands the pan, which is a concave triangular prism, composed of 2 planks nailed together at right angles to each other, and 2 triangular pieces fitted in betwixt then at the ends.

The length of this pan is the whole breadth of the mould in which the sheets are cast, and the breadth of the planks of which it is composed, may be about 12 or 14 inches, or more, according to the quantity of lead they have occasion to put into it to make a sheet of, and the thickness of the planks and inch and a half.

This pan stands with its bottom (which is sharp edge) on a form at the end of the mould, leaning with one side against it, and on the opposite side is a handle to lift it up by to pour out the melted lead, and on that side of the pan next to the mould, are 2 iron hooks to take hold of the mould, and prevent the pan from flipping, when they pour the melted lead out of it into the mould.

This pan is lined on the inside with moistened sand, to prevent it from being fired by the hot metal.

(…)

LIME (cal), calcined stone, marble, free-stone, chalk or other matter burnt in a large fire in a kiln or furnace built for that purpose; to be afterwards used in the composition of mortar for building, the fire taking away all its humidity, and opening its pores, so that it becomes easily reducible to powder.

Mr. Leybourn tells us out of Palladio that stones, whereof lime is made are either dug out of hills, or taken out of rivers: that lime is best, that is made out of the hardest found, and white stones, and being burnt, remains a third part lighter than the stones whereof it is made.

All dug stones are better to make lime of than gathered stones; and from a shady and moist pit, than from a dry.

All stones are sooner or later burnt, according to the fire, which is given them; but they are ordinarily burnt in sixty hours.

Sir Henry Wotton looks upon it as great error in the English, to make lime as they do, of refuse and stuff without any choice, whereas the Italians at this very day, and much more ancients, burnt their firmest stones, and even fragments of marble, where it was plentiful, which in time became almost marble again, for its hardness, as appears in their standing theatres, &c.

There are two kinds of lime in common use in England, the one made of stone, and the other of chalk, whereof the former is much the strongest.

That which is made of soft stone or chalk, is the fittest for plaistering of ceilings, and walls within doors; and that made of hard stone, is fit for structures of buildings, and plaistering without doors, that lie in the weather.

And that which is made of a greasy, clammy stone, is stronger than that made of a poor lean stone; and that which is made of a spungy stone, is lighter than that made of a firm and close stone; that is again more commodious for plaistering, this for building.

Good lime may also be made of mile-stone, but not coarse and sandy, but fine and greasy; as likewise of all kinds of flints; though it is hard to burn them, except in a reverberatory furnace as being apt to run to glass, unless those that are rolled in water, because the greater part of its increase goes by a kind of glass.

Dieussant recommends a lime made of sea shells, as cockle, oysters, &c. as the best; but Goldman finds fault with it, as being impatient of moisture, and therefore easily peeling off from the out-side walls: however, it is the common lime used in the indies.

About Sussex, lime is made a hard chalk digged out of the hills, and is burnt in kilns like brick-kilns, but with this difference, that they have no arches in them; but only a kind of bench or bank, on each side, upon which they lay the largest stones, and so truss them over and make and arch, after the manner of clamps for bricks, and when they have thus made and arch with the largest stones, they fill up the kiln with the smaller ones.

Some have said than Kentish lime is far better than commonly made in Sussex; because they say, a Gallon of water will make as much more Kentish lime run, as it will of Sussex Lime; so that it should seem (by the consequence) that, that is the best lime which will run with the least moisture.

Before the stones are thrown into the kiln, they are to be broken in pieces; otherwise the air contained in their cavities, too much expanded by heat makes them fly with too much violence as to damage the kilns.

Alberti and Palladio say, that Lime will not be sufficiently burnt in less than sixty hours; and Alberti gives than marks of a well burnt of lime to as follows, viz. that its weight is to that of stone in a sesquialterate proportion; that it is white, light and sonorous; that when slaked, it sticks to the sides of the vessel. To which Boeckler adds, that when flaked, it sends forth a copious thick smoak; and Dieussant, that it requires a great deal of water to slake it.

Walter Burrel of cucksfield in Sussex, esq; was the first that introduced the use of fern, for burning of lime, which serves that purpose as well as wood, (the flame thereof being very vehement) and is far cheaper.

In order to preserve lime several years, slake and work it up; dig a pit underground, into which let it pass through a hole open at the bottom of the vessel, as soon as the pit is full, cover it with sand, to prevent its drying; thus keeping it moist until it be used.

Boeckler gives another method. Cover stratum or layer of lime two or three foot high with another of sand of the like height; pour on water enough to flake the lime; but not to reduce it to dust after flaking. If the sand cleave into clush as the smoak ascends, cover them up, so as no vent may be given thereto.

He says, that this lime, being keept 10 or 12 years, will be like glue, and will further be of particular use in painting walls, as being no way prejudicial to the colours.

Quick lime, or unslaked lime, is that which is as it comes out of the furnace.

Slacked Lime, is that washed or steeped in water, and reserved for the making of mortar.

Lime is commonly sold about London by the hundred, which is 25 bushels, or 100 pecks; but in the country, by the load, of 32 bushels.

A load lime as some say, will maje mortar enough for 250 solid foot of stone-work; and 8 bushels of lime, heaped measure, is the common allowance to every thousand of bricks.

MASON, is a person employed under the direction of an architect, in the raising of a stone building.

The chief business of a mason is to make the mortar, raise the walls from the foundations to the top, with the necessary retreats and perpendiculars to form the vaults, and employ the stones, as delivered to him.

When the stones are large, the business of hewing or cutting them belongs to the stone-cutters, thought these are frequently confounded with masons; the ornaments of sculpture are performed by carvers in stone, or sculptors.

The tools or implements principally used by them are, the square, level, plumb-line, revel, compass, hammer, chissel, mallet, saw, trowel, 6c. Besides the common instruments used in the hands, they have likewise machines for raising of great burdens, the conducting of large stones, &c.

MASONRY, is a branch of architecture, consisting as it is defined by some, in the art of hewing or squaring of stones, and cutting them level and perpendicular for the uses of building: though ina amore limited sense of the word, masonry is the art of assembling and joining stones together with mortar.

Whence there arise as many different kinds of masonry, as there are different forms and manners of laying or joining stones.

Vitruvius mentions 7 kinds of masonry among the ancients, 3 of hewn stone, viz. that in form of a net; that in binding, and that called the greek masonry; and 3 of unhewn stones, viz. that of and equal course, that of an unequal course; and that filled up in the middle; the seventh was a composition of all the rest.

Masons work is sometimes measured by the superficial foot, and sometimes by the solid foot; and in some places walling is measured by the rood, which is 21 feet in length, and 3 in height, which makes 63 square feet.

(…)

Net masonry, called reticulation, from its resemblance to the mashes of a net, consists of stones squared in their courses, and so disposed, as their joints go obliquely, and the diagonal are the one perpendicular, and the other level; this is the most agreeable masonry to the eyr, but it is apt ot crack.

Bound masonry, is that in which the stones were placed one over another like tiles; the joints of their beds being level, and the mounters perpendicular: so that the joint that mounts and separates two stones, fall directly over the middle of the stone below. This is less beautiful then the net work, but is more solid and durable.

Greek masonry, (according to Vitruvius) is that, where after 2 stones have been laid, each of which makes 2 courses, the same order being observed thoroughout the building, this may be called double building, in regard that the binding is not only for stones of the same course with another; but likewise of the one course with another course.

Masonry by equal courses; this was by the ancients called isodomum, and differs not from bound masonry; but only in this, that its stones are not hewn.

Masonry by unequal courses, which the ancients called pseudisodomun, was also made with unhewn stones, and laid in bound work; but then they are not of the same thickness, nor is there any equality observed, excepting in the several courses; the courses themselves being unequal to each other.

Masonry filled up in the middle, which the ancients called emplecton, is likewise made of unhewn stone, and by courses; but the stones are only set in order as to the courses; the middle being filled up with stones thrown in at random among the mortar.

Composed masonry, is of Vitruvius proposing; and is so called, as being formed of all the rest. In this the courses are of hewn stone, and the middle place left void, filled up with mortar and pebbles thrown in together. After which, the stones of one course, are bound to those of another course, with cramp-irons, fastened with melted lead.

All kinds of masonry now in use, may be reduced to these 5, viz, Bound Masonry, that of brick-work, where the bodies and the projectures of the stones inclose square spaces or panels, &c. set with bricks; that de moilon, or small work ,where the courses are equal, well squared, and their edges or beds rusticated; that where the courses are unequal; and that filled up in the middle with little stones and mortar.

MORTAR/MORTER: in architecture, is a preparation of lime and sand, mist up with water, servins as cement, and used by masons and bricklayers in building of walls od stone and brick.

For plaistering of walls, they make their mortar of lime, and ox, or cow hair, tempered well together with mortar.

Of making common mortar. As to the proportion of lime and sand to be used in making common mortar, there are different opinions.

Vitruvius says, you may put three parts of dug (or pit-sand) to one part of lime; but if the sand be taken out of a river, or out of the sea, then two parts of it, and one of lime. He also adds, that if to the river or sea sand, you put one third part of powder of tiles or bricks, it will work the better.

But vitruvius's proportion of sand seems too much, though he should mean of lime before it is flaked, for one bushel of lime before it is flaked, will make five pecks, after it is flaked.

About London, (where for the most part of lime is made of chalk) they put about 36 bushels of pit sand to 25 bushels of quick lime, that is, about a bushel and a half of sand to a bushel of lime.

In some places the put after the proportion of three pecks of sand to one bushel of lime; in other places a bushel and a half of sand, to a bushel of lime.

In effect the proportion of lime to sand in making of mortar, ought to be according to the goodness or badness of these material and is therefore rather to be regulated by the judgment of experienced workmen in each particular country, than by any stated proportions of materials.

As to the method of making a mortar, some workmen are of opinion it is the best way not to use mortar as soon as it is made; nor (in making it) to make the lime run before it is mixed with the sand (as some do) but rather to throw the sand on the lime while it is in the stones, before it is run, and so to mix it together, and then to wet it; by which means (they say) it will be the stronger, and when it has lain a while before it is used, will not be so subject to blow and blister.

Others advice to let mortar (when made9 lie in a heap two or three years before it is used, which they say , will render it the stronger and better; they likewise say, the using of mortar as soon as it is made, is the cause of so many insufficient buildings.

Others advice, that it flaking of lime, to wet in every where but a little (and not to over-wet it) and to cover every laying or bed of lime (about the quantity of a bushel) with sand, as you flake it; that so the steam or spirit of the lime may be kept in, and not fly away, but mix itself with the sand; which will render the mortar considerably stronger, than if it were all flaked at first, and the sand thrown on altogether at last.

That all the mortar should be well beaten with a beater, three of four times over before it is used, by that means to break all the knots of the lime well together; and they say, that the air which the beater forces into the mortar at every stroke conduces very much to the strength of it.

That when you design to built well, or use strong mortar for repairs, you beat the mortar well, and let it lie two or three days, and then beat it well again, when it is to be used.

That mortar be used as soft as may be in summer time; but pretty stiff or hard in winter.

As to mixing and blending of mortar mr. Felibien observes, that the ancient masons were to very scrupulous herein, that the Greeks kept ten men constantly employed for a long space of time, to each bason, which rendred it of such prodigious hardness, that Vitruvius tells us, the pieces of plaister falling off from old walls, served to make tables.

And Mr. Felibien tells us, it is maxim among old masons to their labourers, that they should dilute it with the sweat of their brow, i.e. labour it a long time, instead of drowning it with water, to have done the sooner.

Mr. Worlidge advises, that if you would have your mortar strong, where you cannot have your choice of lime, but cand chose your sand and water, not to use that sand that is full of dust; for all dusty sand makes the mortar weaker; and the rounder the sand is, the stronger, the mortar eill be, as is usually observed in water drift sand; that it makes better mortar than sand out of the pit.

Therefore he advices, that if you have occasion for extraordinary mortar, to wash your sand in a tub, till the water, after much stirring, comes of clear, and to mix that with new lime. And the mortar will be very strong and durable. And if the water be soul, dirty or muddy, the mortar will be the weaker.

Wolfius, observes, that the sand should be very dry and sharp, so as to prick the hands when rubbed; yet no earthy, so as to soul the water it is washed in.

He also finds fault with masons and bricklayers, as committing a great error in letting their lime flacken and cool before they make up their mortar, and also letting their mortar cool and die before they use it; therefore he advises, that if you expect your work to be well done, and to continue long, to work up the lime quick, and but a little at a time, that the mortar may not lie long before it be used.

So that it appears, men differ in their opinions in this point; some assuming it to be best to work up the mortar new, and others, not till it has lain a long time.

A certain author tell us, that an experienced mason told him, that being at work at Erige-place, (at the Lord Abergany's) at Fant in Sussex, they would have him make useof mortar that had been made four years. But when he came to try it, he said it was good for nothing, because it was so very hard, that there was no tempering it. Upon which a certain jesuite (who resided in the house, and had been a great traveler) told him, that to his knowledge at several places beyond the sea, they always kept their mortar 20 years before they used it; but then this mortar was kept in cisterns for the purpose, and always moist.

The ancients had a kind of mortar so very hard and binding, that after so long a duration, it is next to impossible to separate the parts of some of their buildings; though there are some who ascribe that excessive strength to the time and influences of certain properties in the air, which is found to harden some bodies very surprisingly.

De Lore, observes, that the best mortar is that made of puzzuoli; adding, that it penetrates black flints, and turns them white.

The Lime used in the ancient mortar is said to be burnt from the hardest stones, and even the fragments of marble.

As for the scaling (or crimping) of mortar out of the joints of stone and brick-walls, some are of opinion it proceeds from the badness of the sand or lime, or both, as well as from the season of year when work is done.

Besides the common mortar used in laying stones, bricks, &c. there are several other kinds, as

White mortar, used in plaistering the walls and ceilings which are often first plaistered with loam, and is made of ox or cow hair, mixed and tempered with lime and water without any sand.

The common allowance in making this kind of mortar is one bushel of hair to six bushels of lime; the hair serves to keep the mortar from cracking; binding it, and holding it fast together.

The mortar used in making water courses, cisterns, &c. is very hard and durable, as may be seen at Rome at this day. It is used not only in building of walls, but also in making of cisterns to hold water, and all manner of water works, and also finishing or plaistering of fronts, to represent stone work.

There are two kinds of it, the one is compounded with lime and hogs grease, and mixt with the juice of figs; and the other is of the same ingredients, but has liquid pitch added to it, and is first wet or slaked with wine, and then pounded or beaten with hogs grease, and juice of figs.

That which has pitch in it, is easily distinguished from the other by its colour; and what is plaistered with this kind of mortar, is washed over with linseed oil.

Mortar for furnaces, &c. id made with red clay, wrought in water, wherein horse dung and chimney soot has been steeped, by which a salt is communicated to the water binding the clay, and making it fit to endure the fire; this clay ought not to be too fat, left it should be subject to chinks; nor too lean or sandy, left it should not bind enough.

Some operators in metal use a kind of mortar to plaister over the inside of their vessels in which they refine their metals, to keep the metal from running out; and thie kind of mortar is made with quick-lime and ox-blood; the lime being first beaten to powder, and fifted, and afterwards mixt with the blood, and beat with the beater.

The glass-makers in France are said to use a sort of mortar (for plaistering over the insides of their furnaces) which is made of a sort of fuller's earth, which is procured at Beliere, near Forges, which is the only earth in France that has the property of not melting in this excessive heat, and also the pots which hold the melted metal, are made of this sort of earth, and will last a long time.

Mortar for sun-dials on walls, may be made of lime or sand tempered with linseed oil, may be made of scummed milk; but oil is better: this spread upon the wall, will harden to the hardness of a stone, and not decay in many years, and will endure the weather six times as long as the ordinary plaister, made of lime and hair with water.

A certain author says he has known a very strong and tough mortar (for a sun-dial plane) has been made after the following manner.

There was taken five or six gallons of brook sand, and dryed on and oast; and after that fisted thought a fine splinted steve, and then mixed with it the same quantity, or rather something more of fisted lime, and gallon of boreing (or gun) dust fisted also these were all wetted and well tempered with six or seven gallons of seummed milk, and about two quarts of linseed oil.

This was laid on the wall first, well wetted with milk; but this proved very troublesome to the workmen to set in smooth; by reason that it dryed so very fast; but by keeping it often sprinkled with milk, and smoothing it with the trowel, it did at last set with a smooth and shining surface.

But notwithstanding all his care (as it dryed) it cracked pretty much, which might probably proceed from the want to hair to it; it did also blow blisters, though the lime was fisted; which probably might have been prevented, if the lime had been prepared as for Fresco Painting.

Extraordinary good mortar for floors, walls, ceilings, &c.

Temper Ox blod and fine clay together, then the lay the same in any floor, or plaister any wall or ceiling with it, and it will become a very strong and binding substance. This is said by some to be much used in Italy.

In buildings one part of waste soap ashes mixed with another lime and sand, make a very durable mortar.

This mortar may be made, as it was by certain eminent Soap boiler, who built himself a very handsome house with it in the following proportions; two load of waste soap ashes, one load of lime, one load of lome, and one of sand.

Another person of the same trade used only lime and soap-ashes, tempered and wrought together for mortar; with which the laid both the foundations, chimnies, and their tunnels, in his dwelling-house in southwark; which have endured and stood out those storms which have overturned many other tunnels, both new and old, which were built with common mortar.

It is true indeed, this kind of mortar is somewhat rough in the laying and more sharp and fretting to the fingers than common mortar; which may be the reason why it is so much neglected and decryed by workmen.

But these two inconveniences might be easily remedied; and indeed its roughness is so far from being a fault, that it is rather an excellent quality in the mortar. But this may be remedied, by grinding stamping the soap-ashes (which are in hard cakes) to fine powder, before they are mixed with the sand, which will soon bring it to smooth temper.

Nor will the charge be much; the profit of one day's labour will answer the charge of three mens wages, in the difference of price that will be found betwixt one load of these ashed and one hundred of lime.

Secondly, as to the sharpness wherewith it offends the workmen fingers, that may be avoided by wearing gloves (without which they seldom lay any brick at all) to avoid the like effects which they find in lime.

Or, factor an assured remedy in these cases; this ashes may be re-imbibed in water for a considerable time, till more of their salt be extracted from them; and then much of their freeting nature being taken away, they will be found to be gentle enough.

For laying tiles, in some places they make a kind of mortar of lome and new horse dung well tempered and mixed together: and this is by some workmen accounted a good strong, and cheap mortar made with lime and sand, which they say corrodes and frets the tiles and causes them to scale and fly to pieces; which this does not.

For the plaisterin the fronts of houses in imitation of brick work; some workmen make mortar for this sort of work, of powder of brick, sharp sand and lime, and some red oker. Some houses plaister, look very well, though they have been done 20 or 30 years, and may be taken, by one passing by, for a brick house, though be only timber plaistered over. The workman has for this sort of work commonly 1 s per yard, only for workmanship.

How much allowed to a rod of brick-work or a square of tileing. Workmen usually allow a hundred and a half (or 37 ½ bushels) of lime and two load (or 72 bushels of sand) to make mortar enough for a rod of brick-work.

And for tileing; four bushels of lime and six or eight bushels of sand, will make mortar enough for laying 1000 tiles, which is about a square and a half; so that a square of tileing will take up, for mortar, about 2 2/3 bushels of lime, and about five bushels of sand.

A caution. It is a general caution in all parts of a building that where either stones or bricks are contiguous to wood, they ought to be laid, dry, or without mortar; because lime and wood are unsociable; the lime very much corroding and decaying the wood.

NAILS, in building &c are small metalline members serving to bind or fasten the parts together.

The several kind of nails are very numerous.

1. Black and bottom nail's; which are made with flat shanks to hold fast, and not open the wood, being proper for nailing of boards together for coolers, for guts to save water under the eves of a house, or for any liquid vessels made of planks or boards.
2. Clamp-nails, those proper to fasten the clamps in buildings &c, and repairing of ships.
3. Clasp-nails; whose heads clasping and sticking into the wood, render the work smooth, so as to admit a plane over it, they are of two kinds viz. long, proper for fine buildings of fir and other soft wood, and strong, fit for oak, and other hard wood; the sizes are 7, 7 ½ , 8, 10, 13, 15, 18, 21, 22, 23, 28, 32, 36, and 40 l. per thousand.
   Of the strong, the sizes are 15, 18, 28, 32, 40 l per thousand.
4. (…)

Allowance in lathing; 500 nails are ordinarly allowed to bundle of five foot laths, and 600 to a bundle of four foot laths; at six score nails to the hundred.

Allowance in flooring. In laying of floors 200 (that is 240) is a sufficient allowance for a square flooring.

Nails are said to be toughened when too brittle, by heating them in a fire-shovel or the like, and putting some tallow or grease among them.

OPTICKS, is properly the science od direct vision; though the word is sometimes used in a larger sense, for the science of vision or visible in general; and in this sense it includes catoptricks, diopticks, and even perspective

(…)

Opticks in its extensive signification may be considered as a mixt mathematical science, explaining the manner wherein vision is performed in the eye; treats of the sight in the general gives the reason of the several modifications or alterations which the rays of light undergo in the eye, and why objects appear sometimes bigger and sometimes more distinct, sometimes more confused sometimes nearer and sometimes farther off.

In this extensive signification it is considered by sir Isaac Newton in his admirable work called opticks; from opticks likewise arises perspective; all the rules of which have their reason or foundation in opticks; and though tacquet makes perspective a part of opticks, jet john Archbishop of Canterbury, calls opticks, catoptricks and dioptricks, by the name of Perspective.

PAINTING of timber work, the manner of colouring all manner of timber-work, as wainscoat, doors, windows, posts, rails, pales, gates, border boards for gardens, &c. which require either beauty or preservation from the violence of rain, or injury of the weather, is as follows.

Suppose there be a set of palisades, or a pair of gates, or some posts and rails to be painted in a stone colour.

Fisrt, look over the work and take notice whether the joints be open in the gates, or whether there be any large clefts in the posts; for if these are not secured, the wet will insinuate itself into those defects, and make the quicker dispatch in rotting the whole work.

Therefore the first thing to be done, is to stop up those clefts &c. smooth, and even, with a substance which painters call putty, which is made of whiting and linseed oil, well beaten together on a grinding stone, or with a wooden mallet, to the consistence of a very thick dough, and with this, let all the crannies, clefts and other defects be well filled up, so that it may be equal to the surface or out side of the things to be painted.

Then prime the work with Spanish brown, well ground, and mixt very thin with linseed oil; with this do over the work giving it as much oil as it will drink up; this in about two days will be indifferent dry; the if you would do the work substantially, do it again with the same priming colour; when it is thorough dry; then if you would do the work substantially, do it again with the same priming colour; when it is thorough dry, take white lead, well ground and tempered with linseed oil, but not too thin; for the stiffer you work it, if it be not too stiff, the better body will be laid on, and the longer it will last; rub this colour on well with a large bristle brush; that the whole surface on the work be so intirely covered, that no crack nor corner may remain bare; which may be easily done by jobbing in the point of a bristle brush.

Let this first colouring dry and then go over it a second time, and if you please, a third also; the charge will be but little more, but the advantage will be great in the duration.

This course is sufficient for every kind of timber work, which requires only a plain colour; whether you cover the work with stone colour, or else with a timber colour with umber and white, ot a lead colour with indigo and white.

Some lay over their work only a coat of Spanish Brown, by tempering it up more stiff thatn was done for the two first primings, which in some respects, is the cheapest way of all, and preserves the timber perhaps as well as any.

Note, if when you have made use your colours, there be occasion for a small cessation, till the work be finished; in this case, you must cover the colour that remains in the pot with water, which will prevent it drying and skinning over.

And the pencils also or brushes should be washed out in clear linseed oil; and then in warm soap suds; for if either oil or colours be once dryed in the brush, or pencil, they are spoiled forever.

Ot has been observed, that timber laid over with white when it has stood sometime in the weather, the colour will crack and shrink up together, just as pitch does, if laid on any thing that stands in the sun; the cause of this is that the colour was laid on with too stiff a body; for being wrought too thick once, it will dry with a skin on the outside, which will keep the inside moist, and prevent its binding firm, from whence those cracks proceed.

PALLISADE OR PALLISADO, is a sort of flight open pale or fence, set to beautify the place, walk, &c.

There is such variety in the workmanship of pallisado pales, that there can be no certain price by the rod.

Pallisado gates are as various of their forms and fachions as pallisado pales, and consequently their prices are also as various, viz, from 6 or 7 to 10 or 12 s, per yard, running measure at about 7 foot high.

Oron pallisado work in gates or otherways, is from 4d per pound to 8 d according to the work.

PALLIFICATION, (in architecture)is the pileing of the ground work; of strengthening it with piles or timber drive into the ground; which is practiced when they build upon a moist or marshy soil.

PARLOUR, a fair lower room designed principally for the entertainment of company.

PAVING is the laying a floor with stones, bricks or tiles.

Paving or lying with free-stones, i.e. with broad stones taken out of the quarrys, and cut into lengths and breadths promiscuously (as they will hold and in thickness about two or three inches, is usually reckoned at 6 d, 7d or 8 d the foot square, or 4 s 6 d 5 s 3 d and 6 s the yard square, for stone and workmanship.

This kind of paveing is laid in common yards and passages, before shop doors, stalls &c.

But if the stones be squared all to a size 8as sometimes these stones are cut perfectly square, as paving tiles are but much larger, as 18, 20 and 24 inches square and upwards) then as they are nearer, so they are dearer, as 12 d. or 14 d. per foot, or 9s. pr 10 s, 6 d, per yard.

But if the stones thus squared and fized be good and well polished (as they ought to be for kitchens, dairies and neat places) then they may be worth 15 or 16 d.per foot, or 11s. 3d. or 12s. per yard square.

Paving with rigate stones, this kind of pavement is good for chimney fire hearths, ovens, stoves, &c. and it is sometimes dearer than common purbeck pavement. See Fire Stone.

Paving with marble is of all other the most beautiful, of which there are several sorts, as white, black and grey; some pavements (as of foot paces before chimneys) are laid all of one sort or colour, and in one intire stone; others of two colours, laid square or checquer ways, the side of the one, by the side of the other; others are laid andgle to angle, and this last is the nearest way.

But there are may be divers forms contrived to lay them in, as may be seen in several chancels, in the choir of st. Pauls, and the Royal Exchange in London, and divers other places.

This sort of pavement is valued from 2 to 3 s per foot square and upwards according as it is well laid an polished see Marble.

Paving with rough ir rag stone, is de cheapest of all pavements, and is valued from 15 to 18 d per yard.

Paving with statute bricks, this paving is done at London for about 4d per yard.

But it is said that a workman has in Sussex 5 or 6 d per yard; but then into its price the make ready the floor for the work; by clearing out the earth, and leveling the floor with a convenient quantity of sand (if they lay the bricks dry, as sometimes they do) which they spread evenly with rake then laying the bricks level by a line, they with a trowel put a sufficient quantity of sand under each brick, to raise it full as high as (or little higher than) the line, and so knock It down level with the line, with the handle of their hammer, which when they have done, they ram in the sand (on the side of, and) against the bottom of the brick, with the handle of their hammer, to make it lie fast.

The whole floor being laid after this manner, they strew sand all over the bricks, to the thickness of an inch, and order the people of the family to let it lie so for five or six weeks, only sweeping it to and frough now and then; that thereby, and by means of their treading on it, it may fill up all the joints between the bricks.

If the bricks are laid in mortar, the price is much the same as if they were laid dry.

There are some masons who when they have laid the floor dry, will spread the floor all over with very thin mortar, and sweep it to and fro' with a broom, to fill up the joints of the bricks.

This sort of paving (with common statute bricks) is usual for cellars, wash-houses, sinks, fire-hearths, and for halls, kitchens in common houses.

32 of these bricks will pave a yard square, if laid flat ways; and 64, edge ways.

Paving with square tiles, or as they are called by some, paving bricks.

The paving with square tiles, is commonly valued by the square, and by how much the tiles are the smaller, by so much the dearer.

These tiles are of several sizes, viz. 6, 8, 10 and 12 inches square; their price from 6 to 20 s. per hundred.

In Sussex, 9 inches tiles are sold for 1 d per tile or 8 s per hundred.

If you would know how many of either of these sort of tiles will pave any floor,

Note that	36	Tiles of	6	Inches square, will pave a square yard
	21		8	
	16		9	
	13		10	
	9		12	

Paving with Flemish bricks; the paving with these bricks, is far neater and stronger than common bricks. The colour of them is a dirty yellow, and they must be laid in sand. These bricks are six inches and a quarter long, two inches and a half broad, and one inch and a quarter thick.

Now allowing a quarter of an inch for the joint, then 72 of them will pave a yard square; but if they be set edgeways, then it will require 100 bricks to pave a yard square.

These bricks are usually sold ar 2s the hundred, and the price of laying them is 4 d 5 d or 6 d the square yard.

Diamont pavement, Mr. Wing saus is worth 3d or 4d per foot.

(…)

PITCH, (in architecture) is the angle, a gable end, and consequently the whole roof of a building.

In the length of each rafter be ¾ of a building, the roof is said to be true pitch.

If the rafters are longer, it is said to be a high or sharp pitched roof; if shorter, which seldom happens, it is said to be a low of flat pitched roof.

PLASTERING, some workmen in Sussex say, that they have for lathing and plastering with lome in both sides, 3d per yard; but with white lime and hair mortar on both sides, 4 d per yard.

Some tell us that at Tunbridge Wells they will do the plaistering of walls (where they plaster over all the timber) and ceilings, for 2 s 10d per square; and some say, they have had it done for 2 s 6 d.

(… prices)

POSTS, (in building) pretty big pieces of timber, place upright in houses, &c.

PUNCHION, PUNCHIN (in carpentry) a piece of timber placed upright between two posts, whose bearing is too great, serving together with them to sustain some great weight.

The puncheon is usually lower and slighter than the posts, and is joined by a brace or the like of iron.

Puncheon is also a piece of timber raised upright, under the ridge of a building, wherein the little forces, &c. are jointed. Vitruvius calls the puncheon columen. Puncheon is also used for the arbour or principal part of a machine, on which it turns vertically as that of a crane &c.

PURLINS, (in building) those pieces of timber that lie a-cross the rafters on the inside, to keep them from sinking in the middle of their length.

By the act of parliament for the rebuilding of London, it is provided that all purlins from 15 foot 6 inches to 18 feet 6 inches long, ought to be in their square 9 inches and 8 inches: and all in length from 18 foot 6 inches to 21 foot 6 inches, ought to be in their square 12 inches and 9 inches.

PUTLOGS (PUTLOCK), (in carpentry) are short pieces of timber (about 7 foot long) used by masons in building scaffolds to work upon. The putlogs are those pieces that lie at right angles to the wall, or horizontal to the building, with one of their ends resting on the ledgers of the poles, which are those pieces that lie parallel to the side of the wall of the building.

PYLING the ground for a foundation

RABBET, (in carpentry) is the planning or cutting of channels or groves in boards.

RAFTER (in building) are pieces of timber, which stand by pairs upon the reason, meet in an angle at the top and help to compose the roof of a building.

As to their scantlings, &c. it is provided by an act of parliament for Re-building the city of London, that the following scantlings, (which were well consulted by the ablest workmen before they were reduced to and act) are set down as fitted for all edifices great or small, as follows.

As to their distance, it is a rule in architecture, that no rafters be laid a greater distance from each other than 12 inches.

Principal rafters in length	from		to		Must be in breadth		And thick
	f	i	f	i	foot	top	
	12	6	14	6	inches	inches	inches
	14	6	18	6	8	5	6
	18	6	21	6	9	7	7
	21	6	26	4	10	8	8
	24	6	26	4	12	9	8 ½
					13	9	9

Single rafters in length	6 foot 6 inches	must
	8 next	
	9 next	

Have in their square	4 and 3	inches
	4 ½ and 3 ¾	
	5 and 4	

Principal rafters, should be near as thick at the bottom as the beam, and should diminishing in their length one fifth, or one sixth of their breadth, the king posts should be as thick as the principal rafters and their breadth according to the bigness of them that are intended to be let into them, the middle part being left something broader than the thickness.

RAILS, (in architecture) are used in different senses, as particularly for those pieces of timber &c. which lie horizontally between the panels of wainscot; also for those which lie over and under balisters in balconies, stair-cases, and the like; and also to pieces of timber, which lie horizontally from post to post in fences, with pales or without. (… prices)

REJOINTING,

REPOSITORY, a storehouse, or place where things are laid up and kept. Architects more particularly use it to signify such a place as is built for the laying up rarities, either in painting or any other art.

RESERVOIRS, a place where water is collected and reserved to be conveyed occasionally through the pipes, &c. or to be spouted up, &c.

The reservoir is a building of large bason, usually of wood lined with lead, where water is kept to supply the occasions of the house.

At canons, the noble seat of the Duke of Chandois, is a very large reservoir, a top of the house, to which the water is raised by a very curious engine, contrived for the purpose.

This reservoir is so capacious, as that besides supplying all parts of the house by means of pipes and cocks, it likewise turns a mill.

A reservoir is also something a large bafon of strong masonry, glazed or paved at the bottom: where the water is reserved to feed Jets d'Eau or spouting fountains.

Such is that vast one of the top of marli in France, called trout d'enfer, i.e. Hell-Mouth, whose surface, Daviler tells us, contains 50 acres, and in depth such as under that superficies to contain 100000 cubick fathom of water.

ROOF, (in architecture) is the uppermost part of a building.

The roofs contains the timber work and its covering of slate or tile, or whatsoever serves it as a cover, though carpenters usually restrain roof to the timber work only.

The form of roofs are various, sometimes pointed; in which case, the most beautiful proportion is, to have its profile an equilateral triangle.

A square roof, is that where the angle of roof is a right angle, which therefore is a mean proportional between the pointed and

Flat roof, which is in the same proportion as a triangular pediment. This is chiefly used in Italy and the hot countries where little snow falls.

Sometimes roofs are made in the pinnacle form.

Roofs have sometimes a double ridge, and sometimes mutilated, i.e. they consist of a true and false roof, which is laid over the former.

This last is particularly called a mansard, from M. Mansard, a famous French architect, the inventor; sometimes they are in the form of a platform, as most of the eastern building are.

Truncated roofs is one, which instead of terminating in a ridge or angle, is cut square of at a certain height, and covered with terrace, and sometimes encompassed with a balustrade.

Sometimes roof is made in the manner of a dome, that is, having its plan square, and the contour circular.

Round roof, is that where the plan is round or oval, and the profile a direct descent.

Sometimes the base being very large, is cut off to diminish its height, and is covered with terrass of lead raised a little in the middle, with sky-lights from space to space, to give light to some corridor, or other intermediate pieces, which without such an expedient would be too dark.

When the walls have been raised to their designed height, the vaults made the joists laid, the stairs, &c brought up, then the roof is to be raised, which embracing every part of the building, and with its weight equally pressing upon the walls, is as a band to all the work and besides, defends the inhabitants from rain or snow, the burning heat of the sun; and the moisture of the night, adds no small help to the building, by casting off the rain water from the walls, which although it seems at preferent to do but little hurt, yet in the process of time, is the cause of much damage.

(…History)

Therefore we commonly divide the breadth of the roof in four equal parts, and take three of them for the roof which according to some makes the most agreeable pitch for our Country, and id the foundation of raising any manner of roof , whether, square or bevel.

As to roofs, says a modern author, there is a plate to go round a building, which either may or may not be accounted a part of the roof, it may be esteemed as the foundation or tye of the walls, or it may be taken as only that on which the roof lies.

These plates are to be dovetailed at the angles, and tenanted together at their lengths, which is what the workmen call cogging down to the plate which prevents its flying out from the foot of the angles of a building; pieces dovetailed cross the angles of the plate found to keep (…)roofs, and various ways of framing them, and different heights for buildings of the same breadth, according to the different sentiments of surveyors or carpenters. And a good roof is the most difficult and most useful part of carpenters work.

The common pitch of roofs is to have the rafters length, if it spanned the building at once, to be three fourths of the breadth of the building.

Some make them flatter, as a pediment pitch, and the odd Gothick way, was to make them the whole breadth; but some authors take the middle path between both extremes of three fourths of the breadth of the building, and pediment pitch, making the pitch or perpendicular height to be two sevenths of the breadth of the building, within side; and the length of the rafter four sevenths, being of the breadth of the building, or twice the perpendicular height if the king post.

Indeed Palladio says, the breadth of the place to be roofed, must be divided into nine parts, two of which shall be the pitch; for says he if the roof were made one fourth of the breadth, it would be to sleep.

But it is to be observed, that Palladio speaks of Italy, or of southern climates, for he says in Germany, where the snow falls in great quantities, the roofs are made very sharp, and are covered with shingles, &c. for otherwise the weight of the snow would crush them.

The height of the pitch of a pediment, is one fourth of the breadth of a building, which is esteemed in England rather too flat, especially for the tileing: therefore some make use neither of that proportion, nor of the third of the breadth of the common pitch,a nd use a medium proportion between the two extrems, &c.

Example. Suppose a building to be ten foot broad work, according to the following table.

If the breadth of the building be	feet	Th e pediment Pitch ¼ perpendicular height	feet	inches	The common one, 1/3 perpendicular height	feet	inches	The medium 2/7 perpendicular height	feet	inches
	10		2	6		3	4		2	10 ¼
	12		3	0		4	0		3	6
	14		3	6		4	8		4	0
	16		4	0		5	4		4	6 ½
	18		4	6		6	0		5	2
	20		5	0		6	8		5	8 ½
	22		5	6		7	4		6	3 ½
	24		6	0		8	0		6	10 ¼
	26		6	6		8	8		7	5
	28		7	0		9	4		8	0
	30		7	6		10	0		8	7
	32		8	0		10	8		9	2
	34		8	6		11	4		9	8
	36		9	0		12	0		10	4 ½
	38		9	6		12	8		13	10 ½
	40		10	0		13	4		11	5

The use of the table is, if the span or breadth of a building 26 feet, the perpendicular height of a roof, pediment pitch is six feet, six inches; if the common pitch, eight feet, eight inches, the medium of which is made to be seven feet, 5 inches, for the following reasons.

The common pitch, is not only unpleasing to the eye, but is attended with this inconvenience, if there be a gutter round the building, the steepness of the roof occasions rain to come with so sudden a velocity and force into the pipes, which are to convey the water from the gutters, that it fills the gutters, and sometimes to that degree, that the water runs under the covering of the roof, and very much endamages the timber &c. of the building, and the steeper the roof is, the longer rafters, and the greater quantity of timber must be used in the roof, as well as the more weight from the greater quantity of timber, and the weakening the principal timbers by adding more to its own weight.

And the pediment pitch is inconvenient in lying to flat for these climates so frequently subject to rain and heavy snows, which last would vastly press and incommode a building, and would lie much longer on the roof; its declivity being so small; besides in strong winds, attended with rain, the rain would drive under the covering of tiles or slates, &c. and cause great decay of the timber.

In order to avoid these inconveniencies, the medium between the two extremes may be taken, according to the following tables, in which some are made stronger than others; that the method may be made use of, as necessity requires, and time as allowed to perform it in.

Take the following rule for the proportion of beams, whose bearing varieth.

If the beam bear in the clear	feet	The scantling must be	inches		inches
	12		6	and	8
	16		6 ¼	and	8 ½
	20		6 ½	and	9
	24		7	and	9 ½
	28		7 ½	and	9 ½
	32		8	and	10
	36		8 ½	and	10 ½
	40		8 ½	and	11
	44		9	and	12

Of roofs in general, observe the following exemples.

Fig 1.- is an hexagon plan and an 0 g Rafter.

First, draw the plan a b c d e f, also the line b h, then middle a b at i, and drawn the line i h; then will b h be the base of the hip, and ih the base of the rafter; from h drawn a line to k, perpendicular to ih, and equal in length to the perpendicular of the rafter; also from h draw a line to g, perpendicular to b h, and equal to h k; then draw the moulding part of the rafter I k, in what form you think proper; so done, divide the line ih any how, from which divisions raise perpendicular lines to touch the curve line ik; continue those lines to touch the line bh, as the dotted lines in the example shew, which will divide the line bh, into the same number of parts and proportions with the line ih; then, from those divisons raise perpendicular lines at pleasure, and take the perpendicular line I, I on the line ih, to the curve of the rafter ik, in your compasses, and set it up the correspondent perpendicular line, on the line bh, as I.I, also the line 2.2, and 3.3, and so of all the rest; and in each of those points, stick a nail, and bend a thin lath round them, to touch them all at once; then on the edge of it, draw the curve of the hip gb, which was to be done.

Fig 2, represents the hip bg, in fig 1 and 1 2 3 4 at the point e represents the sole of the foot of the hip, before the back is worked.

First, (…)

The design of the gable end of roof B, plate 2.

Let the whole breadth of gable end oot roof AA be 20 foot; divide the frame into four equal parts, take three thereof form the length of the principal rafter AB, and placing that perpendicular from the point C to the point D, begets the length of the sleeper AD which will be 18 foot. And the length of the dormer's principal rafter from A to E, when laid into its pitch upon the back of the principal rafter; and this is a general rule for all breadths.

1. summer or beam
2. king-piece, crown post, or joggle piece.
3. Braces or struts
4. Principal rafters
5. The sleeper
6. Purling of the dormer
7. Principal rafter of the dormer
8. Single rafter of the dormer, standing on the sleeper and purling
9. The point of the sleeper.
10. 11 the thickness of the wall and lintels or wall plates.

Of flat roofs. Plate 3

Within a chamber beam and rafters joggled in, whose weight lieth not chiefly in the middle, and may be so made, that without hanging up the beam, the principals may discharge the weight, and how drips may be made to walk on.

A draught of a flat roof with a crown or king post.

The breadth of the house cantalivers, cornices and eaves, the length of the raftings and curvings, which ought to be ¾ of the breadth house.

The principal rafters are to be cur with a knee (as in the design) that they may be better support themselves, and the burthen over them; upon the upright of the wall, and also securre that part from the dripping in of the rain, which otherwise would happen if the rafters were made plain and furred.

The beam to the roof or girder to the garret floor, ought to project without the work as far as the furring or shreading, which is the projecture of the cornice.

1. Chamber beam
2. Principals joggled into the chamber beam.
3. The place where the principals are joggled in.
4. Puncheons or braces.
5. Drips to walk on, and may be made with the less current, that the roof may be made the more pitch, for the strengthening thereof; and may be made higher or lower, according to the building and discretion of the architect.
6. Battlements.

This manner of framing the roof will be useful, from 20 to 30 foot, or thereabouts.

1. Ground plate.
2. Girder or binding, interduce or bressummer.
3. Beam to the roof, or girder to the garret floor.

4. Principal posts, and upright brick-wall.
5. Braces.
6. Quarters
7. Interduces
8. Prick-post or window-posts.
9. Jaums or door posts.
10. King-piece or joggle-piece.
11. Struts
12. Cellar-beam, strut-beam, wind-beam or top-beam
13. Door-hand
14. Principal rafters.
15. Furrings or shreadings.
16. Ends of the lintels and pieces.
17. Bedding moulding of the cornice, over the windows and space between.
18. Knees of the principal rafters, which are to be of one piece.
19. Purline

Roof, how to find the length of the sleepers to a dormer roof.

First, draw the gable end or rafters ab and cb, and divide them in the middle at ac and e; from whence raise a perpendicular at pleasure towards f.

Then take the length of the rafter in your compasses, and set it on the perpendicular at e from e to fi and fd, which are the length of the sleepers fought for.

The names of the timbers.

1. Beams ; II. Principal rafters; III. Cellar beams; IV. King posts. V. Prick posts; VI. Struts; VII. Sleepers; VIII. Purlings; IX. Small rafters.

ROOFING, in ordinary buildings I worth 7 or 8 s per square; but in great buildings 10 or 11 s per square. See framing

SAND, I a fine, haard, gravelly earth of great use in building, and other works.

There are three sorts of sand distinguished by the places whence they are drawn, viz. pit-sand, river-sand, and sea-sand.

Sand is used in building, as one of the ingredients in mortar.

For this use pit-sand is of all the best, and of pit-sand the whitest is always the worst.

Of River-sand, that sound in the falls of water is the best, because most purged.

Sea-sand is the worst.

Pit-sand, as being fat and tough, is most used in building walls and vaults.

River-sand, serves for rough casting.

All sand is good in its kind, if when squeezed and handled it crackles, and if being put on a white paper, &c, it neither stains nor makes it foul.

That sand is naught, which mixt with water makes it dirty, and which has been long in the air; for such will retain much earth and rotten humour. And for this reason some masons wash their sand before they use it.

De lorine observes, that the sand of Puzzuolo id the best in the world, especially for maritime building.

Some distinguished sand into male and female. The male sand is of a deeper colour than another sort of sand in the same bank or bed, called female sand.

Founders make use of fossil sand. It is properly a yellow fat earth, whereof they make their moulds for the casting of small work, whence they call it casting in sand.

The plumbers use sand in moulding several of their works, particularly sheets.

To prepair this sand for their sheets, they wet it lightly, stir and work it with a thick, and then they beat and plane it.

Sand at London is commonly sold for 3 s per load, 36 bushels to the load.

(… Prices)

SHIDES/SHINGLES, (in Building) are small pieces of wood or quartered oaken boards, sawn to a certain scantling, or more usually cleft to about an inch thick at one end, and made like wedges four or five inches broad, and eight or nine inches long.

They are used in covering more specially churches and steeples, instead of tiles or slates.

This covering is dear, yet where tiles are very scarce, and a light covering required, is preferable to thatch, if made good oak, and cleft, not sawed, and then well seasoned in water and the sun, they make a sure, light and durable covering; the building is first to be covered all over with boards, and the shingles nailed thereon.

(…prices)

Of laying on shingles. In order for covering with shingles, the building must be first covered with boards, which being done, the shingles are fastened to those boards, with 4 d 5d or 6d nails, in every course at a certain gage, viz. at 3 ½ inches or 4 inches form under one another; for they commonly make three waters (as they phrase it) that is, they usually hang three singles in height, in the length of one; so that if the shingles are 12 inches long, they are laid at four inches gage.

In breaking joint they do not observe to make one joint over the middle of another; but they sometimes break joint an inch, an inch or a half, or two inches, according to the breadth of the shingles, for they (especially if they are cleft) are not exactly the size.

SLATE, a blue fossil stone very soft when dug out of the quarry, and therefore very easily cut or sawn into long thin squares or escallops, to serve instead of tiles for the covering of houses. The ancients were not acquainted with the use of slate, and instead of them covered their houses with shingles.

Besides blue slate, we have in England a grayish slate, which is also called Horsham stone, because the greater quantities of it are found about Horsham in Sussex.

The blue slate is a very light, beautiful and lasting covering; but then it is pretty dear, because the roof must be first boarded over, and the slates hung on the tacks, and laid with finer mortar than tiles.

The grey slate is chiefly used in covering churches, chapels, chancels, &c.

The covering with this sort of slate, is dearer than tiles; because the timber of the roof must be very strong for them, it being almost double the weight of tiles.

Mr. Colepress directs that in order to judge of the goodness of the slate, to knock it against any hard body, to make it yield a sound; and says, if the sound be good and clear, the stone is firm and good; otherwise is crazy.

Another way of proving the goodness of slate, is first to weight it exactly, and then to lay it 6 or 8 hours under water, and then wipe it dry and weight again, and if it weights more than it did before, it is a sign that it is of that kind, that soaks in water, and therefore will not last long without rotting the timber or lath.

There is also another way of proving it, by placing a slate half a day perpendicularly in a vessel of water, so as to reach a considerable height above the level of it; and if the slate be firm and close, it will not draw water, that is the water will not have ascended above half an inch above the level of that in the vessel, nor that, perhaps any where but at the edges, the texture of which might probably be loosened by hewing; but if the stone be bad, it will have drawn water to the very top, be it as high as it will. There are slates in several places, which the most experienced slaters, or coverers conjecture to have continued several hundres years, and are still as firm as if first put up.

The blue slate cut into long squares, or escallops, makes a handsome appearance, and is commonly used in covering of summer or banqueting houses in gardens; it being a very light and lasting covering.

But if these slates be rudely cut, and carelessly laid 8in respect of form) it is then accounted a cheaper covering than with plain tiles, especially in those countries where the country affords platy of them.

(…Price)

STAIRS, (in building) are the steps whereby we ascend and descend, from one story of an house to another.

As to the dimensions of stairs, they are differently assigned by different authors; but however, they agree in this, that they must not be more than six, nor less than eight inches high; nor more than 18, nor less than 12 inches broad; nor more than 16, nor less than six foot long each stair.

But these measures have only respect to large and sumptuous buildings; for in common and ordinary houses, they may be something higher and narrower, and much shorter; yet even in these, the stairs are not to exceed seven, or (at most) eight inches in height; for if they do, they will be difficult to ascend; neither ought they to be less than nine or ten inches in breadth, nor ought their length to be less than three.

To reduce the dimensions od stairs to some natural, or at least geometrical standard, Vitruvius borrows the proportions of the sides of a rectangle triangle, which th ancient school expressed by the number 4, 4 and 5; that is, three for the perpendicular from the stair head to the ground; 4 for the ground line, itself, or recession from the wall (says sir Henry Wotton) and the fifth for the whole slope and inclination, from the edge to that of another.

But this rule is set aside by modern builders, and that with good reason; for on this principle, the lower the stairs, the narrower the must be; and for instance, stairs foru inches high (such are found mentioned in ancient architects) must be but 5 1/3 inches broad, and if a stair be but six inches high, it must be but eight inches broad, whereas in this case, we sheldom make them less than a foot broad.

One rule to be regarded in making of stairs , that they be laid according to the Italian phrase, “con un tantino de scarpa”; i.e. somewhat sloping, or a little higher behind, than the foot, may as it where, both ascend and descend at the same time; which though it is observed but by few, is found to be a secret and delicate deception of the pains in ascending.

Of making stairs. Though there have been rules laid down for the height and breadth of stairs; yet workmen are not to be so stricktly tyed up to those rules, as not in the least to vary from them; for they must always observe, to make all the stairs of the same stair-case of an equal height and breadth; in order to which they must first consider the height of the room, as also the width or compass they have to carry up the stairs in.

Then order to find the height of each particular stairs, they ought fisrt to propose the height, and to divide the whole height of the room by the proposed height, which being done, the quotient will shew the number of stairs; but if the division does not fall exact, but that there be a remainder; then this case take the quotient, (without regarding the remainder) for the number of stairs, and by that number divide the whole height of the room, so the quotient will give you the exact height of each stair. (…example)

Then to find the breadth of each stair divide the width or compass (that you have to carry them up in) by the number of stairs, and the quotient will give the exact breadth of each stair.

Stair-case, is an ascend inclosed between walls, or a balustrade, consisting of stairs or steps, with landing places and rails; serving to make a communication between the several stories of a house, and sometimes it is used to dignify the whole frame of a pair of stairs only.

The construction of a compleat stair-case, says sir Henry Wotton, is one of the most curious works in architecture, and the common rules are these follow.

1. That it have a full free light to prevent accidents of flipping, falling, &c.
2. That the space over-head be large and airy, which the Italians call “un bel sfogolo”, i.e. good ventilation, because a man spends much breath in mounting.
3. That the half paced be conveniently distributed for rreposing by the way.
4. That to avoid reencounters, and also to gratify the eye beholder, the stair case be not too narrow; but this last is to be regulated by the quality of the buildings; and that in royal Buildings, the principal ascent be at least 10 foot. For little stair case in a great house, and a great one in a little house, are both equally ridiculous.
5. That great care be taken in the placing stair-case, so that the stairs may be distribute without prejudice to the rest of the building, there being much nicety required in making this choice.

The kinds of stair cases are various; in some the stairs are straits; in others, winding, in others mixt of both.

1 Of Strait stairs, some fly directly forwards, and are called flyers; others are square; others triangular, and others are called French Flights.

2 of winding stairs, which are also called spiral or cockle stairs, some are square, some circular, and some elliptical or oval.

And these again are various, some winding round a solid, and others and open newel.

Lastly mixed stairs of strait and winding, they are also of various kinds, some are called dog-legged, others there are that wind about a square open newel.

Stair-cases being of that importance in building, it will be necessary to give a particular account of each kind.

I. Strait stairs are such as always fly, i.e. proceed in a right line, and never wind, and for that reason are by some called flyers. Of these there are several kinds.
    1. Strait flyers, or plain flyers, which proceed directly from one floor to another, without turning to the right or left; and are seldom used, except for garret ot cellar stairs in ordinary houses.
    2. Square flyers, which fly round the sides of a square newel, either solid or open; having at every corner of the newel a square ½ step, taking up ¼ of a circle, so that they fly from one half pace or step to another, and the length of the stairs is perpendicular to the side of the newel.
    3. Triangular flyers, which fly round by the sides of a triangular newel, either solid or open, having at each corner of the newel a trapezoidal half step, taking up 2/3 of a circle: so they fly from one half step to another, and their length is perpendicular to the side of the newel.
    Palladio tells us, that triangular stairs are to be seen in some antient edifices, and of these sort, he says, are those of the cupola of Sta Maria Rotunda, which

are open in the middle, and receive light from above. Those also of sancto Apostollo in the same city, are of the same kind.

4. French flyers, which fly first directly forwards, till they come within the length of a stair of the wall, and then have a square half space, from which you ascend to another half pace, from which you inmediatly ascend inmediatley to ahother half pace, from which the stairs fly directly back again, parallel to their first flight.

II. Winding stairs are such as always wind and never fly, of these also there id great variety; for, some wind round a circle, others round and ellipsis or oval, others round a square, and others round and equilateral triangle; of each of these, some wind round a solid newel, and others and open or hollow newel. Again, some are set upon columns, and some stairs are double, and some are quadruple, of each of which I shall speakbriefly.

1. Circular winding stairs; of which this are four kinds, viz. such as wind about a solid newel, the fore-edge of which being in a right line, pointing to the centre of a newel; commonly used in church steeples and great old houses.

   Secondly, such as wind round and open newel, the fore-side of which being in a right line, pointing to the centre of the newel, as those in the monument of London.

   Thirdly, such as wind round a solid newel only, the foreside, either concave or convex, pointing near to the circumference of the newel.

   In these stairs are much longer than in the common winding stairs.

   Of these there may be two kinds; for their ichonography being drawn, the stairs may be contrived to be either concave or convex on the foreside.

   Fourthly, there are other stairs in all respects like those last described, only they have an open newel.

   These kinds of stairs are said to have been invented by Anthony Barbaro, a gentleman of Venice.

   And of these winding stairs take up less room than any other kind of stairs whatsoever.

   In stairs that a wind roun aa solid newel architects make the diameter of the newel 1/6, ¼ , 1/3, 3/7, of the diameter of the whole staircase; according as the stair-case is in bigness; for if the staircase be very small, they make the newel but 1/6 of its whole diameter; and if very large, then ¾, and so proportionably of the rest.

   In stairs that wind round and open newel, Palladio orders the newel to be ½ the diameter of the whole stair-case, though then there does not appear any reason why these open newels ought not to be proportioned to the size of the stair-case, as well as the solid ones.

   Then as to the number of stairs in each revolution, he orders, that if the stair-case be

6 or 7	Foot diameter	Then there may be	12	Stairs in one revolutions about the newel.
8			16	
9 or 10			20	
18			24	

Elliptical winding stairs. Of these are two kinds, the one winding round a solid, and another round on open newel. They are much of the same nature with circular stairs, except that in those the newel is a circle, and in these an ellipsis or oval.

These kinds of stairs are very handsome and pleasant, (says Palladio) because all the windows and doors are commodiously placed in the middle and head of the oval. He tells us ha has made one of these with an open newel, at the Monastery of charity at Venice.

Square winding Stairs. These wind round a square newel, and the foreside of each stair is a right line, pointing to the centre of the newel.

Triangular winding stairs, are such as wind round a triangular newel, the fore-side of which being a right line, pointing to the centre of the newel. And because the newel may be either solid or open, therefore there are two kinds of them.

Calumniated winding stairs. Palladio mentions a Stair-case in Pomepy's Portico at Rome, set on columns, so as that the light they received from above, might distribute it to all parts alike. Such another pair were made by Bramante (an excellent architect) at Belvedere, the Pope's Palace.

Double winding stairs. Scamozzi mentions a stair-case of this form, made by Piedro del Bergo, and Jean Cossin, at Sciamberg in France, in the king's palace. They are so contrived that two persons, the one ascending and the other descending, shall not meet together or come at one another.

Dr. Drew describes a model of this kind of stair-case, in the museum of the Royal Society. The foot of one of the Stair-cases, he says, is opposite to the other, and both make a parallel ascend, and within the same cylinder. The newel in the middle is hollow, and built with long apertures or convey light from candles, placed at the bottom, and on the sides of the newel in both cases.

Quadruple winding stairs. Palladio mentions a stair-case of this form, which king Francies I, caused to be made in the castle of Chambor, near Bloyse; it consists of four stairs cases carried up together, having each its several entrance and going up one over another, in such manner, as that being in the middle of the building, the four serve for four apartments; so that the people of the one need not to go up and down the stairs of the other pass, without any hindrance to one another.

Mixed stairs are such as partly fly, and partly wind; whence some call them flyers and winders, of these there are several kinds, as

Dog-legged stairs, which first fly directly forwards, then wind a semicircle, and then fly directly backwards, parallel to that.

Square flyers and winders. These have a ssquare newel, either solid or open, and fly by the sides of the newel, winding a quadrant of a circle at each corner.

Solid and open neweled flyers and winders, are of two kinds ; the one winds the quadrant of a circle about solid newel; then flies by the side of a square open newel, then winds again by the side of a solid newel, then flies again before, and so alternately. The other flies first, then winds, then flies again alternately.

(…Price)

STEEL, an iron that is very hard in its nature, and sometimes is made so by arts; is has the same qualities as iron.

Some have given steel the name of Chalybs, because anciently brought from a town in Assyria, named Calibone, where very good steel was made; but that of Damascus in preferred before all the others, and it is found by experience, that swords made of it, cut iron itself.

Our way of steel-making id to chose such iron as is apt to melt, and yet hard, and which nevertheless may be easily wrought with the hammer; for the iron which is made of vitriol ore, though it may melt, yet it is soft, fragil and eager. Let a parcel of such iron be heated red hot, and let it be cut into small pieces, and then mixed with that sort of stone which easily melts, then set in the smith's forge or hearth a crucible, or dish of crucible metal, a foot and a half broad, and a foot deep; fill the dish with good charcoal, compass the dish about with loose stones, which may keep in the mixture of the stores and pieces of iron put thereon:

As soon as the coal is thoroughly kindled, and the dish is red hot, give the blast, and le the workman by the little and little put in all mixture of iron and stone he designs; when it is melted, let him thrust into the middle of it, 3, 4 or more pieces of iron, and boil them therein five or six hours, with a sharp fire, putting in his rod; stir often the melted iron, that the pieces of iron may be imbibe the smaller particles of the melted iron, which particles consume and thin the more gross particles of the pieces of iron, and are as it were, a Ferment to them, and make them tender.

Let the workman now take one of the pieces out of the fire, put it under the great hammer to be drawn into pars and wrought, and then hot as it is, plunge it immediately into cold water; being thus tempered, let him again work it upon the anvil, and break it, and looking upon the fragments, let him consider whether it looks like iron in any part of it, or if it be wholly condensed and turned into steel.

Then let the pieces be all wrought into bars, which being done, give a fresh blast to the mixture, adding a little fresh matter to it, in the room of that which has been imbibed by the pieces of iron, which will refreshed and strengthen the remainder, and make the pieces of iron put again into the dish, the purer; every which piece, let him, as soon as it is red hot, beat into a bar on the anvil, and cast it hot as it is into cold water: and thus iron is made into steel, which is much harder and whiter than iron.

STONES, I a hard, solid mineral body, neither fusible nor malleable, formed in succession of time in the body of the earth,

Of the origin and formation of stones (…) Mr. Geoffrey accounts for the origin and formation of stones, after another manner. He lays it down as a principle, that all stones without exception, have been fluid; or at least soft paste now dryed and hardened; witness the stones, wherein foreign bodies are found; also figured stones &c.

As to the kinds of stones, they are various, as Marble, Fire-stone, purbeck.stone, rag-stone, alabaster, free-stone, and common-stone. All which have been already treated on in their proper places, alphabetically.

As for free-stone, there is a sort of stoen commonly dug in the peninsula of Portland, in Dorsetshire, and commonly known by the name of free-stone, which is much used in building, it being much softer and whiter than purbeck-stone, and is usually raised out of the quarries in bigger blocks then purbeck-stone.

Some authors call this Portland stone, free-stone, though there is a sort of stoen found in Oxfordshire, which is called free-stone, and rigate-stone ot fire-stone, is by some authors called free-stone.

Common-stone needs no description, it being that which is commonly used and found almost every where; and of which I shall principally treat here.

(…)

SUMMER

(in architecture), is a large stone, the first that is laid over columns and pilasters in beginning, to make a cross vault; or it is the stone which being laid over a piedroit or column, is hollowed, to receive the first haunce of a plat-band.

(in carpentry) is a large piece of timber, which being supported on two stout peers or posts, serves as a lintel to a door, window, &c.

SURVEYING

THATCHING, is the covering the roof of a house or barn, with straw or reeds.

(With straw) Thatch (says Mr. Worlidge) is a common covering in many places, yet in some to be preferred before other some; and that the best that he has seen, is that which is called hellin, i.e. long and stiff wheat straw (with the ears cut off), bound up in bundles unbruised; which if well laid lies thin, lasts long, and is much neater than the common way.

There is commonly allowed two good load straw for five square of thatching, or one load to 2 ½ square.

Some are said to have pretended that they could thatch a roof, so that no mouse could get in; but I know no instance of any such thing to have be done.

In some parts of Kent, they don't use withs to bind their thatching rods, but instead of that use rope-yarn, (as they call it) which is a single straded line, about the size of a penny cord; pitches with pitch, after the same manner as some do their well ropes.

This costs about 2 d per pound, a pound of wich will do a square of thatching. This, some say, is more durable than withs; for that withs when they are grow seat, will fly and break, but this will not.

Thatching with reds. This kind of thatching is said to last 40, 50, 60 years.

These reeds in Sussex and Kent, are sold by the thousand, viz. a 1000 handfuls, each handful being 8, 9 or 10 inches in circumference, bound up in a little band., 1000 of which will cost 15 or 16 s, and will cover about three square of roofing. For laying of which they have 4 s per square.

(…Prices and measuring)

TILES/TYLES, (in building) are a sort of thin, factitious or artificial stones, (of a laminated figure) used in the roofs of houses &c; but more properly they are a kind of a fat clayey earth, knodden and moulded together, of a just thickness, dryed and burnt in a kiln, like a brick,, and used in the covering of houses &c.

Mr. Leybourn says that tiles are made of better earth than brick earth, and something nearer a-kin to potters earth.

According to the statute 17 of Edw IV. The earth for tiles should be cast up before the ist of November, shired and turned before the ist of February, and not made into tiles before the ist of march; and ought to be tried and severed from stones, marl and chalk.

There are various kinds of tiles, for the various uses in building, and those known by several names, as plain, thach, ridege, roof, crease, gutter, pan, crooked, Flemish, corner, hip, dorman, scallop, astragal, traverse, paving, dutch tiles.

Plain or thack tiles are those in common use for the covering of houses they are of an oblong figure, being squeezed, flat, while they are soft.

(…Dimensions , weight and price)

Ridge/roof/crease tiles are those used for covering the ridges if houses, being made circular breadth-wise, like a half cylinder.

(… dimensions. Weight and price)

Hip or corner tiles are such as lye on hips or corners of roofs. As to their form, they are at first made flat like plain tiles; but of a quadrangular figure, whose two sides are right lines; and two ends are arches of circles, one end being a little concave, and the other convex; the convex end to be about seven times as broad as the concave end; so that they would be triangular, but that one corner is taken off; then before they are burnt, they are bent on a mould, breadth-wise, like ridge tiles: they have a hole at their narrow end, and are laid and mailed with their narrow end upwrds.

(… Dimensions, weight and price)

Gutter tiles are those which lie in gutters or valleys, in cross-buildings. They are made like corner tiles, only the corners of the broad of the broad end are turned back again with two wings. They have no holes in them; but are laid the broad end upwards, without any nailing. They are made in the same mould with corner tiles; and have the same dimension on the out (or convex9 side. Their wings are each four inches broad, and eight long, pointing out short of their narrow end about two inches.

(… weight and price)

Pan tiles/crooked tiles/ Flemish tiles: are used in covering of sheds, leanto's and all kinds of flat-rooffed buildings. They are in the form of an oblong parallelogram, as plain tiles, but are bent breadth-wise, forwards and backwards in form of an S, only one of the arches is at least three times as big as the other, which biggest arch is always laid uppermost; and the lesser arch on the another tile, lies over the edge of the great arch of the former.

They have no holes for pins, but hand on the laths by a knot on their own earth.

(… dimensions and price)

Dormar/Dorman, these tiles consist of a plain tile and triangular piece of a plain tile, standing up at right angles to one side of the plain tile, and swept with an arch of a circle from the other end, which end terminates in a point, or has no breadth.

Of these kind of tiles there are two sorts; for in some the triangular piece stands on the right, and in others, on the left side of the plain tile; and of each of these again, there are two kinds; some having a whole plain tile; others but half a plain tile: but in them all, the plaint tile has two holes for the pins at the end where the broad end of the triangular piece stands.

Their use, they are laid in the gutters, between the roof and the cheeks or sides of the dormers; the plaint tile part lying upon the roof, and the triangular part, standing perpendicularly by the cheek of the dormer.

They are excellent for keeping out the wet in those places, and yet not perhaps known any where but in Sussex.

(… dimensions, weight and price)

Scallop tiles/ astragal tiles, are in all respects like plain tiles, only their lowers ends are in form of an astragal,: viz. a semi-circle with a square on each side, they are used in some places for weather tileing, and look very handsome.

Traverse tiles, are a sort of irregular plain tiles, having the pin-holes broken out, or one of the lower corners broken off. These are laid with the broken ends upwards, upon rafters, where pinned tiles cannot hang.

Paving tiles, these are by some called paving bricks. See bricks.

Flemish tiles/ Dutch tiles, are of two sorts, ancient and modern. The ancient Dutch Tiles were used for chimney foot paces; they were painted with antick figures, and frequently with postures of soldiers, sometimes with compartments, and sometimes with Moresque devices; but fell far short, both as to the design, and the colours of the modern ones.

The modern Flemish tiles, are commonly used plastered up in the jaumbs of chimneys, instead of chimney corner-stones. These tiles are better glazed, and such as are painted (for some are only white) are done with more curious figures, and more lively colours than the ancient ones.

But both these sorts seem to be made of the same whitish clay, as our white glazed earthen ware; the modern ones are commonly painted with birds, flowers, &c. and sometimes with historical out of the New Testament.

(… dimensions, weight and price)

TIMBER, includes all kind of felled and seasoned woods; or those kind of trees, which being cut down and seasoned, are used in the several parts of a building, by the carpenter, joiner, turner, &c; these when cut down, are called timber, and when growing, timber trees.

The kinds of timber are so numerous, that it would be tedious to mention them all. I shall content myself with mentioning the most common kinds of timber, and their uses, as they are found set down in Mr. Evelyn's Sylva; and Mr. Worlidge's systema agriculture.

1. Oak, the several uses of oaken timber for building and other mechanic uses, are so universally known, that it would be needless to enumerate them.
   There is no wood comparable to it, for enduring all seasons and weathers; as for pales, shingles, posts, rails, boards, &c. for water works it is second to none, especially where it lies exposed to the air as well as the water, there is no equal to it.
2. Elm, if it felled between November and February, will be all spine or heart, and either none or very little sap, and is of most singular use (in the water) where it lies always wet; and also where it may be always dry. Also the thoughness of it, renders it of great use to wheel-wrights, mill-wrights, &c. it is also good for dressers and planks to chop on, because it is not liable to break and fly away in chips, like other timber.
3. Beech, its chief use is in joinery, turnery, upholstery, and the like mechanic works; the wood being of a white and fine grain, and not apt to rend or flit: yet it is cometimes used (especially of late years) for building timbers, and if it lies always wet (as in ground guts and the like) it is judged, that it will outlast even oak itself.
4. Ash, the use of ash is almost universal. It is good for building or other occasions, where it may lie dry; it serves the carpenter, cooper, turner, plough-wright, wheel-wright, &c. and for garden uses, no wood exceeds it; as for ladders, hop-poles, palisade-hedges, &c and also at sea, for oars, hend-spikes, &c.
5. Fir, which is commonly known by the name of deal, and is of late much used in building, especially within doors, for stairs, floors, wainscot, and most ornamental works.
6. Walnut-tree timber, is of universal use, excepting for the outside buildings; there is none better for the joiner's use, it being of a more curious brown colour than beach, and not so subject to the worms.
7. Chesnut tree, the timber of these tree is next to oak, and is the most sought after by the joiners and carpenter, and is od very long lasting, as appears by many ancient houses and barns, built of it, about Gravesend in Kent.

8. The serving tree, the timber of these tree is useful for the joiner, it being of a very delicate grain, and is fit for divers curiosities. It also affords beams or considerable bigness for building.
9. The poplar, abel and aspen; which kids of timber are very little different from one to another, and of late are much used instead of fir; they look well, and are thougher and harder.
10. Alder is useful for the poles of ladders and scaffolds, and also for sewers and pipes, for conveyance of water; for if it lie always wet, it will harden like a stone itself; but where it is sometimes wet and sometimes dry, it rots immediately.
11. Lime-tree, of this have been made ladders, which have been excellently good, and of a very great length.

The time of felling timber.

The season of felling timber, usually commences about the end of April 8because at that time, the bark generally rises the most freely, and if there be any quantity of timber to be felled, the Statute obliges to fell it then, the bark being necessary for the tanner.

But the opinions and practices of authors have been very different concerning the best time to fell timber.

Vitruvius recommends an autumnal fall; others advice December and January: Cato was of opinion, that trees should have bore their fruit before they were felled, at least their fruit should be the first ripe, which falls in with the sentiment of Vitruvius.

And indeed though timber unbarked, be most obnoxious to the worm, yet we find the wild oak, and timber felled too late, when the sap begins to be proud, to be very subject to worms; whereas being cut about mid-winter, it neither casts, rifts or twines, because the cold of the winter does both dry and consolidate it.

It would be happy therefore for our timber, if a Method of tanning without so much bark, could be found out, as the honorable Mr. Charles Howard has most ingeniously offered, were become universal, that trees being felled more early, the timber might be felled more early, so as to be better seasoned and conditioned for its various uses.

The ancients hat a great regard to the age of the moon, in felling their timber, and the presence of Diana in Sylvis, ot the woods, was not so much celebrated to credit the fictions of the poets, as for the dominion of that moist planet, and her influence upon timber.

If their rules avail anything, they are these; fell timber in the wane or cdecrease, or four days after the new moon; and some advice, that it be in the last quarter. Pliny advices, that it be in the very article of the change, which happening in the very last day of the winter-solstice (he says) that timber will prove immortal.

Columella says, from the 20th to the 30th day; Cato says, four days after the full; Vegetius says, from the 15th to the 25th for ship timber; but never in the increase, trees then abounding with moisture, which is the only source of putrefaction.

Some have regard even to the temper and time of the day, the wind to be low, neither east nor west; neither in frosty, wet or dewy weather, and therefore never in the forenoon.

Lastly, regard is to be had to the species of timber. It is best to fell Fir, when it begins to spring; both as it then quits its coat best, and as the wood, (according to Theophrastus), is by the means rendered wonderfully durable in water.

Elm, says Mr. Worlidge, is to be felled between November and January; in which case it will be all heart; at least the sap will be very inconsiderable: he adds, that this is the only season for felling Ash. Some authors advice in the felling of timber, to cut it but into the pitch, and so to let it stand till dry; by which means the moisture is evacuated in drops, which would otherwise cause putrefaction.

The method of seasoning timber.

After timber has been felled and sawn, it is next to be seasoned; for the doing of which some advise that it be laid up very dry in an airy place, yet out of the wind and sun, at the least, free from the extremities of either; and that it may not decay, but dry evenly, they order that it be daubed over with cow dung.

Let it not stand upright, but lay it along, one piece upon another, only kept a-part by short blocks nterposed, to prevent a certain mouldiness, which they are apt to contract by sweating one upon another; which frequently produces a Fungus, especially if there be any sappy parts remaining.

Others advice to lay boards, planks, &c. in some pool or running stream for a few days, to extract the sap from them, and afterwards to dry them in the sun or the air. They say, that by this means, they will neither chap, cast, nor cleave. Mr. Evelyn particularly commends this way of seasoning for Fir. Against shrinking there is no remedy.

Some again advice to bury them in the earth; other in wheat; and others are for searching and seasoning them in fire, especially piles, posts, &c. that are to stand, either in water or earth.

Sir Hug Plat informs us, that the venetians burn and scorch their ´timber in the flaming fire, continually turning it round with an engine, till it has got a hard, black, crusty coal upon it. And the secret carries great probability with it, for that the wood is brought by it to such a hardness and dryness, that neither earth nor water can penetrate it.

Mr. Evelyn tell us, that he himself had seen a charcoal dug out of the ground, amongst the ruins of the ancient buildings, which in all probability ha lain covered with the earth for near 1500 years.

Of preserving timber.

When timber or boards, &c. have been seasoned or dryed in the sun or air, and fixed in their places, and what labour, you intend is bestowed upon them, care is to be taken to defend and preserve them, to which the smearing of them with linseed oil or tar, ot the like oleaginous matter, contributes much to their preservation and duration.

Hesiod prescribes to hang your instruments to the smoke to make them strong and lasting; if so, surely the oil of smoke (or the vegetable oil by some other means obtained) must needs be effectual for the preservation of the timber.

The practice of the Hollander deserves our notice, who, to preserve their gates, port cullis's, draw-bridges, sluices, &c. coat them over with a mixture of pitch and tar, whereon they strew small pieces of cockles and other sells, beaten almost to powder, and mixed with the sea sand; which incrust and arm it wonderfully against all assaults of wind and weather.

When timber is felled before the sap is perfectly at rest, it is very subject to the worms; but to prevent and cure this, Mr. Evelyn recommends the following secret, as the most approved.

Put common sulphur into a cucurbit, with as much Aqua Fortis as will cover it three fingers deep; distil it to a dryness which is performed by two or three rectifications.

Lay the sulphur that remains the bottom, being of a blackish or fad red color, on a marble, or put in a glass, and it will dissolve into an oil; with this oil anoint the timber which is infected with worms, or to be preserved from them.

It is a great and excellent Arcanum (he tells us) for tinging the wood of no unpleasant color, by no art to be washed out; and such preservative of all manner of woods, nay of many other things also; as ropes, cables, fishing-nets, masts of ships, &c. that it defends them from putrefaction, either in water, under, or above the earth; in snow, ice, air, winter or summer.

Is were superfluous to describe the process of making the aqua fortis; it shall suffice to let you know, that out common copperas makes this aqua fortis well enough for our pupose, being drawn over by a retort. And as for sulphur, the island of st. Chritophers yields enough (which furnish the whole world).

This secret for the curious I thought not proper to omit, though a more compendious way may serve the turn, three or four anointing, as to posts, &c. this has been experimented in a walnut tree table, where it has destroyed millions of worms immediately, and is to be practiced for tables, tubes, mathematical instruments, boxes, bed-steads, chairs, &c. The oil of walnuts will doubtless do the same; is sweeter and better than varnish; but above all, oil of cedar, or that of juniper is commended.

As for the posts or the like that stand in the ground, the burning the outsides of those ends that are to stand in the ground, is a great preservative.

Sir hug plat tell us of a Kentish Knight of his acquaintance, who used to burn the ends of this posts for railing and paling; and this was likewise practiced by Mr. Walter Cuckfield of Sussex, esquire, with very good success.

And this practice was probably deduced from the observations that several made who digged the earth, and found charcoal, which, as they conjectured, had lain there 100 years (nay esq; Evelyn says 1500) and yet was not in the least inclined to putrefaction, but was very firm and solid; which is a plain demonstration, that timber thus prepared, will resist putrefaction much longer than can do without it.

That this burning the ends of timber, is also practiced in Germany, as appearsby the abstract of a letter written by David Vanderbeck, a German philosopher and physician at Minden, to Doctor Lagelot, registered in the Philosophical transactions n 92 page 585, in these words: hence also the slightly burn the ends of timber to be set in the ground, that so by the fusion made by the fire, the volatile salts (which by ascension of the moisture of the earth would easily be consumed to the corruption of the timber) may catch and fix one another.

Of closing the chops or clefts in green timber.

Green timber is very apt to split and cleave after it is wrought into form; which is a great eye sore in fine buildings.

This may be done by anointing, supplying and soaking it with the fat of powdered beef broth, twice or thrice repeated; and the chaps filled with spunges, dipt into it; this is to be done, ass has been said, twice or thrice over.

Some carpenters make use of grease and saw dust, mingled together for the same purpose; but the first is so good a way, (says our author) that I have seen wind-shorked timber so exquisitely closed, as not to be discerned where the defects were. But this must be done while the timber is green.

Of measuring of timber (…)

WAINSCOT (in joinery9 is the timber work that serves to line the walls of a room, being usually in panels, and painted to serve instead of hangings.

Even in halls, it is usual to have wainscot breast high, by reason of the natural humidity of walls.

Some joiners put charcoal behind the panels of the wainscoat, to prevent the sweating of the stone and brick-walls from unglueing the joints of the panels; others use wool for the same pupose; but neither the one nor the other is sufficient in some houses: the only sure way is to prime over the back-sides of the joints with white-lead. Spanish-brown and linseed oil.

(… price and measuring)

WAINSCOTTING

WALLS, (in architecture, &c) a work of brick, stone, wood, or the like, which make the principal part of a building, as serving both to enclose it, or separate particular rooms, and to support the roof, floors, &c.

Walls, are either intire or continual, or intermitted, and the intermissions are either pillars, or pilasters.

Walls though built very thick and strong, and their foundations laid deep, yet if carried on in a strait line, are inclined to lean or fall; and such as are built crooked, though thin and weak, are much more lasting.

A wall raised over a river on arches or pillars, will stand as form as others whose foundations is entire.

Hence it appears, that a wall built much thinner than usual, by only having at every 20 foot's distance, and angle, set out at about two foot or more in proportion to the height of the wall; or by having a column at the like distance erected along with it, six or eight inches on each side, and above the thickness of the rest of the wall: such a wall will be much stronger than if five times the quantity of materials were used in a great wall.

Walls are distinguished into divers kinds from the matter of which they consists as:

Plaistered or mud walls, brick-walls, stone-walls, flint or boulder-walls, and boarded-walls, in all which these are to be regarded.

1. That they be build exactly perpendicular to the ground-work; for the right angle therein depending is the true cause of all stability, both in artificial and natural position; a man likewise standing firmest when he stands the most upright.
2. That the massiest and heaviest materials be the lowest, as fitter to bear, than to be born.
3. That the walls as they rise, diminish proportionally in thickness, for ease both of weight and expences.
4. That certain burses or ledges, of more strength than the rest, be interlaid like bones, to strengthen the whole fabric.

Plaistered or mud-walls, these kinds of walls are common in timber buildings, especially ordinary buildings; for sometimes the walls are made of brick between the timber. But this way is not approved of, because the mortar corrodes and decays the timber. These mud-walls (as they are called in some places) are thus made.

The walls being quartered, and lathed between the timber (or sometimes lathed over all) are plaistered with lime, which being almost dry, is plaistered over again with white mortar.

This sort of works is commonly done by yard. For the price of it see Pargeting and plaistering.

Brick-walls, which are the most important and usual among us; therefore to the four rules before mentioned, these are to be added.

1. Particularly car is to be taken about laying of the bricks, viz. that in summer they be laid as wet, and in winter as dry as possible, to make them brind better with the mortar; that in summer, as fast as they are laid the be covered up, to prevent the mortar, &c. from drying too fast; that in winter they be covered well to protect them from rain, snow and frost, which are all enemies to mortar; that they be laid point and joint in the walls as little as may be, but that good bond be made there as well as on the outside.
2. That the angles be firmly bound, which are the nerves of the whole edifice, and therefore are commonly fortified by the Italians, even in their brick buildings, on each side of the corners with well squared stone, yielding both strength and grace.

3. In order to which, in working up the walls of a building it is not adviseable to raise any wall above eight foot high, before the next adjoining wall be wrought up to it, that so good bond may be made in the progress of the work; for it is an ill custom among some bricklayers, to carry or work up a whole story of the party walls before they work up the fronts or other work adjoining, that should be bonded, or wrought up together with them; which occasions cracks and settlings in the walls.
4. That if you built a house in the city of London, you make all your walls of such thickness as the act of parliament for re-building the said city enjoins; which act you may see in the article house; but in other places you may use your discretion. Yet for some directions in this matter, turn to the article house.
5. It may be worth your notice, that a wall a brick and half thick, with the joint, will be thickness 14 inches, or very near; whence 150 or 160 bricks will lay a yard square, measured upon the face of the building, and to the square of 10 foot (which is 100 foot square feet) are usually allowed 1700 or 1800 bricks, and 4600 or 5000 bricks will completely laid, erect or build, one rod, pole or perch squre; which rod, pole or perch; for by all the names it is called) contains in length (according to the statute 16 ½ feet, whose square is 272 ¼ feet, superficial measure, which is 30 yards and ¼.

   But though I have given the number of bricks for each of these squares; yet these numbers are not to be relied on as absolutely exact; for no exactness can be discovered as to this particular, and that for several reasons.

   For notwithstanding that all the bricks made in the same mould, and burnt in the same kiln or clamp; yet the nature or quality of the earth of which they are made (which causes some to shrink more than others) and the bricklayers hand and mortar, may cause considerable Variation.

   And besides these, some bricks are warped in burning, (which makes then that they will not lie so close in the work) some are broken in the carriage, do that a 500 bricks and the tally or tale is for the most part (if not looked after) too little.

   And besides all these uncertainties, when bricks are dear, and lime cheap, the workman by the great, will use more mortar, and make the larger joints, which is much worse for the building.
6. It may be also noted, that (when all materials are ready) a workman with his labourer, will lay, in one day, 1000 bricks and some 12 or 1500.
7. All brick work, according to these rules, is supposed to be one bick and a half thick, which is the standard thickness. If they are thicker or thinner, they must reduced to that thickness

Of measuring brick-walls. (…)

Fence walls, are walls built round courts, gardens and orchards, &c. which are commonly called fence walls; of which some are made of stone, some of flints, or boulders, and some of bricks.

1. As those made with brick, these are commonly made (of statute bricks) a brick and a half thick.

   In some parts of Sussex they are made of a sort of great bricks which are 12 inches long, 6 inches broad and 3 inches thick.

> These walls are but the breadth of a brick, or six inches in thickness, only at the pilasters, where they are the length of a brick or 12 inches.
> The usually set a pilaster at every 10 foot. Some of these walls have stood well for 30 years, and were in good condition.

Of measuring of them (…)

Of the price (…)

Of Stone-walls. Stone walls serve not only for walls of houses, &c. but also for Fence walls, round gardens, &c.

Of measuring them. These are in some places measured by the rod of 18 foot square; but in most places they are measured by the superficial foot.

There are three things to be observed in measuring of them:

1. That if length of the walls at the ends of the garden or house, be taken on the outside of the garden of house, then the length of the walls on the sides of the garden or house, ought to be taken on the inside.
2. That when the walls of a house are measured, the doors and windows are likewise to be measured and deducted from the whole.
3. That in measureing fence walls, they commonly measure the height by a line (pressed into all the moulding) from the top of the copeing to the bottom of the foundation.

As to their price (…)

Flint or boulder walls. These walls are much used in some parts of Sussex and Kent, both for fence walls, round courts, gardens, &c. but also walls of stables and other out-houses, which have looked very handsome.

To build walls and greater works of flint, of which we do not want examples in our island, and particularly in the province of kent, (says Sir Henry Wotton) in, I conceive, says he, a thing utterly unknown to the ancients, who, observing that material a kind of metallick nature, or at least a fusibility, seem to have resolved it into a nobler use; an art now utterly lost, or perchance kept up but by a few chymists.

Some workmen say, that for building flint or boulder walls, they use to have 12 s. per hundred (for so they phrase it) by which they mean 100 superficial feet.

A right and left-hand man fit well together for this work, for they have a hod of mortar poures down upon the work, which they part between them, each spreading it towards himself, and so they lay in their flints.

Their mortar for this work must be very stiff, and it is best to have a good length of work, before them; because they work but one course in height at a time; for if they should do more, it would be apt to swell out at the sides, and run down.

They also say it is very difficult to make the work stand in misty weather.

Boarded walls. Walls are sometimes boarded, particularly the walls of some barns, stables and other out-houses. But one of this kind of work, see weather-boarding.

Walls for gardens, &c, the position, matter and form of walls for fruit-trees, have great influence on them for ripening the fruit; though autors differ as to the matter and form of them, which ought to have the preference.

The reverend Mr. Laurence directs, that the walls of a garden be not built directly to face the four cardinal points; but rather between them, viz. south-east, south-west, north-east and north-west; in which the two former will be good enough for the best fruit, and the two latter for plumbs, cherries, and baking pears.

Mr. Langford, and some others propose, that garden walls should consists chiefly of semicircles, each about six or eight yards in front, and including two trees; and between every two semi-circles, a space of two foot of plain-wall.

By such position, he says, every part of a wall will enjoy a share of the sun one time with another; besides, that the warmth will be increased, by the collecting and reflecting of the rays in the semi-circles, and the trees within will be also screened from injurious winds.

Mr. Fatio proposes to have Garden-walls built sloping, instead of perpendicular, or reclining from the sun; that what is planted against them may lie more exposed to his perpendicular rays; which must very much contribute to the ripening of fruit in our cold climate.

He directs, that the angle of reclenation be the latitude of the plate; that when the sun is in the meridian at the equinoxes, his rays may strike perpendicularly; yet others prefer perpendicular walls, and even inclining ones, or such as hang forwards to the sun; because such will receive the sun's ray's perpendicularly, when she is low, as in Spring and Autumn, or in the evening and morning; which they imagine to be more serviceable than the greatest heats of the sun at mid-summer upon reclining walls.

To this may be added, that in Autumn the sun is most wanted to ripen Winter pears, in order to which they should be kept dry, which cannot be done against sloping walls; the dews &c. lying much longer on them, than on such are perpendicular.

However Mr. Fatio's sloping walls have one great advantage, viz. that fruit-trees, as vines, &c. being planted against them, close glasses may be set on the fruit, which will very much forward its ripening.

As for the materials of walls for fruit-trees, (…)

WATER, being an element so absolutely necessary to all manner of habitations, and being not always to be found near enough to them for use; it will not be improper to consider by what means it may be found, and how it may be conduted.

Geography and history (…)How discover/find water(…) As to the quality of water (…)

Of the conducting water by aqueducts, drains &c.

Running water conducted in aqueducts is certainly to be preferred to water raised by engines, because repairs, which hinder the coming in of the water are not so often needed, and also the water may com easier and in greater plenty, than when it is raised by engines and brought in by pipes; besides the expence is generally larger in doing it at first, as well as the keeping it in order afterwards.

Vitruvius inform us, that the ancients in order to the bringing of water to towns, cities, &c. after they had taken the level, conducted it three several ways, by aqueducts, pipes of lead and earthen pipes, baked in a potter's furnace.

The leaden pipes were at least the nine foot long, and they made them of bended sheets or plates of lead, of different thicknesses, according to the proportion of the largeness of the pipes; these pipes had likewise their necessary declination or sloping, and if any valley was in the way (though by an unnecessary expence) they made it equal to the level with a wall: they likewise had many vents to give the water air, and to know where to mend the pipes, when they wanted reparing.

And these by the description given of them, are much stronger than the mould pipes now made.

The Ancients (as has been before intimated) chose rather to bring their water in large aqueducts, that were so high, that a man might go upright, in order as it may be supposed to mend the pipes, and had three or four kinds of water brought from different springs for different uses, in different pipes; so that the whole structure of their conveyances for water, was of an immense height, and brought at an immense expence, which had certainly the good effect of keeping the water clean and pure, as it came out of the springs; whereas the water that is brought in open carriages, as that of the new river to islington, and other waters are, is subject to be rendered soul by land floods, and to receive a kind of muddy taste and tincture from the several souls through which it passes, in those so great distances it is usually brought.

But as these immense expences, and such as are scarce consistent with the purses of any, but the greatest and most opulent princes and states; and as such inclosed aqueducts with pipes, some of them but of a moderate size, are not likely to supply gardens and cities and towns with such large quantities of water, which are wanted, these open carriages are absolutely necessary, especially where the property of the ground through which you bring them is easily to be come at; that they are to be approved on before inclosed aqueducts, both as to the quantity of water they convey.

To all which we may add, that although the water may be rendered sometimes a little thick or muddy by land-floods, &c. yet by the influence of the sun and open air, it is the same time rendered sweeter, and freed from those corroding qualities, that often render them injurious to man, beast, plats, &c. all plats thriving better by water that is taken out of ponds or rivers which run gently, than out of cold springs.

The next thing to be considered, is the profile or dimensions of such an open current or course of water; after which I shall consider the inclosed ones of more ancient make, which do indeed bring water to any place clearer and less turbid, and therefore the fitter for drinking, &c.

The profile or depth and breadth of such carriages, may be according to the quantity of water you want, or according to the supply you have, though it should scarce be less than four or five yards wide at the top, and four feet deep. That there are may be room for that sediment, which water naturally obtains, by running through soils of different qualities; besides such a depth requiring banks that are flopping, to which there ought not to be allowed less than one and a half or two foot horizontal for one foot perpendicular; less width than that, will not do well; but if it is designed to be a navigable channel for larger boats, then you ought not ot allow less than 30 or 40, as the canals that go between town and town in Holland generally are.

I shall now give some direction how this open carriage or drain ought to be made.

In the first place, you ought to keep as much as you can in the whole ground; and by the side of such hill or valley that lies near you; for that no banking can be supposed of equal solidity and security with settled ground; also all sorts of trees must be cleared away, for the roots of old trees will rot and let the water out, and the roots of young trees will be equally injurious; in that they will by the blowing of the wind loosen the banks to that degree, that much of the water will run to waste there; to which may be added, that rocky ground, fox and rabbit earths, are soils not proper for such works.

If good clay can be procured near at hand, it is requisite it should, especially where there is a necessity of raising banks entirely new, or for the stopping the rocks, fox or rabit earths, &c. but in other grounds, where passage is through that which is whole, there will not be occasion for that great care; specially if your supply be anything considerable; but one of the chief cares will be to close your joints well between your new and old ground, and when you build a new banks on old ground, you must not fail to go down with your new clay or ballast, two or three foot lower than that ground, and two or three foot wide, and you must always mix your old and new ground together with a toothing, after the same manner as bricklayers do, who leave it for one brick to join to another.

It is certain, that whether it be ballast or strong or indifferent clay, it is very necessary to ram it; or to lay the strata but a foot thick at a time, or thereabouts causing the labourers to tread or wheel it over, keeping as exact a slope towards the trench, as if it were for garden, and it will be proper to fill all hollow places with waste earth; not so much for saving or holding water, as for giving a proper base and support the foot of the bank.

The inward sides of the slope of the bank, should also be well beaten with a large hedge stake, before they are pared with a spade, which ought to be done. You should not allow less than six or eight inches, or a foot in a mile (if it can conveniently be had) Dependance; but for certain four or five inches is absolutely necessary.

The next method of conducting water, is what was used by the ancients in their inclosed aqueducts: but this (as has been said before) is so very expensive, (…)

WINDOWS, are apertures or open places in the side of an house, to let in air and light.

There are various kinds and forms of windows, wire windows, horn windows, &c.

Arched windows, circular windows, elliptical windows, square and flat windows, round windows, oval windows, gothick windows, regular windows, rustic windows, and sky lights.

The chief rules in regard to window are:

1. That they be as few in number as moderate in dimensions as may consist with other due respects; in as much as all openings are weakening.
2. That they be placed at a convenient distance from the angles or corners of the building because that part ought not to be open and enfeebled, whose office is support and fasten all the rest of the building.
3. That care be taken that the windows are all equal one with another in their rank and order; so that those on the right hand may answer to those on the left, and those above be right over these bellow: for this situation of windows will not only be handsome and uniform, but also the void being upon the void, and the full upon the full, it will be a great strengthening to the whole fabric.

As to their dimension, care is to be taken not to give them more or less light than is needful; that is, to make them no bigger, nor less, than is convenient; therefore regard is to be had to the bigness of the rooms, which are to receive the light; it is evident, that a great room needs more light, and consequently a greater window than a little room, and e contra.

The apertures of windows in middle sized houses, may be four and a half, or five feet between the jaumbs, and in greater buildings six and a half, or seven feet, and their height may be the double their length at least.

But in high rooms, or larger buildings, their height may be third, a fourth, or half their breadth more than double their length.

These are the proportions of the windows for the first story; and according to these must the upper stories be for breadth; but as for height, they must diminish: the second story may be one third part lower than the first, and the third one fourth part lower than the second.

Price (..)

Windows says M. Le clrck, as ell as gates, differ both in their bigness, and in their architecture; the biggest are seen in churches and halls, &c. and are usually arched to a semi-circle.

The moderate ones frequently terminate in arch less than a semicircle. As to the small ones, they are usually long squares, their height being sometimes double their width, or very mearly so.

Both the one and the other are made more os less simple, or more or less rich, according to the place and the architecture of the building where they are used.

In the façade or front of a building, the windows, should be exactly perpendicular under one another; and to that end, care must be taken, that they be all the same width; but in different stories, their height must be different; those of the lowest and uppermost stories may be less high, as well as led adorned, than those of the middle, which are usually for the master's story.

The width of windows in respect to that of their jaumbs, i.e. with respect to the breadth of the wall between windows, may be as 3 to 4 in temperate climates, like that of ours; or as 3 to 5 in climates that are colder or more hot; or as 3 to 6 countries still no more exposed to violent heat or violent cold; but the various situation of a building with regard to east and west, will always occasion a variation in the proportion of window themselves.

The designs of windows given us by Vignola, do very well, as reformed by M.d'Aviler, in the translation he has made of that author; but it is usual to have windows much less adorned; and we often make them without any ornament at all, besides a plat-band around them, and that too in fine building.

Large windows should have a Cornish that projects pretty much, to be a shelter to those who present themselves at them; and in that case, the projecture should be supported by two consoles, as well as the rest of leaning place, that terminates the window at bottom.

The consoles of the cornish should be as big at bottom as at top, that they may shall in regularly with the jaumb and chambranle.

The breadth of the chambranle or window frame, may be a sixth part of that window.

Without the chambranle is a plat-band, serving it as an arriere-corps, called a montant or window-posts, which may have and equal breadth with the chambranle, or, on occasion, a little less, it serves particularly to place the consoles of the Cornish upon.

If the Cornish be nor supported upon consoles, that plat-band should be then narrower by one half, and without any mouldings besides those that compose its Cornish.

The consoles that support the rest of the bottom of the window, should be placed underneath the chambranle, and be equal to it in breadth, and the wreathigns may be made to run out on the side.

The height of these consoles must not exceed half that of the opening of the window at the most, nor fall short of a third of that opening, when the least.

They are usually made narrower at the bottom that at top; but in MR. le Clerc's opinion, it would be better to have them equally big.

The top of the perron or ascent, frequently terminates the bottom of these consoles.

As for windows, by statute of 7 of qheen Anne, it is ordered as follows.

Whereas it has been the practice of workmen to place window frames, and door-cases very near, and quite ranging with the outside face of the wall, whereby they are not only fully exposed to weather, and thereby decay sooner, than those that are sheltered, by being placed at a moderate distance within the walls, but in time of fire are more liabel to be fires, whereby many houses may be destroyed; for prevention of such practice, it is enacted, that after the first day of June 1709, no door frame, or window frame of wood, to be fixed in any house or building within the cities of London and Westminster, or their liberties, shall be set nearer to the outside face of the wall that 4 inches; nor shall any brick-work, excepting upon plank and piles where foundations are bad, on pain of three months imprisonment, without beil or mainprize.

But by a statute made in the 11^{th} of king George I. it is made lawful to place brick-work upon , or over door cases and windows (provided that the weight thereof is discharged by arches turned over them) or on lentils, breast summers, story posts, or plates, where required, for the convenience of a Shop or Shops only.

WINGS (no)

WITHS, these are used by thatchers to bind their thatching rods to the rafters.

They are usually dold at 6d. the hundred, and one hundred of them will do about 3 square of thatching; they using about 33 or 34 withs, and as many thatching rods (which are of the same price with the withs) in a square; for they bind down their straw at every foot ot thereabouts, viz. at every other laths (for they lath but two laths in a foot) and each course of thatching (bound down with one length of rods) is about three foot in breadth.

AUTOR	Richard Neve // PHILOMATH (Filósofo-matemático)	
TÍTULO	THE CITY AND COUNTRY PURCHASER'S AND BUILDER'S DICTIONARY: OR, THE COMPLETE BUILDER'S GUIDE: CONTAINING AN EXPLANATION OF ALL THE TERMS OF ART USED BY WORKMEN, AS ALSO WHAT IS NECESSARY TO BE KNOWN IN THE ART OF BUILDING, AS WELL BY GENTLEMEN, AS ARTIFICERS OF EVERY DENOMINATION … INCLUDING BRIEFLY THE THEOTY AND PRACTICE OF ARCHITECTURE…/	
AÑO PUBLICACIÓN	London 1736 (third edition)	
HABLA DE_		
Dedicatoria		
A quien va dirigido/Prefacio	These studies as well observes, may be reduced to: designing, geometry, arithmetick, Stone-cutting, perspective, mechanicks, levelling and hidraulicks	En el prefacio habla de le Clerc, y de las ciencias que se han de saber para conocer el arte de la arquitectura. Los define y dice que los 2 últimos son para la conducción de agua. Comenta que parece que cada autor le da más importancia a un u otro estudio, o que incluso añaden otro tipo de estudios como Vitrubio. Hubo un momento mientras se planteaban la ampliación dentro de esta edición, en que resulta que alguien les plagió el libro, en 2 tomos, (queja contra los editores y los escritores que se avinieron a ello) EL "Builder's Dictionary" (que es en 2 volúmenes). Han modificado el original de Neve y lo han ampliado. Como había que reducir, han desestimado poner los precios, aunque de algunos materiales y trabajos es inevitable ponerlos. Sigue con la queja hacia los copiones.
NOTAS SOBRE EL LIBRO	(notas)	Tiene forma de diccionario, empieza con la palabra abacus: te localiza la etimología, su historia y sus tipos Un tipo de árbol
Casa Ikea		
COMENTARIOS		

NOTES NEVE

Abacus.

Abies,

(…)

Architect: a Master workman in a Building; also the surveyor of a building, i.e. he that designs the model or draws the plot of the whole fabric; whose business it is to consider of the manner and method of the building, and also the charge and expence: in the management of which he must have respect to its due situation, contrivance and receipt, strength, beauty, form, and materials. But those the whole fabric be the care of the superintendent, yet sir henry Wotton would have a second superintendent (or Officianator, as Vitruvius calls him) whose care it should be to chose, examine, and sort all the materials for every part of the structure, (Vitruvius reckons up no less than 12 properties necessary to form a complet architect: 1.- that be ingenuous and docile, 2.- generally learned; 3.- Skilled in designing; 4.- in geometry; 5.- in opticks; 6.- in arithmetic; 7.- in history; 8.- in philosophy; 9.- in music; 10.- in medicine; 11.- in law; 12.- in astrology; the most celebrated architects are Vitruvius, Pallacio, Scamozzi, Serlio, Vignola, Barbaro, Cataneo, Alberti, Vida, Bulant, de Lorme, Sir H. Wotton, &c.)

ARCHITECTONIC, belonging to the chief architect or builder.

ARCHITECTURE, a mathematical science, which teaches the art of building, a skill obtained by the precepts of geometry, by which it gives the rules for designing and raising all sorts of structures, according to geometry and proportion. Containing under it all those arts that conduce anything to the framing houses, temples, &c. The scheme or projection of a building is usually laid down in three several draughts or designs. The first is a plan which shews the Extent, division and distribution of the ground into apartments, and other conveniences. The second shews the stories, their heights, and the outward appearences of the whole building; and this we call the design or elevation. The third, called the section, shews the inside: and from these three designs the undertaker forms a computation of the experiences of the building, and the time required to go through with it.

ARCHITRAVE,…

(…)

ARITHMETICK (…)

ASHLAR, I understand by workmen, that by this word, they mean common or free stones, as they come out of the quarry, of different lengths and thicknesses.

(…)

ASPHALTUM, a sort of bituminous stone, found near the ancient Babylon, which mixed with other things, makes an excellent cement impenetrable by water, and incorruptible by air.

ASSEMBLAGE, things joined or united together; also the act of joining or uniting things together, as with mortises, tenons, dovetails &c. For rules for the assemblage of orders, see Mr. Le Clerc.

ATTIC, belonging to Attica, or the state or city of Athens in Greece; neat elegant.

(…)

Attic interposed, that situates between two tall Stories, and sometimes adorned with columns and pilasters.

(…)

BAKE-HOUSE, a room of office, where is placed the oven, &c, in all noble buildings. It ought, according to the rules of Sir Henry Wottom, to be placed on the south-side of any building.

(…)

BALCONY, from the Ital. Palco, or Fr. Balcon, a kind of open gallery on the outside of the Building, for people to stand in, and behold any action or shew, or to take the air in. This projective building is commonly in the middle of a front, if there be but one Balcony, and mostly level with the first floor above stairs.

Is sometimes of Wood, sometimes of iron, with rails and balusters, ornamented or plain.

(price) (…)

BAR, a piece of iron or wood for the security of doors, windows, and several other uses.

BARBICAN, fr. Outwork in a building, or a kind of watchtower. Hence street in London still called Barbican. Among the moderns Barbican is a kind of opening left in the wall for the passage of water, where inundations are probable, or as a drain to a terrass.

BARGE-COUPLES, in architecture, is a beam or piece of Wood mortised into another to strength the building.

BARGE-COURSE, with bricklayers is a part of the tyling, which projects over without the principal rafters in all buildings, where there is either a bale or a kirkin-head.

BARN, a building to common, that every one knows what it is.

Mr. Worlidge observes, that is very convenient to build barns, stables, or such like places, too near a house, because Cattle, Poultry, &c. requiring to be kept near barns, would then annoy the house.

The price (...)

BAR-POST, are much used in the country, 2 of which and 5 rails or bars, serve instead of a gate, for an inlet to fields and other inclosures; each of these posts consists of 5 mortises, and are commonly about 6 feet, or 6 ½ feet long, 4 feet of which stand above ground. These posts are in some places made by the piece, viz. A Penny or 3 halfpence per post hewing, and a halfpenny per hole mortifing.

BARS, upright bars of iron for windows are usually sold for 3 d halfpenny, or 4 d. Per pound in London.

BASALTES, the hardest sort of black, or dark-coloured marble.

BASON, a reservatory for water, see Miller's Gardener's dictionary for an account of the various sorts of basons, the manner of making them, the cement made for them &c. Bason is also used for a kind of royal Dock, for ships of war.

BATTEN DOORS, are such as seem to be wainscot ones, thos they are not so, for in Wainscot ones the Pannels are grooved into the framing; but here they first joint and glue the boards, which are cut to the full Length and Breadth of the door-case, which gluing being dry, they traverse them over, both in length and breadth, with a long plane, and then smooth them, and then fit on the battens on the front side.

(...)

BEAM, in building is a piece of timber, which always lies across the building, into which the feet of the principal rafters are framed, No building hath less than 2 of these beams, viz. One at each head; into these beams the girders of the Garret Floor are framed; and if it be a Timber Building, the teazle tenons of the posts are framed. The teazle tenons are made at right angles to those which are made con the posts to go into the raisons, and the relish, or cheats of these teazie tenons stand up within an inch and a half of the Top of the Raison; and the beam is cauked down (which is the same as Dovetail across) till the checks of the mortises in the beam conjoin with those of the teazle tenon on the posts.

The size (...)

Sir henry Wotton, advises, that all beams, girders and summers ought to be the strongest and most durable Timber.

(...)

BED, with masons is a course or range of stones.

(...)

BIGA, a carriage with two wheels.

(...)

BIDING JOISTS, are those joists in any floor, into which the trimmers of stair-cases(or well-holes for the stairs) asn chimney-ways are framed; these ought to be stouter than common joists.

BOARD, a plank or table or any piece of wood for flooring and other uses.

BOULDER-WALLS, that is walls, made of round flints, or pebbles, which are found where the sea hath a beach cast up, and also at some other places where there are plenty of flints.

The method of building them, this usual (if they can so fit it) for 2 bricklayers to work upon a wall at a time, one at one side, right handed, the other at the other, left-handed; for two such fit best to work, together in this sort of work: they have a hod of mortar poured on their work. Which they part betwixt them, spreading each toward himself, and then they lay their boulders or flints. They always work with a very stiff mortar, and had need to have a good length of work before them; for they work but one course in heighth at a time; for, if they should do more, it would be apt to swell out at the sides, and run down; and so they are forced to work continually in length: if it chance to be misty weather, this difficult to make the work stand. (It is a practice among some, to lay laths in the wall angle-wise, and then to cross them checker-wise, at the heightht of every two or three feet, in order to secure the work in bad weather.

BREST-SUMMERS, in a timber building, are pieces into which there girders are framed, in all the floors but the ground floor (when they call it a cell) and Garret-floor (when it is called a beam). As to their size or square this the same by the act of parliament with girder, which see. You must note by the way, that I mean here all such pieces as are in the exterior part of building, whether in the front, flanks, or Rear of the building; for the pieces in the internal part of the building, into which the girders are framed are called summers.

A BREW HOUSE, is a necessary part in a dwelling-houses, especially in the Country. Sir Henry Wotton, in his elements of Architecture, saith, that all offices that require heat; as brew-houses, bake-houses, wash-houses, kitchins, &c. ought to be placed in the meridional part of the building, if the position of the house, in respect of the high street, or the like, will admit of it.

BRICKS, a factitious or artificial kind of stone, of a reddish colour; of various forms, magnitudes and uses.

II.- Pliny said, that if you would have good bricks. They must not be made of any hearth that is full of sand or gravel, nor of such as is gritty and stony, but of greyish marl, or within chalky clay; or left a reddish hearth; and that the best season to make bricks is in the spring; for in the middle of summer they are subject to crack and be tull of chinks.

Here in England they are made for the most part of the yellowish coloured fat earth, somewhat reddish, (vulgary called Loam) Mr. Leyburn says, bricks are made of a reddish earth, which ought to be diged before winter, but not made into bricks till spring season.

III. Of their kinds and appellations, and prices.

(...)

VIII. of observables in buying and laying bricks, &c.

(...)

Secondly, of lying bricks, which is a thing of no small consequence in a building; for the well-working, and bonding of brick-work (or as some Workmen call it, breaking of joint) conduces very much to its strength; wherefore it may not be amiss to add on this subject some particular notes, which experienced workmen have thought convenient to commend to the publick, as well worth their observation.

Fist, let me commend to your care, to be sure to procure good strong mortar; for which see mortar.

Secondly, if your brick are laid in winter, let them be kept as dry as possible, if in summer, it will quit cost to employ boys to wet them; for they will unite with the mortar much better, than if they were laid dry, and will make the work much stronger. If it be objected, that it will be too much trouble to dip all the bricks in water, if the building be large, and that it will make the workmen fingers fore, there may be water thrown on each course after they are laid, as was done at the building of physicians college in warwick-lane, by order of the ingenious surveyor. Mr. R. Hooke

Thirdly, If your brick are laid in summer; be sure to cover them; for if the morter dries too hastily, it will not cement so firmly to the bricks, as when it dries gradually.

Fourthly, if bricks are laid in winter, be sure to cover them very well, to protect them from rain, snow, and frost, which last is a mortal enemy to mortar, especially to all such as hath taken wet, just before the frost assault it.

Fifthly, let care be taken that bricks be laid joint on joint, in the middle of walls as seldom as may be; but let there be good bond made there, as well as on the outsides; for some, in working a brick and a half wall, lay the header on one side of the wall, perpendicular on the Header on the other side, and so all along throw the whole course, which indeed necessary follows, (...)

IX. Of facing timber buildings with bricks. This method i think should be called Caseing; for this covered all over on the outside with brick, so that no timber is to be seen. It is thus performed viz. All betwixt the timber the wall, is a brick lengthwise or 9 inches thick, but against the timber only halt a brick thick.

But this is not approved by able workmen, because the mortar so extremely corrodes and decays the timber. And an experienced Bricklayer told me, that he pulled down such work at Eridge-place (one of my lord Abergavenny’s country seats) and the Timber was extremely corroded, and eaten with the mortar.

BRICK-KILN, place to burn bricks.

BRICKLAYERS, the bricklayers working in the city is of various kinds, viz. Tyling, Walling, Chimney work, and Paving with bricks and Tiles. But in the country, this common for bricklayers trade too comprehend the masons and plaisterers also. All which particulars will render it too copious to be comprehended under the general head of bricklayer’s work

(...)

BUILDING,

I. Considerations about it, every man who is disposed to build, should first seriously consider the whole design, and above all calculate the charge and the expence: let haply, as our blessed saviour says, Luke XIV, 29, 30. After be hath laid the foundation, and is not able to finish it, all that behold is begin to mock him, saying, this man began to build, and was not able to finish.

In the next place it will behove a person designing to build to make choice of such surveyors and Workmen, as understand what they are going about, before they begin the work, and know how to give the draught; or model of a design, and to pursue it to good purpose.

A building is said to be well done, when it posses of the following qualifications viz. Conveniency, proportion, uniformity, and firmness. For that fabric cannot be accounted perfect, which will last but a short space of time, or is not convenient for longer; and hat not also decency and beauty, which will last but a short space of Time, or is not convenient for longer; and hath not also decency and beauty, which is derived from proportion and uniformity: I would therefore advise all persons, who intend to built to procure such surveyors and workmen as understand the theory and practice of architecture, and also of arithmetic (which is the ground of all arts) without the knowledge of these two, the best mechanicks will be subject to fall into many errors, and mistakes, and not being able to leave the old beaten way in which they have been accustomed to plod, will consume more materials, and make a Building, not only more un-uniform and clumsy, but also more inconvenient and chargeable, as well as disagreeable to a judicious eye, than would be done by one who is a master in his art.

II. Aphorism necessary to be known, and observed in building. Dr. Fuller prebend of sarum, says, he that alters and old house, is confined, as a translator to the original, to the fancy of the first builder, and has some excuse if it come not up to accuracy of taste; and it were unwise, perhaps, to pull down a good old building, to erect a worse new one. But those that raise a new house from the ground, are blame-worthy, if they make it not beautiful and convenient, seeing method and confusion are both of a price. In building says he, we must respect the situation, contrivance, receipt, strength and beauty; to which I will add form or figure.

i. Of situation. The precepts belonging to situation, says sir H. Wotton, are usually reckoned by architects, as part of their possession; but the truth is, they are borrowed from other parts of learning, there being betwixt Arts and sciences, as betwixt men, a kind of association, and communication of principles.

For some of them are purely physical: as for instance, that a house well situated in a good healthy air, not subject to foggy vapours from adjacent fens, or marshes, and be also free from noxious, mineral exhalations. Nor should the place want the sweet influence of the sub-beams, nor be wholly destitute of the breezes of wind, to fan and purge the air; the want of which would make it like a stagnated pool or standing lake, as Alberti, the Florentine Architect, rightly observes. He also warns us to avoid such places as are subject to earth-quarkes, contagions, &c.

Dr. F also observes that air being a dish one seeds on every minute, it had need be salubrious. Wherefore great men, who may build where they please, if they prefer their seeming profit above their health, can have no excuse; and will find in the long-run, that their physicians, &c. will make a painful balance of the account in their disfavour. Cato says, let your country-house have a good air, and not be open to the tempests; let it be seated in a good soil; let it stand under a hill, and have a southern aspect.

Pliny advices no to set a country-house too near a fen, or standing water, nor yet over against the stream and course of a river; for, says he (as Homer observed before him) the fogs and mists that arise from a river before sun-rise, cannot chuse but very cold and unwholesome: (this however may be more generally true with regard to a stagnated stream, or one that runs only one way; but it has been observed, that a river which purges itself by its regular ebbs and flows, as the Thames, is a far less prejudicial situation; and the many fine and desirable-seats, from Richmond or Kinston to London, will evince the truth of this, and specially where a gravelly soil, and eminent situation is afforded. The celebrated Dr. Radcliff had his house at Hammersmith, on the very strand of the river.)

With regard to economy. Sir H. Wotton advices to let the house or seat be well watered, and well fuelled; to led the way to it be not too steep, and of an incommodious access, which will be a trouble to both friends and the family. And to see that it be not seated too far from some navigable River, or Arm of the sea, which will conduce to the easy of the family, in procurement, provisions, and other domestick necessities.

Dr. F. Says that wood and water are two staple commodities, where they may be had. The former I confess hath made so much iron, that it must be bought with the more silver, and grows daily dearer. But it is as well pleasant as profitable to see a house cased with trees; and it must be observed, that where a place is bald of wood, no art can make it a periwig in haste.

The want of water is a very great inconveniency; for must it not be and infelicity to the owner of any house, where the servants must carry the well upon their shoulders?

Optical precepts. Such I mean, (says sir H. Wotton as concern a well-chosen prospect, which may be styled the royalty of the sight: for as there is a lordship (as it were) of the feet, wherein a man walks with much pleasure about the limits of his own possessions; so there is a Lordship likewise of the eye; for the sight being a roving and imperious sense, cannot endure a narrow circumscription, but must be gratified both with extent and variety. (This is admirably judged and executed since our author, in the designs and the taste inculcated or rather inspired by that noble Vitruvious of our time, the Earl of Burlington, whose name will be mentioned with distinction and applause by all admirers of architecture to the latest futurity). However, it must be confessed that some good authors censure such vast and indefinite prospects, as drown all apprehensions of very remote objects: and in conclusion, the matter will be best determined by the nature of the situation.

A pleasant prospect is to be respected. Said Dr. F. A medley view of water and land, as at Greenwich, best entertains the eye, refreshing the weary beholder with change of objects. To the head of situation he adds as follow.

A fair entrance, with an easy ascent, gives a great grace to a building. Where the hall is a preferment out of the court, parlour out of the hall, not as in some old buildings, where the doors are so low, pigmies must stoop, and the rooms so high, that the giants may stand tip-toe.

A political precept. I remember (says the greater architect Sir H. Wotton) one private caution, which I know not well how to rank among the rest of the precepts, unless I call political, which is this, by no means to build to near a great neighbour; for this were to be as unfortunately seated on the Earth, as mercury is in the heavens, for the most part either in the combustion, or in obscurity under brighter beams than his own. We are next to come to.

ii. *Contrivance.* Which being a thing of great moment, I cannot enter upon it, before I have given some few general precautions.

And first, I would by no means have other intends to built, either for use or ornament, set to work without advice of a surveyor or master-workman, who understands the theory of architecture, and is capable of designing a draught or model, according to the rules of art. If a draught be resolved upon, there ought to be the inchonography of each face of the building, viz. The front, the flanks, and the rear. But if the workman be skilled in perspective, then more than one face may be represented in one diagram scenographically.

In the contrivance of these Designs, whether for draught or model , the quality of the persons, for whom the building is erected, must be considered, in respect of the iconographical plots especially. For noblemen have occasion for more rooms of office, than others of a meaner degree; all which must be designed according to the rules of proportion; also the iconography of all chimneys, both in length and breadth of the hearths, and jambs, bed-places, stairs and latitude, of all doors and windows, in each floor. And if it were required in Timber Buildings, the Longitude, latitude, and crassitude of ground-plates, or cells, brest-summers, and in all (whether the timber, brick or stone building) the dimensions of summers, girders, trimmers and joists. Also in the upper floor the scantling of the dragons-beams, reasons or raising-pieces, or wall-plats &c. And also the crassitude of partitions, walls &c. in brick or stone fabricks.

All which, and all other parts, whether the iconography, or orthography of buildings, ought to be represented, (as also Ovens, stoves, broilers, furnaces, coolers, vats for brewing &c.) with their just measures, and for the best advantage, as commodiousness, health, strength and ornament. All which dimensions I would advise to be set in the proper places in the diagrams, in characters; because unless the schemes be very large, it will be difficult to take the dimensions nicely, of the smaller parts, and perhaps of the great ones too, those it will be scarce practicable to take either of them to an inch, or perhaps, to two, three, or four, according as the Diagram may be in amplitude.

In the orthographical schemes, there must be the true delineations, and dimensions of each face, and all its concomitants, as doors, windows, balconies, turrets or cupola's, chimney-shafts, fascia's, rustic quoins, architraves, friezes, cornices, pediments, pilasters, columns, shells over doors, lanthorns, and all other ornaments. And if it be a timber-building, then all the members in that Face ought to have their several seizes in characters, and true positions by the scale. As for example, the ground-plates, or cells, interduces, brest-summers, beams, principal posts, or braces, quarters, prick-posts, or windows-posts, jambs, or doors-posts, or puncheons, king-pieces, or joggle-pieces, struts, collar-beams, door-heads, principal rafters, &c. The ichnography, orthography and scenography of the stair-cases may be also delineated, and all its parts, as hand-rail, risers, nofeing, of the cover, or top, string-board, and mouldings, on it or cartouses, balisters, pendents &c. with their true positions, forms and dimensions: all which being carefully done by an ingenious surveyor, I thing that this almost impossible for a careful workman to mistake, or commit any blunders. More of this see in draughts. You shall next hear what Sir H. Wotton says of this matter; his precautions are follow;

First says he, let no man that intends to built settle his fancy on a draught of the work or design, in paper or vellum, how exactly so ever delineated, or set off in perspective, without a model, or type of the whole structure, and of every parcel, and partition, either in paste-board, or wainscot.

Secondly, let the model be as plain as may be, without colours, or other beautifying, left the pleasure of the eye pre-occupate the judgement.

Lastly, the bigger this type is, it is so much better; not that I would persuade any man to such an enormity, as that model made by Antonio Labaco, of St. Peter's Church in Roma, containing 22 feet in length, 16 feet in breadth, and 13 in height (...)

What Sir H. Wotton, here cautions, is very requisite in large and sumptuous building, whether public pr private, as Noblemen mansion-houses, and the like; cut is not worth while to be at the trouble and cost, to procurer a model for every little dwelling house.

Having thus given sufficient caveats, i will next proceed to discourse of the contrivance , whereby to distribute the whole ground-plot, &c. into rooms of office, or entertainment, as far as the capacity of the building, and the nature of the situation will correspond, and so far as it may be decent and useful. But in the mean while we are to consider, whether the building be to be erected in a City, or great Town or Trade; and whether for a gentleman, or a shopkeeper: neither must all shopkeeper's houses be alike; for some trades require deeper, other may dispense with shallower shop, and so and inconveniency may arise in both, for the shop be hollow, the front rooms upward ought to be shallow also; because by the rules of architecture all partitions of rooms ought to stand directly on over the other: for if the shop stands in an eminent street, the front room are commonly more airy that the back rooms, and always more commodious for observing public plassages in the street; and in that respect it will be inconvenient to make the front rooms shallow; but if there be a fair prospect backwards of gardens and fields &c. (which seldom happens in cities) then it may be convenient to make the back rooms the larger, for entertainment, &c.

This observed by some, that in building of houses long, the use of some rooms will be lost, and it takes up more for entries and passages, and requires more doors: and if a building consists of a geometrical square, if the house be anything large, there will be want of light to the middle rooms, more than if it be built like an H, or some other such a figure (unless it have a Court in the middle of it, which was method of building great houses formerly) This way, like a roman capital H, is much applauded for some; for say they, this form makes it stand better and firmer against the winds; and light and air come every way to it, and every room is near the one to the other. Some also affect this figure very much, because the offices must be remote from the parlour and rooms of entertainment, and yet in the same house, which may serve very well for a Country Gentleman's house. Now, the method which some propose for such buildings, is thus, in the front of one of the long Parts of the H is the Kitchen, and the baker-house, brew-house, and dairy-house in the same part, behind it; the hall in the middle of the H, which separates parlours (which are in the other long part) and rooms of entertainment, from the offices.

I shall here add a cheap contrivance in building, approved of by some, which is thus; where bricks may be had, the walls of the building may be best, and most securely raised with them, and with little cost, if there be firm and strong quoins or columns raised at the corners of the house of sufficient strength to support the floors and roof, or the main beams of it; they may be built square, and between them the walls may be raised of the same materials, and they may be worked up together with the quoins, leaving the one half of the extraordinary breadth of the quoins without, and the other within the wall, whereby there will be much charge saved, both in materials and workmanship, and yet the building be firm and strong.

According to Sir H. Wotton's definition contrivance, it consists of these two heads of principles, gracefulness, or decency, and usefulness.

Decency or gracefulness, he also says consists in a double analogy, or correspondency. First, between the parts and the whole, whereby a great

fabric should have all the members and parts great, proportionable to the building.
The second analogy is between the parts themselves, not only considering their breadths and lengths, as where we speak of doors and windows, which see; but here, says sir Henry, enters a third respect, of height, a point hardly reducerable to any general precept. The truth is, the ancients determined the longitude of all rooms, which were longer than broad, by the double of their latitude, (Vitruvius, lib.6 cap.5) And the height by half breadth and length added together; but when the room was a geometrical square, they made the height half as much more as the latitude, which dimensions the modern Architects have taken leave to vary upon discretion, sometimes squaring the latitude, and doubling, that square number, the square root of that number is the eight, and sometimes more, but seldom lower than the breadth.(...)
As to sir Henry's 2nd point of contrivance, viz, usefulness, this will consists in a sufficient number of rooms of all sorts, and in their due and apt coherence without distraction or confusion, so as the spectator may not only call it, "una fabrica ben racolta" (as the Italians, used to say of well united pieces of work) but likewise that it may appear airy and spiritful, and sit to welcome cheerful guests. The principal difficulty here will be in contriving of the lights and stair-cases, whereof I will give you a note or two:
For the first, I observe that the ancient architects were at much easy; for both Greeks and romans, (of whose private dwelling, Vitruvious hath left us some descriptions) had commonly two cloistered open courts, one for womens side, and other for men; who perhaps would now take such a separation unkindly. However, by this means they had a good conveniency to admit light into the body of the building, both from without, and from within, which we must now supply by some open form of the fabric, or (among other graceful refuges) by terrasing any story in danger of being too dark; lastly, by perpendicular light from the roof, which are the most natural of all others. As to the second difficulty, viz, contriving of the stair-cases, which is no hard point itself, the only thing in contriving them, is to make them handsome, convenient, and in as little room as may be, that they be no hindrance to any other room. I have, says Sir H. Wotton, observed that the Italian Architects are inclined to place the kitchen, baker-house, pantry, washing-rooms, and the buttery likewise, under-ground, level with the cellar floor, raising the first ascent 15 feet, or more, up into the house; by which Method, besides removing Annoyances out of sight, and having thereby, much more room above, it doth also, by the elevation of the front, add majesty to the whole aspect, and with such a disposition of the principal stair-case, as commonly delivers us into the plain of the second story, where wonders may be done with a little room: I have observed, that they commonly place all their rooms for office, about 5 feet under ground at Tumbridge-wells, the first stories being about 8

feet, and then the lights or windows of them be just above the ground without; but then you must note, that those houses always stand up-on and ascent, that they may have good sewers to keep these lower rooms dreined dry from water. The petty officers, says Sir Henry, may be well enough so remote in Italy, yet by the natural hospitality of England, the buttery must be more visible, and we have occasions for larger rangers, or chimneys, and more ample kitchens than the Italians, or that perhaps the aforesaid compartition will bear; and likewise not so remote from the dining-room, or else, says he, besides other inconveniencies, perhaps some of the dishes may straggle by the way.

Here, says Sir Henry, let me note a common defect that we have in our English buildings; viz. They want, or neglect of very useful room, called by the Italians "il tinello", very frequent, nay almost essential in great families, This a place properly appointed for a conservatory of the meats that are taken from the table, till the waiters are ready to eat, which with us is more unseemly set by till then.

Now touching the distribution of Lodging Chambers, I must here presume to reprove an odd custom they have in Italy, without any precedents, as far as I can learn from Vitruvius: Namely, that they so contrive their his custom suppose to be grounded upon a fond ambition of displaying to stranger all their furniture in one view.

There is likewise another defect, (for absurdities are seldom solitary) which will follow by consequence, upon such a servile disposing of the inner chambers; that they must be forced to make as many common great rooms as there shall be several stories, which (besides that they are usually dark, a thing hardly to be avoided, running as they do quite throw the house) do likewise devour so much place, that thereby they want other galleries and rooms of recreation.

Having thus given some general hints and directions, the rest must be committed to the sagacity of the architect, who will be often put to diverse ingenious shifts, when he is to wrestle with scarcity of ground.

As sometimes to dam one room (the Italians call it una Stanza danata, as when a buttery is cast under stair-case, or the like) although of the great use for the beauty and benefit of all the rest; at another time to make those fairest which are most in sight, and to leave the other (like a cunning painter) shadowed. I will close this part, says sir Henry, of compartition, with a short description of feasting or entertaining room, after the Egyptians manner, who seem (at least till the time of Vitruvius) from the ancient Hebrews and Phoenicians (whence all knowledge flowed) to have retained with other sciences in a high degree the principles and practices of this magnificent art. For as far as I can learn, and conjecture by Vitruvius lib. 6 cap. 5 there was no form for such a royal use, comparably imagined like that of the Egyptian; which I shall now proceed to explain. (...)

Having thus far considered the lower parts if the building, the house may now have its hat put on; which point, those it be the last in execution, (of any part of the bare shell of the house) yet it is always the first in intention; for none would build but for Shelter: I shall now only deliver a few of the properest , and most natural considerations belonging to the roof.

There are two extremes to be avoided in the cover of roof of a house, viz. That it be not too heavy, nor too light; first will be objected against, for pressing too much the under work; the other contains a more secret inconveniency; for the cover of roof is not only a bare defence, but likewise a king of band and ligature to the whole fabric, and therefore will require some reasonable weight; but of the two a house top-heavy is the worst: next, there must be care taken to contrive an equality of the pressure of the roof upon all the parts of the edifice, viz. As much on one side, as it doth on the other. And here Palladio's advice is very good, wiz. That the inward walls may take their share of the burden. Thirdly, the Italians are very careful in giving the roof a graceful pendency, or slope; so that dividing the whole breadth of the building into nine parts, two of these divisions shall be the perpendiculars to the roof.

But in this point the quality of the regions is to be the rule to walk by, as Vitruvius observes; that those climates that are subject to great snows, ought to have sharper roofs than other places, where they are not subject to the like accidents; and in all places comeliness must yield to necessity.

I will now add Dr. F's general maxims of contrivance in Building, viz.

1. *Let not the common rooms, be several, nor the several rooms be common)* i.e. that the common rooms should not be private or retined, nor the private rooms common. The Hall (which is a Pandonchaum) ought to lie open, and so ought galleries and stairs, provided the whole house be not taken up in paths. Chambers and Closests ought to be private and retired.
2. *Light (god's eldest daughter) is a principal beauty in buildings).* Yet it shines not alike ´from all parts of the Heavens. An east-window gives the earliest beams to the sun before they are of strength to do any harm, and is offensive to none but sluggard. A south-window, in summer, is a chimney with a fire in it, and needs to be screened by a curtain. In a west-window, in summer-time, towards night, the sun grows low, and over familiar, with more Light and delight. A North-window, is best for butteries and cellars, because the beer will be four, if the sun smiles on it. Thorough lights are best for rooms of entertainment, and windows on the side for dormitories.
3. *Receipt.* As for Receipt, a house had better be too little for a Day, than too great for a year. And this easier borrowing of your neighbour a brace of chambers for a night, than a bag of money for a twelve-month. It is vanity therefore to proportion the receipt to an extraordinary occasion; as those, who, by overbuilding their houses, have impoverished their lands, and their states have been pressed to death under the weight of their house.

4. *Strength).* As for strength, country-houses must be substantives, able to stand by themselves). Not like city buildings, supported by their neighbours on each side. By strength, I mean such as may resist weather and time, and not invasion, castles being out of date in England, only on the Sea-coast. As to making of motes round about a house, this is a question whether the fogs that arise from the water be not more unhealthful than the fifth brings profit, or the water defence. In working up the walls of a building, do not let any wall be worked up above 3 feet high, before the next adjoining wall be brought up to it, that so they may be joined together, and make good bond in the work. For there is an ill custom used among some bricklayers, to carry, or work up a whole story of the party wall (I mean in London) before they work up the fronts, of other work adjoining, that should be bonded, or worked up together with them, which occasioning cracks, and settlings in the walls of the building, weaken it very much.

   Sometimes the strength of a building is much impaired in the erection, by the masters not procuring sufficient materials and money before he began to built; for when buildings are erected, by fits and pauses, now and then a piece, the work dries, and finks unequally, whereby the walls grow full of chincks and crevices; this pausing humour is condemned by all authors.
5. *Beauty Let not the front look asquint on a stranger, but accost him right at his entrance.* Uniformity and proportion much delight the eye, and this observed, that freestone, like a fair complexion, soonest waxes odd, whilst bricks keep their beauty longest.

   Let the offices (saith Dr. T.F.) keep their due distance from the mansion house). Those are too familiar which presume to be of the same Pile with it. The same may be said of stables and barns, without which a house, is like a city without fortifications, and can never hold our long.

   This very inconvenient, and rather a blemish than a beauty to a building, to see the barns and stables too near a house because cattle, poultry, and such like must be kept near them, which are as annoyance to a house.

   Gardens are also to attend in their place). Let the gardens, says Mr. Worlidge, join to one, if not more sides the house; for what can be more pleasant and beautiful for the most part of the year, than to look out the parlour and chamber window into a garden? For beauty, also let there be courts or yards kept from cattle and poultry, &c. and planted with trees to shade, defend, and refresh your house, and the walls also planted with vines, and other wall-fruit, all which will add pleasure and beauty to your habitation. See more of this in Mr. Miller's Gardeners Dictionary.
6. *Form figure).* Figures are either simple or mixt; simple figures are either circular or angular; and of circular, either compleat or deficient

as oval: the circle is an unprofitable figure in private buildings, being the most chargeable, and much room is lost in the bending of the walls, besides an ill distribution of the light, except from the center of the roof, so as it is not used only in Temples and Amphitheatres. The oval, and other imperfect circular forms are subject to the same exceptions, and are less capacious.

Touching the angular form or figures, it is a true observation, that this art loves neither many angles nor few; first, the triangle, which hath of all the others, the fewest sides and corners, is of all others the most condemned, being indeed both incapable and infirm, and not easily reduced into any other form, but that of itself in the inward partitions: as for figures of 5, 6, 7 or more side and angles, they are fitter for military than civil architecture; those there is a famous piece at caprarola. Belonging to the house of farnese, contrived by baraccio, in the form of a pentagon, with a circle inscribed, where the architect did ingenuously wrestle with diverse inconveniencies in disposing of the lights, and in saving the vacuities. But such designs as these aim more at rarity than commodity, and are rather to be admired than commended. And therefore, by the precepts and practice of the best builders , we resolve upon rectangular squares, as a mean betwixt too few and too many angles, and throw the equal inclination of the sides (which make the right angle) stronger than the rhomb, or any other quadrilateral figure; but whether the quadrat, or the rectangle parallelogram be the better, is not yet determined, those I preter the latter, provided the length do not exceed the latitude above one third, which would diminish the aspect.

Of mixt figures, partly circular and party angular; there is a proper objection against them, wiz. That they offend uniformity. Of which (having here mentioned it) I will add something concerning uniformity.

In architecture there seems to be opposite affectations, uniformity and variety; yet these seeming opposites may be very well reconciled; as we may observe in our own bodies, the great pattern of nature; which is very uniform in whole figuration, each side agreeing, with the other both in number, quality, and measure of the parts: and yet some are round, as arms; others flat, as the hands; come prominent, and others indented or retired; so the limbs of noble fabric may be corresponded enough though they be various, provided we do not run out into extravagant fancies, when we are contriving hoe to part and cast the whole work. We ought likewise to avoid enormous heights of six or seven stories, as well as irregular forms; and on the contrary, low distended fronts are unseemly; or again, when the face of a building is narrow, and the flanks deep.

III. *Of the modern way of buildings in England, compared with the ancient.* When I compare the modern English way of building with the old way, I cannot but wonder at the genius of old times. Nothing is, or can be more delightful and convenient than height, and nothing more agreeable to health than free air. And yet old, they used to dwell in houses, most of them with a blind stair-case, low ceilings, and dark windows; the rooms built at random. (Without anything of contrivance) and often with steps from one to another. So that would think the people of former ages were afraid of light, and good air; or lover to play at hide and seek. Whereas the genius if our times is altogether for light stair-cases, fine sash-windows, and lofty ceilings. And such has been, of late, our builders industry, in point of compactness and uniformity, that a house, after the new way, will afford, upon the same quantity of ground, as many more conveniencies.

The contrivance of closets, in most rooms, and painted wainscot, now so much used, are also two great improvements, the one for conveniency , the other for the cleanliness and health; and indeed, for so damp country as England is, nothing could be better contrived, than wainscot, to keep off the ill impression of damp walls. In short, for handsome accommodations, and neatness of lodgings, London undoubtedly has few compeers.

The greatest objection against London houses (being for the most part brick) is their slightness, occasioned by the fines extracted by the landlords. So that few houses, at the common rate of building, last longer than the ground lease, i.e. about 50 or 60 years. In the mean time, if there happens to be a long fit of excessive heat in summer, or cold winter, the walls being but thin, become at last so penetrated with the air, that the tenant must needs be uneasy with it; but those extremes happen but seldom. And this way of building is very beneficial to trades relating to it, for they never want work in a great city, where houses are always repairing, or building.

The plaistered ceilings, so much used in England, beyond the other countries, make the rooms much ligthformer, and are excellent against raging fires. They stop the passage of the dust, and lessen the noise over head; and in summer-time the air of a room is something the cooler for them, and in the winter something the warmer, because it keeps out cold air then, better than board-floors alone can do.

IV. Some general rules to be observed in building). These following rules were established by act of parliament, before the re-building of London.

1st in every foundation within the ground, add one brick in thickness to the thickness of the wall, next above the foundation, to be set off in three courses, equally on both sides.

2nd that no timber be laid within 12 inches of the fore-side of the chimney-jambs.

3rd that all joists on the back of the chimney, be laid with a trimmer, at 6 inches distance from the back.

4th that no timber be laid within the funnel of any chimney, upon penalty to the workman for every default of 10 s. And 10 s. Every week it continues un-reformed.

5th that no joists or rafter be laid greater distances from one to another, than 12 inches; and no quarters at great distance than 14 inches.

6th that no joist bear at longer length than 10 feet; and no single rafters more in length than 9 feet.

7th that all roofs, window-frames and cellar-floors be made of oak.

8th that the tile-pins be of oak.

9th that no summers or girders in brick buildings, do lie over the heads of door or windows.

10th that no summers or girders do lie less than 10 inches into the brick-work; nor joists less than 8 inches; and that they be laid in loam.

Some also advice, that all tarfels for mantle-trees to lie on, all lintels over windows, all templers under girders, or any other timber that must lie in the wall, to lay them in loam, which is a great preserver of timber; but mortar eats and corrodes it; for which reason some workmen pitch the ends of timber that lie in the walls to preserve them from the mortar.

V. Of surveying of a building. I will here briefly touch upon the method of surveying of buildings; by which the manner or form of taking dimensions may be seen

A survey of a building erected by R.M. for R.S. the thickness of the wall (as by agreement) brick and half, at 3 l. Per rod, for mortar and works, manship: the dimensions where as follows:					
		feet	parts		
1	The length of one side	40	50	648	
	From the foundation of the raising	16	0		
2	The breadth at one end	17	16	283	14
	The height to the cross-beam	16	50		
3	A partition-wall within	17	16	180	18
	Height to the first story	10	50		
4	The length of the other side	39	33	273	31
	From an old wall to the raising	7	00		
5	The breadth at the other end	17	00	82	11
	From the front to the cross-beam	4	83		
6	A water-table 30 feet reduced to	7	50	23	70
	From the foundation to the table.	3	16		
7	A setting off on the other side of the house	16	83	16	83
8	A gable-end	66	00	66	00
The total area, or content of these dimensions				1575	27

Particulars to be deduced

1	One Door-case	Broad	8f	66pts	81	58
		High	9f	42pts		
2	Another door-case	Broad	4f	33pts	32	13
		High	7f	42pts		
3	A third door-case	Broad	4f	33pts	22	34
		High	5f	16pts		
4	A window-case	Broad	4f	50pts	20	25
		Deep	4f	50pts		
5	Another window-case	Broad	4f	5pts	20	25
		deep	4f	5pts		
Total deductions					176	55
From the whole					1575	27
Rests due to bricklayer					1398	72

Which reduced into square rods, is 5 rods, 38 feet.

And then according to the contract there will be due to the bricklayer 15l, 8s. 3d.

Thus far Mr. Leybourn; we will now see Mr. Ventris Mandey's method of surveying buildings, taking dimensions, and setting them down in a Pocket-book.

1. Note, before you begin to set down your dimensions, it is convenient to divide the breadth of the page or feet into so many several columns as you think you shall have occasion for; either with lines drawn with ink, or a pencil; your pocket-book being about 4 inches broad (which is one of the broadersized Pocket books) you may then divide a leas into columns.
2. Before any dimensions are set down, the work-master's and workmen's names ought to be expressed; also the place where the day of the month, and date when you measure. I will suppose, for example, that you where to measure glazing; then if it where glazed with square glass, you must write squares above the dimensions, and over those dimensions which are appertaining to quarry-glass (if there be any) you must write Quarries, that when you come to make the bill of measurement, you may express them severally, because they are of several prices.
3. The better to explain the method, I will here insert a Bill of Measurement of glazing.

Glazing done for C.D. in Long-acre, by T.G. of st. Martin's in the Fields: measured Oct, 12, 1734											
Quarries			products			squares			products		
F	I	P	F	I	P	F	I	P	F	I	P
5	8	6	31	11	30	04	03	00	04	11	06
5	7	3				01	02	00			
5	3	6	12	06	09	02	00	00	03	00	00
2	4	6				01	06	00			
2	6	0	08	09	00	06	00	09	30	05	03
1	2	0				05	00	03			
2	1	0	07	02	04	01	02	00	07	00	00
1	8	6				03	00	00			
			60	05	11				45	04	09

In the first column towards the left hand, are the dimensions of glazings done with squares, which you are taught to cast up in cross multiplication N. 2 which see.

In the second column you have the product of each dimension just against it.

In the third column you have the four dimensions of glazing done with squares.

In the last you have the product of each dimension just against it also.

At the bottom of the second column, you have the sum total of the products of the dimensions done with quarries, which is 60 feet, 5 inches, and 11 parts.

Also at the bottom of the last column there is the total sum of the products of those dimensions of the glancing that was done with square being 45f 4n 9p. As for the odd parts, it signifies but little if they are left out in the sum totals of a Bill of measurement, for they will amount to but very little in value.

4. N.B. when you are taking dimensions, and setting them down in your pocket-book, whether it be glazing, or any other tradesman's work; you must observe

to leave every other column vacant, that so having set down all your dimensions in your book (which must be generally done, before any is cast up) when you come to cast them up, (which must be in another book, or a sheet of paper) you may enter the product of each pair of dimensions, just against them, as you see before.

5. An example of a bill of measurement glaziers work done for G.D in Longacre, by t.g. of st. Martins in the Fields: measured Oct. 9 1734

For 60 feet, 5 inches of glazing, done with quarries, at 5d. Per foot	01	01	1 ¼
For 45 feet, 4 inches of glazing, done with squares, at 7 d. Per foot	01	01	2 ¼
Sum total	2	11	3 ½
Measured the day and year above written by T.S.			

For the satisfaction of the curious, I will shew the method of taking the dimensions of bricklayers work, which is the most troublesome of any mechanick's work relating to building.

6. In measuring of bricklayers work, it will be necessary to divide a page only into two small columns, one for the dimensions, the other for products, putting the respective appellations over each.

App. 1 basis of front and rear					
	Dimen.			prod	
	f.	n.		f.	n.
3Br	25	00	(2)	25	00
	00	06			
2. Front and Rear					
2 ½ Br	25	00		550	00
	11	00	(2)		
3. Basis of both Flank-walls					
Ditto	36	02		36	02
	00	06	(2)		
4. Both flanks					
2 Br	36	02		795	08
	11	00	(2)		
5. Wall between the chimney					
1 ½ Br	11	06		113	01
	09	10	(2)		
6.Falling Back of both chimneys					
1 Br	05	00		40	00
	04	00	(2)		
7.Four jambs					
2 Br	14	00		161	00
	11	00	(2)		
8.Breast of both chimneys					
Ditto	11	06		115	00
	5	00	(2)		

7. The dimensions with their product being set down, in the next place the deductions of the windows and doors must be put down, and their products. See more of dimensions in brick work.

Deductions					
	Deduct 2 ½ Br.			Prod. 2 ½ Br.	
	f.	n.		f.	n.
4 windows	06	06	(2)	104	00
	04	00			
	2 ½ br.				
2 doors	09	00	(2)	72	00
	04	00			

8. The next thing to be done is to add the products of each several thickness into the sum.

The products of the several thicknesses									
3B		2 ½ B.		2 B.		1 ½ B.		1 B.	
25	00	550	00	795	08	113	01	40	00
		36	02	161	00				
		586	02	115	00				
				1071	08				

The several products of each thickness being added, in the first column on the left hand there are 25 feet of 3 bricks.

In the second, 586,2 of 2 ½ Br. &c.

How to find these products, see cross multiplication n.2

9. Having found the total sum of the products of the deductions, each total of the products of the dimensions of the same cassitude. E.g. the products of the deductions in

	2 ½ Br.	
	104	00
	72	00
The total product in 2 ½ Br is	176	00

Which in 176 feet of 2 ½ brickwork, being contained in the windows and doors; must be subtracted from 586 feet, and 2 inches, being the total Product of all the dimensions of that crassitude.

This is manifest, because when the dimensions of the front and rear were taken, the whole length and breadth were taken over the doors and windows, allowing nothing of abatement for them.

10. N.B. that whatsoever doors, windows, or other vacancies are measured over, when the dimensions are taken; you must remember to make deduction for them out of the total product of dimensions of the same crassitude wherein they were situated.

To make it plainer, take the following example.

The doors and windows being in 2 ½ brick-work, I set down the total product of ell the dimensions of the crassitude, which is 586 02// the total product of all the deductions of that thickness, to be substracted, is 176 00// the remainder is 410 02.

The like method must have been practised, if there had been any other deductions in any other crassitude: subtraction must have been made of all such deductions, out of the products of the dimensions, before you went to reduce your several crassitudes to the standard thickness of 1 ½ br.

More of this nature, viz. Of surveying buildings, or taking dimensions, &c. may be seen under the different heads of carpenters work, joiners, bricklayers, plaisterers, masons, painters, thatchers.

VI. Of measuring buildings, or taking dimensions &c. I shall only mention the artificers relating to building, who usually work by measure; which are bricklayers, carpenters, plaisterers, painters, glaziers, joiners, and masons. Some of these work by the superficial yard, some by the rod, some by the square, and some by the foot: of all which works the dimensions are taken either with a 5 or 10 foot rod, or with a 2 foot rule, and sometimes with a line. But let them be taken how they will, they are usually set down in feet, inches and parts of the inches; or else in feet and centesimal parts of feet, which last way is the easiest cast up ; the following table will shew the centesimal.

A table of centesimal numbers for every inch, an quarter of an inch in a foot.

		¼ of an inch	½ of an inch	¾ of an inch
inch	100 P. Foot	100 P. Foot	100 P. Foot	100P. Foot
0	.00	.02	.04	.06
1	.08	.10	.12	.14
2	.16	.18	.20	.22
3	.25	.27	.29	.31
4	.33	.35	.37	.39
5	.42	.44	.45	.47
6	.50	.52	.53	.55
7	.56	.60	.62	.64
8	.66	.68	.70	.72
9	.75	.77	.79	.81
10	.83	.85	.87	.90
11	.92	.94	.96	.98
1f	.100			

To set any number of feet, inches and parts, as suppose 30 feet, 8 inches and 2 quarters, you must first set down 30 feet with a period, or comma after it, thus 30, and then look in the first column of the table for 8 inches, and at the head of the table for 2 quarters, and then against 8 inches, and under 2 quarters you will find 7; which set down beyond the 30 to the right hand, and it will stand thus 30,7.

I shall not here stay to treat of the method of measuring all these artificers works, because they will be treated of under their proper heads. But shall now proceed to say something.

VII. Of valuing buildings. To estimate the charge of erecting any house near the truth, or to value one that is already built, so that you come something near the matter, (provided it be built of brick and timber, as is usual in London, and with gentlemen in the country) there must be given.

1. The dimensions thereof, not only in length and breadth, but also in height, in respect of the number of stories : for,
2. By the length and breadth, the quantity of square upon each floor, may be found, and also the squares upon each floor, may be found, and also the

squares of roofing in the carpenter's work, and also tyling in the healer's or bricklayer's work. And,

3. By the height, one may give a near estimate of the rows of brick-work, contained in the walls round about, and in the partition walls, if there be any; and also in the chimneys: then
4. Consider how many pairs of stairs and of what sort.
5. What partitions of timber with doors.
6. What timber front.
7. What number of window-frames, and lights.
8. What iron work; and
9. What leads &c.

Of all which, see the particular heads.

Now says mr. Leybourn, what will be the charge of erecting a fabric of brick walls and timber, which shall be 20 feet in front, and 44 deep, (for this method in London, and more cities, &c. for the front to be shorter than the flanks) and to consist of cellars, 3 stories, and garrets; which is one of the second rate houses. We will suppose the price of materials as follow, (in London) viz. For

	l	s	d
Bricks per 1000	0	16	0
Tiles per 1000	1	05	0
Lime per 100	0	10	0
Sand per load	0	3	0
Oak, or fit Timber ditto	1	15	0
Deal-boards per 100	7	10	0
Laths per bundle	0	1	6
As for the plaisterers works, for			
Lathing, plaistering, rendering , and washing with white and size, per yard	0	1	2
Lathing and paistering, per yard	0	0	10
Plaistering and sizing, per yard	0	0	6
Smith's work; for			
Iron balconies, per tb	0	0	5
Folding casements per pair	0	16	0
Ordinary casements, per piece	0	4	6
For painting			
Window lights	0	0	6
Shop window doors, pales, per yard	0	1	0

Now says he, from these rates of materials for building, and for workmanship, such a house as is here proposed will amount to about 360 pounds, which is near 41 l. Per square.

Mr. H. Philips (another method) (...)

VIII. Of century buildings). (History of the buildings) (...)

IX. I shall finish this head of building with that conclusion of Dr. F. F. In building, says he, and artificer, in his own art for matter of charges, especially if either he, or any particular friend of his, be like to be concerned about the fabric you design to erect; not but that an ingenious workman can tell nearly in charge when he knows the design; but it is very rare for them to give a just estimate of it, because they think, if they should acquaint a young builder with the full expence at first, it would discourage him from proceeding, and therefore they footh him up till it has cost him something to be able to confuse them. See more relating to the head of building in the articles house, architecture, wall, &c.

BUTTON, a slight fastening for a door, or a window.

BUTMENT, a term used by masons and bricklayers by which they mean the supporters, or props, on or against which the feet of arches rest.

BUTTERY, in noblemens and gentlemen houses this is the room belonging to the butler, in which he disposes all his utensils belong to his office, as his napkins, pots, glasses, tankards, monteth, cistern, cruets, salvers, , pepperboxes, sugar-box, mustard-pot, spoons, knives, forks, voider, or basket, and all other necessaries appertaining to his office.

BUTTRESS, a prop or support , either of brick or stone, to keep the work the firmer in its position, as against brick or stone-walls are their high, or have a bank of earth of any considerable weight against them on the other side; they are also used against the angles of steeples. Churches, and other buildings of stone, &c. on their out-side, and along the walls of such building as have a great and heavy roofs, which would otherwise be subject to thust the walls out. Buttresses are also commonly placed for a support and butment against feet of arches, that are turned cross some great halls, in old palaces, abbeys, &c. And generally at the head of stone-buildings, where there are great crocket-windows.

No mathematical rule for calculate them (...)

The want of a certain rule in arching, with is necessary butment, hath often proved the ruin of some structures of no small expence; of which I could give an instance from my own observations, says Mr. Neve, of a large stone bridge, which was no small charge to two counties to erect, not above ten or a dozen years ago, which is already so intolerably gone to decay, that it is ready to fall, and must be rebuilt in a little time; for some arches are forced to be propped with many pieces of timber. The chiesest fault, seem to me, to be want of a good and firm butment, for the materials appeared to be good.

(prize) (...)

CABINET, stricktly taken, is the most retired place in a house. But a cabinet in places and great houses, consists of an outer-chamber, an anti-chamber, and a cabinet with a gallery on the side.

(...)

CALIDUCTS, i.e. conveyers of heat. The ancients used to warm their rooms with certain secret pipes in the walls, thus called, which conveyed heat to sundry parts of the house, from one common furnace.

CALX, chalk, burn lime, mortar.

(...)

CAMBER-BEAMS, pieces of timber cut arching (or with an obtuse angle) in the middle. They are commonly used in platforms, as church-leads, &c. and other cases, where there is occasion for long beams; a camber-beam being much stronger than another of the same size: for being laid generally with the hollow side down-wards, and having good butments at the ends, it is kind of arch.

(...)

CAMES, the small slender rods of cast-lead, of wihc the glaziers make their turned lead. For their lead being cast into slender rods, of some 12 or 14 inches long each, is called the came, and sometimes they call each of those rods a came, which being afterwards drawn thought their vice, makes their turned lead.

CANAL of larmier, in Architecture, the hollow soffit of a cornice, which makes the pendant mouchette.

(...)

CANTHERUS, in architecture a rafter of joist of a house, that reaches down from the ridge to eaves; a transom, a spar; also leaver.

CANTONED, in architecture is when the corner of an edifice is adorned with rustic quoins, or any projectures beyond the naked of a wall.

(...)

CARCASS. The timber-work (as it were the skeleton) pf a house, before it is lathed and plaistered.

The price of framing. The price of framing the carcass of a house (in the country) is about 8s. Per square, if the workman pays for the sawing; if not but about 4s. 6d; per square: but the rates differ according to the situation, country, workmanship, &c.

(...)

CARPENTER, from the latin, carpentum, i.e. carved work; an artificer, or worker in wood. The rules and practices in carpentry are much the same as in joinery, saving the carpenters are employed about the stronger and coarser work, and the others in the more neat and curious; and it may be said, that a good joiner, may more easily supply the place of a carpenter than a Carpenter can do the fine work of a joiner.

1. Work. The several kinds of carpenters work, with their prices, and methods of measuring, 6c. are too many to be comprehended under this too general a word of carpenter's work; and therefore I shall refer them to their particulars, (as framing, flooring, roofing, &c) where they will much more readily be found.
2. Bill to make. A carpenter bill should be made after this manner.

Mr. William liberal of London, his Bill of material hand of, and work done by Thomas Trueman, June 24 1735			
	l.	s.	d.
For 17 Load of Oaken-timber at 22 s the Load	18	14	00
For 28 load of fir-timber, at 35 s. The load	49	00	00
For 180 Feet of Oaken –plank, 2 inches thick, at 3 d. The foot	02	05	00
For 17 M. Of 10d. Nails, at 6 s. The M.	05	02	00
For 7 C, and half of deals, at 6l.5s.the C	46	17	06
For 28 lb. Of large spikes, at 4d. The tb.	00	09	04
For 8 weeks work for myself, at 3s. The day	07	04	00
For 8 weeks 2 days work for man at 2s. 6d. The day	06	05	00
The sum is	135	16	10

But note, if the carpenter do not work by the Day, then he writes: for so many square of roofing (at what price they agree upon per square) so much money. Likewise for so many square of flooring, at so much per square, so much money. Also for so many per square of partitioning, at so much per square, so much money. And for so many square of ceiling joists, &c. The windows they set down, either at so much per light, or so much per window. The door-cases at so much a piece, either with, or without doors. The mantle-trees, tassels, &c. at so much a piece. The lintelling, guttering, cornice, window-boards, &c. at so much per foot. Stairs, at so much per step, or so much per pair , &c.

(...)

CAVAZION, or cavasion, a term of architecture, signifying the under-digging, or hollowing of the earth for the foundation of a building. Palladio says, it ought to be the sixth part of the height of the whole building.

(...)

CEILING, in architecture, is the lathing, and plaistering at the top of a room, upon the under side of the joists of the next room, or upon joists put up for that purpose (and called ceiling-joists) if be garret. These plaistered ceilings are much used in England, beyond other countries; and they have these conveniencies with them; they make the rooms much more lightsome; are excellent against raging fire; they stop the passage of the dust, and lessen the noise over head, and in summer time the air of the room is somewhat the cooler for it.

Of measuring ceilings, (...)

Price (...)

(...)

CELLARS, they are the lowest room in a house, the ceilings of which lie level with the surface of the ground on which the house stands, or at least but very little higher.

Situation. Sir Henry Wotton, says, they ought (unless the whole house be a cellar) to be situated on the north –side of the house, as needing cool and fresh air.

Of digging, they are commonly dug by the solid yard, containing 27 solid feet; and therefore the length, breadth, and depth in feet, being multiplied together, and the product divided by 27, the quotient in solid yards.

CEMENT, in architecture is a strong, sticking, cleaving, or binding mortar.

To make, there are two sorts which come bricklayers use in cementing of bricksfor some kind of mouldings, or in cementing a block of bricks 8as they call it) for the carving of scrolls capitals, of such like. One is called cold cement, the other hot cement; because the former is made, and used without fire, but the latter is both made and used with fire. The cold cement being accounted a secret, is known but to few bricklayers; but the hot cement is common. I shall here shew how to make them both.

To make the cold cement: take a pound of old Cheshire cheese, pare of the rind, and throw it away; cut or grate the cheese very small, and put it into a pot; put to it about a Pint of Cow's milk; let it stand all night; the next morning get the whites of 12 or 14 eggs, then take half a pound of the best unslacked or quick-lime that you can get, and beat it to powder in a mortar; than fist it though a fine hair sieve, into a tray or bowl of wood, or into a an earthen dish, to which put the cheese and milk, and stir them well together with a trowel, or such like thing, breaking the knots of cheese, if there be any; then add the whites of the eggs, and temper all well together, and so use it. This cement will be of a white colour; but if you would have it of the colour of the brick, put into it either some very fine brick dust, or almegram, not too much, but just to colour it.

To make hot cement, take one pound of rosin, and a quarter of pound of bees-wax, half an ounce of fine brick-dust, half an ounce of chalk-dust, or powder of chalk; fist both the brick-dust and chalk-dust though a fine air sieve (you may beat the brick and the chalk in a mortar before you fist it) boil all together in a pipkinm about a quarter of an hour, stirring it all the while with an Iron, or a piece of lath, or such like; then take it off, and let it stand 4 or five minutes, and it is fit for use.

Note, the bricks to be cemented with this kind of cement, must be made hot by the fire before you spread the cement, and then rub them to and fro, one upon another, as Joiners do, when they glew two boards together.

Cement Royal, a particular manner of purifying gold, by laying over it beds of hard paste, made of a composition of one part of sal armoniac, two of common salt, and 4 of potter's-hearth or brick-dust, moistening the whole well with urine.

(...)

CHALCK, a fossil, by some accounted stone, but dr. Slare thinks improperly. There are two sorts, one containing a fatty substance, and easily dissolving, becomes a fit Manuer for lands; the other inclines more to a strong nature, and is used for making lime.

CHAMBER, latin camera, all those rooms are called chambers that are situated between the cellars and the garrets: so that in some houses there are two in others three, or more stories of Chambers.

Situation, Sir Henry Wotton tells us, that the principal chambers of delight (in a house) ought to be situated towards the east.

Proportions, the length of a well proportionate lodging chamber, ought to be the breadth, and half the breadth of the same, or somewhat less; but ought never to exceed that length. For the height three quarters of the breadth will be a convenient height.

(...)

CHIMNEY, a chimneys is a particular part of a house, designed for the conveniency of firing, with a tube, or tunnel, to convey away the smoke.

Of measuring, though bricklaying, in making of chimneys, do commonly agree by the hearth; yet they sometimes also work by the rod, as in other brick-works; and then their method of taking their dimensions is thus:

If the chimney stand singly, and alone, not leaning against or being in a wall, and it be wrought upright, over the mantle-tree, to the next floor; they gird it about the breast for the length, and take the height of the story for the breadth , and the thickness od the jambs for the thickness. But if the chimneys stand against (or in) a wall, which is before measured with the rest of the building; then the breadth of the breast, or front, together with the depth of the two jambs, is the length; the height if the story, the breadth; and the thickness of the jambs, the thickness. But if the chimney stand in an angle of a room, and have no jambs; then the breadth of the breast is the breadth, the height of the story the length and the thickness, the thickness. Then for the shaft (which is part which appears above the tiling) they commonly girt it about in the smallest part, for the breadth, and take the length of the shaft for the length; and they commonly reckon the thickness of both sides for the thickness in consideration of the widths, pargeting and scaffolding.

Note, here is nothing to be deducted for the vacancy betwixt the hearth and the mantle-tee, because of the widths and the thickening for the next hearth above.

The dimensions being thus taken in feet, the work is thus measured: multiply each particular length by its breadth, and that product by its thickness in half-bricks (i.e. by 2, for 1 brick thick; by 3 for 1 ½ brick thick; and by 4, for 2 bricks thick, &c.) Add these products into one sum, which divide by 3, and the quotient will give the content of the whole chimney in feet, and the standard-thickness of a brick and half. Then divide this content in feet, by 272 ½ , and the quotient will be the content in rods. But, because this difficult to divide by 272 ¼ , you may do thus. Add two ciphers to the right-hand of the content in feet, and then divide it by 27225, and the quotient will be the content in rods, as before. And, every 100 of the remainder, is one foot of work. Or 6807, of the remainder, is ¼ of a rod, 14643, is ½ of a rod, and 20419, is ¾ of a rod.

Price. Mr. Leyburns says, that chimneys are sometimes measured and paid for by the rod, like other brick-work; and sometimes says he, they are paid for by the fire-hearth; which, says he, is various, (...)

Rules about timbers near them,

1. Let no timber be laid within 12 inches of the fore-side of the chimneys-jambs.
2. Let all the joists on the back of any chimney be laid with a trimmer, at 6 inches distance from the back.
3. Let no timber be laid within the tunnel of a chimney.

Proportions. Palladio lays down the following proportions, for the breadths, and depths of chimneys (on the In-side) and for their height to the mantle-trees.

Chimneys in	Breadth	height	depth
halls	6,7,o 8 feet	4 ½ or 5 feet	2 ½ or 3 feet
Chambers	5 ½, 6 or 7 feet	4 or 4 ½ feet	2 or 2 ½ feet
Studies and Wardrobes	4, 4 ½ or 5 feet	4 or 4 ½ feet	2 or 2 ½ feet

Nevertheless in this points, the workman ought rather to be guided by the modern fashions, than by the words of ancient architect. And according the following proportions are more regarded by workmen at this time.

Chimneys in	Breadth	height	depth
kitchens	6, 8, or 10 feet	4 1/2 , 5 or 6 feet	2 ½ or 3 feet
halls	4, 5, or 6 feet	4 or 4 ½ feet	2 or 2-3
Chambers	3-6, to 4 feet	3-9 to 4 feet	22 inches
Studies and Wardrobes	2-6 to 3 feet	3-6 to 3-9 feet	18 inches

(...)

To prevent smoaking. Mr. Lucar (in his solace) adviseth to leave two holes (one over another) on each side of the chimney, one flopping upwards, and the other downwards, or else to place two pipes (in the same position) on each side of the chimney. Though these holes, or pipes, says he, the smoke will easily pass out of any tunnel, which way soever the wind blows. I cannot tell how this may take effect; but to me it seems but a fancy. I think Phllippe de L'Orme's advice is better, who proposes to provide a hollow brass-ball of a reasonable capacity, with a little hole on one side for the reception of water. (I think it were better made with a short nose to skrew-off, when this is filled with water; and then the hole at the end of this nose needs not to be bigger than that at the small end of a tobacco-pipe) This ball being filled with water, is to be placed (with the hole upwards) upon an iron-wire, that shall traverse the chimney a little about the mantle-tree, at the ordinary height of the greatest heat, or flames; and when the water is hot it will be rearelyed, and break out of the hole in a windy vapour; which will force up the smoke, than otherwise might linger in the tunnel by the way, and oftentimes revert. It were good to have two of these balls, one of them may supply the place of the other, when this exhausted; or for a need. Blow the fire in the mean time.

I have seen on the top of some chimneys, a sort of fane, or weather-cock, (some call it a beggar-man) whose back-side is covered with plates of tin; so that which way so ever the wind be, it can never keep down the smoke in the chimney, but it always comes out free, and undisturbed. I have known this last contrivance helps chimneys, that before smoaked very much. But I believe the ingenious carpenter, and bricklayer might prevent the smoking of any chimney, by a due situation of the doors of the room, and an apt falling back of the back, and convenient gathering of the wings and breast of the chimney. See funnel.

CHIMNEY-HOOKS, are hooks of steel or brass, put into the jambs of the chimney, for the handle of the fire-pan, and tongs to rest in.

CHIMNEY-JAMBS, the sides of a chimney commonly coming out perpendicularly (though sometimes circularly) from the back; on the extremities of which the mantle-tree resteth. See corner-stone.

(...)

CISTERNS, are vessels made to serve as receptacles for rain, or other water, for the necessary uses of a family.

If you design ato make your cistern under your house, as in a cellar, which is the best way to preserve your water for culinary uses; then you may lay your Brick or stone with terrace, and it will keep water very well. Or you may make a cement to join your brick or stone withal, with a composition made of slacked sifted lime, and linseed oil, tempered together with tow or cotton wood.

Or you may laid a bed of good clay, and on that lay your bricks for the floor; then raise the wall round about; leaving a convenient space behind the wall to ram in clay, which may be done as fast as you raise the wall; so that when this is finished it will be a cistern of clay, walled within with brick, and being a cellar, the brick will keep the clay moist; (although empty of water) so that it will never crack. This (says Mr. Worlige) I have known to hold water perfectly well, in a shady place, though not in a cellar. Thus in a garden or other place, ma such cistern be made in the earth, and covered over; the rain-water being conveyed thereto, by declining channels running to it. Also, in, or near house, may the water that falls from them be conducted threto.

(...)

CONDUCTS, or conduits, sewers or gutters, to convey away the suillage of a house. In these (says Sir Henry Wotton) art should imitate nature, in separating those ignoble conveyances from the sight; and (where there wants a running water) should place them in the most remote, and lowest part of the foundation, with secret vents passing up though the walls (like a tunnel) to the wide air; which all Italian artist commend for the discharge of noisome vapours;, though elsewhere little practised.

(...)

DESIGN, in architecture, the contrivance, construction, general plan, or geometrical representation of a building.

(in painting it is the general draught of a piece, the first sketch, in which if much skill and judgement appear, it is called a great, or a noble design; and if in pieces imitating nature, the just measures and proportion be observed in the outlines it is called a just design).

DETACHED, in architecture such members as seem separated from the body of the building.

DIGGING, of the ground for cellars and for the foundations of buildings, is commonly done by the yard solid, containing 27 solid feet; and that is usually counted a load. Therefore the dimension being given in feet, multiply the length by the breadth, and the product by the depth, dividing this last product by 27, and the quotient will give the content in solid yards.

DOORS,

1. doors are those parts of the building that are serviceable for the passage in and out.
2. Situation, First, see that the doors of a house be as few in number, and as moderate in dimensions, as may possibly consist with other due respects; for, in a word, all openings are weakening.
   Secondly, that they do not approach too near the angles of the walls; for where a wretched solecism to weaken this part, which must strengthen all the rest: a precept well recorded , but ill practised by the Italians themselves, particularly at Venice.
   Thirdly, le the doors, if possible, be right over one another, that the void, and the full upon the full; which will be a great strengthening to the whole fabric.
   Fourthly, le them (if possible) be placed opposite to one another, in such manner, that one may see from one end of the house to the other; which will not only be very graceful, but also most convenient, in respected will cool the house in summer, bu letting the air through the same, and in winter to keep out the wind, which way soever it fit.
   Fifthly, this not only ornamental, but very secure to turn arches over the doors, which will discharge them in a great measure, from the super-incumbent weight, which might otherwise press upon them too much.
3. Dimensions. Doors must be larger or smaller, according to the bigness of the building; but none should be less than 6 feet high, and 3 feet wide. Palladio says, that the principal door of an house, must always be regulated by the dignity of the possessor. Others say, the outer door, in small buildings, should be in width about 3 feet and two diameters, and one 3d in height; in middling building about 5 feet; in large ones about 7 feet; in chambers something under 3 feet; in gates from 9 to 12; in churches from 7 to 8 feet. M. Le Clerc says, when a little door is made in the front of an ordinary but regular building, it should be raised to the just height of the windows, but its width must exceed those of the windows, less while it is adjusted to the rest of the building, it appear ill-proportioned in itself. It must be raised still higher, if it be ornamented with an order of columns.
4. Price. Doors made of plain whole deal and rabited, are for stuff, nails and workmanship, valued at 3d. Or 4 d. The superficial foot; the workmanship only about 2s. Or 2s 6d per piece (...)

(...)

DORMANT, or dormer, in architecture, is a window made in the roof of a house, standing up on the rafters. Dormers are commonly rated at so much per piece, according to the bigness &c.

(...)

DOVE-TAILS, a sort of joints, or hinges so called, because they resemble the tail of a dove, or pigeon.

DOVE-TAILING, in architecture, is a strong manner of fastening boards (or any timber) together, by letting one piece into another, in the form of a dove's tail.

(...)

DRAGON-BEAMS, are two strong braces, or struts, that stand under a breast-summer, meeting in an angle upon the shoulder of the King-piece.

(...)

DRAUGHT, vulgary draft,

1. The picture of and intended building, described on paper; wherein is laid down 8by scale, and compass) the devised divisions , and partition of every room, in due proportion to the whole building.
2. Its useful. This is very convenient for any person, before he begins to erect a building, to have designs, or draughts drawn upon paper, or vellum; in which the iconography, or ground-plot of each floor, or story, is delineated: as also the form of each front, with the windows, doors, ornaments, &c. in the orthographies, or draughts if the uprights.
   Sometimes more fronts than one are shewn perspectively in a draught, and then this is called, scenography; but this is not easily comprehended, except by those who understand the rules of perspective, and therefore, it will be more intelligible to have a draught of each front, as also of the ichnography of every floor, or story, each i paper by itself; because many times the conveniencies, contrivances in one story, differ from those in another, either in the bigness of the chimneys, or divisions of the rooms, and sometimes in the number of chimneys, &c.
   All which being well considered, and drawn on paper, before the building is begun; these draughts will be a great guide to the workmen, and save them a great deal of time in contriving; and moreover, there will be no need alterations; which besides hindrance, makes the structure lame and deficient; nothing of this kind being so well done as at first. See building N.II, see also glazing.
   The drawing of draughts is most commonly in the work of a surveyor, though there be many master-workmen that will contrive a building, and draw a draught, or design thereof, as well almost, and better than some surveyors. But whoever makes a draught of a building, ought to be very well skilled in the theorie of architecture. (we think it unnecessary under this head, to crowd a dictionary of building, with tedious extracts stolen from elaborate pieces in the science of painting and perspective, which will be best and mostly justly learnt from the authors themselves who have treated those subjects; though it may be necessary to architecture, to explain the terms of art in those sciences, as they occur, and as we have all along done, so far as we have all along done, so far as is requisite to be known by gentlemen, or other who make the art of building their study and delight)
   (...)

EAVES, in architecture, the margin of the roof of a house; that part of the roof that hongs over without the walls.

(...)

EMBRASURE, in architecture, is the enlargement that is made in a wall, on the inside of a window, or gate, to give the more light, or for the more convenience if the gate, or window.

(...)

EMPLECTON-WORK, in architecture that which is knit and couched together; properly, it is that kind of masonry, wherein the stones of a building are so laid, that their front and back-parts are smooth, but the inside is filled-up with small stones and mortar promiscuously thrown in.

(...)

FABRICK (FABRIC), a church a house, or any other building. The three capital conditions required in a good fabric, by all authors, are, that it be commodious, firm and delightful. Some compare a good building to a proportionable man, and make a judgement of the one by the rules, that distinguish the excellency of the other: for example, they require that the walls stand upright upon a clean footing and foundation; that the fabric be of a beautiful stature; that for the breadth it appear well burnished; that the windows (as your eyes) be set in equal number and distance on both sides; and offices (like the veins in our body) be usefully distributed &c., Vitruvius, lib 1 cap 2. Summarily determines six considerations, that accomplish this whole art, viz. ORDINATIO, DISPOSITIO, EURYTHMIA, SYMETRIA, DECOR & DISTRIBUTIO, each of which see in their proper places. See also building.

FACE, in architecture, is any member that has a great breadth, and but small projecture, as the architrave in the front of a building.

FLOORS, or flooring.

1. What, Carpenters by the word floor, understand as well as the framed work of timber, as the boarding over it.

   Floor are of several sorts; some are of earth, some of brick; some of stone, and some of wood.
2. Earthen. Earthen floors are commonly made of lome, and sometimes (for floors to make malt on) of lime, and brook-sand, and gun-dust, or anvil-dusts for the forge. I cannot pass by that receipt given us by the ingenious Sir Hugh Plat, to make an artificial composition, wherewith to make smooth, glistering and hard floors, and which may also serve to plaister walls with. Take (says he) ox-blood, and fine clay, and tempering them well together, lay the same in any floor (or wall) and it will become a very strong and binding substance.
3. Brick and stone. See paving.
4. Bouraed. Though carpenters never floor their rooms till the carcass is set up, and enclosed with walls, lest the weather should wrong the flooring; yet they generally rough-plane their boards for flooring, before they begin any thing else about the building, that they may set them by to season which is done thus. They lean them one by one on end aslant, with the edge of the board against a balk (or, as this called in some parts of Sussex, a Perch) somewhat above the height of half the length of the board, and set another board in the same posture on the other

side of the balk, so that above the balk the cross one another; then on the first side the set another; then , and so alternately, till the whole number of boards is set on end; being this a posture, there is left the thickness of a board between every board, all the length, but just where they cross one another, for the air to pass through to dry and shrink them, against the have occasion to use them; but they set them under some covered shed, that the rain or sun comes not to them: for if the rain wet them, instead of shrinking them, it will swell them; or if the sun shine fiercely upon them, it will dry them so fast, that they will tear or shake them, as they phrase it, i.e. split or crack them. They have another way to dry a season their boards for floor, viz. By laying them flat upon three or four balks, each board about the breadth of a board asunder, the whole length of the balks. Then lay another lay of boards athwart upon them, each board asunder; then another lay athwart the last, and so till all are thus laid. So that in this position also they lie hollow for the air to play between them.

5. Of measuring. Floors boarded are commonly measured by the square (of 100 superficial feet) by multiplying the length of the room in feet, by the breadth, and the product is the content; then measure the chimney-ways, and well-holes for stairs by themselves, and deduct their content in feet from the whole content, and from the remainder cut off two figures on the right-hand, and what remains on the left-hand, are squares, and what is cut off are odd feet of the content of flooring in that room.
6. Price. (...)

FOOT, a measure of 12 inches in England and Spain, 11 ¾ at Amsterdam and Antwerp; 12 4/5 at Paris; 13 9/10 at Venice; 11 3/10 at Dantzick; 11 3/5 at Rome, Copenhagen and Bremen. Foot-pace, or as some call it, half-pace; is a part of a pair stairs, whereon, after 4, or 6 steps, you arrive to a broad place, where you may take two or three paces, before you ascent another step, thereby to easy the legs in ascending the rest of steps.

FOUNDATION,

1. what, the lowest part of a building (generally laid under ground) upon which the walls of the superstructure are raised. This word is also sometimes for a publick building, erected for pious uses.
2. Digging for, and laying of. In this work, there are several things to be considered; the most material of which,, I shall extract from the best architects, ancient and modern.
   i. This (says that great architect, sir Henry Wotton) requires the exacted care; for the foundation happen to dance, itwill marr all the mirth in the house; therefore, that we may found our habitation firmly, we must first examine the bed of earth upon which we build; and then the underselling or substructions, as the ancient called it. For the former we have a general precept in Vitruvius, twice mentioned, as a point of main consequence. First lib 1 cap 5 and again in lib 3 cap 3 in this words (as philander well corrects the vulgar copies) *substructionis fundationes sodiantur,* (says he) *si queant invenire ad solidum, &c in solido*, by which words I understand him to commend to us, not only a diligent, but even jealous examination what the soil will bear; advising us not

to rest upon any appearance of solidity, unless the whole mould, through which we cut, hath likewise been solid; in order to which, architects ought to use their utmost diligence; for all errors that may happen in building, those are the most pernicious which are committed in the foundations; because they bring with them the ruin of the whole fabric; nor can they without great difficulty be amended.

ii. If the foundation happen to be on a rock, or hard gravel, these (without digging, or other artificial helps) are of themselves excellent foundations, and most sit to uphold the great buildings.

iii. If the place where you build, be firm solid earth, you may dig for the foundation, so far as a discrete architect shall think requisite for the quality of the building, and soundness of the earth; but how deep we should dig, Vitruvius has no where, to my remembrance, determined, as perhaps depending more upon discretion than rule, according to the weight of the building; yet palladio has fairly ventured to reduce it to rule, allowing for the cavazione (as he calls it, i.e. the hollowing of the earth for the foundation) a sixth part of the height of the fabric; and if the building be cellared, he would have us (as it should seem) to dig somewhat lower. Palladio lays down several rules, to know if the earth be firm enough for the foundation (without artificial helps) by observations from the digging of wells, cisterns, and such like (which he would have to be done in the first place) and from herbs growing there, if there be such as usually spring up only in firm ground; also, if a great weight be thrown on the ground, it neither founds nor shakes; or if a drum being set on the ground, and lightly touched, it does not resound again, nor shake the water in a vessel set near it; these (says he) are signs of firm ground. But the best way to discover the nature of the soil, is to try it with an iron crow, or else with a borer, such as well-diggers use.

iv. If you build upon mossy, and loose earth, then you must dig till you find sound ground. This sound ground (sit to uphold a building) is of divers kinds; for (as alberti well observes) in some places it is so hard, as scarcely to be cut with iron in other places very stiff, in others blackish, in other whitish (which is accounted the weakest) in others like chalk, and in others sandy; but of all these, that is the best, which is cut with most labour, and when wet, does not dissolve into dirt.

v. If the earth you build on be very soft, as in moorish grounds; then you must get good pieces of oak, whose length must be the breadth of the Trench, or about a feet longer than the breadth of the wall; these must be laid across the foundation, about 2 feet asunder; and being well ramed down, lay long planks upon them; which plank need not lie so broad as the pieces are long, but only about 4 inches of a-side wider than the basis or foot of the wall is to be, and pinned or spiked to the pieces of oak, on which they lie. But if the ground be so very bad, that this will not do then, you must provide good piles of oak, of such length as will reach the good ground, and whose diameter must be about a 12th part of their length, these piles must be drove or forced down with a commander, or an engine for that purpose, and must be placed as close as one can stand by another; then lay long planks upon them, and spike, or pin them down sast.

vi. If the earth be faulty but in here and there a place, and the rest be good ground, you may turn arches over those loose place, and the rest be good ground, you may turn arches over those loose places, which will discharge them of the weight. You must observe to place your piles, not only under the outer walls, but also under the inner walls that divide the building; for if these should sink, it would be a means to make the outer walls, crack, and so ruin the whole fabric.

vii. Thus much for the bed of earth on which we build. We are next to consider the substruction, as the ancient called it; but modern artists generally call it the foundations, This is the ground-work of the whole edifice, which must sustain the walls, and is a kind of artificial foundation, as the other was natural: about which these are the chief things to be remembered. First, that the bottom be precisely level, where the Italians therefore commonly lay a platform of good board. Secondly, that the lowest ledge or row be merely of stone (the broader the better) closely laid without mortar; which is a general caution for all parts of the building that are contiguous to board or timber; because lime and wood are utter enemies; and if any where unfit neighbours, then most especially in the foundations. Thirdly, that the breadth of the substruction, be at least double to the breadth of the wall to be raised thereon . Yet here discretion is freer than art, and you may make it broader or narrower, according as the goodness of the ground, and the weight of the fabric shall require. Fourthly, that the foundation be made to diminish as it rises; yet so, as that there may be as much left on one side, as on the other; so as the middle of thatabove may be perpendicularly over the middle that below; which ought to be also observed in diminishing the walls above ground; for so the building becomes much stronger that it would be, by making the diminution any other way. Fifthly, that you never build upon the ruins of any old foundation; unless you are very well assured of its depth, and that its strength is sufficient to bear the building. Lastly, I find (in some ancient architects) a curious precept, that the stones in the foundation should be laid as they lay naturally in the quarry; they supposing them to have more strength in their natural posture. And this precept is generally observed by all good modern artists, not only in the foundations, but also in all parts of superstructure; and that for a better reason than bare conjecture, viz. Because they find the stones to have a cleaving grain (or are subjected to cleave) that way of the stone that lay horizontal in the quarry, and threrfore, if the horizontal position of the stone in the quarry should be placed vertical in the building, the superincumbent weight would be apt to cleave them, and so render the fabric ruinous; for, as Philip de L'orme observes the breaking or yielding of a stone in the foundation, but the breadth of the back of a knife, will make a cleft or more than half a foot in the fabric aloft. See stone, and bed, and face of stone.

3. How to value. There are several ways (says Mr. Philips) by which men value the foundations, of ground –plots of houses. I suppose he means, in cities and great-towns, according to their situations, or in the country (...)

FRAMING,

1. of houses, I know some workmen in Sussex, that do all the framing in a house, viz. The carcase, the flooring, partitioning, roofing, ceiling-beams, ashlering, &c. all together, and make the windows, and lantherns, and hew and saw the timber, for 12 s. Per square.
2. Carcase of a house. Mr Leybourn says, that carpenters commonly work by the square of 10 feet, in erecting the carcase, that is, (says he) framing and setting up, with the partitions, floors, rafters, and such like; for which (says he) they have (in running buildings) from 15 to 20 s. The square, and some may deserve 30 s. Or more; and to a square of good carcase (says he) 20 feet of ground rough timber may be allowed. But i doubt not but he means that the carpenter sells, and hews, and saws the timber in to that price; for some workmen in Sussex tell me, that for framing the carcase of a house, and sawing the timber, they have but 8 s. Per square, and without sawing but 4 s 6 d others say but 4 s. per square.
3. Carcase of barn. Some workmen tell me, they have for framing of barns 3s. 6 d. Per square, and that the charge of the carcase of a banrn may be thus computed viz. (...)

FUNNELS of chimneys.

1. What. The funnel of a chimney is the shaft or smallest part of it, from the waft (where it is gathered into its least dimensions) upwards.
2. Of making. Palladio tells us, that the funnels of chimneys must be carried through the roofs, 3, 4, or 5 foot at least, that they may carry the smoke into the air. And here you must take care, says he, that they be made neither too wide, nor too narrow; for if they be too wide the wind will drive back the smoke into the room; and if they be too narrow, the smoke (not having free passage) returns back also. Therefore this that camber-chimneys are not made narrower than 10 or 11 inches, nor broader than 15, which is the ordinary depth of the funnels, or great Kitchen-chimneys, whose breadth is 4 or 5 feet within the work, from the place where the breast ends, to the top of the funnel. Now the said breast reaches from the mantle-tree, to the ceiling, or pitch of the arch; always diminishing within the works, till you come to the measures of depth and breadth, before-mentioned; and from thence to the end of the funnel, it must carried up as even as you can possibly; for failing in this, it often happens the smoke is offensive. See chimneys.

FURRINGS, or furs, in architecture are the making good of the rafter-feet in the cornice; that is, when rafters are cut with a knee, these furrings arepieces that go straight along with the rafter from the top of the knee to the cornice. Also when rafters are rotten, of funk hollow in the middle, and pieces (cut thickest in the middle, and to point at each end) are nailed upon them to make them straight again; the putting on of those pieces, is called furring the rafters; and those pieces so put on, are called furs.

GALLERIES, are long narrow rooms, made on the sides or fronts of houses; they serve for walking, eating, and other divertissements. Their length says Palladio, ought to be at least 5 times their Breadth; they must be 6, 7, or 8 times their breadth, but should not exceed.

GATE.

1. What. This is a thing so well known, that it needs no description; for all know it to be a place for passage of persons, or horses, coaches or wagons &c.
2. Of their proportion. The principal gates for entrance, through which coaches and wagons are to pass, ought never to be less than 7 feet in breadth, nor more than 12 feet, which last dimension is fit for large buildings.
   As to the height of the gate, it ought to be 1 ½ the breadth, or something more.
   But common gates in Inns, where wagons loaded with hay and straw go under, their height may be twice the breadth.
3. Of the price of some sorts (...)

GIRDERS (biga), or girding-beams (travesaño).

1. What, are some of the largest pieces of timber in a Floor, the ends of them are for the most part framed into the summers or breast-summers, and the joists are framed in at one end of the girders.
2. Of their size or proportion. The scantlings, or size of girders and summers upon the rebuilding of London, after a consultation of experienced workmen, were reduced to and act by the parliament, and are thus set down, as sit for all fabricks, great and small, viz.

<table>
<tr><td colspan="8">GIRDERS AND SUMMERS MUST BE</td></tr>
<tr><td rowspan="6">IN LENGTH</td><td>Feet</td><td rowspan="6">to</td><td>Feet</td><td rowspan="6">IN BREADTH</td><td>Inches</td><td rowspan="6">IN DEPTH</td><td>Inches</td></tr>
<tr><td>10</td><td>15</td><td>11</td><td>8</td></tr>
<tr><td>15</td><td>18</td><td>13</td><td>9</td></tr>
<tr><td>18</td><td>21</td><td>14</td><td>10</td></tr>
<tr><td>21</td><td>24</td><td>16</td><td>12</td></tr>
<tr><td>24</td><td>26</td><td>17</td><td>14</td></tr>
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3. How to be laid in the brickwork. No girder, or summer ought to lie less than 10 inches into the wall, and their ends must be laid in loam. See summer.
4. That girders and summers be of good hearty oak, as free from knots as may be; because that will be least subject to break, and may with more safety be relied on in cross and transverse work.

GLASS.

1. What. A diaphanous, or transparent body made by art, of sand and nitre, faith Pliny: this is also made of white glistering flints, mixt with salt-alkali, or the salt of the herbs glass-work, os salt of fern-ashes for common glass, some say. Monsieur Blancourt saith, that the venetians also use white flints, and also a rich sand, and likewise a sort of white marble; he also saith, that all white transparent stones that will not burn to lime, and all stones sit to strike fire, are capable to be made into glass.
2. The sorts of glass. I shall confine myself to those sorts which glaziers commonly work upon here in England, which are: I. Crown-glass of two sorts, i.e. Ratcliff and Lambeth. II. French or Normandy Glass. III. German glass of two sorts white and green. IV. Dutch

glass. V. Newcastle glass. 6. Staffordshire Glass. 7. Bristol glass. 8. Looking-glass. 9. Jealous glass. 10 Woolwich glass. Of which sorts I shall succinctly treat in their order. (...)

GLAZIER's work, or glazing.

1. What, it is a manual art, whereby pieces of glass (by the assistance of lead) are so fitted and compacted together by straight or curves lines, that serves as well for the intended use (almost) as if it where one intire piece; nay, in some respects, far better and cheaper, viz. In cafe of breaking, &c.
   These two heads of straight or curved, will admit of several subdivisions; and 1. Of straight, which contains a square work, whose angles are right ones, as almost all window lights are in timber window frames, and so likewise are the squares, if it is glazed with such of which the lights are composed.
2. Miter, or making an angle of 45 deg, this but seldom happens in this possession, unless it be in some piece of fret-work.
3. Bevel. This is the most common specially in the country, and ordinary houses, which are mostly glazed with quarries, which is bevel work, so likewise is a great deal of fret, and all snip-work.
   Curved work, consists either of circles, ovals, or some distorted arches; circles, and ovals are commonly used for lights at some particular place in a building, as in a pedimenta over a door, or the like in the middle of a front &c. I have also observed a light over a door in the front of a building that consisted of two arches of a pretty large circle like a weaver's shuttle, lying along, and the whole light was glazed with one piece of glass both parts, circles, and ovals; and sometimes some distorted archers are made use of in crocket windows, &c. and also both whole and parts of circles, and ovals in their fret. Or ornamental works.
   (...)
   GUTTERS (canaleta, canalón, alcantarilla)
   1. What. Those which we shall here treat of are Vallies in the roofs of buildings, and these are of two kinds in respect of their position; for they are either something near parallelism with the horizon, or inclining towards a vertical position to it.
      Of the first kind of gutters (which for distinction sake I will call parallel) there are three sorts which are covered with lead; for, first, either it is a gutter, betwixt two roofs, which stand parallel to each other, being made upon the feet of the rafters of two roofs which met together: or secondly, a gutter where a building hat a cantaliver, or modillion cornice, which projects 1 ½ foot, or two feet (according to the design of the building) beyond the walls, then the roof is set with the feet of the rafters no farther out than the walls, but rather within it; so that the joists of the upper floor lie out beyond the walls, and also beyond the feet of the rafters which is yet covered with lead. The third sort of these parallel gutters are in those roofs that are flat, commonly called platforms, where are also gutters for the water that runs from the platform to descent to, which is from thence conveyed off from the building, either by spouts or pipes.
      By vertical gutter, I mean such a one as made by two roofs meeting at right angles, one to the other, or, which is the same thing on other words, it is made by the end

of one roof joining to the side of another; as for example, if a building be erected in the form of roman L, it is then common to have one gutter on the inside of the L; but if it resembles a T, it hat two gutters, but if it resembles an H, then 4. These gutters also are of two sorts, viz. Either lead or tile. Of which we shall speak in their order.

2. Of laying parallel lead gutters. Before I treat of laying the lead, I must give it as a necessary caution, to take care that the gutter board, &c. lie so as to have a good current, to carry of the water which otherwise will be subject to stand in splashes, especially if the gutter chance to sink a little in the middle, which some are apt to do.

   I have observed some gutters to have a layer of sand for the lead to lie upon; but this way I do not approve of, for two reasons, 1. Because some sorts of sand I have observed rot the timber that lies near it very much; 2. When it is laid on sand, a very little squatting viz. By jumping upon it with the heels of one shoes, will dent it, and there the water immediately stands.

   In laying of lead for gutters upon boards, if they are so long than one sheet of lead will not reach them, it is common to fodder them; for which purpose a channel is cut cross the gutter-boards at the end of the sheet, where the soddering must be; and into this channel they beat down the ends of both the sheets (that are not meet there) into the channel; which, when they have done, there will be remain a little cavity, which the sodder fills up level with the rest.

   The lead which they commonly lay in gutters, is that which weighs about 8 or 9 tb to the foot. Of these gutters, see lead. Numb 6.

3. Of vertical gutters. These are two sorts, viz. Lead and tile: the first of these, being almost the same as the parallel ones, I need only to observe, that the lead of these need not to be altogether so thick as for the others, and lead of 6 or 7 tb to the foot, will last as long as the parallel ones with lead of 8 or 9 tb to the foot.

   Gutters with tiles, are laid with concave, or gutter-tiles (for which see gutter-tiles).

   Plain tile gutters, are also distinguished into two sorts. 1. Plain tile properly so called. 2. Three point gutters.

   First, of plain tile gutters, properly so called, in these there is a gutter-board laid which raises the from pointing to an angle: and in laying on the tiles, the workman begins at one side of the gutter, and so works cross it as if it were plain work, and then brings the next row of tiles back again; so that he works to and fro from right to left. So that these gutters are of a kind of distorted curvilinear form; whereby they are not so subject to be furred up with the mortar which washes out of the adjacent tiles.

   Secondly, of three point gutters. These are laid with plain tiles; beginning to lay one tile on one part of the roof (it matters not which part first) the one corner just in the middle of the gutter, and then they lay another on the other part of the roof, with its corner just in the middle of the gutter also; so that the corner of the second tile is contingent with the first; and then lay another tile in the gutter, with its corner (as it were) betwixt them in the gutter: after this manner they go on with their work, till they have finished the gutter: and this is what they call a three point gutter; for there always come three points (or angles) of tiles together (viz.

One angle of three distinct rules) which makes it very uniform and handsome. You are here to note, that only three inches square of the middle tile id visible (if the gage be 7 inches) the rest of the tile being covered with the next row of tiles above it.

Though these gutters are very handsome, and if well done, very secure also; yet if they let the water into the house (by reason of some stoppage, or broken tile in the gutter) they are to trouble to mend.

(...)

GUTTER-TILES, are quadrangular figures, consisting of two straight sides about 10 or 10 ½ inches long, and of two circular sides, one convex , the other concave, the convex side is about 14 inches, and the concave one about two inches. These tiles are laid with their broad ends and hollow sides upwards.

HEALING, the covering of the roof of any building; which is of various kinds, viz. 1 lead, 2. Tiles, 3. Slate, 4. Horsham stone, 5. Shingles, 6. Reed, 7. Straw, and account of all these sorts of healing, you may find under the heads of lead, tiles, &c. see also (for straw) thatching.

HIPS.

1. What, are pieces of timber placed at the corners of a roof, not with a right of square angle, but bevel at every one of them; and by consequence, ought not to be square at any angle, but bevel at everyone of them; and which is yet more as rafters have but four planes, these commonly by countryworkmen called corners, and some call them principal rafters, and others sleepers. The truth is, hips and sleepers, are almost the same; only the sleepers lie in the vallies (and join at the top with the hips) But those surfaces, or planes, which make the back of the hip, are the under sides of the sleeper.
2. Back of a hip. Are therefore those two superficies or planes on the outside of the hip, which lie parallel (both in respect of their length and breadth) with the superficies adjoining side and end of the roof.
3. Hip-mould. By these some mean the same as the back of the hip; but others understand it to mean the prototype, or pattern (which is commonly made of a piece of thin wainscot) by which the back and sides of the hip are set out.
4. Of finding the length and backs of hips, sleepers, &c. in square frames. And also od the rafters, diagonals, half diagonals, and perpendiculars; see this brief analogical table; saying.

As 20	FEET	::Breadth of the house :	
	15 00		Ten of the rafter
	18 00		Ten of the hip
	11 18		Perpendicular
	28 28		Diagonal
	16 63		Nearest dist.

Hip angles	At foot 38 22	Rafter angles at	
	At top 51 28		Top 41 50
	At back 116 12		Foot 48 10

The angles are always the same in all square frames that are true pitch.

5. The hip roof. Such roof as hat neither gable-heads, nor shread-head, or jirkin-head (by which we mean such heads as are both gable and hip at the same end; for it is a gable or upright as high as the collar-beam, and then there are two short hips which shut up with their tops of a pair of rafters, which country carpenters call singulars.) For a hip-roof hath rafters as long, and with the angles at the foot, &c. at the ends of building, as it hath at the sides, and the feet of the rafters on the ends of such buildings as have hip-roofs, stand on the same plane (viz. Parallel with the horizon) and at the same height from the foundation with the rafters on the sides of the roof. These hip-roofs, some call Italian Roofs.
6. Of measuring hip-roofs (...)

HOUSE.

1. What a habitation or dwelling, wherein men preserve themselves and their goods from the injuries of the weather, and other inconveniences.
   In treating of this word, I shall, 1st , discourse concerning the situation of the country-house, 2nd of the ground-work of houses, 3rd concerning building in London, 4th and lastly, discourse about party walls; referring for what may be further necessary under the head, to the word building.
2. Of the scite of a country-house. To what I have said, concerning the situation of a country-house, in the word Building, I shall here add, that woods as well as the water, ought to be near your country habitation; they being the principal things that adorn a rural seat: but if you cannot conveniently seat your country-house among the trees, yet there are but few places, but you may speedily raise, trees about your house; according to the direction of the ingenious Mr. Philip Miller, in his gardeners dictionary; which we have quoted so far as was necessary to our design; and which the reader will find under their respective heads; as those of oak, elm, beech &c. and in the article of timber trees.
   It is far better to have a house, defended by trees then hills, for trees yield a cooling, refreshing, sweet, and Healthy the air, and shade, during the head summer, and very much break the cool winds and tempests from every coast in the winter. The hills, according as they are situated, defend only from some certain winds; and if there are on the north side of your house, as they defend you from the cold air in winter, so they also deprive you of the cool refreshing breezes which are commonly blown from thence in the summer. And if hills are situated on the south side, it then proves also very inconvenient. Besides, they yield not the same pleasure to the eye, as the tall plumps of trees, and pleasant groves do. Yet hills which are cloathed with coppices, or otherwise improved, are pleasant objects, if they stand not too near a house.
   Let not your house be too lowseated, left you lose the conveniency of cellars; but if you can't avoid building on low ground, set the first floor above the ground, in your house, the higher, to supply what you want, to sink in your cellar in the ground; for in such low and moist grounds, it conduceth much to the dryness, and healthiness of the air, to have cellars under the house, so that the floors be good and ceiled underneath.
   Mr. Worlidge justly observes, that houses built too high in places obvious to the winds, and not well defended by hills, or trees, require more materials to build them, and more reparations to maintain them, and are not so commodious to the inhabitants, as

the lower-built houses, which may be made at a much easier rate, and also as compleat and beautiful as the other.

3. Of the ground-work of houses. Buildings or houses, that are not above two stories with the ground-room, and not exceeding 20 feet to the Raison-place, and upon good foundation, the length of 2 bricks, or 18 inches for the heading course, will be sufficient for the ground-work of any common structure, and 6 or 7 courses above the earth to water-table, where the thickness of the walls are abated (or taken in) on either side the thickness of a brick, namely 2 ¼ inches.

   But for large and high houses, of 3, 4, or 5 stories with the garrets, the walls ought to be from the foundation to the first water-table 3 heading courses of bricks, or 28 inches at the least, and at every story a water-table, or taking-in on the inside for the summers, girders and joists to rest upon, laid into the middle, or ¼ of the wall at least, for the better bond. But as for the innermost, or partition wall, one ½ brick will be of a sufficient thickness: and for the upper stories a 9 inch wall will be very well suffice.

4. *An act concerning building of houses in London*. What here follows is so much of the act only, as relates to the brick-layers work, viz. The heights and numbers of stories, and thickness of walls of the four several rates of houses, viz.

   And be it further enacted, *that the houses of the first and least sot of buildings, fronting by-streets or lanes, shall be of two stories high, besides cellars and garrets; that the cellars thereof be 6 ½ feet high if the springs of water hinder not; and the first story be 9 feet high from the floor to the ceiling, and the second story be 9 feet high form the floor to the ceiling; that all the walls in front and rear, as high as the first story, be of the full thickness of the length of two bricks, and thence upwards to the garrets of the thickness of one brick and half; and that the thickness of the garret walls on the back part be left to the discretion of the builder, so that the same be not less than one brick a length; and also that the thickness of the party-walls between these houses of the first and lesser sort of buildings be 1 brick and a half as high as the said garrets, and that the thickness of the party-walls in the garret be of the thickness of the length of 1 brick and least.*

   And be in the further enacted, *that the houses in the second sort of building fronting streets, and lanes of note, and the river of Thames, shall consist of three stories high, besides cellars and garrets, as aforesaid; that the cellars thereof be six feet and a holf high (if the springs hinder not) that the first story contains full 10 feet in heigh from the floor to the ceiling; the second full 10 feet: the third 9 feet: that all the said walls in front and rear, as high as the first story, be two bricks and an half thick; and from thence upward to the garret floor, of one brick and an half thick; and the thickness of the garret walls on the back part be left to the discretion of the builder; so that the same be not less than one brick thick; and also that the thickness of the party-walls between every house of this second and larger sort of building, be two bricks thick as the first story, and thence upwards to the garrets, of the thickness of one brick and an half.*

   Also, that the houses of the third sort of buildings, fronting the high and principal streets, shall consist of four stories high besides cellars and garrets, as aforesaid: that the first story contain full teen feet in height from the floor to the ceiling, the second ten feet and an half, and the third nine feet, the fourth eight feet and an half; that all *the said walls in front and rear, as high as the first story be two bricks and an half in thickness, and from thence upwards to the garret floor, of the thickness of one brick and an half; that the thickness of the garret walls on the back part be left to the discretion of the builder, so as the same be not less than one brick: and also that the party-walls between every house of this third and larger sort of buildings, be two bricks thick as high as the first floor, and thence upwards to the garret floor, the thickness of one brick and an half.*

And be in further enacted, that all hoses of the fourth sort of buildings, being mansion-houses, and of the greatest bigness, not fronting upon any of the streets, or lanes, as aforesaid, the number of stories, and the height thereof, shall be left to the discretion of the builder, so as be exceeds not five stories.

Also the same act enjoyns, that no timber be laid within twelve inches of the fore-side of the chimney-jambs, and that all joists on the back of the chimney be laid with a trimmer, at six inches, distance from the back; also that no timber be laid within the tunnel of any chimney, upon penalty to the workman, for every default, of 10 s. And 10 s. Every week it continues unreformed.

Thus far the act.

Note, further, when you lay any timber on brick-work, as tassels (or Torsels) for mantle-trees to lie on, or lintels over windows, or templets under girders or any other timbers; lay them in loam, which is great preserver of timbers; lay them in Loam, which is a great preserver of timber; for mortar eats and corrodes the timber: likewise the joistends and girders which lie in the walls, must be loamed all over all over to preserve them from the corroding of the mortar. Some workmen for this purpose pitch the ends of such timber in the walls, is to let them be exposed to the air, and hve nothing to touch them.

5. Concerning party-walls, Mr. Leybourn observes, that as the buildings in London join one upon another, and almost every several house hath a distinct proprietor, and as the parliament at therefore enacted, that the wall dividing the proprietor's ground shall be built at the equal charge of both the owner; it will not be unnecessary to shew how these party-walls are to be valued.

All brick-work of whatever number of bricks lengths in thickness, is to be reduced to the thickness of a brick and an half.

Abbout 4500 bricks, 100 and a quarter of Lime, 2 loats and half of sand, will compleatly raise one rod of brick-work, of a brick and an half thickness.

	l.	s.	d.
4500 bricks at 16 s. Per 1000 is	3	12	0
A hundred and ¼ of Lime at 10 s. Per C	0	12	6
Two load and ½ of sand at 3 s. Per Load	0	7	6
In all	4	12	0

To which may be added for workmanship, 1 l 8 s and the total will be 6 l.

So that for every rod in a party-wall, 3 l. A piece is to be allowed, and so proportionably, for any number of rods.

But note by the way, that the price of party wall may be sometimes more or less, according as materials rise or fall. Thus far Mr Leybourn. I will now add Mr. Philips way.

Now, says he, having the dimensions, both in length and height of the cellar, and all other stories of the House, the following tables will shew (according to the thickness of the wall) how many bricks your neighbour is to pay for towards his party-wall. To this purpose he computes the charge to be about 30 s. For every 1000 of bricks; but I believe this price too great; and that 25 or 26 s. Per 1000 is very well; but he acknowledges that bricks then were about 18 or 20 s. Per 1000.

He then proceeds to and example; suppose a house of the 3rd rate, the party-wall thereof being 30 feet long, and you would know how many bricks are to be paid for towards this party-walls.

First, measure the cellar where the party-wall is to be two bricks thick, the length whereof is 30 feet, and the depth 7; find this length in the side, and depth in the top of the table, and in the square of meeting in the table for one brick thick, you will find bricks to be paid for 2314.

Then proceed to the first story, which will be likewise 30 feet long and 10 feet high, and also 2 bricks thick, the same table shews the allowance fro this... 3306.

The second story also is 30 feet long and 10 ½ feet high, but the party-wall is to be built a brick and a half thick, the ½ whereof is ¾ of a brick, and this in the table of ¾ brick, wields for 30 feet long, and 10 feet high ----- 2479.

And for the half foot more in height-----------124

The third story is 9 feet high and 30 feet long, being likewise a brick and a half thick; and for this the table shews the half to pay for it ------- 2231.

The fourth story is 8 feet and half high and 30 feet in length, for 8 feet table shews 1983

And for the half foot ----- 124

Which together made 12561.

Whicha are be paid for the half of the party-wall, which at 26s per thousand, comes to 16l. 6s. 6d.

Thus you may see what any party-wall comes to, though your neighbour’s house joins never so little, or much to yours, as readily as you can by measuring by the rod.

And whereas the floors of the several stories add somewhat to the height, you may add somewhat for them according as you find them in thickness.

Lastly, for the garrets, the walls thereof being but one brick thick, you may take half the number in the table of one brick’s thickness, and add to the rest of the account.

All the difference that can be between neighbours herein, will be about the price of bricks, and the lime, and workmanship; but if neighbours built together, they will easily determinate it; but if they do not, yet the builder is sufficiently provided by his workmen to restify his charge, and by act of parliament is allowed full satisfaction, with interest from the time of his building.

A TABLE FOR 1 BRICK IN THICKNESS, OR THE HALF OF 2 BRICKS.

A table for 1 brick in thickness, or the half of 2 bricks; the walls height in feet											
f. LONG	½ BRICK	I BRICK	II BRICKS	III BRICKS	IV BRICKS	V BRICKS	VI BRICKS	VII BRICKS	VIII BRICKS	IX BRICKS	X BRICKS
1	5	11	22	33	44	55	60	77	85	99	110
2	11	22	44	66	88	110	132	154	176	198	220
3	16	33	66	99	132	165	198	231	264	298	331
4	22	44	88	132	176	220	264	309	353	397	441

5	27	55	110	165	220	275	331	386	441	496	551
6	33	66	132	199	264	331	397	463	529	595	661
7	39	77	154	231	309	386	463	540	617	694	771
8	44	88	176	264	353	441	529	617	705	793	882
9	50	99	198	298	397	496	595	694	793	893	992
10	55	110	220	331	441	551	661	771	882	992	1102
11	61	121	244	364	485	606	727	848	970	1091	1212
12	66	132	264	397	529	661	793	926	1058	1190	1322
13	72	143	286	431	573	716	859	1003	1146	1289	1433
14	77	154	309	462	617	771	926	1080	1234	1388	1543
15	83	165	331	496	661	826	992	1157	1322	1488	1653
16	88	176	355	529	705	882	1085	1234	1410	1587	1763
17	94	187	375	562	749	937	1124	1311	1499	1686	1873
18	99	198	397	595	793	992	1190	1388	1587	1787	1983
19	105	209	419	628	837	1047	1256	1466	1675	1884	2094
20	110	220	441	661	882	1102	1322	1543	1763	1983	2204
21	116	231	463	694	926	1157	1388	1620	1851	2083	2314
22	121	242	485	726	970	1212	1455	1697	1939	2182	2424
23	127	253	507	760	1014	1267	1520	1774	2028	2281	2534
24	132	264	529	793	1058	1322	1587	1851	2116	2380	2645
25	138	275	551	826	1102	1377	1653	1928	2204	2479	2755
26	143	286	573	860	1146	1432	1719	2006	2292	2578	2865
28	154	309	617	926	1234	1543	1857	2160	2468	2777	3085
30	165	331	661	992	1322	1653	1983	2314	2645	2975	3306
40	220	441	881	1322	1763	2204	2645	3085	3526	3967	4408
50	275	551	1102	1652	2204	2755	3306	3857	4408	4959	5510

A table for ¾ of a brick thick, being the half of 1 ½ bricks; the walls height in feet											
f. LONG	½ BRICK	I BRICK	II BRICKS	III BRICKS	IV BRICKS	V BRICKS	VI BRICKS	VII BRICKS	VIII BRICKS	IX BRICKS	X BRICKS
1	4	8	17	25	32	41	50	58	66	74	83
2	8	17	33	50	66	83	99	116	132	149	165
3	12	25	50	74	99	124	149	174	198	223	248
4	17	33	66	99	132	165	198	231	264	298	331
5	21	41	83	124	165	207	248	289	331	372	413
6	25	50	99	149	198	248	298	347	397	446	496
7	29	58	116	174	231	289	347	405	463	521	579
8	33	66	132	198	264	331	394	463	529	595	661
9	37	74	149	223	298	372	446	521	595	660	744
10	41	83	165	238	331	413	496	579	661	744	826
11	45	91	182	273	364	455	545	636	727	818	900
12	50	99	198	298	397	496	595	691	793	893	992
13	54	107	215	322	430	537	645	752	860	976	1074
14	58	116	231	347	463	578	694	810	916	1041	1157
15	62	124	248	372	496	620	743	868	992	1117	1240
16	66	132	264	397	529	661	793	926	1058	1189	1322
17	70	140	281	421	562	702	843	983	1124	1264	1405
18	74	149	298	446	595	744	893	1041	1190	1339	1488
19	79	157	314	471	628	785	942	1099	1256	1413	1570
20	83	165	331	496	661	826	992	1157	1322	1488	1653
21	87	174	347	521	694	868	1041	1215	1388	1562	1736
22	91	182	369	545	727	909	1091	1273	1455	1636	1818

23	95	190	380	570	760	950	1140	1331	1521	1711	1901
24	99	198	397	595	793	992	1190	1388	1587	1785	1983
25	103	206	413	620	826	1022	1240	1446	1652	1860	2066
26	107	215	430	645	860	1074	1290	1504	1709	1934	2149
28	116	231	463	694	926	1157	1338	1620	1851	2083	2314
30	124	248	496	744	992	1240	1488	1736	1983	2231	2479
40	165	331	661	992	1322	1653	1983	2324	2625	2975	3306
50	207	413	826	1240	1653	2066	2479	2893	3306	3719	4132

See more concerning building of houses under the head architect; also very ample account under the head building, where there are these following sections, viz

i. Considerations about buildings

ii. Aphorisms; which are subdivided into seven sections viz 1. Situation, in respect of the whole; 2 contrivance, with some precautions; 3. Receipt; 4. Strenght with directions about it; 5. Beauty, in the whole parts; 6. Form, figure or fashion, and what figure is strongest and most convenient.

iii. A comparison betwixt the modern and the ancient way of building in England.

iv. General rules to be observed in building all houses, in city and country.

v. A method of surveying buildings, and taking dimensions, and setting them down in a pocket-book, &c. with a form of a bill of measurements.

vi. The method of measuring all artificers work, relating to bulding of houses &c.

vii. A method of value nearly most sorts of buildings, great or small.

viii. A method of censuring buildings, and to judge whether firmly compacted, and well contrived, for use, or conveniency; and as to its beauty, whether the designer observed as due symmetry, or proportion of the parts, in respect of one another, &c.

ix. Some directions concerning advising with workmen about the charge of building any house: and how much builder (or gentleman that is going to build) is generally the wiser for such men advice; I mean if he advise with such as are to do the work; though otherwise perhaps he may be well informed by some ingenious workmen who understand the speculative part of architecture: but of these knowing sort of artificiers there are not many, because few workmen look any further than the mechanical, practick, or working part of architecture; nor regarding the mathematical, or speculative, thinking it of little use. This I know to be true, because I have heard some workmen affirm, that the theory, or speculative part of architecture was useless, because, as they say, it is uncertain: but this the humour of some people, to flight such things as are beyond their reach.

(we shall add in this place, to complete this article, the substance of several causes, in the acts of parliament relating to building, to party-walls, to front and rear walls &c.)

22 car II.c.II. it iwas enacted, *that no foundations shall be laid in London, till proper surveyor, appointed by the Lord Mayor, &c. have viewed the same, and seen the piers and party-walls, equally set out.*

That before such survey be taken, the builder shall enter his name with the chamberlain, and the place where the building is to be erected, paying 6s. 8d.

For an acquittal, which shall entitle him to have the foundations set out by proper surveyors, within three days after producing the same.

By 19 car.II *there is to be a party-wall of brick or stone between every two houses, for preventing the spreading of fires, of the thickness under-mentioned.*

That, to prevent dispoutes among Landlords, there shall be party-walls and piers set out equally on each builder's ground, and whoever first builds, shall leave a toothing in the extremes of his front and rear-walls, for that of his neighbour to be firmly incorporated therewith, when he shall build.

That the second builders shall not build against the said party-walls, till they have paid the first, the half charges of such party-wall, with interest at 6l. Per cent, from the first building; and directs how differences shall be determined.

By act 7 annae, *the first builder is to be paid by the owner of the next house, after the rate of 5 l*. Per rod. As soon as he shall have built the party-wall.

Bya and act 11 geo II. *All second builders are forbidden to take the benefit of such party-wall, or lay any timber, or cut any holes for cupboards, presses, &c. therein, on the penalty of 50 l.*

The thickness of party-walls, by stat.19. car. II. *Were to be a brick and half in cellars and stories above ground, except the garrets, which were to be one brick only:* but by the acts,

6 and 7 Q. Anne, *every house shall have party-walls wholly of stone or brick, of two bricks thickness in the cellar and the ground-stories, and 13 inches from thence upwards, to 18 inches above the roof.*

By the said act II Geo I. *No door-case, window, lentil, bresst-summer, or story-plates (unless where two houses are joined and used as one single one, and there only while so used) shall be put into any party-wall, on the penalty of 50 L.*

The same act provides what is to be done in cases of difference between two landlords, about the expence of the party-walls, in rebuilding, where ruinous and bad; and where the one is poor or unwilling to pay his proportion: which beinga case of importance, we shall rather refer to the act itself, than give an abstract of it, which will not be sufficient authority to determine such a difference.

We might enumerate several other particulars from the statutes of Charles II, relating to building, and to the particular four rates of houses there laid down, and their respective scantlings &c. But as these particulars were mostly temporary, as regarding principally the rebuilding of the city after the fire of London, we think it needless to insert the here, and shall therefore only take notice of what may be necessary at present, for the builder's information.

By stat 22 Car II *no timber shall be laid within 12 inches of the foreside of Chimney-jambs; all joists on the back of chimneys to be laid with a trimmer, at 6 inches distance; and that no timber shall be laid in the funnel of any chimney, on the penalty of 10 s. And on 10 s. More weekly, for all the tiem it is unreformed.*

By stat 7, annae, no modillion or cornice of wood, should be fixed under the eaves of any house, or against the front or rear-wall thereof.

That the front and rear-walls of every house. Shall be entirely by brick or stone, except windows and doors, and carried two feet and half above the garret-floor, and coped with stone or brick.

That jambs and backs of chimneys shall be at least a brick thick, from the cellars to the roof; that the insides of such chimneys shall be four inches &c. in breath; that all funnels shall be plaistered or pargetted within from top to bottom; that all chimneys be turned or arched with a trimmer under the hearths with brick, the ground floor excepted.; that no timber shall be nearer than five inches to any chimney, funnel, or fireplace; that all mantles between the jambs be arched with brick or stone, and no wood or wainscot affixed to the front of any jamb or mantle-tree, nearer than five inches from the inside; that all stoves, boilers, coppers and ovens, shall be 9 inches at least, distant from the adjoining house.

HOUSING, when a tile or brick is warped, or cast crooked or hollow in burning, bricklayers say, such a brick or tile is housing, or is apt to be housing, or hollow on the struck side (or that which was upmost in the mould) and bricks on the contrary side.

Also some observe, than the tiles are always smoothest, when burnt on the struck side, by reason the sand sticks to under side, which they strew on the stock of the mould, to prevent the Earth's adhering to it.

JAMBS, or jaumbs, door-posts, also the upright posts at the ends of window-frames, are so called. Also, brick layers call the upright sides of chimneys, from the hearth to the mantle tree, by this name. Jambe is a French word, and signifies leg.

JOINERY, the art of joiner, a business requiring great ingenuity; being the nicer and more delicate part of wooden-work; as carpentry try is the larger and rougher. See the particulars of joiners work in their proper places of the alphabet.

JOIST,

1. What, joist in architecture, arethose pieces of timber (framed into the girders and summers) on which the boards of the floors are laid.
2. Scantling of joists. At Full length (to bear in the wall).

	F.	In.		In.		In.
Being	12	0	Ought to be in their squares	8	and	3
	11	6		7	and	3
	10	6		6	and	3

And biding, or trimming-joists being in length

Feet		In.		In.
7 - - - -	Ought to be in their squares	6	and	5
9 - - - -		7	and	5
11 or 12		8	and	5

3. Distance and position. (1) No joists ought to lie at a greater distance from each other than 10, or at more 12 inches. (2) All joists on the back of a chimney ought to be laid

with a trimmers, at 6 inches distance from the back; (3) No joists ought to bear at a longer length than 12 feet. (4) No joists ought to lie less than 6 inches into the brick-wall. (5) Some carpenters bridge, or as others call it, furr the joists one over another; the undermost of which is framed level with the under-side of the girder, and the uppermost, which lies cross the lower one, lies level with the upper-side of the girder.

IRON,

1. What, iron is a hard, fusible, malleable metal, so universally known, that we need not spend time in its description.
2. Kinds, there are several kinds of iron; as (1) English, which is a coarse sort of iron, hard and brittle, fit for fire-bars, and other such ordinary uses. (2) Swedish, which is all sorts the best we use in England. It is a fine tough sort of iron, will best endure the hammer, and is softest to file, and therefore most coveted by the artificer to work upon. (3) Spanish, would be as good as Swedish Iron, were it not subject to red-fear, as workmen phrase it; that is, to crack betwixt hot and cold: therefore it must be tended more carefully at the forge. But though it be a good, tough, soft iron, yet, for many uses workmen refuse it, because this is so ill and unevenly wrought in bars, that it cost them a great deal of labour to smooth it; but it is good for all great works that require welding; as the bodies of anvils, sledges, large bell-clappers, large pestles for mortars, and all thick strong bars, &c. But this particularly chosen by anchor-smiths, because it abides the heat better than other iron, and when this is well wrought, is thoughest. (4) there is some iron that comes from Holland (though in no great quantity) but is made in germany. This sort of iron is called Dort-squares, (only because it comes to us fron thence, and is wrought into bars of ¾ an inch square) it is a bad coarse iron, and only fit for window-bars, brewer-bars, fire-bars, &c. (5) there is another sort of iron used for making of wire, which all sorts is the softest and toughest: but it is not peculiar to any country, but it is indifferently made where any other is made, though of the worst sort; for it is the first iron that runs from the min-stone when it is melting, and is only preserved for making wire.
3. To know good iron. Generally the softest, and toughest iron is the best. Therefore when you chose, take such as bows oftenest before it breaks, and see it breaks found within, be of a grey colour, like broken lead, and free from glittering specks, and no flaws or divisions in it.
4. Price of Iron when wrought. Iron being wrought into dogs, iron bars, staples, large hooks, thimbles, and hinges or hides, grates, &c. the usual price is three pence half penny, or 4 d. Per pound. But for small and neat hooks, hinges, bolts, staples &c. various, as from 4d. To 8 d. Per pound.
5. To make iron blue. To beautify iron with a blue colour, take a piece of a grind-stone or whetstone, and rub hard upon your work to take off the black scurf from it; then heat it in the fire, and as it grows hot, you will see the colour change by degrees, coming first to a light, then to a darker, gold-colour; and lastly to a blue. But workmen sometimes grind indico and salad-oil together, and rub that mixture upon it with a woollen-rag, while it is heating, and let it cool of itself.
6. Of twisting iron. Square and flat bars of iron are sometimes twisted for ornament; which is very easily done; for after the bar is square or flat forged (and if the curiosity

of the work require it truly filed) you must take a flame-heat, or if you work be small, but a bloodred-heat, and then you may twist it about, as much, or as little as you please, either with the tongs, vice, or hand-vice, &c.

LATHS,

1. What, laths are long, narrow,, thin slips of wood, used in tiling and walling.
2. Kinds of laths. Are three, viz. Heart of oak, sap-laths, and deal-laths; the two last sorts are used for ceiling and partitioning, and the first for tiling only. They are each of them distinguished into three lengths, viz. 5 feet, 4 feet, and 3 feet-lath. All these sorts are necessary (especially in repairing of old buildings) because all rafters are not spaced alike, nor yet the proportion strictly observed in every one and the same roof. See tiling, n.8.
3. Bundle of laths, is generally called a hundred of laths; those of the 3 feet-laths there go 7 score to the hundred, or bundle, and of the 4 feet-laths, 6 score; but of the 5 feet-lath, there go but just 5 score to the hundred, or bundle.
4. Size of lath. The statute allows but of two sorts of lath, one of 5, the other of 4 feet in length; of either sort each lath ought to be in breadth an inch and half, and in thickness ¼ of an inch; but there are seldom exact, either in their tale of measures.
5. Of cleaving laths. (1) lath-cleavers having cut their timber into lengths, they cleave each piece with wedges into 8, 12, or 16 pieces, according to the bigness of their timber, which they call bolts; then they cleave this bolts (with their dowl-ax) by the felt-grain, into sizes for the breadth of their laths, and this work they call felting. Then, lastly (with their chit) they cleave their laths, into their thicknesses, by the quarter-grain (2) some men affirm, that a foot of timber will make a bundle, or hundred of laths; but this I know to be a mistake (unless the laths are made very slight) for by several experiments, which I have caused to be made, I find that a tun, or 40 feet of round oaken timber, will not make above 30 hundred, or bundles of laths. O which number above one third will be sap-laths.
6. Price of cleaving. The common price for cleaving of laths, is 5 d. Or 6 d. The bundle. But I know a carpenter in Sussex, who buys a great deal of timber, and has it clest into laths, and he tells me, that he uses to give but 11 s. Per load for the cleaving of them, reckoning a load to be 30 bundles, which is not full 4 d. ½ per ´Bundle.
7. Price of Laths. The price of laths must needs be various, there being so great disparity in the commodity, as to in goodness, plenty, or scarcity &c. but the prices are generally between a shilling and a half a crown the bundle: And the common rate for heart-laths is about 20 d. Per bundle, and sap laths are commonly about 2/3 of the price of hearth-laths. The carpenter mentioned above (in this number) tells me that he uses to sell his laths for 4 l. 10 s. The carriage: he reckons a carriage 60 bundles, whereof 40 are heart, and 20 sap-laths; at which rate (...)
8. Nails allowed to a bundle of laths. The common allowance is five hundred (at six score to the hundred, that is 600) Nails to a bundle of lath.
9. How many to a square. Workmen commonly allow a bundle of laths to square of tilling, which is the distances of the rafters fit the lengths of the laths without any waste) is a sufficient allowance; for then about 90 laths of five-feet, and 112 of four-

feet, will compleat a square of tilling, counter-laths and all at 7 inches gage; and at 8 inches gage, a square will require sewer.

LATHING, the price of lathing, plaistering, rendring, and washing with size, is about 10 d. 12 d. Or 14 d. Per yard, materials and work.

LEAD, (plomo)

1. What, and its use. Lead is a material used in buildings, well known, and needs no description. Its chief uses are for covering for gutters, for pipes, and for glass. Covering with lead is most used for covering churches, princes palaces, castles, and great men's houses. It's generally laid almost flat to walk upon, allowing the water little fall to the battlements, thence privately to descend in pipes. But in ordinary tiled buildings, it is chiefly used for gutters to convey the water from the house into convenient place.
2. Sorts of lead. There are three sorts of lead, white, black and ash-colour; the white is the most preferable, the black least, and the ash-colour between both.
3. Of casting sheet lead. For this purpose there is a mould provided, which is made something longer than the intended Length of the sheets, that the end where the metal runs off from the mould may be cut off; because it is commonly thin, and uneven, or ragged at the end.
   This mould (which is just as broad as the sheed is to be) must stand every even, or level in breadth, and something falling from the end where the metal is poured in, viz about an inch, or an inch and a half in 16 or 17 feet.
   (...)
   (explicación de como se hace, como se trabaja, y los diferentes precios).

LIME (cal), a well known material used in buildings, made of burn stones, but most commonly of chalk.

2.- How to made. Mr. Leybourn tells us, out of Palladio, that stones whereof lime is made, and either dug out of hills, or taken out of rivers: that lime is the best which is made of the hardest, sound, and white stones, and being burnt, remains a third part lighter than the stones whereof it is made. All dug stones are better to make lime of than gathered stones, and from a shady and moist pit, than from a dry. All stones are sooner or later burnt, according to the fire which is given them; but ordinarily they are burnt in sixty hours.

Sir Henry Wotton tell us, that to make lime, without any choice of refuse-stuff, as we commonly do in English error, of no small moment in our buildings. Whereas the Italians at this day, and much more the ancients, did burn their firmest stone, and event fragments of marble where it was plenty, which in time became almost marble again for its hardness, as appears in their standing theatres.

Lime made of soft stone or chalk, is useful for plaistering of ceilings and walls within doors, or on the insides of houses, and that made of hard stone is sit for structures, or buildings, and plaistering without doors or on the outside of the buildings that lie in the weather: that made of spongy stone, is lighter than that made of firm and close stone; that is more commodious for plaistering, this for building.

Also very good lime may be made of mill-stone, not coarse and sandy, but fine and greasy. Likewise of all kind of flints; but they are hard to burn, except in a reverberatory Kiln, except those rolled in water, because a great part of its increase goes away by a kind of glass. Also the shells of fifth, as cockles, oysters, &c. are good to burn for lime.

(notas sobre extracción de LIME in Sussex, el peso, los precios...)

(…)

MASONRY, the work of a mason, i.e. the art of hewing or squaring stones, and of joining them together with mortar. Some divide Masonry into three parts, (1) the stone-cutter, who hews or cuts the stones. (2) the mason, properly so called, who uses the stones, and builds with them when cut. And (3) the stone-carver or sculptor, who makes the ornaments and decorations of a building. (...)

(...)

MORTAR. Or morter. From the French mortier, a sort of plaister, commonlu made of lime, sand and water, used by masons and bricklayers, in building of walls of stone and bricks. For plaistering of walls, they made their mortar of Lime and Ox, or cow-hair, tempered, well together with water, and this is commonly called white mortar.

(2) Of making common mortar. For this and for the proportions of lime and sand to be used about it. As many men are of many minds, I shall give you their several sentiments about this matter.

Vitruvius says, you may put three parts of dug, or pit-sand, to one part of lime, to make mortar; but, says he, if the sand be taken out of a river, or out of the sea, the two parts thereof and one of lime. He also says, that if to river, or sea sand, you put third part of powder of tiles, or bricks it works the better: but Vitruvius proportion of sand seems to much though he should mean of lime before it is slacked, will be five pecks after.

About London, ehere the most part lime is made of chalk, they put about a bushel and a half of sand to a bushel of quick lime.

In Sussex, they commonly put three pecks od sand to one bushel of lime.

Other workmen in Sussex...

(3) Of making other kinds of mortar. Besides de common mortar used in laying stones, bricks and tiles, above mentioned , there are several other kinds as...

(4) White mortar. This is used in plaistering of walls and ceilings, that are the first plaistered with lome, and is made of Ox, or cow-hair, well mixed and tempered with lime and water, without any sand: the common allowance in making this kind of mortar, is one bushel of hair, to six bushels of lime. The hair serves to keep the mortar from cracking, binding it, and holding it, fast together.

(5) mortar used in making of water-courses, cisterns &c. This kind of mortar is very hard and durable, as may be seen at Rome at this day. It is used not only in Building of walls, but also in

making of cisterns to hold water and all manner of water-works, and also in finishing or plaistering of fronts to represent stone-work.

An I find two kinds of this mortar used by the ancients; both of which are compounded of lime and hog's-grease; but to one is added the juice of figs, and to the other liquid-pitch, and is first wet, or flacked with wine, then pounded, or beat with hog-grease, and juice of figs, or with the same and pitch; that which has Pitch in it, is blacker and easily distinguished from the other by it's colour, and that which is plaistered with this kind of mortar, is done over with linseed-oil.

(6) For furnaces &c. Some chymists, in building their furnaces, make use a kind of mortar made with red clay, not too fat, left it be subject to chinks; nor too lean, or sandy, left it bind not enough. This clay is wrought in water, wherein store of horse-dung and chimney-foot has been steeped and well mingled, by which a salt is communicated to the water, binding the clay, and making it sit to abide the fire.

Some metalist use a kind of mortar to plaister over the insides of their vessels, for refining of metals, to keep the metal from running out; and this kind of mortar is compounded, and made of quick-lime, and ox-blood, the lime being beat to powder, and fisted and then mixed with the blood, and beat with a beater.

The glass-makers in France, use a sort of mortar, for plaistering over the insides of their furnaces, made a sort of fuller's-earth, which is gotten from beliere near forges, which is the only earth in France that has the property of not melting in this excessive heat, And it is of this same Earth, that the pots are also made which will hold the melted metal for long time.

(7) For sun dials. (...)

(8) Extraordinary good mortar for floors, walls and ceilings. If you temper Ox-blood, and fine clay together, and lay the same in any floor, or plaister any wall, or ceiling with it, it will become a very strong and biding substance. This I amd assured is of great use in Italy.

(9) a profitable and cheap kind of mortar. Two load of waste soap-ashes, one load of lime, one of lome, and one of Woolwich sand, will make a very good and cheap mortar.

So likewise Lome and soap-ashes, onlu tempered and wrought together, has been experienced to make a very good mortar, more durable and binding, than common mortar.

It may be, that many lime-men, and some of other bricklayers, that are fee with them, may speak against this practice; but no reason can hold against experience .

It is true, this kind of mortar is somewhat rough in the laying, and more sharp and fretting to the fingers than ordinary mortar, which makes it decryed by some workmen,; but these two slender faults, the first whereof is rather an excellent quality, than the fault, might be easily remedied. And first, concerning the roughness of this kind of mortar, nothing need be done, but to grind or stamp into fine powder. The soap-ashes, which are in hard cakes, before they be mixt with the sand, which will soon bring them to a smooth temper; and when this is done, the profit of one day's labour will answer the charge of three mens wages, in the difference of price betwixt one load of these ashes, and 100 of lime.

Then, as to the sharpness to the fingers, that may be avoided by wearing of gloves, which is frequently done, to avoid the like effects in lime.

But for an assured help in this case (if the sharpness be such as cannot be endured) let these ashes be re-imbibed in water for some reasonable time, till more of their salt be extracted from them, and then much of their fretting nature will be taken away.

(10) Mortar for laying tiles. I know several places in Sussex, where they make a kind of mortar of lome, and new horse-dung, for this purpose, well tempered and mixed together. This some workmen commend for a good, strong and cheap mortar; and other tell me, that it is more agreeable to the tiles, than the common mortar made of lime and sand; which say they, corrodes and frets the tiles, causing them to scale and fly to pieces; which this does not.

I have taken particular notice of one house, where the tiles had been laid in this kind of mortar about four or five years and yet the mortar stuck very well under the corner-tiles, where it generally lies thickness.

(11) Mortar for plaistering fronts, of houses, in initiation of brick-work. Mortar, for this kind of work, may be made of powder of bricks, sharp sand, and lime and some red-ocre. I know house that has been plaistered with this kind of mortar above 20 years, and yet looks very well, and passes, with common passengers, for a brick-house though it be only timber plaistered over. They have commonly 1 per yard for doing the workmenship only.

(12) how much mortar allowed to a rod of brickwork, or a square of tiling. Workmen commonly allow 100 and half or 37 ½ bushels of lime, and 2 load, or 72 bushels of sand to make mortar enough for a rod of brick-work, (but to do the work as it ought to be done, little less than 200 of lime will suffice).

And for tilling, 4 bushels of lime, and 6or 8 bushels of sand will make the mortar sufficient to lay 1000 of tiles, which is about a square and a half. So that a square of tilling will take up, for mortar, about 2 2/3 bushels of lime, and about 5 bushels of ssand.

(13) a caution about mortar. In all parts of a building, where stones or bricks are contiguous to timber, they ought to be laid dry, or without mortar; because lime and wood are insociable, the former very much corroding and decaying the other.

(14) Rough mortar. See rough. For what relates further to mortar see also brick.

(...)

NAILS (clavos), small iron materials, serving to fasten pieces of workmanship together. The particular kinds of them, which are very numerous are as follows (clases de clavos) (..)

(...)

OPTICKS, a science treating of the sight, in general, and explaining its properties and effects. When it treats on reflected rays, it is called catoptricks; when it treats on refracted rays, dioptricks (...)

(...)

PAINTING, explicación enooormemente larga sobre la pintura, y los colores....

PALLISADE, OR PALLISADO, a sort of slight open pale, or fence, sot to beautify a place, or walk. (2) Pales. Some workmen tell me, that making and seeting up of pallid-pales, (if the heads are handsomely cut, the palisades mortised through, the post at the corners higher than the rest, and the rails, kneeling-rails) is worth 14 s. Per rod, carpenter's work, and sawing.

And ancient and experienced carpenter informs me, that the carpenters had 25 s. Per rod for timber and workmanship. (...)

(...)

PALLIFICATION, a term in architecture, signifying the pileing of the ground-work, or strengthening of the ground-work with piles of timber driven into the ground, when they build upon a moist and marshy soil.

PARLOUR, from the French parlour, a speacking-place; a place for conversation; a fair lower room, designed principally for the reception, and entertainment of company.

(...)

PAVING, is the laying a floor with bricks, tiles or stones. It is derived from the latin pavire.

(2) Paving with statute bricks, is cone at London for about 4d. Per yard; but I know some workmen in Sussex that have 5 d. Or 6 d. Per yard; into which price they make ready the floor for the work, by clearing the earth, and levelling it convenient quantity of sand, (if they lay the brick dry as sometimes they do) which they spread evenly with the rake; then laying the bricks level by a line, with a trowel , they put a sufficient quantity of sand under each brick, to raise it full as high as, or a little high than, the line, and so knock in down level with the lime with the handle of their hammer; which being done, they ram in the sand on the side of, and against the bottom of the brick, with the handle of their hammer. Having thus laid the whole floor, they strew sand all over the bricks, to the thickness of an inch, more or less, with a command to the people of the house, that they let it lie for the space of five or six weeks; now and then sweeping it to and fro, that thereby, and by their treading on it, it may fill up all the joints betwixt the bricks.

If they lay the bricks in mortar, the price (they say) is the same as if they were lay dry.

There are some masos, that having laid the floor dry, will make a very thin mortar, which they spread all over the floor, sweeping it to and fro with a Broom, to fill up the joints of the bricks.

This kind of paving (with common or statute-bricks) is usual for cellars, wash-houses, sinks, firehearths, and for halls and kitchins in common houses.

Of these kind of bricks, 32 will pave a yard square, if laid flat-ways, and 64 if edge-ways.

(3) Paving with square tiles, or, as some call them, Paving-bricks. The paving with square-tiles is commonly valued by the square, and is the dearer, the smaller the tiles are; for these kind of tiles are of several sizes, viz 6, 8, 10 and 12 inches square; their price from 6 to 20 s. the

hundred. In Sussex these kind of tiles (or as they call them, paving-bricks)are 9 inches square, and commonly fold at at 1d.per piece, or 8 s. per hundred.

If you wouldn't know how many of either of these sort of tiles will pave any floor, then note that.

36	Tiles of	6	Inches square will pave a square yard.
21		8	
16		9	
13		10	
9		12	

(4) paving with Flemish bricks. The paving with this bricksis far neater and stronger than common bricks; they are yellowish colour, and must be laid in sand. Earth-brick is 6 inches and a quarter long, 2 inches and a half broad, and 1 inch and quarter thick.

Now, allowing a quarter of an inch for the joint, then 72 of them will pave a yard square; but if they be set edge-ways, then to pave a yard square will require 100 bricks. These bricks are usually sold at 2 s. the hundred, and the price of laying them is 4d. 5 d. Or 6 d. The square yard.

(5) Paving with rough, or ragstone. This is the cheapest of all pavements, and is valued fronm 12 d. To 15 d. The yard, or 4 d. Per yard workmanship.

(6) paving with free-stone. Taken out of the quarries, and cut into lengths and breadths promiscuously, as they will hold, and in thickness about 2 or 3 inches, is usually rated at 6d. 7 d. Or 8 d. The foot square, or 4 s. 6 d. 5 s. 3 d. Or 6 s. the yard square for stone and workmanship. This kind of paving is laid in common yards, and passages before shop-doors , and stalls &c.

But if the stones be squared all to a size, then, as they neater, so they are dearer; as 12d. Or 14 d. Per foot. Or 9s or 10 s 6 d per yard. But if the stones, thus squared and sized be good, and well polished, 8as they ought to be for kitchens, dairies, and neat private places) then they may be worth 15d or 15 d per foot, or 11s 3d or 12 s per yard square.

(7) With rigate or firestone. This kind of pavement is good for chimneys fire-hearts, ovens, stoves, &c. and is somewhat dearer than common purbeck-pavement. For the price of these stones, see fire-stone n2.

(8) with pebble-stones or bolders. Paving with pebble-stones laid in gravel for materials and workmanship, may be worth 15 or 18d. The yard square.

(9) with marble. Paving with marble is of all other the most beautiful, or which several sorts; as white, black, and grey: some pavements (as foot-paces before chimneys) are laid all of one sort or colour, and in one entire stone; others of two colours laid square, or chequer-ways, the side of one by the side of the other; others are laid arrace-wise; of two colours, laid angle to angle, and this last is the neatest way; but there may be divers forms contrived to lay them in; as you may see in several chancels, in the choir of Saint Paul's in the royals Exchange, London 8in the new Theatre at Cambridge) and divers other places. This kind of pavement is valued from 2 to

3 s the foot square, and upwards, according as it is well laid and polished. For the price of marble, see marble 5.

(10) Diamond-pavements, according to Mr Wing is worth 3 d. Or 4 d per foot.

(11) random-pavement. Says the same writer, at the quarry, is worth 2d halfpenny or 3d per foot.

(12) Of measuring (...)

(...)

PITCH, By this term architects understand the angle a gable-end, and consequently the whole roof of a building, is set to. If the length of each rafter be 3 fourths of the breadth of the building, then that roof is said to be true pitch; if the rafters are longer it is said to be a high or sharp-pitched roof; if shorter, (which it seldom is) the it is said to be a low, or falt-pitched roof.

Pitch is also a oily, bituminous substance, well known both for its quality and uses.

PLASTERING, Of walls. Some masons in Sussex tell me that for lathing and plastering of walls with loam or both sides, the have 3 d. Per Yard; but if it be done with lime, and hairmortar on both sides, then they have 4 d. Per yard.

I am informed that at tunbridgewells the masons will do plastering of walls (where they plaster over all the timber) and ceilings for 2s 10 d per square. A gentleman told me, he had such work done for 2 s 6d per square.

(2) Plastering of ceilings. For ceilings our masons in Sussex, have (for lathing, plastering, and finishing) 4 d per yard. In some countries the make their ceilings with reed, lime and hair; for which the workmanship is worth 3 d per yard: but the workman finds all materials, it is worth 5 d or 6 d per yard.

(3) With rough mortar or rough cast. In some parts of Kent the commonly rough-cast (as they call it) upon old Loam-walls; that is, they give them one coat (upon the loam) of rough mortar, or rough cast, as they call it, though it be commonly struck smooth like lime and hair. For this work have 3 half-pence per yard, only workmanship; but if the wall be new and lathed and plastered with loam on both sides, and a coat of rough mortar on the outside, then they have 4d. per yard, only workmanship. But if the rough-casting be wrought in flourishes, then they have 8 d per yard, only workmanship. But if the workman finds all materials, it is worth from 1 s to 3 s per yard according to the variety of goodness of the work.

(4) On the laths in imitation brick. I know a house that is plastered in imitation of brick-work; the mortar was made of powder of bricks, sharp sand, lime, and some red-ocre. This house has been done this 20 years, and yet looks very well and passes for brick-house with common passengers, though it be only timber plastered over.

Some workmen tell me, that they have 1s per yard for such work, only workmanship.

(5) Of Floors. Plaster-floors running, (says Mr. Wing) the workman finding all, is worth 1s 4d per yard; but the working part only is worth 4d 5d or 6d per yard. Plaster at the pits may be had for 4s or 4s 6d per load, viz 40 C. weight, which will do about 40 yards flooring.

(6) of white-washing. White-washing with size upon plastered walls is commonly reckoned at 2d per Yard.

(7) Of measuring. (...)

POSTS, pretty big pieces of timber, standing upright in a house &c. (2) Principal posts. In architecture, are the corner posts of a house, viz. (3) prick posts, the posts are framed into brest-summers, between principal posts, for the strenghning the carcass of the house. (4) pf preserving posts. Walter Burrel esq; of Cuckfield in Sussex, used to burn to a coal on the outside the ends of all posts which he set in the ground; whereby they will continue a long time without rotting. Post and rail. See fencing.

(...)

PUNCHINS, or puncheons, short pieces of timber placed under some considerable weight to support it. They commonly stand (upright) between the posts; thay are shorter (and slighter) than either principal-posts, or prick-posts. Those that stand on each side of a door, are called door-puncheons. Vitruvius calls a puncheon, columen.

(...)

PURLINS, those pieces of timber that lie a-cross the rafters, on the inside, to keep them from sinking in the middle of their length.

(2) size. By the act for rebuilding the city of London, all purlins length from 15 foot 6 inches to 18 foot 6 inches, ought to be in their square 9 inches and 8 inches. And all in length from 18 foot 6 inches, to 12 foot 6 inches, ought to be their square 12 inches and 9 inches.

PUTLOCK, or putlogs, in carpentr &c. short pieces of timber, (about 7 foot long) used in building of scaffolds to work on. The putlogs are those pieces which lie horizontal to the building, one end lying into it, and the other end resting on the ledgers; which are those pieces that lie parallel to the side of the building.

(...)

PYLING, the foundations of bridges, and structures to be erected upon them in marshy or watry places, and by the side of rivers &c. see foundations.

(...)

RABBET, a chanel of kind of semi-groove, cut at the edge of boards, door-cases, &c for letting other boards or doors &c into them

(...)

RAFTER, rafters are those pieces of timber, which (standing by pairs on the reson) meet in an angle at th top, and compose the roof of a building.

(2) distance. It is a rule in architecture, that no rafters be laid at greater distance from each other than 12 inches.

(3) Scantling, or size. In an act of parliament for rebuilding the City of London, the following scantlings, (which were well consulted by able workmen, before they were reduced too and act) are set down, as fitted for all edifices, great or small, viz.

Principal rafters in length from 12 f 6 n to 14f 6n must be broad at the foot 8n at the top 5n and 6 n thick							
From 14f 6n to 18f 6n -------- at the foot 9n at the top 7n thick 7 n							
From 18f 6n to 21f 6n -------- at the foot 10n at the top 8n thick 8 n							
From 21f 6n to 24f 6n -------- at the foot 12n at the top 9n thick 8 ½ n							
From 24f 6n to 26f 6n -------- at the foot 13n at the top 9n thick 9 n							
	f		*n*		*f*		*n*
Single rafters in length	*6*	*:*	*6*	*Must have in their square*	*4*	*:*	*3*
	8	*:*	*0*		*4 ½*	*:*	*3 ¾*
	9	*:*	*0*		*5*	*:*	*4*

(...)

RAILS, in architecture are used in various senses; as for those pieces that lie horizontally between the panels of wainscot, and over and under them. Also for those pieces that lie over, and under ballisters, in balconies, stair-cases &c. alco for those pieces of timber lie horizontally from post to post, in fencing with pales, or without.

(...)

REJOINTING, with architects, the filling up of joints of the stones in old buildings, when worn hollow by time and weather.

(...)

REPOSITORY, a store-house or place to keep things in; more peculiarly by architects it is used to signify such places are built for the laying up of rarities, either in painting, or other arts.

(...)

RESEVOIRS, large basons or receptacles for water, which serve both for ornament and use to a fine seat , and are mad in divers forms, some round, some oblong, or oval, square, octangular, &c. but most commonly circular. When small, they are generally called basons, when they are exceed the size, they are called pieces of water, canals, mirrors, fishponds, pools, &c.

In making these, the judgement of the designer will appear by his avoiding extremes in the dimensions of them; that is, that a waterwork may not take up the best part of a small spot of ground, or make too little a bason in a large spot.

If a small reservoir, which is usually called a bason, is intended , some prescribe the size of it to be proportioned to the JET D'EAU, that so the water thrown up in the air, may not be blown beyond the edge of the bason, and wet the walk. Others aver, that no precise proportion can be fixed between the size of basons, and their spouts; because that depends upon the fall and force of their water, or upon the place where the fountain is situated.

ROOF, the covering of a house. In carpentry, the word is retrained to the timber-work of the covering. The first men, according to Vitruvius, built their houses with flat roofs; and the Italians and other warm countries, where they have little snow, still frequently do the same: but in colder climates, they are obliged to raise their roofs to a great pitch, and the higher still, as they are colder and more accustomed to snow, which otherwise would lie on them a long time with a great weight. There are various sorts of roofs, and various ways of framing them; and as they are not only a covering, but a tie to the whole building, a good roof is the most important and difficult part of carpentry.

The principal timbers used in a roof are (1) beam; 2 principal; 3 cellar-beam; 4 kings-post; 5 prick-post; 6 struts; 7 sleepers; 8 purlins; 9small rafters. There are also puncheons, bracers, quarters, interduces, furrings &c. most of which are described in their proper places.

The pitch of roofs, and indeed the construction of the roofs in general, varying, as we have said, according to the climates, and still more according to the opinion of the workmen, we shall not waste our time and our reader's on this head; but refer such as have occasion or curiosity to be farther informed, to larger works for this purpose, where this subject is expatiated upon with more advantatge than we have room for here; and indeed it is the less necessary to be done, as it is to be met with in every book of building and architecture. We shall only add, that we may not be wanting in what may be expected from any part of our design, that workmen in general with us, commonly divide the breadth of the roof into 4 equal parta, and take 3 for the roof, whether it be the bevel or square. Palladio indeed says the breadth must be divided into 9 parts, two of which must be the pitch; but it is to be remembered, that he has a view only to Italy and southern climates, where little snow falls, as we have said. See hips. (...)

(...)

SAND, as Dr. Boerhaave defines it, is earth properly so called which is a fossil body, neither dissoluble by fire, water, nor air, insipid and untransparent; more fusible than stone; still friable, and contain usually a share of fatness.

Dr. Lister divides English sand in two classes, sharp and ragsand, consisting of small transparent pebbles, naturally found on mountains and not calcinable. These he further divides into fine and coarse, and subdivides each according to the colour, white, grey, reddish, brown &c.

(...)

Its uses in architecture is for making mortar. For this end there are 3 sorts of sand:

Kings of sand. Pit-sand, river-sand, because not purget; but of all pit-sand, that which is whitest, is by long experience found to be the worst. Of all river-sand, that which is found in the falls of water is the best, because it is most purget. The sea-sand is the worst of all.

The pit-sand, because it is fat and though, is used in walls and vaults. The river sand is very good for rough-casting of walls.

All sand is good in its kind, if, being squeezed and handled, it crackles; and if being put upon a white cloth, it neither stains nor makes it foul.

That sand is bad, which mingles with water, makes it dirty and muddy, and which has been a long time in the Air; because it will retrain much earth and rotten humour: and therefore some masons will wash their sand before they use it.

SHIDES, or shingles. Small pieces of wood, or quartered oaken boards, sawed to a certain scantling; but they are more usefully cleft to about an inch thick at one end, and made like wedges about 4 or 5 inches broad, and 8 or 9 (and some places 12) inches long. They are used to cover houses with (but more commonly Churches and Steeples) instead of tiles, or slates.

This kind of covering is very chargeable, and seldom used but in covering the roofs of churches, and pyramidal steeples. Nevertheless, where tiles are scarce, and you would have your house but lightly covered, shingles are to be preferred before thatch; and if they are made of good oak, and cleft out, (not sawed) and then well seasoned in the water and sun, they become a sure, light and durable covering.

SLATE, or slating is the covering of the houses with slate.

This kind of covering is very neat, specially the blue slate; as for the other kind of slate (known in some places by the name if Horsham-stone) see Horsham-stone.

The blue slate, cut into long squares or escallops, shews very handsome, and is commonly used in covering in summer, and banqueting-houses in gardens; it being a very light and lasting coverings.

But as this kind of covering is very handsome, so also it is very chargeable; for roofs covered with slate, must be (first)boarded over, the slates hanged on tacks and laid with finer mortar than tiles.

But if the slates be rudely cut, and carelessly laid, (in respect of form) it is then accounted a cheaper covering than with plain tiles; especially in those countries where the earth affords plenty of them.

STAIRS, it is sometimes taken to signify the inclosure f a pair of stairs; whether it be with walls, or with walls and rails, and balisters &c. and sometimes it is taken for the whole frame of a pair of stairs.

II. of making a stair-case. To make a compleat one is a curious piece of architecture; the vulgar cautions about it are these, saith Sir Henry Wotton, in his Elements of Architecture.

That it have a liberal light, against all casualty of slips and falls.

That the space over-head be large and airy, which the italians use to call "Un bel sfogolo; as it were, good ventilation, because a man spend much breath in mounting.

That the half-paces be well distributed at competent distances, for reposing the way.

That to avoid encounters, and besides to gratify the beholder, the whole stair-case have no niggard latitude, that is, for the principal accent, at least ten foot in royal buildings.

That the breadth of every single step of stair be never less than 1 foot, nor more than 18 inches.

That they exceed by no means half a foot in their height or thickness, for our legs do labour more elevation than in descension.

That the steps be laid (add he) where the join, con *un tantino discarpa*, i.e. somewhat stopping, that so the foot may in a sort both ascent and descend together, which,though observed by few, is a secret and delicate deception of the pains in mounting. But this doctrine of stair-cases ought to be regulated in proportion to the quality of the building; for a great stair-case in a little house would be as improper, as a little one in a great house.

There is to be great care taken in the well placing the stair-case; for there is not a little difficulty to find a place convenient, so as the stairs may be distributed without prejudice, or hindrance to the rest of the building.

III. Kinds of stair-cases. There are many kinds of stair-cases; for in some the stairs are made strait, in others winding, in others mixt of both.

Of strait stairs. Some fly directly forward, others are square, others triangular, others are called French flights.

Of winding stairs. (which in general are called spiral, or cocklestairs) some are square, some circular, or round, and some elliptical, or oval; and these again are various; for some wind about a solid, others about an open newel.

Stairs mixt of strait and winding, are also of various kinds; some are called dog-leged, others are that both wind about a solid newel, and fly about a square open newel. I shall particularly, (though briefly) describe all these several kinds, in the following numbers.

IV. strait stairs. These are such as always fly, and never wind, and therefore are by some called flyers. Of these there are several kinds as:

(1) Direct flyers, or plain flyers. These fly directly from one floor to another, without turning to the right or left, and are sheldom used, unless it be for garret, or cellar-stairs in ordinary houses.
(2) Square flyers. These are round the sides of a square newel, either solid or open, (so that there are two kinds of them) and at every corner of the newel, there is a square half-pace, that takes up ¼ of a circle. So they fly from one half-pace to another; and the length of the stairs is perpendicular to the side of the newel.
(3) Triangular flyers. These fly round by the sides of a triangular newel, either solid or open, (so that there are also 2 kinds of these) and at each corner of the newel there is atrapezial half-pace that takes up 120 degrees (or 2/3) of a circle. So they fly from one

half-pace to another; and the length of the stairs is perpendicular to the side of the newel.

Palladio tells us, that triangular stairs are to be seen in some antient edifices: and of this sort, 8says he9 are those of the Cupola of sta maria Rotunda, which are open in the middle, and receive light from above. Those also at sancto Apostolo in the same city, are of the same kind.

(4) French flyers. These kind of stairs, first fly directly forward, till they come within the length of a stair of the wall; and then they have a square half-pace, from which you immediately, (without any stairs between) ascend to another half-pace; and from this second half-pace the stairs fly directly back again, parallel to the first flight.

V. winding stairs. These are such as always wind, and never fly: there are many kinds of these; for some wind round a circle, others round a square, and others round and equilater triangle; and of each of these, some wind round a solid newel, and others round an open, or hollow newel. Again, some are set upon columns, and some stairs are double, and some are quadruple. I shall describe each of these in the following numbers.

(1) circular winding stairs. These are of four kinds. Fisrt, such as wind about a solid newel, and the fore-edge of each stair is a right-line pointing to the center of the newel. These are common in Church steeples, and great old stone houses. Secondly, such as wind round an open newel, and the foreside of each stair is a right-line pointing to the center of the newel. Of this kind are those in the monument of London. Thidly, such as wind round a solid newel, but the fore-side of each stair is an arch (of a large) circle, that points quite by the center, (andnear to the circumference) of the newel. In these, the stairs are much longer then in the common winding stairs. Of these there are may be two kinds; for their ichnography being drawn, the stairs may be contrived to be either concave, or convex on the fore-side. Fourthly, there are other stairs, in all respects like those last described, only they have an open newel. These kind of stairs are said to be invented by Marc Anthony barbaro, a gentleman of Venice.

Any of these kinds of winding stairs are take up less room than any other kind of stairs whatsoever.

In stairs that wind round a solid newel, architects make the diameter of the newel, one 6th, one 4th, one 3d, or three 7th of the diameter of the whole stair-case is in bigness.

In stairs that wind round and open newel Palladio tells us, the newel must be ½ the diameter of the whole stair-case. But I see no reason why these open newels ought not to be proportioned to the size of the stair-case, as well as the solid ones.

Then, as to the number of stairs in one revolution, Palladio tells us,

That if the stair-case be	6 or 7	Feet diameter; then there may be	12	Stairs in one revolution about the newel.
	8		16	
	9 or 10		20	
	18		24	

(2) elliptical winding stairs. Of these there are two kind; one winding round a solid, and one round and open newel. They are much of the nature of circular stairs, only in those,

the newel is a circle, but in these an ellipsis, or ovel. These kind of stairs are very handsome and pleasant (says Palladio) because all the windows and doors are commodiously placed in the middle and head of the oval. I have made one of these (says he) with an open newel at the monastery of charity at venice.

(3) Square winding stairs. These wind round a square newel, either solid or open; and therefore are of two kinds) and the fore-side of each stair is a right-lin pointing to the center of the newel.

(4) Triangular windings stairs. These wind round a triangular newel, and the fore-side of each stair is a right-line pointing to the center of the newel. And because the newel may be either solid or open, therefore there are two kinds of them.

(5) Columnated window-stairs. Palladio mention a pair of stairs belonging to the portico's of Pompey at Rome, that were set upon columns, that the light (which they received from above) might distribute itself to all parts alike. Such another pairwere made by Bramante (an excellent architect in his time) at belvedere, the Pope's Palace.

(6) Double winding stairs. Scamozzi mentions a stair-case of this form, made by Pietro del Bergo, and Jeban Cossin at Sciamburg in France, in the king's palace. They are so contrived, that two persons, one ascending, the other descending, shall not come at one another. Mr. Grew (in his museum regalis, societatis) gives us the description of a model of this kind of stair-cases (which model is kept by the royal society) thus; the foot of one of these stair-cases (says he) is opposite to that of the other; and both make a parallel ascent, and within the same cylinder. The newel in the middle is hollow, and built with long apertures to convey the light from candles placed at the bottom, and on the sides of the newel into both the cases.

(7) Quadruple winding stairs. Palladio mentions a stair-case of this form, which king Francis the first caused to made in the castle of Chambord near Blois: It consists of four stair-cases (carried up together) which have four entrances, viz, one to each; and go up one over another in such manner, that being made in the middle of the building, the 4 may serve for 4 apartments; so that the inhabitants of one need not go up and down the stairs of the other; and because it is open in the middle, they all see each other go up and down without any hindrance to one another.

VI. Mixt stair. These are such as both flu and wind; and therefore are by some called by the general name of flyers and winders. There are several kinds of them.

(1) Dog-legged stairs. These first fly directly forward, then wind a semicircle, and then fly directly back again, parallel to the first flight.
(2) Square flyers and winders. These have a square newel, either solid or open; (and therefore are of two kinds) they fly by the sides of the newel, and wind 8a quarter of a circle) at each corner.
(3) Solid and open-neweled flyers and winders. These are of two kinds: for some do first wind (a quarter of circle) about a solid newel, then fly by the side of a square open

newel, then wind by a solid newel again, then fly again, as before, and so alternately. Others fly first, and then wind, and then fly again, and so alternately.

Let this suffice for the various kinds of stair-cases; for the bare description of these several kinds of stairs, together with what has been said above, NV, S1 and in Stairs, N3, may be pretty good guide to the ingenious, that have a mind to make any of these kind of stairs.

VII Price (...)

(...)

STEEL. A sort of iron very hard naturally, and sometimes factitiously so. That of Damascus is reckoned to exceed all others; and it is observable, that swords made of it will cut iron.

(...)

STONES, a solid body, neither fusible nor malleable, formed by succession of time in teh bowels of the earth. Concerning the oringin and formation whereof, see the celebrated Mr. Tournefort, in his description of the labyrinth of crete, in his voyage to the Levant.

1 Their kinds (...) 2 of their nature 3 Of drawing stones 4 Lord of stone (prices) (...)

(...)

SUMMER, in architecture, a large stone, the first that is laid over columns and pilasters, in beginning to make a cross vaults; or that stone which being laid over a piedroit or column, is made hollow, to receive the first haunce of a Plat-band.

Summer in carpentry, a large piece of timber, which being supported by two stone pier, or posts, serves as lintel to a door, window, &c.

Summer-house, a well-known place for recreation and air in garden.

Summer-tree, a beam full of mortises for the ends of joists to lie in, and to which the girders are framed. See Brest-summer and girders.

SURVEYING, or planimetry, is the art of measuring all manner of plain figures, in order to know their superficial content, which how to bring to practice, so as to measure the areas of lands, fields, grounds, &c. by the help of proper instruments, is usually called surveying; in order to which the surveyor must be furnished with good instrument to take angles, as a theodolite, or entire brass circle, with a well graduated limb and telescope sight, as also with a well-divided pole-chain, an off set rod, station-stave, &c.

THATCHING, thatching is the covering the roof of a house or barn, with straw or reed.

With straw. Thatch , (says Worlidge) is a common covering in many places, yet is some to be preferred before other some; the best which I have seen (says he) is that which is called helm, that is long and stiff wheat-straw, (with the ears cut off) bound up in bundles unbruised; which well laid, lies thin, lastslong, and is much nearer than the common way.

Thatchers commonly allow about two good load of straw for five square thatching.

A thatcher of my acquaintance, tells me that one rubble a mason of rootham in Kent, proffered (for a small matter) to teach him how to thatch a roof so, that no mouse not rat should come into it: but he was not thoughtful than as to get the receipt of him, though it would have been of no small use to him; for the rootham mason said, he knew a thatcher that had 4d per square more for doing it so. It is a thing worth enquiring after.

In some parts of kent they use no withs to bind on thatchingrods, but (instead thereof9 the use rope-yarn, (as they call it9 which is a single strand .lien, about the size of a penny-cord; it is pitched with pitch, according as some do their well-ropes. A Kentish thatcher told me, (money...)

With reed. In some parts of Sussex, and kent, they thach with reed instead of straw. Some workmen tell me, that this is a kind of thatching will indure 40, 50 , 60 years. They also tell me, that reed is sold by the thousand handfuls, each handful being about 8, 9 , 10 inches incircumference, bound it up in little band; a thousand of which will cost 15 o 16 s. and will cover about 3 square of roofin; for laying of which they have 4 s per square.

(...)

TIMBER, all those kinds of trees, which being cut down and seasoned, are useful for the carpenter, joiner, or other artificers in wood, are called timber trees when growing.

(...)

TYLES, Bishop Wilkins defines them to be a sort of artificial stones, of a laminated figure, used about the roofs and pavements of buildings. They are made of clay, kneaded together, then squeezed flat in a mould, and then baked in a kiln.

There are many kinds of tyles, and those known by several names; as plain, thack, ridge, roof, create, gutter, pan, crooked, Flemish, corner, hip, dormar, scallop, astragal, traverse, paving, and dutch tyles. (...)

WAINSCOT, with joiners, is the panelled work round, or against the walls of a room; it was formerly accustomed to be done with wainscot, whence its name: but though performed with deal, it serving for the same uses, retains the ssame name.

WAINSCOTTING, the making and setting up of or lining of the walls of a room, be the wood what it will, is called wainscoting.

Some joiners (as I'm informed) put charcoal behind the panels of their wainscot, to prevent the sweating of stone and brick-walls from unglueing the joints of the panels, which otherwise, (especially in some places) it is very apt to do; and others make use of wool in the same manner, and for the same purpose; yet neither of these ways will prevent their unglueing in some houses; but the most effectual way to prevent it, is by priming over the backsides of the joints well with whitelead, Spanish-brown, and linseedoil.

WALLS, (1) What, by this term in architecture is meant the inclosures of whole houses, or particular rooms ; as also the gardens, orchards &c., if made of brick or stone. Walls are eitherintire and continual, or intermitted; and the intermissions are either pillars or pillastres.

(2) kinds of walls. These are several, distinguishable by different names, according to the substance whereof they are made, as plastered or mud-walls, brick-walls, stone-walls, flint, or boulder-walls, and boarded-walls; of all which I shall discourse in the following numbers.

(3) plastered or mud-walls. These kind of walls are common in timber-buildings, especially in ordinary buildings; for sometimes the walls are made of brick betwixt the timber: but this is accounted no good way; because the mortar corrodes and decays the timber.

These mud-walls (as they are called in some places) are thus made. The walls being quartered and lathed between the timber, (or sometimes lathed over all) are plastered with lome, (see lome; also see mortar, N8 and 11) which being alsmot dry, is plastered over again with white mortar (see mortar n4). This kind of work is commonly measured by the yard. For the price of it.

4 Brick-walls, here I shall something.

i. Of building them. And here are several things to be considered and taken notice of; as

FIRST, that all walls ought to be most exactly perpendicular to the ground work; for the right angle (thereon depending) is the true cause of stability, both in artificial and natural position, a man likewise standing firmest, when he stands uprigthest.

SECONDLY, that the massiest and heaviest materials be the lowest, as fitter to bear than to be born.

THIRDLY, that the walls as they rise, diminish proportionally in thickness, for easy both of weight and expence.

FOURTHLY, that certain courses, or ledges or more strength than the rest be interlayed, like bones, to sustain the fabric from total ruin, if the under-parts should decay.

FIFTHLY, that (all along) care be taken in laying the brick. See bricks N8.

SIXTHLY, that the angles be firmly bound, which are the nerves of the whole edifice; and therefore are commonly fotifyed by the Italians, even in their brickbuildings, on each side of the corners, with well squared stone, yielding both strength and grace.

SEVENTHLY, in working up the walls of a building, do not work any wall above three foot high, before you work up the next adjoining wall, that so you may join them together, and make good bond in the work: for this an ill custom among some bricklayers, to carry, or work up a whole story of the party walls, before they work up the fronts, or other work adjoining, that should be bonded or worked up together with them, which occasions cracks and settings in the walls.

EIGTHLY, if you build (a house) in the city of London, you must make all sour walls, of such thickness, as the act of parliament for rebuilding of the said of the city enjoins; (which act you may see in House, N4) but in other places you may use your discretion; yet for some directions in this matter see HOUSE N3.

NINTHLY, it may be worth of your notice, that a wall of brick and half thick, with the joint, will be in thickness 14 inches, or very near; whence 150, or 160 bricks, will lay a yard square measured upon the face of the building; and to the square of 10 feet (which is 500 square feet) are usually allowed 1700, or 1800 bricks, and 4600 or 5000 bricks will compleatly lay, erect, or built one Rod, Pole or Perch square; which Rod, Pole or Perch (for by all these names this called) contains in length (according with the statute)16 ½ feet; whose square is 272 ¼ feet, superficial measure, which is 30 yards in a quarter.

But those I have here laid down the numbers of bricks for each of these squares, yet these numbers are not to be relyed upon absolute exact; (...)

TENTHLY, it may be also be noted, that (when all materials are ready) a workman with his labourer will lay in one day 1000 bricks, and some 12, or 1500.

ELEVENTHLY, all brick work, according to these rules, is supposed to be one brick and half thick, which is the standard thickness. If they are thicker, or thinner, thay must be reduced to that thickness, as shall be shewn how, in the next section of this number.

ii. Of measuring them. Bricklayers most commonly measure their walls by the rod square, each rod, Pole, or Perch, being , by the statute, 16 ½ foot long; so that square rod contains 272 ¼ superficial feet.

Therefore having taken the dimensions viz, the lenghtand height of a wall in feet, multiply the length by the height, and divide the product by 272 ½, and the quotient shews the number of square rods in the superficies of the wall. (...)

iii. Of the price (...)

5 FENCE WALLS. Those build round courts, gardens, orchards, &c. of these some are made of stone, so of flints, or boulders, and some of bricks; of the two former I shall speak in n. 6 and 7 of the latter I shall something here and,

i. Of their making, these are commonly made (of statute bricks) a brick and a half thick.

But in some parts of Sussex, they are commonly made of a sort of great bricks, which are 12 inches long, 6 inches broad, and 3 inches thick. I have very often discoursed with the old man who first introduced, not only those sort of great bricks, but also their necessary concomitants, pilaster and copeing bricks, and the method of making fence-walls of them see Bricks III s4 9, and 13.

These walls are but the breadth of a brick (or 6 inches) in thickness only at the pilasters, where they are length of a brick, (or 12 inches thick). They usually set a pilaster every ten feet. I know a wall of these sort of bricks, (of about 9 feet high) that has been built near 30 years, and stands very well.

ii. Of measuring them. Fence walls built of statute bricks, are commonly measured, as is taught above, N.IV, S2. (...)

iii. Of their price, (...)

6 Stone walls, serve not only for walls of houses, &c, but also for fence-walls round gardens, &c. of these I shall say something.

i. Of measuring them.

ii. Of their price.

7 FLINT, OR BOULDER WALLS, these are much used in some parts of Sussex and Kent, where I have seen, not only fence-walls, round courts, gardens &c. but also walls of stables, and other out houses built of them, which looked very handsome.

To build walls, and greater works of flint, whereof we want not examples in our Island, and particularly in Kent, (says sir Henry Wotton) is, as I conceive, says he, a thing utterly unknown to the antients, who observing in that material a kind of metalical nature, or a least a fusibility, seem to have resolved it into noble use; an art now utterly lost, or perchance kept up by a few chymicks.

Some workmen tell me, that for building of flint, or boulder-walls, they use to have 12s per hundred, (for so they phrase it) by which they mean too superficial feet they also tell me, that a right and lefthanded man fit well together for this sort of work; for they have a hod of mortar poured down upon the work, which their part betwixt them each spreading it towards himself; and so they lay in their flints. They also tell me that their mortar for this work must be very stiff, and that this best to have a god length of work before them; for they work but one course in height at a time; for if they they should do more, it would be apt to swell out at the sides, and run down. They also say, that in misty weather this is very difficult to make the work stand.

8 we shall add under this head what an ingenious author gives us in relation to the building of walls for gardens &c. (...)

9 Boarded walls (...)

(...)

WATER (...)

(...)

WINDOWS.

1. What. Everyone knows that windows are those parts of the building that are made to let it in the light.
2. Situation of the windows. Concerning this we observe: 1st, that they be as few in number, and as moderate in dimensions, as may possibly consist with other due respects: for, in a word, as we have elsewhere observed, all openings are weakening. 2nd, let them be placed at convenient distance from the angles, or corners of the building; because that part ought not to be open and infeebled, whose office it is to support and fasten all the rest of the building. 3rd, before taken great care that all the windows be equal one with another in their rank and order, so that those on the right hand may answer to those on the left, and that those above may be right over those below; for this situation of windows, will not only be handsome and uniform, but also the void being upon the void, and the full upon the full, it will be a great stengthning to the whole fabric.
3. Dimensions of the window. In making of windows, you must be careful not to give them more or less light than is needful; that is, make them no bigger, nor less than is

convenient; wherefore you ought to have regard to the bigness of the rooms that are to receive the light; it being evident, that a great room has need of greater light, and consequently of greater window, than a little room &c è contra.

The apertures of windows in middle-sized houses, may be 4 ½, or 5 feet between the jambs, and in greater buildings they must be 6 ½ or 7 feet, and their height may be double the length at the least. But in high rooms, or larger buildings, their height may be a third, a fourth, or half their breadth more than double their length.

These are proportions for windows of the first story, and according to these must all the rest of the windows in the upper stories be for their breadth: but for their height they must diminish: for the second story may br one third part lower than the first, and the third one fourth part lower than that.

4. Price of making windows. Window-frames are usually agreed for by the light, (says Mr Leybourn) so that if a window have four lights, and is double rabitted, it may be worth 12s that is 3 s a light for materials and workmanship. But if the builder find timber and sawing, then 1 s light is fair.

   Transom-windows, (says Mr. Wing) are worth making (for great buildings) 1 s. 9d per light, or 7 s per window. Some workmen tell me, they make them for 12 d 14 d 16 d or 18 d per light, according to their bigness.

   Luthern window, says Mr. Wing, making and setting up are valued from 9 to 14 s. per window, according to their bigness. Some workmen tell me, that (if they saw the timber) they commonly have 20 s per window.

   Shop windows, (says Mr. Leybourn) will be afforded at the same rate as plain or battened doors. See doors.
5. Price of painting (...)

WINGS, in a great building, are those parts that join to the main edifice, at each end, thus.

WITHS. These are used by thatchers to bind their thatching-rods to the rafters. They are commonly sold at 6 d the hundred, and a hundred of them will do about three square of thatching; for some workmen tell me, that they use about 33, or 34 withs, and as many thatching-rods, (which are of the same price with the withs) in a square; for they bind down their straw at every foot, or thereabouts, viz. At every other lath; (for they lath but two laths in a foot) and each course of thatching (bound down with one length of rods) is about 3 feet in breadth.

AUTOR	Isaac Ware, Esq. of his Majesty's Board of Works	
TÍTULO	A COMPLETE BODY OF ARCHITECTURE ADORNED WITH PLANS AND ELEVATIONS, FROM ORIGINAL DESIGNS. (in which are interspersed some designs of Inigo Jones, never before published).	
AÑO PUBLICACIÓN	Londres 1756 / E.d. 396	
HABLA DE_		
Dedicatoria		
A quien va dirigido/Prefacio	(…) By these means we propose to make our work serve as a library on this subject to the gentlemen and the builder; supliying the place of all other books: as it will contain whatsoever there is in them worthy regard, and, together with this, whatever we have been able to invent or obtain that is curious or useful. Those who have studied these things , have in general considered the magnificence of building rather it's use. Architecture has been celebrated as a noble science by many who have never regarded its benefits in common life: we have endeavoured to join these several parts of the subject, nor shall we fear to say that the art of building cannot be more grand than it is useful; nor its dignity a greater praise than its convenience. (...) The purpose of which is to instruct rather than amuse; in which nothing will be omitted that is elegant or great; but the principal regard will be shewn to what is necessary and useful. Architecture may be consider under two heads; with respect to the preparatory studies, and to the science itself. Among the studies that lead to it are to be reckoned arithmetic, geometry, perspective and mensuration.	LO DIRIGE A LOS ESTUDIANTES DE ARQUITECTURA Por esa razón nosotros proponemos hacer que nuestro trabajo sirva como una librería sobre esta asignatura a los caballeros y constructores; sustituyendo a todo el resto de libros: ya que contiene todo lo que se relaciona está dentro con una relación digna, y, junto con ello, cualquier cosa que nosotros seamos capaces de inventar u obtener que es curioso o útil. Esos quienes han estudiado estas cosas, han considerado en general la magnificencia del edificio antes que su uso. La arquitectura se ha considerado como una noble ciencia por muchos de los que nunca han considerado sus beneficios en la vida común: nosotros nos hemos esforzado para unir esas diferentes partes del sujeto, no tenemos miedo a decir que el arte de construir no puede ser más grande que su uso/utilidad; ni su dignidad una alabanza mayor que su conveniencia. (…) El propósito de esto es instruir en lugar de divertir; en lo que nada ha de ser omitido que si es elegante o grande, pero la principal consideración será enseñar todo lo que es necesario y útil Sigue con unas explicaciones en las que pretende ser más claro que el resto. La idea es hacer entender primero el vocabulario que se va a utilizar y luego usarlo de la forma más sencilla. Una relación de lo que se va a ver a lo largo del libro. La arquitectura se ha de considerar bajo dos cabezas; con respecto a la preparación de estudios y en relación a la ciencia misma. Entre los estudios que le dan lugar se ha de contar con la aritmética, la geometría, la perspectiva y las mediciones. Como aprender todo eso es un poco pesado, resulta que hace un resumen de lo que realmente se necesita de esas ciencias al final del libro. Es un libro práctico. Habiendo descrito primero los materiales, se pasa luego a las partes de la obra, empezando por el terreno, siguiendo por los cimientos; las proporciones en cómo han de subir las paredes con figuras ilustrativas en función del tipo de terreno. Las instalaciones las proporciones de las paredes y los detalles de chimeneas, tejados y suelos. Luego órdenes. Y después de haber dado los conceptos de arquitectura, se ilustrará al estudiante en cómo hacer el planteamiento del edificio cualquiera que sea el país en el que se encuentre, cuya elegancia se basará en las ventanas y puertas. NO HAY MENCIÓN A LAS ESCALERAS!!!! (en la introducción)
Contenido del libro	Hay el prefacio (que ya he explicado), una relación de las láminas que hay a lo largo de todo el libro y el índice.	

	BOOK 1:	
	1. An explanation of the terms of art, which are useful in writing or speaking of buildings.	Dentro del vocabulario explica palabras como: naked (desnudo) que la define como falta de adornos. En general, define términos que se usan en los órdenes, decoración. Algunas están en total desuso “constructivo” son artísticas.
	2. Of the materials used in building.	Conoce la obra de Wotton, y apoyándose en Vitruvio y Palladio, defiende que el buen arquitecto ha de conocer los materiales para dominarlos. Es lo primero que se ha de saber Palladio no podría diferenciar entre Portland y Purbeck porque no disponía de esos materiales igual que es absurdo hablar de mármoles en Inglaterra porque no hay. La primera preparación de un edificio es tener suficientes materiales y suficiente dinero para llevarlo a cabo.
	3. Of stone in general	Divide la piedra en 3 tipos: the common quarry-stones, and slates; los mármoles y las profirias y granitos. Los 2 primeros se pueden convertir en limo si se queman pero en las terceras el fuego no tiene efecto.
	4. Of common quarry stones: their kinds, uses, and the ways of digging them.	Te da una selección de piedras y para qué sirve cada una.
	5. Of the manner of using quarry stone (referencias a Alberti y a de L’Orme)	Se ha de cavar la piedra en verano, para que cuando llegue el invierno esté en condiciones de aguantar los cambios climáticos. Comenta de Alberti, que nos advierte que la piedra usada en una obra ha de venir toda del mismo sitio, y es cierto; pero cuando se refiere a de L’Orme, que dice que el limo que se usa para construir ha de venir de la misma piedra es estúpido, porque al quemarla la piedra pierde propiedades.
	6. Of the various kinds of slate (pizarra)	Te dice los tipo (blue and purple) la primera es más común, también se importa de Alemania, y hay una serie de ensayos que se le pueden hacer.
	7. Of the several kinds of marble	No hay mármol en Londres pero te da una relación de los tipos de mármol que se importan y en que se usan.
	8. Of the manner of using marble	Considera el mármol un material bonito, y se usa y admira más por eso que por ser un material escaso en gran Bretaña, hay mármoles de varios colores que la gente usa en las chimeneas pero son mejores los mármoles naturales.
	9. Of porphyry and granite (referencia a Alberti y a “Los franceses”)	Se las considera como clases de mármoles pero son diferentes por su naturaleza y cualidades. El pórfido, es una roca muy dura que se usa desde tiempos antiguos. Hay muchas teorías sobre como los antiguos trabajaban esta piedra, por ser muy dura y las herramientas rudimentarias. Del granito comenta que hay de varios tipos y dependiendo del país de procedencia es más o menos duro.
	10. Of brick	Te habla de las referencias a los ladrillos en Grecia, en Wotton, en Palladio … dice que es muy importante la manera de cocer los ladrillos.
	11. Of several kinds of bricks	Te habla de los tipos de ladrillo, porque se diferencian unos de otros.
	12. Of the manner of using bricks	Te comenta los usos de los diferentes ladrillos
	13. Of tiles	De donde vienen
	14. Of various kinds of tiles	Los tipos
	15. Of the manner of using tiles.	Para que se usa cada tipo
	16. Of timber in general	En general en el libro primero hace un repaso de los materiales

	17. Of Oak. The felling, seasoning, and choice of its timber. 18. Of Fir. Its growth, nature and qualities. 19. Of the uses of oak and fir in Buildings. 20. Of several kinds of timber worthy to be used in buildings. 21. A table of useful Timber Trees, the growth of England	más importantes para la construcción, los tipos y para que es bueno cada tipo, hace referencias continuas a S, Henry Wotton y a Palladio (señal de que los ha estudiado) y comparativas con el resto del mundo. Realmente conoce lo que se mueve por ahí. También hay diseños de hornos para ladrillos y baldosas; un horno de Lime Kiln.
	22. Of lime 23. Of preserving lime, and making into mortar. 24. Of the various kinds of sand 25. Of mixing up the mortar. 26. Of lead. 27. Of Iron.	Y planos de detalles de rejas de cerramiento de casas, diseños más modernos(trabajados y más antiguos)
	BOOK II. THE INTRODUCTION.	En la introducción entra con que el estudiante ha reconocido los materiales necesarios para llevar a cabo un edificio.
	PART 1.- OF SITUATIONS. 1. Of situations in general	Cuando se habla de la situación se habla de la de una casa en el país. Se habla de la situación de una casa en un entorno X al que se ha de adaptar el gusto del propietario. Se ha de tener en cuenta que sea saludable; y accesible, y hay que tener en cuenta que esté llena de vecinos para no caer en la melancolía, pero tampoco demasiados vecinos que entonces no sería un lugar de retiro.
	2. Of the air	El aire ha de ser saludable, para eso nos vamos al campo.
	3. Of water 4. Of the soil	El agua ha de ser abundante pero escasa. Es importante el suelo, que no tenga impurezas por debajo y además que sea fértil para que se pueda plantar un bonito jardín.
	5. Of the elevation of ground for a situation 6. Marks of a healthful situation.	Es bueno una pequeña altura para tener buenas vistas pero que continúe por detrás para que los árboles nos eviten los vientos desagradables.
	PART 2.- OF THE ESSENTIAL PARTS OF BUILDINGS. 1. Of wells, sewers and drains.	Hay una gran preocupación para que a la hora de realizar los cimientos haya un planteamiento serio de cómo voy a expulsar las aguas de la casa.
	2. Of the qualities of the ground. 3. Of preparing the ground for foundations.	El terreno es muy importante a la hora de construir un edificio Hay que cimentar muy al fondo si estamos cerca de agua.
	4. Of laying the foundations of buildings	El arquitecto ha de conocer muy bien el terreno, para plantear un buen cimiento acorde con el mismo. Se ha de estar muy seguro de que sea más ancho que las paredes que quedan por encima.
	5. Of walls. Their form and diminution.	La gran norma en la construcción de paredes reside en que ha de ser muy fuerte en la parte baja, han de crecer directamente desde los cimientos Hay que reforzar los ángulos con piedra.
	6. Of the ancient stone and brick walls, and the manner of constructing them.	Una serie de observaciones sobre las diferentes clases de muros de los antiguos, mencionando a Vitruvio, Diocleciano…
	7. Of the modern construction of stone and brick walls.	Nada que no se haya comentado
	8. Of roofs.	Hay unos detalles preciosos, explicados de los diferentes tipos de cubierta de madera, como se unen a las paredes de ladrillo o piedra.
	9. Of floors	Habla de los materiales, que han de ser llanos, e incluye los estucos y las alfombras como parte de estos suelos.
	10. Of chimnies	Para plantear una chimenea, ésta es necesaria, y además hay que sacar el humo, pero existe el viento que lo puede volver a

		entrar, hay que plantear la chimenea desde éstos 3 supuestos.
	PART 3.- OF THE ORNAMENTAL PARTS OF BUILDINGS. SECTION 1.- OF THE ORDERS IN GENERAL, AND WHAT THEY HAVE IN COMMON. SECTION2.- OF THE THREE ORIGINAL ORDERS OF THE GREEKS. SECTION 3.- OF THE TWO ADDITIONAL ORDERS OF THE ROMANS. SECTION 4.- OF PILASTERS SECTION 5.- OF THE FANCIFUL OR LESSER ORDERS. 1. Of the attic order. 2. Of the Persian order 3. Of the caryatic order 4. Of termini SECTION 6.- OF THE DECORATION OF THE ORDERS. 1. Of the materials and the richness of the orders. 2. Of the construction of the column, according to the different material. 3. Of the disposition of columns 4. Of ornaments of carved work in the orders. 5. Of preserving the true proportions 6. Of the place of the composite order 7. Of the decorations of the Doric-freeze 8. Of the general proportions in the orders.	Me salto toda la parte de los órdenes, cuales son, de donde vienen, porque los plantearon los antiguos,… es bonito porque hay unas ilustraciones muy buenas… Continúas referencias a Vitruvio y a Palladio, las columnas de trajano… La proporciones; los órdenes griegos;
	BOOK 3 SECTION 1.- CONTAINING THE GENERAL PRACTICE OF ARCHITECTURE, IN THE ERECTING OF COMPLETE EDIFICIES, AND PROPORTIONING AND DECORATING THEIR SEVERAL PARTS.	Ha acabado de explicar los conceptos en arquitectura y pasa a explicar cómo se hace el edificio. Del capítulo 1 al 7 se la pasa hablando de cómo expulsar el agua del edificio
	1. Of preparing for the regular, certain, and unobstructed discharge of water.	El pasillo del agua, para expulsarla, lo mejor posible.
	2. Of the construction of pipes and small drains, for the conveyance of rainwater. 3. Of cesspools (pozos negros), their use, proper places, and dimensions. 4. Of the ways of discharging the water according to the situation of the house. 5. Of the disposition of drains, channels, and cesspools, through the whole ground plan	Un tejado preparado para expulsar el agua de lluvia gracias a las tejas y a los canalones y cañerías; el agua una vez a llegado abajo se recoge en pozos negros, que han de ser grandes para evitar que el agua que cae fuerte, salte fuera. Es importante, en las ciudades el alcantarillado y la situación de los pozos negros. En el campo, a la hora de plantear los cimientos de la casa se ha de plantear el alcantarillado teniendo en cuenta los jardines y el muro exterior. De los canalones que bajan de la cubierta van a los pozos negros que a su vez las transportan al exterior.
	6. Of the construction of dry drains, and general discharge of water 7. Of the construction of the several kinds of sewers and drains.	Los desagües ayudan a eliminar el agua (plano en planta cimientos de todas las alcantarillas del edificio y de los desagües, con secciones de dichas alcantarillas).
	8. Of the construction of houses.	Historia de la construcción (adobe, las cuevas…)
	9. Of the giving and edifice a proper strength.	Los materiales y la forma como se ponen en obra. Proporción.
	10. Of proportioning the several parts of a house with judgement.	Hay que proporcionar las viviendas en función del tamaño y de para la persona a la que van dirigidas: sentido común.
	11. Of disposition of parts in an edifice.	Lo deja todo en manos del arquitecto
	12. Of edifices without columns	Es una modernez, que empieza a entrar y hay que comentarla.
	13. Of drawing the ground plan of an edifice	Te da cuatro notas y te pone un dibujito
	14. Of circular figures, and their use in building.	A circular figure is fit only for such building as is to have no inner divisions.
	15. Of angular figures and their propriety in buildings.	Figure composed of right angles, is stronger than any other, and there is none that admits a better distribution of light.
	16. Of mixed figures, and their use in buildings	No está de acuerdo en mezclar figuras pero se ha de evitar el exceso.
	17. Of elevations, and their general proportions	Con relación al planteamiento de los alzados, no da reglas exactas como en otros tratados, en realidad lo deja todo en

	18. Of the particular proportions of parts in an elevation.	manos de la experiencia, el ojo y el buen gusto del alumno.
	19. Of the ornaments of an elevation	También los ornamentos.
	20. Of the exterior ornaments of houses.	Marcar las plantas y señalar las puertas y ventanas, hay un ejemplo gráfico, con una planta baja de piedra y el resto de estuco.
	21. Of the construction of the exterior part with respect to strength *At one time our houses were, in a manner. All windows; the piers between them were son slender, that one wondered how the fabric supported itself. From this error, which arose from a desire of abundance of light, we fell of late into the other extreme of making the windows too few, and too small. In this our builders followed the practice of Italians too closely, not considering the difference of our climate. All imitations must be guided under the rules of judgment: it is so persons of genious follow the best exemples, otherwise there are no better mimick a very paltry kind of imitators; that may be proper in Italy, which will be very wrong in England. It is true that our windows were too numerous and too large, because they weakness the fabric in that condition; but it was possible to err on the opposite side, and these improvers did it; not that they failed to avoid that error, and give the building strength, but they made a great mistake, for they shut out too much of the light.*	*En un tiempo nuestras casas eran, de alguna manera. Todo ventanas; las piezas entre ellas eran demasiado delgadas, eso hacía que te preguntaras como la fábrica se sujetaba a si misma. De ese error, que nace de un deseo de abundante luz, nosotros caemos recientemente en el otro extreme de hacer las ventanas demasiado pocas y demasiado pequeñas. En esto los constructores siguen las prácticas italianas demasiado, sin considerara la diferencia de nuestro clima. Todas las imitaciones han de estar guiadas bajo las reglas del sentido común: que es lo que hacen las personas de genio, seguir los mejores ejemplos, de lo contrario se imita a un imitador miserable; lo que es apropiado en Italia, puede ser un error fatal en Inglaterra. Es verdad que nuestras ventanas son muchas y muy grandes, lo cual debilita la fábrica en esas condiciones; pero es posible errar en el lado contrario, y si eso mejora hacerlo; no es que fallaran al evitar ese error, le dieron fuerza al edificio, pero cometieron otro grave error, dejaron la luz fuera.* Las ventanas no han de estar cerca de las esquinas.
	22. Of models for the compartition, or inner division, of a house.	Aconseja a los "estudiantes" que hagan maquetas (models) de las casa para los promotores, son más fáciles de entender para el ojo no experto.
	23. Of the door of a house	La puerta ppal, ha de estar en el centro… critica un edificio que la tiene al lado porque: *this practice is contrary to the reason, utility, beauty and proportion; yet we see it too common in places where it is yet more conspicuous.*
	24. Of the general distribution of apartments	Aquí hace una comparativa entre las casas inglesas y las italianas, no tienen nada que ver, normalmente las inglesas tienen las habitaciones de verano al norte y las de invierno al sur.
	25. Of the compartition or inner divition of the house	Aparece el concepto ESCALERA, ha de haber 2 una para enseñar y otra para el servicio. Es lo siguiente a marcar en el plano, si la puerta ppal ha de estar en el centro la escalera ppal ha de seguir al recibidor.
	26. Of the distribution and proportion of the rooms. 27. Of the proportion of rooms.	2 normas: que el edifico entero ha de seguir: armonioso y grande. A la hora de proporcionarlas, tenemos normas del largo y ancho pero no de las alturas (siempre se ven las plantas de los edificios)
	28. Of galleries	Se construyen en casa grandes, depende del propietario que haya más de una y es esencial que tenga entrada libre, si usa como sala de pintura.
	29. Of halls, lobbies and passages.	Con relación a estas salas, sólo se realizarán en caso de que la casa sea lo suficientemente grande para admitirlas. Y hay que ir con cuidado con las proporciones, son prácticas pero hay que ver si cabe,
	30. Of the Egyptian manner of building. 31. Of the houses of the antient Greeks. 32. Of the private houses of the antients Romans	Cultura general
	SECTION 2.- OF THE CONSTRUCTION OF HOUSES IN WHICH ORDERS OF ARCHITECTURE ARE NOT EMPLOYED.	Empieza con un resumen de lo que se ha hecho hasta el momento; la idea es: " for nothing is more certain tan that he will acquire more reputation from a well-constructed cottage, tan from a faulty palace.
	1. Of common houses in London 2. Of common houses in the country	(ver texto "casa ikea") En esta parte se dedica a describir las diferentes partes de las

	3. Of the construction o small houses in the country 4. The construction of somewhat larger farm house. 5. Of the distribution of the parts in a country house in a farm.	diferentes tipologías constructivas (a excepción del caso del cimiento en la casa en Londres) para las demás sólo va describiendo como se desarrollan las diferentes estancias de la casa. La distribución más cómoda de cara a los propietarios. También hay dibujos sobre cada distribución, y porque son buenas.
	SECTION 3.- OF THE CONSTRUCTION OF HOUSES IN WHICH THE ORDERS OF ARCHITECTURE ARE USED. 1. Of the proper distribution of the orders. 2. Of disposing the Doric under the ionic order 3. Of the manner of placing the ionic over the Doric order 4. Of the manner of using the ionic and the Corinthian orders in a building 5. Of the construction of the ionic in a lower story 6. Of the choice of parts for the Corinthian order in a second story 7. Of the choice of the Corinthian capitals 8. Of the using the ionic order alone in the front of the house. 9. Of raising the ionic in a single series over an arcade. 10. Of the construction of the ionic order in this edifice. 11. Of raising an upper story with the attic. 12. Of the use of the Corinthian order alone in a house 13. Of the construction of Corinthian columns in a single series	Pasa a elevar el nivel, vamos a pasar a materia avanzada. "With this knowledge of the intent, use, and character, of the several orders of columns, he will find no difficulty to dispose them properly in more magnificent structures; and we have shewn the method of designing his plan: he is therefore to join these two parts of the study together, and they will make no errors in the choice, or disposition". (volver a la nota) Hay una voluntad de enseñar al alumno, que partes de la arquitectura del pasado son excelencias y cuáles pueden ser errores. Incluso en Palladio.
	14. Of the upper or attic story in the before-mentioned house. 15. Of the use of the composite order in single series 16. Of the place and use of the mezzanine story 17. Of finishing the front of the lower floor inn above-mentioned house 18. Of raising the second story on first floor apartments of the above mentioned house. 19. Of the choice of parts for the composite order in front of houses 20. Of the construction of the composite capital when used in front of houses 21. Of the general use of the Tuscan and Doric order 22. The construction of a Country feat without columns, or other expensive decorations.	Se construye con ventanas cuadradas, sencillas, y no tiene casi importancia dentro del conjunto de la casa (detalle) Se usa como el corintio y le da entidad al Ático. Es como el entresuelo, que se hace en algunas habitaciones de la planta principal, según el narrador es horrible. Diseño de la fachada ppal del edificio, las proporciones. (dibujo incluido, de planta y alzado). Tiene las habitaciones y por la disposición de los órdenes en la fachada es más fácil colocar una "mezzanine" con ventanas.
	23. Of the drawing a ground plan for this edifice	(volver a las notas casa ikea) Va planteando de forma lógica como ha de ser la planta de una casa con más posibles, a un lado las cocinas del otro los establos. La proyección de cara a la fachada.
	24. Of the internal division and distribution of the rooms. 25. A second disposition of the building illustrated by plate LIV 26. Of the internal division of the plan 27. Of the elevation of the intended building 28. Of a house with Ionic columns on the parlour floor 29. Of the plan 30. Of the compartition, or inner division of the plan of the house 31. Of the compartition of the wings	A lo largo de lo que resta de esta sección te da instrucciones detalladas de cómo han de ir las diferentes distribuciones de las diferentes casas, en consonancia con sus alzados, y sin olvidar la practicidad de los diferentes modelos. Realmente es una buena herramienta a la hora de diseñar un edificio y sus diferentes tipologías.

	32. Of the elevation	
	33. The construction of a house with a single row of Ionic columns over the parlour story	
	34. Of the out-line of the plan	
	35. Of the distribution of the ground within the out-line of this plan	
	36. Of the compartition of the plan	
	37. Of the elevation	
	38. The construction of a twn-house of the greatest elegance	
	39. The ground plan of the edifice	
	40. Of the two additional rooms	
	41. Of the construction of the additional rooms	
	42. Of the colonnade and wings	
	BOOK IV.	
	The introduction	
	1. Of doors	No seguir los errores de los antiguos, proporcionar las puertas en función de las medidas del ser humano en primer lugar, luego en proporción de la casa, ahí también entra la anchura.
	2. Of the dimension of doors	
	3. Of the elevation of doors	La puerta siempre ha de quedar por encima del nivel del suelo (porque si no es un problema de salubridad y a la vista) si no hay más remedio que ponerla por debajo del nivel del suelo, aumentar la altura y anchura de la puerta para que no desentone visualmente.
	4. Of the use of columns in the ornament of door	A partir de este momento hay toda una serie de explicaciones sobre como decorar las puertas con los diferentes órdenes e ilustraciones, las ilustraciones de las puertas son muy bonitas, pero dejando la parte didáctica del tema carece de interés para mi tesis.
	5. The construction of a Door in the Doric and the Ionic order	
	6. Of the use of the more elegant orders in doors	
	7. Of the original decorations of doors	
	8. Of the use of fanciful orders about doors	
	9. Of the symbolical figures in the ornaments of doors	
	10. Of the use of terms as ornaments to doors	
	11. Of the use of pilasters in the ornaments of doors.	
	12. Of the use of the Corinthian order in a door	
	13. Of a Door of the Composite order	
	14. Of decorating the orders for doors	
	15. Of the panels of doors	
	16. Of the several kinds of windows	Las ventanas en la planta noble son las mejores y ha de ser su altura dos veces la anchura de las mismas. Habla de ventanas sencillas en casas sencillas que sigan el mismo diseño de la puerta. A partir de ahí como con las puertas entra en los diseños y cual queda mejor en que parte y los tipos siguiendo los órdenes. Hay láminas muy bonitas de alzados y secciones de las ventanas.
	17. Of the plainer windows for a principal floor	
	18. Of windows with the orders	
	19. Of the use of a Doric order in a simple window	
	20. Of the projection of the columns in plain Doric windows	
	21. Of executing an ionic window plain	
	22. Of constructing a plain window in the Corinthian and Composite order	
	23. Of venetian windows	
	BOOK V.	
	Part I.- of inside decorations	Como proceder con las decoraciones dentro de las habitaciones, la primera lámina lo dice todo, va describiendo estucos y apanelados clásicos. También quiere meter columnas y pedestales en las habitaciones. Lo más remarcable son las láminas que acompañan las explicaciones.
	1. Of the decorations for the sides of rooms in general	
	2. Of the practice of antigens in decorating their rooms	
	3. Of the introduction of columns into rooms	
	4. Of the introduction of pedestals in the finishings of rooms	

	5. The origin of the ornaments in plain rooms 6. Of decorating the upper part of the wall 7. Of the modern decoration of the rooms, deduced from the antient practice 8. Of suiting ornaments to one another. 9. Of designing a finishing from the principal parts 10. Of taking the general design from chimney-piece	
	Part II..- The introduction 1. Of the ornaments in ceilings in general 2. Of stair-case ceilings 3. Of a stair-case ceiling with other decorations 4. 5.	Se pasa a una serie de láminas de ejemplos de cómo diseñar las decoraciones de los techos, de todas partes siguen un diseño simétrico y son muy bonitos.
	6. Of placing the circular and elliptical compartments 7. Of ceilings of rooms and their compartitions 8. Of decorated the compartments 9. Of finishing a ceiling with all curvilinear figures 10. Of decorating curvilinear compartments in a ceiling 11. The way to of constructing curvilinear division with smaller side and end compartments 12. Of decorating the compartments of the preceding ceiling 13. Of ceilings of more expence 14. Of a large ceiling in the true taste 15. Of the division into compartments 16. Of finishing the panels 17. Of decorating the panels. 18. Of enriching the compartments ibid 19. Of decorating a ceiling with mixt figures 20. Of the shape of the compartments in this ceiling 21. Of the manner of forming the compartments 22. Of ornamenting this ceiling 23. Of the proper kinds of ornaments 24. Of decorating the compartments in a richter manner 25. Of decorating the spaces 26. Of decorating a ceiling in a fanciful manner 27. Of constructing a ceiling for a music room 28. Of the general figure of this ceiling 29. Of forming the linea of this distributions 30. Of the farther ornaments 31. Of the more peculiar and appropriate ornaments 32. Of a large ceiling with mixt compartments 33. Of the proper ceiling for mixed figures 34. Of the compartition of this ceiling 35. Of the choice of the figures, and their disposition 36. Of addition of ornaments in the ceiling 37. Of decorating a ceiling with a single compartment 38. Of striking the compartment 39. Of filling the central space 40. Of a division of the exterior space 41. Of filling the space within the	Son diseños muy bonitos Da toda una serie de consejos de cómo llevar a cabo las molduras de los techos, que formas siguen, sus diseños, básicamente son normas de dibujo. Es muy importante saber dibujarlas.

	compartment 42. Of ornaments for such a ceiling 43. To form a fanciful and very ceiling 44. Of the compartments 45. Of the principal figures 46. Of the construction of these figures 47. Of finishing the compartition 48. Of the decoration of this ceilings BOOK VI 1. Of the general structure of chimney-pieces and their several material 2. Of simple and continued chimney-pieces 3. Of the various ornaments of chimney-pieces 4. Of the appropriation of the materials to chimney-pieces 5. Of the choice of marbles for particular chimneys 6. 7. Of a Doric chimney-piece 8. Of a disposition of the columns 9. Of finishing the order 10. Of the ornaments of the rest of the chimney-pieces 11. Of the kinds of marble most fit for this chimney 12. Of a chimney-piece with figures 13. Of a chimney with the caryatic order 14. Of the construction of the figures 15. Of the drapery 16. Of the construction of this chimney 17. Of the materials of this chimney 18. Of the chimney-piece whose sole ornament is sepulchre 19. A chimney-piece with single Doric columns 20. Of the several parts in this chimney 21. Od the materials for this chimney 22. Of a chimney with termini ibid 23. Of the construction of this chimney-piece 24. Of the materials for this chimney-piece 25. Of continued chimney-pieces 26. Of propriety in the ornaments 27. Of enriching a continued chimney 28. Of suiting the upper work of a room 29. Of the upper works 30. Of the decorations 31. Of a richer continued chimney-piece 32. Of the ornaments 33. Of simple chimney pieces, with various ornaments 34. Of the ornaments 35. Of a marine chimney-piece 36. Of the decoration of this chimney-piece 37. Of a small chimney-piece with sculpted mouldings 38. Of the decorations of such chimney 39. Of a chimney-piece for a room more enrichted 40. Of the ornaments of this chimney 41. Of a chimney-piece and wind-dial 42. Of the construction of this chimney-piece 43. Of the lower part in this chimney piece 44. Of the ornaments of this chimney-piece 45. Of the decorations for the rest of the lower part 46. Of the superstructure	(volver a las notas casa ikea) A parte de una interesante explicación de porque unos materiales son mejores que otros para la construcción de chimeneas y su decoración pasa a explicar la decoración de chimeneas propiamente dicha, si llega o no hasta el techo siguiendo la decoración interior descrita antes en las habitaciones y techos. Como unos materiales van mejor en una habitación que en otra (dependiendo de lo que signifiquen dentro de la casa los mismos). Y luego ya pasamos a los temas de órdenes y demás. Los dibujos/diseños como siempre una maravilla

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2. Mensuration</td><td>Más de lo mismo pero ahora para muros exteriores. Para jardines templetes, muros de jardines o asientos para jardines.
Hay que tener en cuenta la tierra y hacerlos siguiendo simetrías.
Hay un estudio de puentes, con sus diseños muy instructivo.
A vueltas de cómo se ha de hacer una fachada, siguiendo adecuadamente los órdenes, los ejemplos como siempre muy buenos, mucha simetría.
“The architect will be able to select from both (Vitruvius/Palladio) without copying either; and to accomodate in such manner the parts to their offices, that the whole shall be his own, while things beyond invention are known to be borrowed; and he shall have, and shall deserve the credit of novelty, where there is nothing but what may be supported by the remains of antiquity, the writings of the great Roman, and the works of the no less great Italian Architect.</td></tr>
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COMENTARIOS	El tamaño del libro es bastante grande y poco manejable. El análisis ha sido largo Es un tipo que conoce los clásicos, uno de los puntos fuertes es que divide su libro en 10 libros, como Vitruvio o Alberti, aunque los capítulos no se corresponden exactamente, aunque sí los contenidos, no es difícil ver que si comparas ambos índices hay ciertas similitudes. También es cierto que es un libro influenciado por Palladio, y que además hay contínuas referencias a los franceses pero casi siempre es para dejarlos mal (rivalidad histórica) Lo que más llama la atención es que es profundamente didáctico, hay continuas referencias a “coger de la mano al estudiante” el “estudiante debe saber”; hasta el orden de los capítulos está pensado para ir de menos a más dificultad, empieza por la casa entre medianeras de Londres típica, que no tiene secretos por ser algo muy común (incluso hoy en día), para seguir por la de campo, que puede resultar más compleja y de ahí seguir adelante. Le obsesiona, que se considere la arquitectura no sólo un arte o una ciencia sino algo útil para el ser humano, medidas de las puertas y ventanas han de ser proporcionadas al ser humano. Busca que el arquitecto sea racional, y sobre todo le obsesiona la simetría, se nota en el tema de puertas y ventanas y en los diseños de las decoraciones de interiores.

NOTAS WARE:

PREFACIO

TABLA DE DISEÑOS

CONTENIDOS

BOOK I: Dictionary

Architrave

A part of the entablature placed over a columns. It is the lowest member of that ornament, and rests immediately upon the capital. Lying upon its abacus before described. (See plate 2).

The architrave is understood to be the principal beam laid upon the columns, and serving as a base to the rest of the superstructure. Its name expresses this, being derived partly from Greek and part from Latin; the first half from αζχοξ, which in Greek is *principal*, and the second from *trabs*, which signifies *beam*.

This member is made sometimes of a single summer, as we see in many of the old buildings, and sometimes of several haunses, as is common in modern works. The old writers sometimes give it another name, the *epystile*, which is derived from the Greek επι, *upon*, and ξυλοξ, a *column*, because of its place as before described, it is lying immediately upon the columns.

The *architrave*, though its place be the same in all the orders, differs in form in each. The *Tuscam* it consists only of a plain face: in the *Doric* it has two faces generally allowed it; but in the oldest buildings in this order we see it plain, and with only one face and its annulet, as in the *Tuscan*,; in the *Ionic* it consists of three faces, and do in the more decorated; this is one of the parts in which architects allow themselves a great deal of liberty, and in which too many follow their fancy rather any rule.

Architrave of a chimney-piece

Is that part we more commonly call the mantle-piece, or mantle-tree. The architrave, though a regular part of the entablature of every order, yet is not limited to be placed in that circumstance only; for besides these architraves of chimney-pieces, there are architraves of doors and windows.

All a*rchitraves* finish either with a tænia or fillet only, or with an ovolo cavetto and fillet, or a cima reversa and fillet. These terms will be explained hereafter in their place; in the mean time the *architrave* may be perfectly understood from this description and the figures in Plate II

Entablature

The ornament supported by the capital on the top of a column or pilaster. Every columns consists of its base, shaft, and capital, and supports entablature; these together constitute the entire body, or order; and the entablature, like the capital, differs in every order.

The *entablature* consists of three parts, the architrave, freeze and cornice; the architrave is composed of one or more faces, and rests upon the capital; the freeze comes next, and is the middle part of the entablature, the cornice is the top, or uppermost.

In the *Tuscan* order the *entablature* is plain; in the *Doric* the freeze is decorated with triglyphs, or chanelled figures; in the ionic and other richer orders, the cornice is decorated with dentells, modillions, and a variety of ornaments.

The *entablature* according to Palladio, should be a fifth of height of the column, and this equally in all the orders, except *Tuscan*, in which is a fourth. Its parts are separately explained under the articles of architrave, freeze, and cornice.

Frontispiece

The word is sometimes used to express the whole decoration of the front of a church; sometimes for a particular compartment raised over the gateways, and in other places, supported and encompassed with figures, or other ornaments, and intended to hold an emblem, a coat of arms, or inscription.

Hips

The pieces of timber which are placed at the quoins of a roof.

Lintel

Piece of timber that lies horizontally over doors and windows.

Platband

A square moulding which has less projecture than height or breadth. The faces of an architrave are platbands.

The platbands or flutings are the lifts or fillets which separate those hollows on the shafts columns.

The lintel of a door, or window, when it is square, or not much arched, is called the platband of the door, or platband of the window. Andy flat square moulding, if not too projecting, is called by this name.

Chapter II: Of the materials in building

(…) Without a knowledge of the materials the architect will not know what is to be executed with them: but thoroughly understanding their nature and qualities, he will distinguish what he can , and what he cannot, make them bear; and will astonish perhaps the age with fabricks into which none have entered but the Meanest.

He only, who knows exactly what cannot be done with any kind, understands fully what can, Such one will undertake works that would deter others, which, the bolder they seem in the design, will the more extol his judgment in the execution.

(…)

Most books of architecture have been written where marble is the common produce of the quarry; in England our best stones are very poor, in comparison of those; and in most places the builder cannot even obtain them; but must be content with bricks. It is of the atmost importance to him to understand the nature of those several kinds of stone in his country produces, that he may know how best to employ them, when he has them; and to acquaint himself perfectly with the strength of the several kinds of bricks where the others are not to be had. These are subjects the more needful to be treated at large in the present work, because the are imperfectly managed in the best of the others, foreigners having written them , who therefore could not be the masters of this particular part of the subject.

Palladio could not judge of the differences of *Portland* and *Purbeck* stone; and it is impossible to learn from all *Vitruvius* has written concerning bricks, whether those he mentions were burn or dry'd in the sun.

We do not name these as faults or blemishes in the works of those great men; they were natural defects, for they had not the means of knowledge, or the opportunity to obtain it, respecting these things: but they shew the necessity of an English body of Architecture for the use of English builder, a necessity which we shall very happy if we are as able to supply, as to discern.

It is the honour of the architect that the dorm triumph over the materials; in the former judgment and taste are shewn; in the latter only expence. The most ignorant builder could have piled up as large heaps of marble as he who built the Coliseum, but the symmetry and order are the praise of true genius.

The first preparation for building should be sufficient materials, and sufficient money: the skill of the architect is to be employed in making the most of the former with the least expence of the latter. This can only be done by a perfect knowledge of their several natures; and this we shall endeavour to convey in a succeeding pages. Strength is so great a consideration in all buildings; that their elegance and convenience are of no consequence without it; and there is no way of giving them strength but by a knowledge of the materials.

Beside giving strength to buildings, there will result another good consequence from the perfect acquaintance with the materials, which is a saving of expence: for there will be a certain saving of quantity.

It is a sure consequence of ignorance in this respect to overload; this gives weights and a heavy aspect to the edifice, and sinks an unnecessary sum of money. He who knows on what he is to depend will know also how far he is to depend upon it, and while the other, for fear of wanting strength, loads his building with expence and weight, he who is sensible what is the force of each kind of material will depend on is so far as he can with safety; and while on the one hand he secures himself from danger, will on the other give a lightness to the building while he diminishes the price.

These we understand to the advantage which will be obtained in consequence of a full and perfect acquaintance with the materials: they are of the greatest importance; and we shall therefore endeavour in the most careful manner to convey that necessary knowledge.

Chap III: Of Stone in general.

The first and most essential of the materials used in building is stone. Under the general consideration of it, in a book of this kind, we are to include every thing which nature affords under that name: and afterwards whatsoever the art of a man has devised to imitate the qualities and supply the place of those several kinds; under this later denomination will fall the several sorts of brick and tiles, the one used to supply the place of thick stones in erecting walls, the other to officiate for the thin sorts called slate, in covering roofs. But the first regard is due to stone naturally formed an dug of the earth.

In the first and general consideration of stone, we shall divide it into three kinds. This material has been generally divided in two species, according to its finer or coarser form, under the name of stones and marbles; but there is a third, which though in general included among the marbles, differs more from them than they do from stones, in hardness, and other essential qualities; this comprehends the prophyries, granites, and some other species.

Following the course therefore pointed out about the nature in different qualities, matter, and properties of stone, we shall divide it inot the three kinds, beginning with the meanest, and ending with the richest and most noble. The three general kind of stones thus distinguished, are

1. The common quarry-stones, and slates
2. The marbles
3. The porphyries and granites

The first kind are distinguished by their coarse aspect, and the rough particles of which they consist; the second by their fineness and beauty; and the third by their extreme hardness.

Most of the quarry-stones, and all the marbles, will burn into lime, like common limestone; and they are all soft. The porphyries and granites are hard like flint, and will in the same manner strike fire with steel, and a fierce fire takes little or no effect upon them.

The common stones are the produce of our own quarries; the marbles we principally have from Italy; and the porphyries and granites from the East. The common stones are used with us in erecting walls, and on the outsides of buildings; the marbles serve this purpose in countries where they are plentiful and cheap, but here they are used for ornaments within; and the granites and porphyries are principally admired in the columns, and other great works and antiquity; we sometimes use them for tables, and in the decorations of chimney-pieces, but the distance from whence they come, and their extreme hardness, are reasons why we see little of them any where in modern buildings. We find the cutting and plishing so expensive, that sew will be at the charge; and we are astonished when we see the works executed in them by the antients.

These harder kinds have a treat advantage over the other marbles when wrought; those polish easily, but they are easily hurt and damaged, every little accident scratching them; when the granite is polished the work is done for ages, scarce anything but a diamond can make an impression. The polish they tale also is high in proportion to the difficulty with which is given, and there is singularity in their aspect very pleasing.

Those therefore in the most essential points from marble, and it is an error to confound them with its kinds: they approach more to the nature of the semi-pellucid precious stones.

I have observed that we have some of these precious kinds more common than we imagine; if anybody would be at the trouble of expence of polishing them, it will seem strange to say the streets of London are paved with granite, but it is true; whoever is acquainted with the nature of stones, and walks out after a smart shower, will perceive this, the rain washing them and giving them for the time a natural polish. These stones are brought from the island of Gernfey, where they lie upon the sea-shores; and it would be worth while to search that place for quarries.

The marbles are polished at a small expence, and have a beauty that sufficiently recommends them: as to the common stones they are easily cut smooth, but they will not take much polish, nor is it ever required of them.

Having premised this much as to the general distinction of the three kinds, we shall consider them separately under those heads in the succeeding chapters.

Chapter IV: Of common Stones; their kinds, uses, and the ways of digging them. (p 43)

Quarry stones are rough and coarse, but some more than others. They are distinguished from marbles by their having neither naturally a glossy surface where broken, nor being capable of any fine polish.

They may be distinguished into two general kinds; the first such as lie in thick compact masses, and are fit for building of walls and forming of columns, and other the like puposes, where firmness is required; the other such as lie in a flat and thin flakes; or are so constructed by nature that they easily split into such, and are used for covering of roofs. Of the former division of these are the common blue and purple slates, and of the latter are several sorts of grey stone that easily split for that purpose.

Of the first kind, or those which are not apt to split, but are used in building walls, and the like, we have four principal species; these we distinguish, according to the places from whence they come, by names of

1 Portland Stone 2 Purbeck Stone 3 Bath Stone 4 Ryegate Stone.

All these are called by name of free stone by some; while other limit that title to the Bath and Ryegate; but this is an arbitrary term, and people use it according to their pleasure.

Of these four kinds of quarry stone the Portland is the best, It stands extremely well in the weather, equally well with marble; and better than many kinds of it. It is therefore the fittest of all for outside work. The Purbeck is also an excellent stone for many purposes: none stands better in sorts and walls near the sea, and in many other purposes of strength and decoration. The Bath stone does very well upon or near the spot, but not so well in London; and this is a general and a true observation, that all stones stand better, and serve for purposes of strength and beauty both, much more successfully upon or near the place where their quarries aer than elsewhere.

PORTLAND-STONE is not destined altogether to outside work. The better sort of stone chimney-pieces are made of it, at an inch and half or two inches thick: it also serves very well at an inch and a half thickness for paving, in which service it is sometimes laid plain, and sometimes with black marble dots. In steps also it serves excellently: it looks very beautiful plain, but much more so when bordered with an astragal, or round moulding. It is also used in copings, three inches thick on one side, and an inch and half on the other; and no stone ansvers better in curbs for iron-work: in this case it is usually cubed first, and then measured superficially.

For the more elegant parts of the building, Portland stone is preferred to any other kind; the shafts of columns are cut out out of it; and it not only bears fluting freely, and stands well in that form; but the elegant capitals of the Corinthian, and other rich orders may be finely executed in it, and will hold perfectly well.

PURBECK STONE is used much in paving, and is very strong, in random and strait courses, and it serves well in steps; in both these uses it is inferior to the Portland, because it is less hard, and it will not take so good a surface; we must not call it polish, for in Portland it does not amount to that; but where we do not aim at polish, smoothness is a great consideration. The Purbeck is cheaper than the Portland, and therefore there is a great consumption of it; it will serve also for some other uses to which the Portland is applied, but the other is so much better that the cheapness of this hardly is a sufficient recommendation.

BATH STONE is principally used for walls, and is fittest for that purpose; it will answer to some of the other occasions, but it is very much inferior to the Purbeck in its durability and strength.

RYEGATE STONE is commonly called fire stone, and its principal use is for covings and hearths. It works very easily, but it wants strength for many other purposes.

These are the principal kinds of quarry stone with which we are acquainted in London; but beside theses there are several very good kinds dug and used in different counties. They have a fine white free stone in Dorsetshire, but it is faultis being brittle; in Northamptonshire they have a grayish kind, but brittle also; and in Dorsetshire there is a hard white kind very valuable, and capable of a smooth and good surface. There is also a brownish kind that cuts very freely, common in many of our Northern counties. In Yorkshire they have a grayish kind that is full of little spangles; and in Sussex and Gloucestershire there is a brown one extremely hard, that glitters in the same manner. These are all of them used in the several places where they are produced; but there is not one of them superior to the Portland, either in beauty or durability, so that they are not worth bringing to London.

When a quarry of any one of these kinds of stone is found in a place where they will be worth digging (that depending, in a great measure, on the place and situation) there is a great deal of consideration needful for the getting them up.

When the bed of stone, in many species, is examined, there are two kinds of grain discovered, the one running flatwise, and the other perpendicularly; the first they call the splitting grain, and the other the braking grain.

In the fiate kinds this cleaving or splitting grain shews itself at every part of the surface; so that they may be split at any thickness; but in these stones it is only at certain distances, and those very considerable. The stone will thus rise regularly flatwise at a certain depth, but no art could split it into thinner flakes, the grain running cross in the several blocks, though here and there strait in the whole beds.

The quarry-men, when they have cleared away the earth above, get at a side face of the stone, and in this they search carefully for the splitting vein; when they have found this, they drive in a great number of wedges in several places, and by degrees heave and force up a large be of it to the surfaces.

When they have thus raised and loosened the upper bed of stone from the rest, they go to work upon separating this vast flat piece into such sizes as are demanded most; this being much more easily done while the stone lies in the quarry than at any other time. To that purpose they are to consult the breaking grain; in some places, this of itself runs so regularly, that with little force or care the great cake separates into square, or oblong pieces; and they must take these as they come. Where there is not this natural visible grain the manner is this; they draw lines a-cross the flake, or great cake, regularly, according to the sizes into which they intend to break it; along each of these lines they cut a slight channel, and into each channel they insert several wedges, as they did for cleaving ; they drive these slowly and evenly, till they thus cut off a long piece of the breadth they intend, and of the whole length of the flake; and this they separate into such lengths as they chuse, in the same manner, by marking the places by a line, and breaking off the pieces by wedges.

Some stones are even, and others of a cross grain; the even-grained ones succeed a great deal the best in this work; and those which are softest. In the free kinds it is surprising to see how regularly the pieces will come off, and how easily it is done; but it would not be so easily, or proceed so regularly, when the stone had lain some time out of the quarry.

For the hard and cross-grained stones they are obliged to have recourse to other methods; to get these up they cut deep and wide channels on the surface, and confine their wedges to these by iron bars, and then driving them take the piece as it comes: or they use a gunpowder. This has a very great and very speedy effect, but it is altogether irregular. They put a quantity of powder in a hole bored in the rock, and ramming it up tight, leave room for the train by an iron wire which they draw out afterwards.

These two methods raise and loosen a great quantity of stone at a little expence, but then it comes in irregular pieces; so that the other manner, when the nature of the stones will admit of it, is greatly prefereable.

In these better works they often follow the bed of the stone to a great depth, splittin off one flake, and then another; and they draw it up with wheels which they fix upon the heap of rubbish first raised in opening the pit.

Chapter V: The manner of using the Quarry Stone.

We have observed that all stone succeeds better on the spot where it is produced than elsewhere: this is doubly true, because it not only works easier but lasts longer; and there is an advantage to the builder, because the expence of carriage is saved.

It is the advice of Palladio, that all stone be wrought as soon as may be after the digging, because the works the easier. We have seen how freely the great flakes in which it rises are broken in proper pieces in the quarry, and the hewing it farther into form easier while it is fresh dug than at any other time.

All stone whatsoever hardens when it lies out of the ground; this is the reason for working it quickly; and this may be a caution to the person who shall find a quarry upon his state, not to despise it because soft when in the bed, for it will soon harden.

When the stone is found in a new place, so that its nature is not known, and when it rises soft, it is best to exposed to the air some time, to see what it will come to before it is used. Summer is the fit season for digging, and it should lie till that time next year at least: it will be better if it lie two years exposed to the air to see the effect. Some pieces will naturally be prejudiced in this exposure, and they may be rejected or used out of fight, the others in more conspicuous places.

The digging of stone in summer, and exposing it, is a kind of seasoning it for bearing the winter rains and frost; these might be injure it when fresh from the bed; but having thus been used to bear them by degrees, and after being first hardened by the summer exposure, it will stand in building without damage.

We have shewn the builder which are the fittest for inside work, and which will best bear the weather, let him chuse them for the several purposes accordingly.

Alberti advices, that all the stone used in the walls and essential parts of a building, be out of the same quarry; and he has great reason for that caution: the architect will hope to see his work last uniformly; and there is no better way of assuring himself on that head than by this care in the principal materials.

De L'Orme orders, that the lime for the buildings be made of the same stone that is to be used with it; but this is idle; we shall shew hereafter, that the lime made of hard stones is best; but the fire makes such an alteration in this work, that it is weak to imagine there should remain any kind of sympathy between it and the stone of the same kind from which it was made.

A great deal of the success in the building where stone is to be employed in any quantity, will depend upon the choice of the kind, and in this the strength and durability are more to be considered than the easiest of working. In general those kinds of stone which cut the most easily decay the soonest: the same loose texture which makes them work so freely, renders them unable to bear the assaults of the weather. The air is a kind of universal dissolvent: we see in old buildings what effect it has upon the stones, and especially upon those used in the ornamental parts: let the builder look up to these and learn caution.

If he hope for the admiration of posterity, which ought to be de design in every great work, let him consider that this cannot be obtained unless the materials will retain their form: let him see what is the power of the air, and expose only such stone to it as will best resist its insults; none will do this entirely; but, by chusing the hardest kinds for the outside work, and the hardest of all for such parts as are to be decorated with carving, he will succeed the best he can; and the others will answer as well for the inside, where no injuries will be offered to them often outlasting those on the outer parts that are twice as strong.

Chapter VI: Of various kinds of Slate.

There are two kinds of slate principally used about London for the covering of houses, the blue and the purple; and these differ more in their colour than in their qualities: but, beside these, there are a great many other kinds of stone that split naturally and easily into thin pieces of any size, and we see them used for the purpose of slates in the places where they are dug. They are coarser in their structure than the common blue slate, and they have two disadvantages; they load the roof more and they do not bear the weather so well, for they will not split into so thin pieces; nor are of so close and even a grain.

The common blue slate is dug in many parts of England. It commonly lies at a small depth; and, beside the splitting grain, by means of which it is easily cleft to almost any thinnest, it is commonly divided into a kind of stacks, by breakings, cracks, and fissures. These stacks are from one foot to four or five in diameter, so that they are always ready to furnish slates of such sizes as are wanted, and are rather an advantage than an inconvenient.

The purple slate lies in the same manner, but it is usually harder and of finer grain.

It is common to see small square pieces of yellow matter naturally sticking in these slates, and looking as if they were made by art of polished brass. They are lumps of substance called by the writers mundick, and are composed only of sulphur and vitriol. They are a disadvantage to the slates, for they will moulder to pieces after being some time exposed to the air. Some are very hard, and remain entire a longer while; others perish sooner.

Beside these, which are the common slates, there is the Irish slate, which is used as a medicine, but it is softer than those of a worse colour, and does not last; and there are a white and redish sort of the stony kind, pretty nearly approaching to the nature of the others. The grey slate, called the Horsham kind, is of the stony or bad sort, and is inferior to many of the kinds in other parts of England.

Beside the use of slate in the covering of houses, it serves for being framed to write upon, and tables are set with it for the same purpose: but these are out of use, because they cut and scratch so easily. The thicker pieces of the stony kinds are used also in paving.

For many uses we import slate from Germany, but it is not needful, for we have enough of it good at home. The German is said to be very soft in the quarry: ours is much softer there than afterwards, and works very regularly and conveniently. There is no natural covering for a house so light, so lasting or so beautiful, as the blue or purple slate, for the distinction between them is little. Common tiles are heavier than slate of this fine kind, and the stony slate is heavier than tiles. The fine slate is dearer than the covering with tiles, but its vastly preferable in every respect; it is much more close and beautiful, and there are instances of its continuing good a hundred years. After the covering of lead, there is none comparable to this by fin slate.

As we recommend slating to the architect for so many reasons, and as it is allowed to be very expensive covering, we shall deliver him some practical rules for the judging of the goodness of the slate before he uses it, for there are some kinds that will last twice as long as others that look just the same.

The great value of slate consists in its soundness in thin pieces, and in its fine texture, by which it resists the entrance of wet. The expence of laying slate is very considerable; and that which is soft and spungy, or is loose and unfound, lets in the wet, to the destruction of the timber underneath. A parcel of fine and well-chosen slate will last in the laying much longer than lead, some of that requiring to be riped and new laid after a very few years.

To judge of the goodness of slate, let the builder first of all strike several pieces against any thing hard to make it found: if it ring clear and well it is good; but if not, there is something unfound in the texture of it. The builder is not to judge by one piece or two, for they may be damaged by accident, but trying several, he will this way make a near guess at the goodness.

After this let him set several pieces of slate edgewise in a vessel of water, the water reaching up about half way of the height of the pieces: if they draw water, and become wet to the top in six or eight hours time, they are spungy and bad; but if they do not appear wet above an inch or two over the level of the water, they are sound and good.

Finally, another very good way is to weight a piece of slate carefully, and then put it into a vessel of water, where it shall be covered all over: let it remain there half day, and then taking it out, let it be wiped clean and weighed again: if it weight but little more than at first it is good: but according as it weighs more and more, after this soaking, it is worse and worse. The same loose texture that here admits the water will let in the wet in rainy weather, and spoil the wood work that supports it.

These are methods for trying the foundness and value of slate, and every builder ought to use them, for the eye is no judge. Nothing is more deceitful than a slate, and the expence is so considerable by that time they are laid.

Chapter VII: Of several kinds of marble.

We have already observed, that marble not being the natural produce of this country, comes at too large and expence to be employed in the outside work of buildings. In limiting the production of marble to other countries, we are however to make a reserve of some kinds, which although truly such, are found in England, and probably the curious inquires of the present age will discover more. It is not probable however that we shall soon discover them at home in such plenty as to use them as common stone, so that we are to treat of them as serviceable in the ornamental, rather than the essential parts of buildings. Their uses are so many, according to their several kinds, that we import them annually at great expence; and as they differ extremely in beauty as well as price, we shall enter upon an examination of their several kinds.

Those in most frequent use are the white veined marble, the white and purple, both from *Italy*, and the black from *Namur*; but as beside these there are many others used in great and elegant houses, we shall give a catalogue of those several kinds, according to their colours and variations.

Of the entire white marbles there are the common *Statuary*, which is soft, and the *Carrara* which is harder.

Among the black, or approaching to than colour, there is first a blueish black kind, common in *Germany,* which was the *Numidian,* marble of the antients; as the black marble of *Namur* before-named was their *Luculleam* kind. What we call the touchstone, is a black marble, and was called *Chian* by the antienst; and our black *Irish* marble of the *Giant`s Causeway* in *Ireland*, was their touchstone, called the *Lydian* and *Obsidian* marble. It is singular in this kind that it rises naturally in columns of an angular figure, and composed of joints in a nice manner, as if firmed by art.

These are all the plain black marbles that are known, and of these scarce is used but the common Namur kind, though that of which the Giant's Causeway is composed is vastly superior to it in beauty and hardness, and that single quantity in the county of Antrim might supply the kingdom of England for ages. It would be expensive to cut, but the beauty of the polish and the hardness, would make good amends.

Of the other plain colored marbles, there is a yellow we sometimes have from Italy of the nature of the yellow part of the Syenna marbles; and about Bristol there is a vein of a plain green marble that would be very beautiful in slabs and chimney-pieces; but is not regarded.

Next after these we shall enumerate those marbles which have variations made in them by shells and other bodies petrified and contained in them. What is called Derbyshire marble is full of the parts of a star-fish of a particular kind: this is of within brown. We have a green marble form Bohemia full of small grey shells, of which the columns in many of our Gothick churches are made; and there is a grayish marble of the same kind. We have a blackish marble, very beautiful, full of a kind of white coral in broad branches, which is too little regarded; there are a great beds of it in Desbyshire and Wales, and it takes a fine polish. The tomb of the famous Sir Thomas Gresham in Great St Helen Church at Bishopsgate, is made of this marble: we have also another black marble beautifully spotted in white, with shells and corals, brought from Kilkenny in Ireland. We have named these the more particularly because they are the produce of our own country, and thought we have them in great plenty they are neglected.

We shall next enumerate the veined and sported marbles, dividing them into several assortments, according to the colour of their ground. The common purple and white, which our workmen call purple marble, we have named already; we sometimes import a brown and white kind from *Italy*, that is petty enough but very soft; and we have at home a very beautiful and hard red and white marble. It is produced in great quantities in Devonshire, and is called by the workmen Plymouth marble. The blue and white which our workmen call white and veined comes also from Italy, and is the most common kind of all. We have in Cornwall and Devonshire a brown marble veined with white and red, which we neglect, while we import a brown one variegated with white and black, much inferior to it in every respect, form Italy:

there is also from the same country a brown kind variegated with white only, which is much harder.

Of the yellow marble with variegations we know but two kinds: first, the fine Syenna marble which is yellow and purple; and secondly, a yellow and blue marble common in Spain, but not much valued.

Of the variegated marbles with a black ground, there are two which have white veins, one brought from Italy in great quantities; the other seldom, because of the hardness of the white part. There is also a black and yellow very beautiful, the yellow looking like veins of gold; this comes from Italy. There are two other of this kind also, a black with white and red veins, and another with white red and yellow.

Of the variegated marbles with a green ground there are three; first, the Egyptian marble, which is green with white veins, and was the Tiberian and Augustan marble of the Romans. Secondly, a hard green marble, spotted with black and white, and called the black serpent stone, or ophites, by the antigens. And thirdly, the softer green marble, with white and black variegations, called the white ophites. The former of these is what the people of taste call verde antique.

There are three grey marbles variegated also, one with small black spots only called the grey orphites, or tephira, by the antients; a second grey with green spots only, and a third grey with green spots and veins.

To these if we add the variegated marble with a red gground, called brocatello by the Italians, which is veined with white and yellow, and was the Theban marble of the antients; we have before us all the really distinct known kinds of marble.

Most of these are in our power, though few of them are used, and we see that even such as we have at home are neglected. We have judged it proper to give this list of them, that the student in building, when he sees them in use, may be able to call them by their names, and that the accomplished architect may know at once how large choice, and how vast a variety, he has before him; and may be tempted to bring into use those which we have at home, which have no fault but that they are not known; unless it be that they are of our own production.

After these, which are known by the name of marbles, we are to name three kinds very nearly approaching to their nature, and called alabasters; and we have then, in one view, all the stones of this beautiful class.

The first of these is the plain alabaster, which is white and glittering stone, like the finest statuary marble, only more brittle; this was the antient Greek Lygdine marble; the second is a plain yellow alabaster, which they called phengites, very beautiful , and the most transparent of all the kinds; and the third is what our workmen called oriental alabaster, a very beautiful stone, of a yellowish colour, elegantly veined with brown and redish. We have a softer kind of this last in our own kingdom, which is very beautiful; the greatest quantity of it is found in Cornwall, among rocks of lime-stone.

What is called Egiptian marble is now brought from Italy, where there are large quarries of it. The kind called brocatello, before described; is also found about Auvergne in France, and in east near Adrinople; the French is inferior to the Italian, but the other is much superior; and there is a famous quarry of it also near Tortosa in Spain. The marble called Cippolino by the Italians differs little from the Egyptian, but is finer; what we see under the name of Egyptian in many old magnificent houses is this kind. What is called peacock's tail marble, is of the brocatello kind, but has the spots rounder, and more determinate in figure, than they are usually in that species.

These are the names by which the workmen, and those of higher rank in architecture, and in the polite arts, distinguish the several kinds of marble that are at this time imported for use, or are found in buildings erected some time since: in general their meaning is very ill determined, but what is fixed among them is upon this foundation.

Chapter VIII: The manner of using marble.

Where marble is very common, and therefore cheap, it enters rough into the structure of many buildings, and shews itself on their outsides: with us, those which are the produce of our own country not being sufficiently known, and the others coming at a large price, they are seen only in the decorations principally within, and always polished.

In the cutting there are difficulties and inconveniences in some kinds, and in the polishing in others. Several of the species are so brittle that they crumble under the tools, and some so harsh that they fly off in splinters: the first is the fault of the white, and the other principally of the black marbles.

In the polishing, some are found to have metallic spots in them, which give a great deal of trouble; these are principally of the mundic kind, or of the nature of those square yellow lumps we have described in slates; there often lie clusters of them together in marble, and they give a great deal of trouble, and sometimes continue a lasting defect. These blemishes the workmen call emeril, and they are most frequent in the variegated marbles that have a white ground.

Other pieces have a kind of knobs like the notes in timber, which are a great deal harder than the rest of the block; and in others there are hollows which must be filled up with cement to make the surface level: there are also frequently streaks like threads in pieces of marble, which discover themselves in polichins, and are a great defect: these last are called thready marbles, the others terrace marble, and both faults lower the value of the slab.

The French make what they call an artificial marble, and some years since it was getting into fashion with us, but is too soft for use. It is made form transparent stone called selenites, which resembles crystal but that it is soft. This calcines like Plaister of Paris; and, when

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We see in the marble tables that are set in brass, how excellently the metalline yellow agrees with, and sets off, the stone: gilding agrees with most kinds yet better; and this is an additional ornament by which the finest compositions of marble may be enriched greatly. There are some kinds that will be hurt by the brightness of the gold yellow; but those colours that will bear it, as most will, are decorated by an edge of brass, well gigilt, beyond what would be conceived by those who have not seen the effect.

Chapter IX. Of porphyry and granite

These have been generally reckoned among the kinds of marble, but they altogether differ from it their nature and qualities, as well as, in their structure an degree of hardness; as had been shewn already. They also differ very essentially from one another in the construction as well as colours; but as they are of less frequent use than the others, and agree in most respects so far as the architect is concerned in them, we shall treat of them in the same chapter.

PORPHYRY is a stone of extreme hardness; its colour is purple stained with white, and this is commonly disposed in small regular spots.

GRANITE is a stone of greater hardness than porphyry, and of a much more singular aspect, and greater beauty; its ground colour is a pale red, and it is variegated with black and white, in small and irregular spots. These have a singular appearance; the white in particular being somewhat transparent, so that one sees a little way into the stone: this is the granite of the antients, and is what we understand by the name used singly. The moor-stone brought from Cornwall is a black and white granite; and we have observed that there are many of the stones in the pavement of the streets of London truly of the granite kind.

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The architect will find little use of the porphyry, for it is one of those stones before named, whose value lies in accidental considerations, not in the beauty: if it fall naturally in his way it may be used among others, and he may take advantage of its vast harness.

The granite may be much more useful to him. We see how elegant a figure it makes in tables when set in brass; and this may shew what effect it would have in many kinds of work; columns in elegant chimney-pieces are sometimes made of it, and nothing has more singular or beautiful appearance.

Chapter X: Of Brick.

Brick, as it supplies the place of stones in our common buildings, and is composed of an earthy matter hardened by art, to the resemblance of that kind, may place, and is of so great use, and so many species, that it demands and deserves our considerate and particular notices.

Bricks are made of clayey or a loamy earth, pure, or with various mixtures: they are shaped in a mould, and after some drying in the sun or air, are burnt to a hardness. This is our manner of making bricks: the use of them was very antient, but whether they were always made in the same manner admits a doubt; we are not clear what was the use of straw in the bricks for building in Egypt, and there is room to question whether those of many later periods were ever exposed to the fire. There are remains of great brick buildings of the Romans in which the bricks seem never to have been burnt but to have been hardened by very long exposure to the sun; and this their own accounts confirm, there being mention in some of their writers of four and five years drying for this purpose.

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We are in general tyed down by custom to one form and one size, but that very idly: eight or nine inches in length and about four in breadth, is our general measure; but beyond doubt there might be other forms and other sizes introduced very advantageously. Sir Henry Wotton mention with commendation a particular form of brick from Daniel Barbaro, which is in shape triangular,, of equal sides, and each a foot long. The thickness he mentions is an inch and half, so that his may be well enough called a kind of thick tiles, but that may be altered at pleasure. There is no doubt but bricks of this and other regularly angular forms might have been used with advantages in many parts of our common buildings.

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The manner of burning is a thing very essential in the structure of brick. It is commonly done in a clamp about London; but in some places in a kiln. Some of the finest bricks are burned in the kilns erected for tiles. See Plate 5.

The degree of burning makes a considerable difference in the condition of the bricks; but their principal distinction is form the nature of the materials with which they are made: these being not only various in themselves, but made different in much greater degree by the mixtures given them in the working.

Chapter XI: of the several kinds of bricks

A great variety of bricks have been contrived by different persons, and made at different times; and long and perplexed descriptions have been given of the way of fabricating them; but all present there are in a manner reduced to four sorts, our builders finding these sufficient to answer every purpose. These are place bricks, grey stocks, red stocks and the finest red bricks or cutting bricks. (…)

As to the materials of bricks, we have already said they are all maid of earth of a clayey or loamy nature: the more pure the earth is used the harder and firmer will be the brick; but then the less mixture there is with it, the more labour it will require in working. The brick-makers guide themselves according to this rule, and finish their work according to the seervice for which it is designed.

GREY STOCKS are made of a good earth, well wrought, and with little mixture.

PLACE BRICKS are made of the same earth, or worse; with a mixture of dirt from the streets; and these are often to miserably bad they will hardly hold together.

This is the principal difference between the two kind of common bricks, as to their substance; the grey stocks being found and firm, because the earth of which they are made is purer, and the place bricks being poor and brittle, because of the mixture other matter with that earth, and less working.

RED STOCKS, and the red bricks, called also from their use CUTTING BRICKS, owe their colour to the nature of the clay of which they are made; this is always used tolerably pure, and the bricks of the better kind are called by some CLAY BRICKS, because they are supposed to be made of nothing else.

(…) The grey stocks, he sees are made of purer earth, and better wrought, and they are used in front in building, being the strongest and handsomest of this kind; the place bricks are made of clay with a mixture of dirt and other coarse materials, and are more carelessly put of hand; they are therefore weaker, and more brittle, and are used out of sight, and where little stress is laid upon them; the red bricks of both kinds are made of a particular earth well wrought, and little injured by mixtures, and they are used in fine work, in ornaments over windows, and in paving.

These are often cut or ground down to a perfect evenness and set in putty instead of mortar; and on many occasions they in this manner make a very beautiful appearance.

There are three kinds of bricks commonly used by us in buildings, and their difference is owing to this variety in the materials. The place bricks and grey flocks are made in the neighbourhood of town, whenever there is a brick-work; the two kinds of red bricks, depending upon a particular kind of earth, can only be made where that is to be had; they are furnished from several places within fifteen or twenty miles of London.

We have observed in the beginning of this chapter, that there were two or three other kinds of bricks to be named which are important from other countries and these is also one of the red or cutting brick, sort that is of your own manufacture, and for its excellence is very wortly to be particularly mentioned: this is the Hedgerley brick; it is made at a village of theat name, of the famous earth called Hedgerley loam, well known to the glass-makers and chemist.

This loam of a yellowish colour, and very harth to the touch, containing a great deal of sand; it is particular value it that it will bear the greatest violence of fire without hurt: the chemist coat and lute their furnaces with this, and the ovens at glasshouses are also repaired or lined with it, where it stands all the fury of their heat without damage. It is brought into London for this purpose, under the name of Windsor, and is sold a large price; the bricks made of this are of the finest red that can be imagined, they call them fire bricks, because of their bearing the fire, and they are used about furnaces and ovens in the same way as the earth.

The foreign bricks that are to be named are the Dutch and Flemish bricks, and clinkers; these are all nearly of kind, and are often confounded together: they are very hard, and of a dirty brimstone colour: some of them not much unlike our grey stocks, others yellower. The Dutch are generally the best baked, and the Flemish the yellowest. As to the clinkers they are the most baked of all, and commonly are warped by the head.

These are used on particular occasions, the Dutch and Flemish for paving yards, and stables, and the like, and the clinkers, which come also from the same places in ovens.

Chapter XII: Of the manner of using BRICKS.

(…) The fine-red cutting bricks are twice, or more than twice, the price of the best grey stocks; the red stocks half as dear again as the grey; and the place bricks, as they are a great deal worse, so they are much cheaper than any of the others. This will be shewn more at large hereafter: it is only hinted here as an article of consideration in the using them.

The grey stocks, and place bricks are employed in the better and worse kind of plain work: the red stocks, as well as the grey, are used sometimes for arches, and other more ornamental pieces: the fine-red cutting bricks are used for ruled and gaged work, and sometimes for pavimg; but the red stocks are more frequently employed when a red kind is required for this purpose.

(…)

The red stock and the grey are frequently put in arches gauged, band one as well as the other set in puttey instead of mortar: this is an expensive work, but it answers in beauty, for the regularity of this disposition, and fineness of the joints, has a very pleasing effect.

The fine red brick is used in arches ruled and set in puttey in the same manner; and, as it is much more beautiful, is somewhat more costly. This kind is also the most beautiful of all in cornices ruled in the same manner an set in puttey.

The grey stocks of an inferior kind are used in bricking of walls.

The place bricks are used in paving dry, or laid in mortar, and they are put down flat or edgewise. If they are laid flat, thirty two of them pave a yard square; but if they be placed edgewise it takes twice that number.

In the front work of walls the place bricks should never be admitted, even in the meanest building. That consideration therefore only takes place in the other kinds; and the fine-cutting bricks come so very dear this way, that few people will be brought to think of them; so that it lies in a great measure between the grey stocks and red stocks.

Of these grey are the most used; and this not only because they are cheaper, but in most cases where judgment is preferred to fancy they will have the preference.

We see many very beautiful pieces of workmanship in red brick; and to name one, the front of the green house in Kensington-gardens will be sure to attract every eye that has the least curiosity: but this should not tempt the judicious architect to admit them in the front walls of the building.

Chapter XIII: Of tiles

Tiles are very much in the nature of bricks, differing more in the shape than in the sibstance; they are made of an earth finer or coarser, andare wrought according to their use and price; more pure or with mixtures. The common kind are made of blue clay that is found everywhere about London, though usually at some depth; it often lies under the common kinds of brick earth; and, when wrought into form, is baked in kilns, as the bricks are in clamps: those kilns in shape of cones, or sugar-loaves, at this time used about London are well contrived and answer the purpose excellently. We have given the figure of a complete one and its parts, in plates V and VI.

There are so much conformity in the substance are bricks and tiles, that the earth that made one will in many cases serve for the other. The way of which tiles are made may always be wrought into bricks, but only the best of the bricks earth can be wrought into tiles; because being thinner, they require more toughness in substance.

The proper clay for tiles is the toughest and the purest: when there are foreign mixtures among in they should be carefully separated from it; the depth at which it lies keeps it in general free from stones, but there commonly are found abundance of lumps of a substance looking like brass in it: these are frequently in the shape of shells, and have a natural polish; they moulder and fall to powder only by being exposed to the air, though they will keep entire for ages when they are in bed of clay: and what is more remarkable, they will remain whole under water ever so long, though the air soon destroys them.

(…)

Clay for tiles is to be dug in the months of September and October, and to lie exposed all winter: it must be turned in January, and may be worked up no tiles in February.

All tiles are made in the manner of bricks, by tempering and beating up the clay to a due consistence, and then fashioning them in a mould; but more care and pains are required in this work than in making of bricks, for the tile-making approaches more to the pottery work, and the earth of which they are mad is such as might be employed in potteries, and in some places is so.

Tiles being thin would be more apt to crack and break than bricks, which have more body and substance; the clay therefore whereof they are made, must not only be in its nature more tough and firm, but it must be more thoroughly wrought, than it, may have equal firmness in every part: and when the tile is shaped, if of the common kind, it is to be kept flat; but if the pan or gutter kind, it is to be bent afterwards upon a mould to a proper form, and this must be while it is soft, that it may be take and retain the impression. More care is also required in the management of the fire for burning them, than is needful in bricks; for if be too slack they do not get a proper hardness, and if too violent they suffer in their shape and are glazed. In burning bricks in the clamp the fire must be watched and managed with discretion, and he must be a trusty as well as knowing person to whom this care is committed, for a little neglect may be of vast mischief and loss to the proprietors.

Chapter XIV: Of various kinds of tiles

What has been said with respect to bricks, is applicable to tiles also, with regard to their several kinds; a great many sorts have been invented and recommended at different times, and have got into use in various places; but practice, which is the only judge of convenience. Has in this, as in the case of bricks, reduced these to smaller compass. In the place of that greater variety we hear of among the workmen of some time ago, the tiles for all sorts of uses may now be comprised under six heads. 1. The plain tile for the covering of houses, which is flat and thin. 2. The plain tile for paving, which is flat also but thicker, and its size is 12, 10 or 9 inches. 3. The pantile, which is also used for covering buildings and is hollow and crooked, or bent, somewhat in the manner of an S. 4. The Dutch glazed pantile. 5. The English glazed pantile. And 6 The gutter tile, which is made with a kind of wings.

(…)

COMMON TILES are best when they are firmest, soundest, and strongest. There are not so many differences in these as in bricks, either in respect of body or colour, but according to the nature of the clay, and the degree of fire in burning, some are duskier ans some ruddier in colour. The dusky-coloured are usually the strongest; the workmen sometimes, when they have both colours, amuse themselves with laying them separately in rows, in which case they give the roof a striped aspect. But this is a pitiful and idle fancy.

PAVING TILES are made of a more sandy earth than the common or plain tiles: the materials for these last must be absolute clay, but for the others a kind of loam is used, though it must be of a though substance, or they will not have due strength or firmness. This loam burns to a fresher red colour than the best of the common tile clay. These are made thicker and larger than the common roof tiles; and, when care has been takes in the choice od the earth, and the management of the fire, they are very regular and beautiful.

PANTILES, when of the best kind, are made of an earth not much unlike that of the paving tiles, and often of the same: but the best sort of all is paler coloured loam that is less sandy: they have about the same degree of the fire given them in the baking, and they come out nearly of the same colour.

GLAZED PANTILES, whether Dutch or English, get that addition in the fire, many kinds of hearthy matter running into a glassy substance in a great heat, as is seen in the glazing of common earthen-ware; and it is a great advantage to them, preserving them much longer than the common pantiles, so that they are very well worth the additional charge that attends the using of them.

GUTTER TILES, are made of the same earth as the common pantiles, and only differ from them in shape: but it is adviseable that particular care be taken in tempering and working the earth for these, for none are more liable to accidents.

DUTCH TILES, for chimneys are of a kind so different from all these, that they should scarce be treated of in the same place. They are made of an earth much more approaching to the potters kind, and have the same sort of workmanship, not that of the tile-kiln in the way we have described for the others.

Chapter XV. Of manner of using tiles

The great use of tiles is for the covering of houses; and for this purpose where either service or beauty are regarded, the plain common tile is greatly preferable to any other: but in its condition is not at all comparable to slate.

(…) 65

If the plain tiling be thus inferior to slate, the pantiling is much worse than that both in duration and aspect. There are occasions on which tiling is proper, and there are particular building whereon pantiling is better than the plain metho; but what we have said is delivered as general, and admits these exceptions: in ordinary buildings adjoining to houses, and particularly in such as have flat roofs, the pantiling does very well, and comes cheaper than the other kind, the tiles being a great deal larger, and laid with less trouble. The plain or common tiles have holes for pins, and hangs by that; a few of them cover a great deal of roof, and where they are not in the way of accidents, they will last a great while, but they are easily loosened, injured, or broken.

The Dutch glazed pantiles are better than the English, but either are much superior to the common pantile, and for most uses to the plain tile; they are dearer, but their bigness makes great amends for that, and they are very lasting. In the common pantiling the different in size is so great and article, that where seven hundred and sixty plain tiles, at six inch gauge, are required, the same space which is square, will be covered by one hundred and seventy pantiles. The use of gutter-tiles is explained by their name, their place being in the vallys or gutters of cross buildings, and when they are used they are laid plain, without any nailing, the broad end upwards.

(…)

The Dutch tiles are in a manner neglected, though they used to be in general repute about chimnies. They are indeed inferior to ordinary stone for that purpose, because of their continual falling. The joints are required to be small for the fake of beauty, and it makes the setting weak, and the continued effect of the fire destroys the force of the lime, so that they are often dropping; then their thinness is such that a small blow cracks them, and when they cracked they soon fall out.

This is the greatest defect for it must be confessed that when entire they look very pretty. If they were made thicker, and some contrivance was used to keep them firmer, they might be worth bringing into fashion again, where the expence of marble is not allowed, for there is a particular brightness their glazing, and nothing looks so clean; nor is this the only advantage, for they reflect the heat much better than stone.

In this case all the trouble they take about figures is ridiculous, and would be better spared; they are ill done and the plain white are much cleaner in the look and prettier; if anything were done by way of colour, it should be the throwing on a little blueish loosely, to imitate the veining marble.

In the preceding number we gave in our fifth plate the plan and section of a conical tile-kiln, of the most useful and advantageous structure; we shall in this lay before the reader in our sixth plate the several parts of that useful fabric separated, to shew its inner structure. The whole therefore being now before the eye, we shall give an account of its several uses, and the manner of burning bricks as well as tiles of various kinds in it; and add the references of explanations for both.

The kiln of dimensions here represented burn a very large quantity together, to the great advantage of the proprietor, whose business is to sell them in great quantities. The profits of this branch of business are so great, that wherever there is proper earth, and a sufficient demand, it is extremely worth any person's while to fall into it; but beside this we propose another use in plan and sections of the kiln, which is, that the whole being explained in such a manner that a good workman may easily bring in into execution, any gentlemen who has a large edifice to erect, or his surveyor for him, may give directions for the setting up one of a smaller size, in which to burn all the needful brick and tile of every kind for the fabric.

The quantity this kiln burns at once is, of tiles alone, including the three kinds of plain tiles, pantiles, and paving tiles, thirty-four thousand. This being known it will be easy to construct a kiln of the same fabric, and of any bigness, proportioned to the quantity of tiles of several kinds and will be wanted for the building.

We have before observed that bricks may be very finely, and perfectly burnt in it; and it is most worth, while to use it for the best kinds. In the several kilns of this make about London they usually burn a large quantity of the red stocks, and other valuable sorts; therefore the same may be done by such as small one for their own use in the country

If it happen that in preparing for any large edifice there be little occasion for tiles, slate being intended for the covering, in that case a great part of the expence may be saved, and yet the kiln answer the purpose for bricks alone, should be just the same as in our plan and sections, but all the cone, of great building, above may be spared; the kiln being covered over with a slight shed, and the smoak let out at the sides. Bricks burnt this way will be much better in proportion to the materials than those done in clamps as we see them about London; these being only heaps of bricks, so piled up as to leave room for the fuel between them.

Plate V Shews the plan and elevation of the entire kiln

Plate VI shews the plan of the kiln, and its several parts.

The bricks of which the floor we have represented is composed, are made for this purpose: they are oblong hexagons; their length is eight inches and a half, and their breadth four and half; by their size and figure the naturally form the pavement, which is a beautiful mosaic, and the holes.

They might be used for paving halls in country houses; and the square holes being in this case filled up with a dark-coloured glazed brick, would have a very pretty effect.

Nothing can be more artifially constructed than the lower part of this building, for conveying the heat regularly through the great quantity of tiles burnt at one time, the large cone of brick-work raised over it serves to receive the great body of smoak continually rising, and to keep the heat together.

Chapter XVI: Of timber in general

After stone, and brick which is made in imitation of stone, and serves in its place, as tiles do in that of slate, we naturally come to the consideration of timber, the second essential in building: in many countries indeed it is the first,, and in some degree has a title to that distinction in nature, because a house it may me built without stone or brick, though hardly of those without the assistance of timber.

Of timber there are a great variety of kinds, all of which have at one time or other, and one where or other, been employed in building or ornamenting of houses: but in this article the present practice has retrenched the variety more than in bricks; for of all those kinds of timber, two in a manner do the whole business of the architect; these are oak and fir. They are very excellent species without doubt; and taken them all in all, are much superior to any other kinds: but as we are not altogether to commend the reduction of the several sorts of brick, much less are we to allow as proper or convenient this banishing all except two kinds of timber.

There are walls now standing,, in some places, of what were called great bricks, each twelve inches long, six broad, and three thick, which shew that such may be made found and will be found serviceable; and, in the same manner, we see about old houses, various kinds of timber which have lasted excellently for a vast length of time, and very well deserve to be continued in use: of this we shall speak more largely when we come to enter on the distinct kinds.

Nature seem have destined the two species we now use for the services to which we employ them, and to have pointed out their particular utility in their growth; the fir, which is tall and upright, being fit to bear any perpendicularly; and the oak, which spreads its great arms every way, being qualified for supporting weights in any direction. We shall not pretend to give the preference against the oak for strength to any other timber; but if some other kinds may be used as well, there will be convenience in the chusing them on particular occasions, and the builder ought to be acquainted with them.

There are many rules laid down respecting the fellings, management, and seasoning of timber, and they are repeated thought all the works of those who have written on these subjects. The English reader will smile to hear that they are all extracted from the Roman oracle Vitruvius: but when he sees how little the moderns have been able to add, he will also be pleased to find those rules confirmed by the experiences of many centuries.

Timber that is felled in winter will be stronger than such has been cut when fuller of sap, as it is in the leas and fruit season. This is a rule inviolably followed by all who have any regard to their interest or credit. A second caution given by that author is, that it be felled in the decrease of the moon: this has been laughed at, and supposed and imaginary advantage, but the considerate builder, who recollects the effect the different times of the moon have upon shell-fish, and even upon our own bodies, when subject of diseases, will not reject the advice; for he will find it is not impossible the sap of trees may be influenced by the same means: he will find the concurrent testimony of many to establish the opinion, that timber is founder and less subject to worms when felled in that time of the moon; and he will not be influenced against it by the laugh of contempt with which such an opinion is treated by some who pretend to wisdom, or the flat denial of others who confess ignorance. He will judge thus; there may be good in following the practice; there cannot be harm; and therefore when I am to depend upon my timber I will observe it.

After the timber is felled it should be laid up in a dry airy place, where the sun does not come; and piled in such manner that lying hollow the wind and air will pass freely among it, but where it may be safe from the rain. It should not be drawn to this place in the early time of the morning, when the ground is wet with dew, but when all is dry; and if it be daubed over with cow-dung, that will contribute to its drying more equally.

As to the working of it is best done when it is moderately fresh. If it be too wet it works easier, but will be more subject to decay; and if it be too dry, it cuts with more difficulty than need to be.

These are the general heads laid down by Vitruvius, with respect to the felling, seasoning, and working of timber in general; to which he adds, that it is not perfectly fit for the smaller works till three years after the felling.

After giving this general idea of the nature of timber for building, we shall proceed to an examination of the two principal kinds in a particular manner, and afterwards take a view of the several others: which, although neglected at present, may be found worthy, on many occasions, to be brought into use in building.

Chapter XVII: Of Oak. The felling, the seasoning, and choice of its timber

(…)

Alberti advises that all the oak for a building be cut in the same forest. This has been looked upon as an idle nicety by some, who are more ready to censure than to judge; but there is a foundation for it in a reason and the nature of things. Oak grows flow in clayey ground, but the timber is better than in any other; therefore oak of the same age and size, growing on different soils, is not equal strength. It is for this reason best that it should be all from one soil; and this is most like to be the case when all comes from one forest.

As we would have the architect chuse his own timber while growing, we shall advise him to fix only upon such trees as appear healthy and vigorous; but as nothing is more deceitful than a tree while it stands, we shall here add a few cautions. Let him examine the trunk with a strict eye to see that all look even; if there be swelling vein rising above the level of the wood, and covered by the bark,, it is a mark of decay: if a branch at the head be dead it is more suspicious; and in this case he should open the earth at the root, and see the condition of that: if it appear quite found, probably the decay of a branch is an accident; but if it be in a state of decay, the timber is to be suspected.

The best age of the oak for service, is just, or as near as can be, at the time of its arriving at its full growth. While it is increasing, it will pay for the standing on the ground; and experiments have proved that the timber of all trees is soundest and firmest at the time of their attaining their full bigness: at best it is useless to let them stand longer; and as all trees are liable to accidents, they are most easily injured by them after this time.

In felling the oak the branches which may hurt the trunk in its fall are to be first cut off, and then it is to be cut down as near to the ground as possible, for this adds length to the main timber.

When the tree is down it is to be barked; and being trimed of the branches it is to be seasoned.

We have given Vitruvius' way, which is by leaving it thoroughly open to the air, but defended from sun and rain: in this practice the work is left to time, and as the wood drys gradually and equally, it is very good method.

Another way is to bury it some time under ground in a dry soil; this is called dry seasoning.

A third way is what we call water seasoning, which we learned from the Venetians. They sink their oak two or three years under water before they use it; and no method better prevents the splitting. The Venetians do this with whole trunks of oak, and allow such a length of time; we frequently practice it on oak sawn into planks, allowing only a fortnight or three weeks soaking.

It is sound that split pieces of timber are not so apt to crack as the entire ones; and even that which is only squared escapes better than such as is left round. This splitting in trees begins in the inner part, and widens outward; the workmen call it splitting from the heart: they find that boring the timber, when it is for posts or columns, prevents this better than any other practice; but after all the care it is so liable to crack when thus used entire, that they prefers columns made of pieces glewed together. In general oak is most subject to split when it is in its natural state, and is less liable to this as it is more and more wrought.

We have cautioned the builder in what manner to chuse this trees standing; we are next to suppose him a purchaser of the timber as he finds it. In this case to know its strength and value let him examine its weight and grain. In order to judge from the weight he must have some knowledge of its condition as to dryness, but that an experienced eye will always be found of strongest which is heaviest. For most purposes that oak is best which has the evenest and most regular grain. There are some cross-grained pieces which fro strength exceed all others: these are principally the trucks o oaks that grow upon barren commons; and for posts, and other coarse occasions, where a vast weight is to be supported nothing is like them.

Oak under its maturity is to be chosen for purposes of strength rather than such as has stood beyond its time of full growth, for it is tougher while it is acquiring its size than afterwards. Old oak timber is lighter than such as has been cut at a somewhat earlier time, and it is more brittle, which is the first approach toward decay. The weight and toughness are therefore articles of vast consideration in the choice of its timber.

Chapter XVIII; Of fir, its growth, nature and qualities

The fir is a tree much quicker in its growth than the oak, and sooner comes to decay. The hastly growing trees in general are the shortest lived there requires time to the formations of a sound and firm wood; but when formed we see that whether considered in the living tree, or in the duration in work, it very well answers in value to the time required for its production.

The fir is not a native of this country as the oak, so that the builder seldom has an opportunity of chusing the trees as they stand; we shall therefore confine our observations on this head to the timber as we see it imported; but it may not be amiss to observe there that the fir, although not a native of England, will thrive here very well; that it has been planted in many places, and grows to a great height and excellence; and that it is exceedingly worth while to raise it for use in our own country. The climate whence we import this timber is very little different from our own; it there grows on the most bleak and barren mountains, and we have hills enough of this kind at present that produce very little to the owner: we find the tree will thrive with us, and we know the demand for its timber is great and is certain; what therefore can be more adviseable than to try the success of plantations?

As to the time of felling firs, it does not at present concern us; nor is there any occasion for such care in the seasoning, for it is not of the nature of the oak to spoil for want of this method of preserving; nor is it intended for such purposes of strength that so much caution is necessary. The juice of the oak is watery, and that of the fir is resinous; this makes a great difference in their nature and qualities: the juices of the fir preserving the timber, while those of the oak are more subject to decay in it, and produce worms and rottenness.

It is to this resinous nature in that the fir owes its great duration, for otherwise it is so light a wood, that it would soon perish: we see those of the same or like texture of our own growth whose juices are waterly, last a very little time, while this is of great continuance.

The fir is ready for use in a much shorter time than the oak after felling, and whether laid upon the ground, or floated on the water, it keeps strong and fit for service. If it have less strength than the oak, it is also cheaper, and requires less care and less trouble in preparing, and works with incomparably greater ease; and if it be not employed for so great and essential purposes, it answer more, and at less expence.

Chapter XIX. The uses of Oak and Fir in Building

No tree affords materials for so many purposes as the oak, but we have to do with those only which concern the builder. The cooked pieces are serviceable for coarse and strong work, and the smallest fragments will be of some price for rails, laths, and even down to the pegs for tyling; so that as there is no timber so valuable as the oak for large and important services, there is not the least piece of it while found, but is of some use and answers some purpose to the builder. The oak is therefore, of all kinds of timber, the most universal; and it exceeds all others in strength, solidity, and soundness, and consequently in duration.

No wood whatever supports such weights; none bears the injuries of the weather like it; and even fire affects it much more slowly than other timber.

Oak is the timber which the builder should always use for the substantial parts, and where most stress is laid. Where it happens that a part of the work is to be subject to the injuries of water in the worst way of all, that is, sometimes wet and sometimes dry, there is no timber that endures this trial like the oak, not in articles of importance is there any other that can be trusted in such circumstances.

We have observed that for coarse purposes rough posts of oak will serve; but for the general use in good and elegant buildings, the straitest, finest and evenest pieces of this timber are to be always chosen. The timber of roofs and joists of floors are in manner everlasting when made of good oak; and no wood is equal to it in door-cases and for window-frames. When properly employed in framing or building, it holds for such time as few would imagine. We see instances of this in many of the old framed houses; in which the knowledge of geometry has enabled the builders to give them a prodigious strength with a moderate quantity of material.

Beams should always be of oak where great strength is expected or required. The flooring of barns should be with two inch of oak plank, for the most perfect strength and service; it is a custom with many to lay them with two inch deals, and oak joists, but they are not comparable: and the excellence of the oak for weather-boarding is the same.

For stairs it is greatly prefereable to any other wood; and it has the same preference in posts, joists, and girders, and in general wherefore strength is required under any form.

FIR, although is very inferior quality to oak, is yet a very universal timber in building; and as it is cheap, and works easily, since the use of paint has become so frequent, it has in a manner superseded all other kinds. Wainscoting was at one time done with oak, and doors were made of cedar; other ornamental parts also were of wood of different kinds; but it is all one what is the wood when it is covered with paint, so that deal being cheap and working easy, has taken the place of all the others in general in this respect; and is on many occasions used where indeed oak would be better.

There are few of the purposes before-named, for which we have so much commended oak, but deal is in ordinary buildings made to answer in its place. Roofs are framed with fir, and door-cases are made of it; it serves for the purpose of weather-boarding rough and feather-edged; and doors, dressers and other ornamental and useful parts in a house are wrought in it: the oak would in most of these cases very well pay the difference of price by its lasting; and for others elm is preferable.

The carvers used to have oak for their material, but at present we are got into a slighter way of working, and deal answers the purpose. We admire those pieces of antient carving in which the chisel has been so boldly and so happily employed, but those who admire do not attempt to imitate them. Deal would not well have supported the tender work in use at that time, but it very well answers for that which is fashionable at present; and as we now paint or gild all carved work, one kind of wood does as well in it as another.

In this short view of the uses of the fir, we see that it is become almost the universal timber: it often supplies the place of all other kinds. Where its strength is not sufficient oak is called in, and we look no farther: in other parts of the fabric all that we see is deal, and we find it answers very well on the generality of those occasions.

Chapter XX. Of several kinds of timber worthy to be used in building

Custom has received the two kinds of timber, oak and fir, in the place of all others; but there is no reason that custom should, in this case, be a law to those whose convenience it may suit rather to use different kinds. In and about London, they may be preferred not only on account of their excellence, but because they are always ready for the purchaser, who would not know where to procure the other kinds if he approved them; but in the country the farmer may often want to build his barn, or repair his house, and the gentlemen to raise his whole fabric, with the timber from his own land though little oak, and no fir, grow there. It would be hard if, out of a variety of kinds he has at hand, none would serve, and that he must purchase; but we shall shew him that he is not under any such necessity, by pointing out the strength, service, and uses, of the other kinds which ar of English growth.

The architect in general will do well also to take this addition to his materials into his consideration: for he will find it advantageous on may occasions to break upon the present practice by reviving the old; and to use several of the other species of timber which cur woods and plantations afford, in the place sometimes of the oak, an often of the fir, among that variety od purposes which they are made to serve.

We are not about to prefer any timber to oak in strength, far that were ridiculous; but the oak is of slow growth, and it may be useful to supply its place on many occasions with wood that comes more speedily to perfection. Its duration is often wanted where its great strength might be dispensed with; and on this occasion it may be proper to use in its stead some other wood, if such as is answerable may be found, as we shall it may, at home; strength generally implies weight, and where we want only the duration of the oak, and can find a lighter wood that possesses that quality in the same degree, it will be prudent not to load the building where there is not a necessity.

Where people do not chuse the price of oak they frequently have recourse to fir, but if there where other species in readiness they would not always single out that kind, for there are many that excel it in different particulars, which make them fitter for certain purposes.

At present we have no medium between the oak and the fir, whose several strengths are so exceedingly different that there may be many degrees between them: there are all these degrees in nature, and our own plantations supply a variety of kinds of timber that answer to them; we are therefore vastly to blame that we do not take in their assistance.

Although it might appear from our using only two kinds of wood in building that there was a little variety in the nature of those occasions on which is required, yet there is in reality a great deal. Every purpose for which timber is demanded requires some particular quality in it, and these purposes are the more or less perfectly answered as one or other of our two kinds have those qualities in more or less perfection: but though these two cannot be suited so well as might be wished to all uses and occasions, some one or more among that variety of kinds nature (…)

Chapter XXI. A table of useful timber trees, the growth of England.

ELM thrives on a loamy soil, is raised by layers, and it of tolerably quick growth: the timber is strong and sound, but of a rough grain: it will serve for many coarse purposes, and very durable. It is fit for beams, posts, and water-pipes, but it must be always wet or always dry, for it does not bear changes in this respect: deffers, and other necessary things about a house, are better made of Elm than any other wood.

ASH grows very best in a light rich mould, and is raised from seed; it is of very quick growth, and the timber is tough, strong, and durable, if kept dry: no wood is fitter for many purposes of strength.

BEECH grows best in a dry warm soil; and is raised from seed. It grows moderately quick, and its timber is sound, firm, and has a fine even grain: it is less liable to split than any wood whatever.

POPLAR is of several kinds: the white, the black, and aspen: they are all very quick growers, and love damp soils. The timber is light but not strong: it has however many good qualities: none requires so little seasoning, for none starts so little: it is of a fine white colour and beautiful grain, and is therefore fit for many purposes in the inner part of buildings. The timber of the black is somewhat firmer than the white, and the aspen than either; but they are all of this kind.

SYCAMORE thrives on a light moist earth, and is raised for seeds. It grows quick, and the timber is white and of a very beautiful grain. It resembles that of the poplar, but has more strength. There are old houses in the country floored with sycamore, and wainscoted with poplar: the wainscoted never has been painted, but retains a good colour, and floors stand excellently and are very pretty.

THE LIME tree grows best in a rich loamy earth, and is raised by layers: it is moderately quick in its growth, and the timber is white and has a very even grain, but it is liable to split; it may however be serviceable for many kinds of inside work, and particularly is excellent for carving; much superior to deal and to most other woods.

WALLNUT, succeeds best in a sandy loam, and is raised by sowing the nut; it grows slowly, but the value of its timber is very great. The fine veined pieces are to be reserved for cabinet makers, because of the price they bear, but the rest is of great value in building. The French use walnut as we do oak, and it answers very well; for it is firm, sound, strong to bear weights, and very durable.

CHESNUT loves a dry warm soil, but is not very speedy in its growth, it is raised by following the fruit, and the timber is very sound, strong and durable. It was at one time used in the substantial part of buildings,, and in old houses it is often mistaken for oak, even by good workmen, it so greatly resembles it in colour, and substance, and in its qualities. It does not bear to wet and dry at times; but entirely wet or entirely dry, it will last without end. It may supply the place of oak on most occasions.

SERVICE does best on a tough firm loam: it is raised from seed, and grows quick; the timber is firm and beautiful veined. It would answer excellently for doors, and other ornamental purposes.

QUICKBEAM grows best in a light dry loam, is raised from seeds, and the timber is strong thought light. It is a quick grower, and should be felled at about five and twenty years, at which time the wood will be fit for many purposes in the inside work in buildings, cutting easily and having a fine grain.

HORNBEAM grows best on a poor soil, and is raised from layers; the growth is slow, but the timber is very sound, firm and hard; it has a coarse grain but great strength: and may be used in the coarser parts of the building.

MAPLE thrives best in a rich mellow soil, and is raised from layers; it grows tolerably quick, and with proper management will make a handsome tree. The timber is sound, firm, strong, and very beautiful: its grain is exceeding close, and it is often beautiful veined. It would answer excellently for the finest of the inside work in buildings.

CHERRY TREE, grows best in rich loam, and is raised by layers: it grows tolerably quick, and when not spoiled in shape by the tricks of nurserymen, it makes a large tree: the timber is very firm and very beautiful, and may be used both in the inside and outside work of buildings with great advantage: it is equal to almost any timber, except the oak, in strength and durability; and, when managed in the way of mahogany, has a handsome appearance. It is idle to attempt, as some do, to pass it for mahogany; but every one will allow it to be a beautiful wood; and it bears working as successfully as any.

PEAR TREE, the wild, or hedge pear tree, rises to the best timber. It is raised from layers, and will live in any soil. It grows moderately quick, and its timber is strong and sine: it is of a close and delicate grain, and beautiful color: its strength recommends it, on many occasions, to supply the place of oak, its firmness and beauty also plead greatly for admitting it into the more delicate parts: no wood cuts better into boards, nor does any suit more excellently for ornaments by carving.

ALDER grows any where near water, and is raised from layers, or by sticking pieces in the ground. It may be trained up to a good thickness, and bears standing continually in water as well as any wood whatsoever. Some have written that, being put in water, it hardens by degrees into a stone: but is false. It continues firm and good for a vast while, and that is a sufficient recommendation.

SALLOW grows best in a loamy damp soil, and is raised by layers. It grows very quick, and with care may be trained to a good sized tree. The timber is very tough and strong, and is surprisingly lasting. It must be used only where it can stand dry: but in that case it is as durable as oak.

YEW grows best on barren hills, and might be planted to great advantage in many waste grounds. It is raised from the berry, and though it grows slow, makes amends in the quality of the timber, which is extremely tough and strong, and of the beautiful grain and fine colour. The more irregular pieces might be used in the coarser works, and the beautiful planks of it would be worthy to be introduced into the finest of the ornamental parts of the most elegant buildings, where it would be as lasting as beautiful.

We say nothing of the former woods, their qualities being sufficiently known; but have enumerated these to give the builder a view of what variety of useful materials he leaves neglected, we do not take upon us to dictate in what kind of service each should be employed. We have named their qualities, by which it will be seen for what they are fit; and we leave the application to his own judgment and discretion.

Chapter XXII: Of lime

We have taken a view of the two great species of materials used in building, stone and timber: we have considered their qualities, and laid down their nature in their separate state, and shall now proceed towards their use in erecting edifices, by entering upon the nature of those things which connect, cement, and fasten them together.

(…)

Lime is made of a great many different materials, and according to their qualities and nature it is better or worse, stronger or weaker. It may be made of stone, of chalk, or of shells; but this is a general rule, that the harder the stone the better lime: therefore that which is made of rocks is best, that of chalk inferior, and that of shells worst.

Some have pretended to describe the limestone as if it were a distinct species of rocks, but that is idle. Every stone that will ferment with an acid, such as aqua fortis, will may good lime; and the more sound and solid it be the better.

In England, our best stones for this use are bluish or redish. In Italy, where marble is plentiful and cheap, they burn that into lime; and many other kinds are used in different places.

We have observed already that the nicety of burning lime from the same stone that is used in building need not be observed: but many have with reason taken notice that it is a great damage to the English buildings that the architects are so careless in the matter of which is made.

We advice the builder therefore who is to undertake any considerable structure, to look carefully to the working of his lime. Let him see that it be burnt from a sound firm, and weighty stone, and such as upon the dropping a little aqua fortis on it sends up a large quantity of bubbles. Let him take care that it be uniform in its structure, at least that there be no lumps of different matter among it, which is often the case; if there be, let him try whether they ferment with the acid, and if they do not, let them utterly reject such pieces.

Lime stone is best when the broken form large rocks or beds, which lie in the sides of hills; and the lime will be strongest which is made from such stone as in newly taken up, not such as has been exposed first sometimes to the air. Lime-stone alters exceedingly on lying above the ground; and it loses that every matter which gives it firmness in the lime.

It is for this reason that stones to make lime are always better dug than picket up to the surface, as Palladio justly observes; and, for the same cause, such as have some moisture while the pit; for those which are utterly dry, are, in a manner, in the same condition with those that have lain exposed to the air.

If there be not a sufficient supply of proper materials for good lime of the strongest kind, let the builder make as much as he can of the best materials, and a quantity also of an inferior sort, from chalk or from worse stones: let him keep this inferior kind of inside work, for it will be as white as the other, all that it wants is strength, and let him use the other wherever he has a dependence upon it for firmness.

Among the many idle things we have affected to copy from the Chinese, one was their lime: this is made of a sea-shells only, and it is a white and elegant kind, but of no strength or service in this climate.

Sound and firm lime-stone requires about sixty-hours, with a good fire well regulated, to burn into lime; and it loses about one thirty of its weight in the burning.

To examine into the value of lime when burnt, we must observe its colour and soundness: the whitest is the best; and if upon striking it against a stone it sounds, it is proof that it is strong and good. The weight also is a consideration, in this matter the lighter the lime is the better; and we are to observe how it flakes. The best is that which requires most water to slake it; and in wetting, the more it smoaks the better; it ought also to stick to the sides of the vessel in which it is slacked for trial, and the more firmly it does this, the better it may be expected to endure in the building.

As to the degree of burning, the nature of the stone must determine that: we are sensible sixty hours will appear a great while according to the modern practice; but where perfectly good stone is used less is not sufficient; and this is the time directed by all the matters in the sciences.

Too much care cannot be taken on this head; for the best materials, with bar mortar, will never raise a durable fabric. We see, in the old buildings, mortar become as hard as the very stones, and we say that it acquires this strength and firmness from the air. It is true that it does, but there requires a choice in the lime of which it is made, otherwise the air, instead of hardening, will quickly moulder it to powder. We see this every day in buildings wherein bad lime has been used, as we see the contrary effect where there has been a proper choice in the material.

To give the reader a distinct idea of the manner of burning lime, we have, in Plte VII, given a plan and two sections of the kiln most convenient to this purpose.

FIGURE 1 *The plan*
A. The fire-place
B. Two bars laid occasionally over the apertures C.C.C.C. and supported by loose bricks, one of which is taken out occasionally for the lighting of the fire.
C.C.C.C. the four apertures in which the bars are supported.
D. A passage of three foot and a half wide round the kinl.
E. Recesses where the workmen come to rake out the lime.
F.F.F. Three windows level with the ground.
G. The steps down the kiln.
H. A flight of steps going to the top, where they put in the lime-stone.
FIGURE 2*. A Section of entire kiln through the middle.*
I. The cone, in which the materials and fuel are put.
K. One of the bars, marked with B in the plan
On this, and the other bar, they lay first faggots, then coals upon them, and afterwards the lime-stone and fuel, in beds, one above another.
This they carry to the height of about four foot at first, and afterwards removing the bars, they draw out the lime in the recesses, marked E in the plan, supplying more fuel and more materials at the top as long as nay more lime is required.
L.L. The passages, marked D.D. in the plan.
M.M. The walls of the recessed E.E. in the plan
N. One of the windows answering to F. in the plan.
FIGURE 3 *A section shewing the front of the kiln below and the passage round it.*
O. One of the recesses, E. in the plan, where the lime is raked out.
P.P. the passage, marked D in the plan

Chapter XXIII: Of preserving lime, and making into a mortar

As the lime is always best when the stone is carried immediately from the rock to the kiln, and burnt as soon as dug; so the mortar is always best when the lime is slaked immediately on its coming out of the kiln.

The reason is evident, for the lime has at no other time so much strength: the air taking an effect upon it which is in a greater or less degree slaking; for in time it will be thoroughly slaked by the air, and fall to a weak powder. But it is not always convenient to work up the lime as soon as burnt; sometimes it is needful to keep it long time; and finally, there are a certain purposes which it never answers so well as when it has been thus preserved.

When lime is to be preserved only a little time after the burning for the convenience of any kind, no more is required than to keep dry; but when it is to be preserved longer more caution is needful. For this purpose let a pit be dug in the ground, and over this a vessel set, as for making mortar, with a hole stopped so as it may be opened at pleasure its bottom: let the lime be flanked and worked up in this vessel, and then opening the hole let it run into the pit; as soon as the pit is filled let it be covered up with a good coat of sand, and thus it will be kept moist and fresh.

Another method is to cover up a quantity of fresh lime with a yard thickness of sand, and then pour as much water as will slake it, but not reduce it to dust. If the sand crack, and the smoak rises thought the openings, close them up, and keep all fast and without vent: the lime will be thus preserved ever so long, and will acquire a new value, by the time of its lying: it will be more tough and clammy than any other kind, and less free to shoot out its falts when worked. No lime is so proper as this for inside work, where great nicety is required, and none is so fit for painting upon, because it will not destroy the colours.

MORTAR is made of a mixture of lime, sand, and water; other ingredients are added occasionally for particular purposes: but this is plain mortar, and is the foundation of the different kinds.

We have advised the builder to be very careful in the choice of its stone for lime, and very nice in his examination of it after it is burnt: he will by the care be sure to furnish himself with good lime; but if he stops there he may have very bad mortar. Sand and water are common ingredients, and to the careless eye there may seem little difference in the several kinds of the one, or it may be imagined the variations of the other are of no great consequence. But this is an error; every little particular is to be regarded in a great work, and there are differences in both these articles which may so far influence the composition of the mortar, as to render the best choice, and greatest care about the lime ineffectual.

A judicious person who sets about making mortar, will which to have nothing in it but what he intends; he will therefore take care that the sand be pure, and the water clear, otherwise whatever foulness either of them has, it carries so much of some matter not intended into the mortar.

Our people are very careless in both these particulars, and they are very faulty in that neglect. They take their sand from the first pit, and their water often from the nearest kennel. It must grieve a person, who knows the importance of these articles, to see such a slovenly negligence in respect of them in preparations for the greatest and the most eminent structures.

Chapter XXIV: Of the various kinds of SAND

River sand is better than pit sand, because is clearer, otherwise there is no difference: for this reason, where river sand of a proper kind can be had, it is to be preferred, otherwise pit sand is to be well washed, and it comes to the same thing. River sand is no other than sand washed out of the banks bottom, from which any earthy matter that was among it originally has been carried off by the course of the water: therefore pit sand may be made the same by the same method, that is, by washing it in water.

Very little sand is perfectly clear as it lies in the earth; therefore, when pit sand is to be used, let it be well pumped upon till the water which will be at first yellow, white, or muddy, runs off, after ever so much stiring, as clear as it was put on; the sand being then examined will be found to look clean and bright, like that of rivers; and it is to all intents and purposes the same.

Next to the cleanest of the sand, let the builder take care of the cleanest and condition of its water. Dirty water always weakens the mortar, because it carries mud into it, which has no strength nor any business in the composition. Spring is not so good for making mortar as river water, but the best of all is that taken from a clear pond: if it be set in the sun for some hours before it is used, or a quantity made hot and mixed with the rest, that all may be warm, it will slake the lime the more readily and perfectly: this depends upon a very well established principle, which is, that soft water slakes lime better than hard; and hot water more perfectly and more readily than cold.

The quality of the sand is also a very great article. There is some that is soft and fine like dust; this is the worst of all. The proper kind for a strong mortar is a large coarse, clean looking sand, of a yellowish colour, and such as hurts the hands when rubbed between them.

The care the antients took in these small particulars was the occasion of the vast strength and duration of their works; if we will at this time use the same precautions, we shall, like them, work for the admiration of succeeding ages. Mortar thus made will acquire that hardness we find in theirs, which is equal to the brick and stone that it cements, by the effect of the air; while the very same means reduce the common ill made mortar to powder, and destroy every thing about it.

Palladio observes that a larger quantity of pit sand is needful in mortar than of river sand, but when the pit sand is washed it becomes altogether the same in its nature, and is to be used in the same proportion.

The advice of this author, and the practice of our builders, differ greatly with respect to the quantity of sand that is to be used in this mixture. He orders three times the quantity of lime if it be pit sand, and twice the quantity if river or sea sand; and the common practice at this time allows less than a third part; more in some places; and in others they are made equal.

To speak from experience and the result of many trials, it seems that Palladio’s proportion of sand is too great, at least for mortar to be used in our climates, and that what we commonly allow is too little. The medium perhaps will be best, and if general rule may be laid down, it should perhaps be that two thirds of lime and one of sand would be the best quantities.

Palladio sets sea sand and river sand upon a level in point of goodness, and seems to be indifferent as to their use; but it has been found that sea sand does not succeed so well as the other. The reason is plain enough, for there is salt in sea sand which imbibes the moisture of the air to the damage of the whole; we have observed that nothing should be suffered to come into mortar but what is intended in the composition; salt is not intended, but it will always hag about sea sand, and therefore river sand is better.

We have observed that a coarse yellow sand is best for mortar; but by this we must not be understood to exclude those of other colours, for that article is quite indifferent. All genuine sand is a crystalline matter of formed into little grains, and tinged more or less to one colour or other, but which signifies nothing. While sand is condemned by some of the antients writers, but this must be properly explained, for what is true in one country does not hold good in another. The writers who condemn white sand wrote in Italy, in that country there is abundance of a white matter in form of sand, but really composed of small fragments of marble; this lies about the marble quarries, and is washed into the beds of rivers, and this which from its being in form of powder, is called sand by those who do not observe the distinction, must needs be of a very improper nature for a mortar.

We have said that sand is of a crystalline nature; this is not in the least so, but calcareous: it is too much of the nature of the lime itself to answer the purposes of the intended mixture. It ferments with acids in the same manner as lime-stone, and might be burnt like it into lime, whereas the other is nto affected by the acid, nor can be reduced to the condition of lime fire.

This is the white sand that the Italian writers object to, and that the builders in that country refuse to use in mortar: we have none of it in England; our white sand is the same with the yellow in all respects but colour. In Buckinghamshire the white writing sand is so common that they use it on all occasions as the other: among the rest they mix it with lime for the making of mortar, and it serves as well as the other.

We may understand by the account the Italian architects give of their white sand, that this is the occasion of their rejecting it; they do not say it is because of the colour, for they were too judicious to regard such trivial circumstances; they tell us it was softer, and that is a real cause of its being inferior to common sand.

They have one kind of sand in Italy which the old authors praise extremely, and that with reason: it is found at this time Puzzoli, the old Puteoli, and hardens under water. This is a very substantial recommendation of it for buildings are exposed to that element, and it is found vastly superior to all other for such purposes. It is a pale coloured sand, less harsh than the common kinds, though composed of large particles; and it contains a kind of plaister stone, which has, without burning, the same effect as plaister of Paris has when prepared. We say withour burning, because it is not calcined by any human means; but these are places full of hot springs and hot vapours, and probably that effect is produced by fires burning naturally under ground. De L'Orme has a very singular observation with respect to this Puzzoli or Puteolan powder: he says, that the mortar in which it is used in a manner calcines flints, turning them white throughout their whole substance. This is a very wonderfull effect; but he seems to speak if it with the assurance of one who knows it to be true.

Chapter XXV: Of mixing mortar

When the ingredients of mortar are carefully chosen, the lime sound and fresh, the sand clean and sharp, and the water soft and pure, there remains another consideration in which the antients were very careful, and we are very remiss and negligent; that is, the mixing them well together. We affect to wonder at the strength of their cements, and some have pretended to explain it by a supposed addition of many ingredients; but when we compare their practice and ours in this light, we shall see there need be no recourse to such solution, but that all is easily accounted for without it. The ingredients were the same in their time and in ours, for we know it by their writings, but they selected and picked them carefully, and were at vast pains them together, whereas we are negligent in one respect and idle in the other.

Our people throw in a great deal of water and then a little labour does;: the antients mixed all by little and little, and might be very well said, in the language of the French proverb, to dilute their mortar with the sweat of their brows. They employed a number of labourers, who constantly worked together upon the same quantity of mortar for many days; and it was whis which blended every part of it so thoroughly together that when it united it hardened into a stone. There are remains of this old mortar yet among the ruins, and when pieces of any size are taken off, they bear a polish equal to marble.

We name these circumstances, and confirm them by these instances, to spirit up our builders to have more pains in taken with that great article mortar; they may make such as the antients did if they will take the pains the antients took to do it.

Hair is on some occasions mixed in mortar; and, for certain purposes, it is worked up with oil instead of water: there are also many other particularities of which we shall treat in the place; but to speak in general here of the materials, and the manner of connecting them, we cannot omit to oppose against the flight and inconsiderate practice of the present time, that careful, exact, and laborious manner in which the Greeks and Romans caused it to be done, and by which they gave their mortar that power of hardening by time, which have been very apt to admire and envy, but too little careful to understand or imitate.

Chapter XXVI: Of lead

Lead serves a variety of purposes in building; and it is fit the architect should be fully acquainted with its nature and qualities. It is the produce of most parts of the world: in England we have a great deal of it, and often there is silver, in large quantities, mixed with it in the orre.

Though lead be very common in England in the ore, it is neither here, not elsewhere, found pure or naturally in its perfect state. Pieces of native lead have been said to be found in many places, and such things are even preserved by name in the catalogues of cabinets; but what has been usually mistaken for native lead is, in reality, a kind of ore of silver, blackish and malleable.

Common lead ore is bricht and bluish, and has very much the aspect of the metal. No metal whatsoever is more easily separated or purefied; but the operation, though easy, is destructive in its consequences, the vapour of lead being very pernicious. The cattle are often killed in the neighbouring pastures, and the trees all about have a sickly aspect. The workmen also feel the effects of it in terrible diseases; and, at the end, death; even the plumbers, who work the pure metal only, are not altogether free from the same inconveniences.

Lead is sent from the furnaces at the lead-works, in large lumps called pigs: the plumbers receive it in this form, and they run and work it into several others. The principal of these are sheets, pipes and canes.

Sheet lead is of two kinds made by casting; and a third which from the nature of the process is called milled lead. The two kinds of sheet lead differ in thickness, and are cast in various manners; the milled lead is the thinnest of all. The thicker kind, or common sheet lead, is made by casting upon a table; the pig lead is melted in a large furnace; the table which is placed very near it is eighteen or twenty foot long, with a rising edge all about, and it is covered with the fine sand; this is pressed and beat, and then smoothed down, and the lead from the furnace is run over it. The thickness of the sheet is determined by the space left between a part of the engine which spreads it, and the surface of the sand; this engine, which is called a rake, bears upon the edges of the table, and comes within a regular and small distance of the sand.

The thin sheet lead is cast upon a linen cloth, spread over a woolen one, which is stretched upon a proper table. The linen cloth answers the purpose of the sand, and they know the lead will not burn it, when it will not set fire to paper. In this case the thinnest of the sheet of lead depends upon the quickness with which the rake is drawn along the table.

Milled lead is thinner and smoother on the surface than this; but though it has an advantage in aspect, it is the worst of all the kinds for service. Its great fault is its weakness and this is owing to its being so exceedingly thin; it looks very fit for use, but when it comes to be exposed to the air it cracks and shrinks, and by no means answers the purpose of keeping out the weather, or preserving the builder.

The common sheet lead is used in covering churches and large buildings: the thinner kind is often employed also for the same purpose; and it is used also between the large stones instead of mortar in some magnificent buildings.

Pipes of lead are made two ways; by casting in a mould, or by bending a piece of sheet led, and soldering it. The mould for casting them is commonly of brass, and has a core of iron supported loose in the middle of it, at such distance from the inside of the mould as is to be the thickness pipe. In the way of making them by soldering they have cores of wood of a proper thickness, round which they roll a piece of sheet lead, and bringing the edges together, join them with folder, which is a mixture of two parts lead, and one part tin, that metal melting more readily than lead.

The canes of lead are made for the glazier’s mill, in which they are wrought into a flat form with a groove on each side; this, when finished, they use for joining the pains of quarries of glass in ordinary windows.

There has been an opinion that lead grows heavier when exposed long to the air; and celebrated English writer urged as an instance of this, that in buildings covered with this metal they are obliged after a time to take off the lead and put tiles, because it is grown too heavy for the rafters. This thus philosophers argue: a builder would have told him it was the rafters that grew too weak for the lead, and not the lead that so encreased in weight as to become too heavy for them. Wood will decay and lose its strength, but the imagination that lead grows heavier is altogether fanciful.

The principal use of sheet lead to the architect is the covering large and strong buildings; there is a great deal of difference in the thickness of the sheet which ought to be proportioned tot eh supports and to the massyest of the building; the difference is in general from seven to twelve pound weight the foot square, and this makes a vast variation as well in the price to the owner, as to the load laid on the building.

Pipes are used for a variety of occasions; and cisterns are made by casting; these as well as the pipes are paid for by weight, as is also the covering of gutters, and works of plain lead on other such offices. Sash weights are sold by the hundred as the larger things, and the soldering the joints of water pipes is paid for according to the diameter of the pipe.

Beside this, which are the great and essential uses of lead, it serves for several others in the builder’s possession, as the fastening of iron-work in the cavities of stones, which can no other way be firmly united, for these and other accidental purposes it is paid for certain rate, by weight, when the work is little; but when the trouble is considerable, and the quantity of the lead employed is less, allowance is made accordingly.

Chapter XXVII: Of iron

Iron is useful to the builder in an equal degree with lead, and the smith comes in upon the same footing with the plumber to the service of the architecture; he is even required on a greater number and variety of occasions.

Iron, of which the common affairs of life require so continual assistance, is, like lead, found in almost every quarter of the world. It is indeed much more universal than that metal, there being scarcely any earthy substance out of which it may not be obtained in a greater or lesser quantity; and scarce any large extent of ground any where in which there are not rich ores of it to be found, often at the surface. In this we see the care of providence: those metals which serve our necessary purposes are common, and produced every where, while gold and silver, the instruments of luxury, are met with only in a few particular places.

Though iron be, like lead, very common, yet it is not found any where native in its pure and perfect state, any more than lead, but must always be obtained from its ore by the help of furnaces, and violent fires. As there have been pretences of native lead, so we hear also of native iron; but what is called by that name, whether by the vulgar or philosophers, is always either some rich ore of iron which will not beat hammering, and therefore, though a rich ore, is not a piece of the pure metal; or it is a piece of some iron instrument lost and buried in the earth, and afterwards taken up, and supposed native iron.

The form in which iron ore appears is various, but usually it is a reddish of iron-coloured stone. From this is obtained by the means of fierce fires, and vast furnaces, in form of what is called pig iron or cast iron, in which condition it is ready for any service, and is wrought by the smith into any form. In the forest of Dean in Gloucestershire, where there a great iron works, they mix with the fresh ore the flags or cinders of former workmen, which lie in vast heaps about the places where the works have antienly been, and by this mixture they make a tougher and better iron than they could produce at once from the ore alone. It has been pretended that these flags, which plainly contain a great deal of iron, have been imprenated by the air with that metal since they were exhausted, and thrown by out of the former works; but the truth is that the former workmen did not exhaust them of the metal so thoroughly as they might have done, either because they did not understand their business so well as ours, or because having a grater plenty of ore they did not work so close; for certainly these flags have no more iron in them now, than they had when those people left them.

In casting of iron, there is a bed of sand before the mouth of the furnace, in which they hollow out a kind of moulds, according to the figure and size of the pieces they intent; and the violence of the heat is so great, that when the melted iron is let out, it not only runs freely to these moulds, but continues liquid some time when it is in them, boiling and bubbling up at the surface in a surprising and frightful manner.

The larger pieces of cast iron thus formed they call sows, and the smaller pigs. They also make moulds for a great variety of things. These come very cheap, because there has been no second work about them; but when broke they are of little value when at a distance from the works; and the brittleness of cast iron is such, that whatever is made of it, is liable to that accident, and often from the effect of air-holes will burst even at the fire.

This difference of cast iron and hammered, or as it is commonly called wrought iron, is very great in quality and is not less in price; and in this last article the difference though great is very reasonable; the price of the cast iron being sounded on nothing but that of ore and fuel, whereas the other depends upon a vast deal of labour; and it is made amends for by the intrinsic value; wrought iron, which comes so much dearer, being always worth a certain price in any condition; whereas the merit of the other is principally in its form, its worth being when broke little or nothing.

Cast iron is however a very serviceable article to the builder, and a vast experience is saved in many cases by using it; in rails and balusters it makes a rich and massy appearance,, when it has cost very little, and when wrought iron much less substantial would come to a vast sum. But on the other hand, there is a neatness and finished look in wrought iron that will never be seen in the cast; and it bears accidents vastly better.

The uses the architect as for iron are not less numerous than they are important: railing has been named already, and is of many kinds, plain of with pilasters, or a variety of ornaments. Window bars, chimney bars, and that vast variety of hooks, nails and fastenings, swell the account greatly; we are also to count among the lesser articles, hinges, staples, latches, bolts and locks, and multitude others; and among the larger those cramps and chain-bars that are sometimes necessary to hold the parts of a building together, and those that sometimes supply the place of a stone-work; in all these he is to consider the necessity quality and substance; not trusting to the smith, whose ignorance may often make him suppose more quantity is necessary in iron-work than is; and whose interest may sometimes make him crowd in a great deal whether it be needful or not.

He should also careful to look into every piece of large iron-work himself, to see in what manner it is finished, for in these instances there is always a great stress laid upon iron, and it will be very ill able to support it if be carelessly wrought. Nothing is so common as to see iron-work full of flaws, and nothing is so hurtful, or so needless. There requires nothing more to give it an equal body and strength throughout, then good hammering; but this the servants are very apt to omit, and the master is too ready to look it slightly over.

Chain bars are frequently necessary in groined arches of brick or stone; they are used in arcades to tie the front piers, and to hold them to the main building: they are also used occasionally in other parts of buildings where great stress is laid.

Sometimes they are so disposed that they may be taken away when the several parts of the building have settled, and all is safe; but they frequently are less in their places.

Cramps are of great service in holding stones together, where it is required they should firmly keep their places. We have given figures for the explanation and illustration of these two great uses of iron in our eight plate; and in our ninth and tenth shall give various kinds of railing.

Having thus finished what appears needful to be said concerning the materials used in buildings, we shall close the account with a few words on the necessity of the architect understanding and overlooking their use. It is the whose credit is at stake, and it is he therefore who ought to have an eye to every part of the work. The several other persons who are employed according to their trades and possessions, work under him, and are accountable to him as he to the person at whose expence the building is carried on; It is therefore to he on whom the dependence is placed and he is to answer for the miscarriages of the others, because it is under his direction they are employed.

We are sensible among the persons of distinction, who amuse themselves with the study of architecture, some of whom have done a great deal of honour both to themselves and the science by their progress in it, a consideration of these things which are only subservient to the great objects of their designs, will be looked upon as too mean and trivial; but those designs can never be fulfilled, nor those great objects raised to their perfection, without some person who has skill and integrity be deputed to look after them. As to the possessed architect, thought the science be a very noble and exalted one, he must not be above stooping to these which are its most minute considerations. We admit that there is as much room for genius in architecture as in writing, and that it may be as much displayed in a great building as an heroic poem; but in order to this, the attention we have advised to little things is a necessary previous step, without which the others cannot be taken. It is the foundation, and error in which undermines the whole superstructure.

FIGURE 1 *In plate VIII, shews the plan and elevation of and arcade, part of a building in which the chain bars are seen in their places, with their manner of fastening.*
A The chain bar
B. The collar into which is received.

FIGURE 2 *A plan of a plinth, or what is commonly called a facia course, shewing how the stone ashlering is cramped together.*
C. The ashlars. These are stones let nine inches into the wall.
D. The cramps of iron holding together.
E. The bond stones carried through the brick wall.

BOOK II OF THE SITUATIONS: AND ORNAMENTAL PARTS OF BUILDING.

(…) Whatever be the building he proposes to erect, it must have a foundation: we shall therefore, in this place, acquaint him with the nature of the foundations in general: that we may hereafter speak of them without leading him beyond what he has considered. In the same manner, a floor, a chimney, and roof, are articles that must occur, in whatever building, for the uses of life, and shall be the subject of the farther enquires; and these will be here treated of in the same manner as the article of foundations. These are whet we understand by the essential parts of the buildings; and to them we shall add the like accounts of such others as come under the same denomination.

Among the ornamental will fall the orders of architecture, which give the greatest beauty that can be communicated to a building; but they are not essential parts, because very good, may be very elegant, edifices and houses may be erected wholly without them.

From this view of the plan and nature of the present part of our undertaking, the reader will see not only what we comprehend under the distinctions we have established in the several portions of buildings, but why we have proposed to treat of then in this part of our work, and in its manner. We propose leading the student from the principles to the practice of science, and from its smallest objects to its greatest undertakings. That we may be understood, we clear every part as we go, and endeavour to explain first those things to which we afterwards refer.

PART 1 OF SITUATIONS

Chapter I: Of situations in general

When we speak of a situation we naturally mean that of a house in the country. In cities and great towns business is more regarded than pleasure, and men are confined to do not what they chuse, but what they can. They are cramped for room, and must conform with the method of other buildings: what regards a situation therefore in this respect concerns rather the placing of streets and squares than of private houses; and this is a consideration upon which we shall enter in a succeeding part of our work. We shall here speak of situation for private houses in the country, where a place may be chosen according to the inclination of the builder or the owner, where he may have a room to spread his edifice over what extent of ground the pleases, and no check upon his fancy as to the disposition of its parts.

In all buildings we seek convenience and pleasure, and neither the one nor the other can be obtained unless we properly consider the place and the situation of the structure; the conveniences of life cannot be had unless they are either produced near the spot, or there be common ways of conveyance for them: therefore the country house should stand either in the neighbourhood of a town, or have water carriage or common land-conveniencies.

Pleasure can never be where there is not health; therefore such a situation is to be chosen as is not infected with damp or other unwholesome vapours; and after this the beauty of prospect, and advantages of diversions, are to be regarded.

These are the first and great considerations, but the lesser are not to be neglected: though it be convenient to be near a town, or in the way of cheap and easy carriage of needful matters from one, yet it is a great advantage to have as many of those things produced about the house as possible. Thus there should be trees in sufficient quantity for the sake of defense, shelter, and the common used in country implements, and for fuel, and other such common articles of nature, and the means of raising such others as are to be the produce of our industry.

The place of the house should be such that the access to it be easy and convenient.

The country about it, even to a great distance, may be understood in some sense as the property if the eye, and its situation and disposition are therefore to be regarded with respect of prospects; the more cultivated it be, always the more cheerful and beautiful; for there is a melancholy look in desert places. Where it rises in and agreeable manner so that two or three views are seen at once, the object is the more pleasing; and a road at a proper distance, or a navigable river, affords a continual moving picture.

The great articles in prospects are variety and extent; either without the other tires. There is something composed and cheerful at the same time in a home view, or limited prospects; but we grow weary of it in some other part there be not a larger field: and where the extent is in a manner unbounded any way, after a while we see only the clouds in the horizon.

The prospect which is altogether too extensive is better to be born with than that every way too limited, because it may be in some degree remedied, but the other cannot: we can obstruct the sight when we cannot enlarge its scope; and it is easy to block up a view with trees, when it is impossible to open a vista through mountains.

It is the misfortune of our senses that we cannot see distinctly at great distances, and from hence arises that defect in our minds, that vast views swallow up and drown the apprehension, so that in seeing to much we regard nothing: but this we can palliate; the other is without the least glimpse of remedy.

The neighbourhood is another consideration not foreign to our present subject, for it is determined by the place.

Retirement is what we seek in the country, but it must not be too absolute. We all fancy we shall be pleased with it, but few of us can well bear it in the extreme. When we first think of leaving a populous city, the charms of retreat appear double, because of the opposition to that noise and hurry; but when the comparison is forgot we grow weary of the sameness of the scene.

Retirement is apt to be melancholy; we should therefore seek the means of remedying its fatigue, for it is greater than that of business: let us have them in our powers, and we shall perhaps be the less inclined to fly them. There is this perseverness in human nature that we want ten times over what we cannot have, and that often for no other reason but because we cannot have it.

The remedies for the melancholy of retirement are company and conversation; let us therefore provide for them, but without forcing them upon us when we are not disposed for them. Company in the country is as a medicine, it nauseates when we do not want it.

I would not have a man lose the idea of retirement for fear of being melancholy; let him therefore not fix his house in the midst of others, for that were like remaining in a town: nor let him bury himself in a desert, out of the reach of everybody, for there he will forlorn. Let him chuse the place for his house where there is retirement, but let it be within reach of company.

(…)

Chapter II: The air

(…)

The choice of a good air is the more essential because it is one of these things the faults of which we cannot always mend. If the place be choaked up with trees, and surrounded with quagmires, these will render the air unwholesome, and as they are the cause I may be amended by cutting down the one, and filling up the other: but this which is the least occasion of its badness can be obviated only in a certain degree, and that at a great expence; where the defect arises from these causes, and they are in any great degree, no price will purchase the perfect cure: and in many other instances the air is altogether out of the power of human art to mend at all.

(…)

We see then the great faults of the air, and to what they are owing; it is our power to avoid them all by the proper choice: but if we have not this caution before us we may be led by some trifling consideration to give up the most essential benefits of nature.

(…)

Chapter III: OF WATER

(…)

CHAP IV: THE SOIL

(…)

How long, and in what degree, the rains shall be detained within the reach of the surface, is altogether determined by the ground, and comes immediately under the architect’s consideration. The soils in England may be divided into three general kinds, sandy, loamy, and clayey; we may add chalky to these, but they are not very eligible to build upon. The sandy is the lightest and loosest, and in this may be included the gravelly kind; the clayey is the toughest and heaviest. These are the two extremes. The loamy consists of sand and clay with other mixtures, and is of a middle mature between them; it is therefore, as middle things in general, the most eligible.

In absolute sands, or gravels there is always a healthy dryness in the air, but they let the rains soak through them too quickly, so that enough of the wet is not detained for the common purposes of the growth of the plants; and they dryness and sharpness of the air in high situations, with these soils, is too much for many constitutions. On the other hand, where the soil is clayey, if it be in the extreme, the water that fall in rains it not able to penetrate it: it detained too long, and here all is in the other extreme. If the clay lie upon the surface it is damp and dirty in wet weather, and it cracks and chops in dry, both which are very disagreeable; and if it lie at some small depth under the surface, the rains penetrate easily to it, but are detained upon it, chilling the roots of plants, and by that stopping their growth, making the place damp and moist.

The loam, which is of a middle kind between this, is subject to neither of their defects; it receives rains freely, and detains them sufficiently, but not hurtfully: there is enough moisture in the earth to soften by its vapours the great sharpness of the air, bur there is no so much as to chill the roots of plants, or occasion a dampness at the bottom. We have said that the builder is not, like the physician, to pick out an air that will be fit for some particular disorder, but such as, being pure and moderate, will preserve health. This air, so far as soil is concerned, which is not a trivial manner, will most naturally be found where that that is loamy. The very best soil on which a house can be built is a gravelly loam.

The soil demands great consideration on the other account of its richness and fertility: these are of the most immediate concern for convenience and for beauty. A garden is a very essential article in a country habitation; and, both for use and pleasure, it should ve on such a soil as will cause things planted in it to grow well. There is no soil so universally fertile as the loamy: it suffers the rains and dews to penetrate freely to the roots of plants, and it detains them, as we have shewn, sufficiently.

(…)

This so certainly and perfectly accompanies the excellence of the soil, that before the ground is opened for examination, it may be known by the aspect of the growth and herbage. Where the corn prospers well, and the trees grow straight and beautiful, the soil is always good; for when it is faulty in one respect or the other it is equally seen; the herbage is poor in spite od all the labour and expence of the farmer, and the trees grow irregular and stubbed, or have an aspect of decay.

We would have the architect take into his consideration all the advantages of nature in their fullest extent, when he is about to fix upon the situation of a house. He must not expect that in any place he will find them all in their most full perfection; but knowing what that perfection is, he will be the better able to judge how far an excellence in one kind will make amends for a deficiency or imperfection in another.

Chapter V: Of the elevation of ground for a situation

We have occasionally given many reasons why a country house should stand upon an eminence, but we come now to examine that point separately, and to consider what the elevation should be, according to the general nature and circumstance of the ground.

Every elevation of ground has the advantage of driness, and a more wholesome air than is on flats or hollows; less moisture remains upon it, and the air has a more free current: but these advantages are found only in moderate elevations, for in extremes every things is faulty. Because an elevation of ground is convenient, the builder must not to fix his spot upon the top of a high hill; the air there is too sharp, the winds have too much power, and the place is bleak and commonly barren. All eminencies are agreeable, but moderate ones the most: they avoid the disadvantages and imperfections of the others.

The higher the elevation the more necessity there will be for shelter; and, in general, the less possible it will be to have it. All the means of shelter are confined to trees, and these will not grow on those bleak and mountainous heights, where if the architect should place his house they would be most wanted. The side of a hill for this reason is prefereable to the top, and the ascent should be gentle, because otherwise the coming at the house is troublesome; and all the walks about it are tiresome.

Beside the exposure and bleakness of very high situations, water is commonly wanting; and where that is not in sufficient plenty, there will not be good verdure. The prospect from such place is fine; but the contrast of what one sees, with what one has is afflicting: when we view the fertility of the fields below, the barreness of our situation is the more hateful.

The most agreeable eminence for situation is that upon the slope of a moderate hill, where the ground rises gently up from the plain, and continues rising behind the house a little; where the height is sufficient to give us a command of the plain below, and where there are trees to shelter us from the more disagreeable and strong winds, but none to block up the prospect.

If the house be for stranger, let there be as much ground taken in as will serve his convenience; but if for the owner of a large territory, let its place be as near as may contrived to the centre of his possessions. There is a pleasure none but the man of fortune knows, in commanding and extensive prospect every way from his house, and knowing that all he sees is his own.

A situation which thus has a fine air, plenty of good water, and an extensive prospect, with a good soil, and the defence of trees, may be said to be perfect. He who can find such a one need scruple no expence in his edifice, for he will be sure never to be tired of it; and if accidents should influence him to leave it while he liked it, he would never fail of an opportunity of disposing of it to his advantage.

We have now examined the several particulars on which the convenience and healthfulness of a situation depends, and shall close our observations on this head with a chapter of general observations on the latter and most important article, which while they illustrate the truth of preceding principles, will at the same time lead to a familiar, easy and certain manner of judging.

Chapter VI: Marks of a Healthful Situation

The reader has seen of what considerations the healthfulness of place depends. It will not be difficult for him to determine on a little examination in what degree any particular spot has that great advantage: but we shall here add certain common and familiar observations by which it will known at sight. These will be sufficient to determine in a general way without such examination; and they will in a more particular and accurate enquiry always confirm it.

We have referred the architect for a general idea of the goodness of the soil to the growth of those trees and herbage that the sees upon it; and we shall in the same manner advise him too make his first conjecture, before his enquires, by the general face of things, including the other buildings and their inhabitants; and to confirm the result of those enquires by the same means afterwards.

With respect to buildings, if he perceive them clean and fresh on the surface, though so old that the materials begin to decay, it is a proof that the air is pure: on the other hand, if the walls be tinged with green and other colours, and moss and other herbs grow upon them in abundance, he may look upon it as a proof that the air is damp and bad. In general he will find the building that stand on elevated situations, good soils, and in a free air, of the former kind; and those which are situated in bottoms, on damp soils, and choaked up with wood, of the later.

If the trees by their regular growth and thriving aspect declare the goodness of the ground, let him observe the cattle in the adjoining fields, to know what is the condition of the air and water. Provided the pasture be tolerable, these creatures cannot fail to thrive if they have the common advantages in those two respects; but where there is a fail to thrive if they have the common advantages in those two respects; but where there is a fault in either or both of them, they will shew it in their aspect. If they be there is a fault in either or both of them, they will shew it in their aspect. If they be hearty, brisk and strong, it shews that the air is good and water pure: if they be feeble, poor, and heavy the fault is commonly in one of these two particulars, and most probably in the latter.

From the brute animals let him ascend to the inhabitants; for their faces and conditions he will read the most certain account of the general healthiness or unhealthiness of the place. High spirits, strength to labour, a good body, and a fresh complexion, are marks of health that can neither be disputed nor mistaken; the lower people have all these, from their moderation of diet and exercise in working, in a degree superior to the dainty and the idle; but they have them not in all places alike. He who should have observed the inhabitants of Alps universally with swelled throats, might naturally conclude that if he mixed among them he should have the same, before they came by a critical enquiry to search the cause of it in their water. This may serve as an instance of the general manner of judging of a situation, before we descend to particulars; and more or less it will be found true in all.

There is something in a good air that is as it were the object of taste; we perceive it as we take it in, and are scarce ever mistaken in judging of it that way; but it is only in elevated places that we have this mark of its purity. In the same manner that we perceive this the moment we breathe it, we are struck at sight by that appearance of robust health we see in the faces of inhabitants on healthy spots; nor are we any more mistaken.

Our own species are the most tender of all animals kind, and feel the bad effects of air sooner than any other. The cattle will sometimes shew natural defects in a bad place as has been observed, but their disorder are generally an indication of badness in the water; men shew the lesser defects of the place in their faces, and are affected by every fault that can attend it. We are subject to more disorders than other creatures, and they more easily fall upon us; it is a reason why we should be more upon our guard, to avoid the occasion of them: nature which has left us liable to them gave us our reason for that purpose. When we have our choice of a hole kingdom in which to fix our residence, it is and unpardonable error to place ourselves where any great convenience is deficient; but where the means of health are wanting it is a greatest of all.

The general occasions of this we have delivered separately, as they regard the air, the water, and other accidents; and we here propose the plainest and most certain method of assuring ourselves whether we have judged rightly by those rules; for in any places where other enjoy their health, he who comes to seat himself from elsewhere may; where they do not, probably neither will he. There is an advantage he may have over others by fixing upon a spot particularly healthy, whereas they are situated as chance disposes them; but it is best to have this advantage where all is good about him, for where the rest is bad it may not be sufficient to secure the benefit. The face of the inhabitants shews the general condition of the country as to health, and this may be obtained in a picked situation. He must be very weak, or very rash, who would fix himself where every man he met was shivering with an ague, as is the case in many marshy countries: on the contrary he may reasonably be tempted to the spot, who sees nothing but health in the countenance of the people, and reads of seventies and sourscores upon their tomb-stones.

PART II. OF THE ESSENTIAL PART OF THE BUILDINGS

Chapter I: Of Wells, sewers, and drains

The architect has been led to the several considerations which are concerned in the choice of a place for his building, and he has been before acquainted with the nature of those materials with which is to be raised: we are now to lead him to the employing those materials with which it is to be raised: we are now to lead him to manner; and this by first giving him a general idea of the essential parts of a building, and then delivering rules for the raising from these and the ornamental, a regular and beautiful edifice.

The first of these essential parts is a foundation, the ground-work and basis of the whole; a thing so important that the least error or fault on it affects the whole building, and is not to be rectified without great difficulty, expence, and inconvenience.

To avoid the danger of those faults or errors, we are in this chapter to give such cautions as are requisite, and prescribe such methods as will certainly inform the builder where will be the hazard. This chapter may be considered as preparatory to the succeeding: we have fixed upon the spot for the house, and we are about to lay its foundation; we shall therefore here examine the ground on which it is to be raised; and while we prepare for the convenience of the building, assure ourselves of the condition of the earth that is to bear it. According to this the foundation is to be laid with greater or less expence, care and trouble.

It is necessary that every house have conveniencies for discharging its refuse water, and other useless and offensive matters; there are obtained by digging and laying sewers and drains at proper depths, and with the needful outlets; it is convenient also that there be a well for a supply of spring water for certain uses; for though this be inferior to the water of ponds or rivers for most occasions, there are some which it answers much better.

As these therefore are conveniences and necessities that must be at some time prepared, we mention them first in order, and advise the builder to begin with them, because they will discover to him the nature of his ground, and consequently the method that is needful to be observed in his foundation. The opening for sewers and drains shews him the strata or beds of earthy matter to some depth; and that of wells to a much greater. When these are finished therefore he is to begin laying his foundation; and he is to prepare himself for the method of doing it by what he sees thrown up in the digging: for he will know by that whether the soil he in itself strong enough to support a foundation, or whether he must have recourse to art; and in what degree, or what manner.

As to sewers and drains the great care is that they be made large enough; that they be placed deep enough, and have a proper descent; that they be well arched over, and have to a free a passage that there be no danger of their choaking up; the cleaning them being a work of expence and trouble.

Wells are to be sunk in places where they will stand with most convenience, and at such a depth as to retain a sufficient quantity of water. They must be carried down below the level of surface of the water that is collected within the strata of the earth, otherwise they will not receive or hold it, and they must be carried so far below that they may detain a proper quantity.

The collection of water between these strata lies so differently in various places, that the depth of wells is necessary to be five, six or eight times a great in some spots as in others, not accounting the extremes of either: but sometimes a great deal of the expence of digging wells where the water lies thus deep is to be saved by boreing. When the well is regularly dug to twenty or thirty foot deep, is in many places a good method to have a recourse to this expedient: a large augur is to be used, and the earth carefully taken out of it as it becomes needful. The water will often at length rise up through the hole with a great impetuosity, and fill the well to a sufficient depth.

This method is practiced in Italy, France and Germany, with great success, and has been also very happily tried in several parts of England, particularly in Essex. The expence of this is so vastly less than that of continuing to dig and make the well to the needful depth in the usual manner, that wherever the situation of the place renders it at all likely of success, and water is not found a moderate depth, it should be tried. It is most likely to succeed in in places encompassed with distant hills, or where there may be conceived to be subterranean passages.

When a reasonable conjecture can be made at what measure the water will be found, the diameter of the well should be proportioned to its expected depth. This may often be known very exactly from the wells in the neighbouring places, and when finished with a lining of brick or stone-work, it will need no farther care for ages.

In the neighbourhood of the sea the necessary depth of wells may be easily known by observing the level of its water. In Bermudas they have wells in a manner close to the shore, which rise and fall with the tides, and yet the water is perfectly fresh. In all parts of the island they find water when they have dug nearly to the level of the sea, and it is commonly fresh though not always. At any time if they dig a few feet deeper they come at salt water. These are facts very exactly laid down by MR. Norwood, who has been upon the spot, and may be of use to the architect who is about to build under the like circumstances.

Chapter II: Of the qualities of the ground

The foundations of a building is that part which is laid under the surface of the ground in an opening made for that purpose; and serves as basis of support for all that is raised above.

It is the first thing to be regarded in the erecting of a house, and so much depends upon it that it can never be considered too thoroughly. In some places the ground is naturally firm enough for supporting the building; and in these the foundations is to be laid with ease and little expence: in others the ground wants this natural firmness, and must be assisted by art. The first business of the architect is to determine whether the earth will do itself, or whether it wants assistance; and if it be of the latter kind, his next enquiry is what kind of help it requires, and in what degree.

The best ground for a foundation is that which consists of gravel or stone: but the architect who intends a great or a heavy fabric is not to content himself with what he sees on the surface, or near it. We have advised the digging for wells and sewers first, and have cautioned him to observe exactly what is thrown up; he will thus know what is beneath that uppermost bed, which promises in itself so much strength and solidity. There is often an unfound matter underneath, and in that case the strength and firmness of the superficial strata is but a decoy; and a dependence upon them will undermine the building.

Beside an unsound matter beneath, there may in stone places, be an absolute vacuity; and this is a much more unhappy circumstance: there are many hollows in the earth, and no where so many as in rocky places. Such ground, since it often will deceive, should be always suspected. In this case the bed of rock which seems so firm and found a foundation, is no more than the covering of a vault or cavern, and may break in when loaded with a weighty building. This is the most terrible of all accidents that can attend an error in foundations. Palladio advices the throwing down great weights forcibly upon the ground in these places, and observing whether it founds hollow or shakes; and the beating upon a drum set upon it, by the sound of which an accustomed ear will easily determine whether the earth be firm or hollow.

Though a foundation upon a rock be strong to a proverb, we are to examine in this careful manner whether the rock that presents itself be solid or hollow, before we can assure ourselves of its great advantages. If there be cavities we must examine in what degree, and whether they are likely to render the rock too weak, for the superstructure, or whether its thickness over them be sufficient for their security.

Though rock be the best foundation, it is in many parts of this kingdom the least common. Gravel we have observed is the next; and in order to judge of its degree of excellence, we must observe the thickness of the bed, and the strata that lie under it, as they have appeared in the digging. If the gravel be a thick bed, and the under strata of a sound and firm kind, and well disposed, there needs no assistance, for it will bear any thing; if otherwise, we are to have recourse to art, in various ways to be named thereafter according to the nature and degree of the defect.

The other matters which may occur for a foundations, are clay, sand, common earth, or rotten boggy ground. Clay will often both raise and sink a building, yet it has a solidity which with proper management, is very useful; the marshy, rotten, or boggy ground, is that which of all others nature has least prepared for a foundation; but even on this very great edificies may be raised with perfect safety, the proper methods being employed to secure them.

Piling is the method in case of these boggy earths, and where there is an unfirm sand; and this is one of the securest foundations when properly executed, notwithstanding the great natural disadvantage of the ground. What we have said of the gravel may in a great measure be applied also to sand, which when it is dry, and a good body, and well supported by strong and sound under strata, is a very good soil for foundations; but what is said in the commendation of these two kinds, is to be confined to foundations for buildings on dry land, for in rivers neither sand nor gravel can afford any dependence at all, because the motion of the water is continually removing and disturbing them: in this case therefore they are not to be regarded, but the right practice is to dig down through them to the first solid bed; and if that lies at too great a depth, then let an opening be made in the loose matter, and the work trusted to piles driven down to the solid upon piles so driven and covered with planks, andy superstructure may be raised.

When the ground on which a building is to be raised has been dug or wrought before, we should never trust to its condition as so left, but dig through it to the solid and unmoved ground, and to some depth into that, according to the weight and bigness of the intend of edifice.

This is a rule given by Palladio, and we see instances enough in modern buildings to she the necessity of punctually observing it. One there is Rome so great and so striking, that it will leave no occasion for mentioning any other; even San peter's is in danger from a neglect part built upon the old circus of Nero, and they haue neglected to dig trough to the solid and untouched ground to secure a foundation; the consequence of which is that the whole building is much the weaker. The walls were judged of strength enough to bear the superstructure of two steeples, upon the corners of the frontispiece; Bernini made the attempt, but if the walls were strong enough the foundation was not sufficiently firm. The found on this occasion an error that should have been obviated early, and they have but imperfectly amended it. The settlement this additional weight occasioned sent them to the foundation, where they found the defect; they stopped the progress of the mischief, but the fault is beyond remedy.

An accident like this may be a warning for ages: we have told the architect he cannot be too nice in the choice of a spot for his building, he will see by this he cannot easily be careful enough in preparing for a foundation.

Foundations laid in the solid earth are always the most secure where that is hardest; and it is a very good sign when every shower of rain does not melt it into dirt. We have earths so hard that the tools will scarce penetrate them; these when they have a sufficient support below are the best of all.

Chapter III: Of preparing the ground for foundations

The form and nature of a foundation differs according to the intended structure of the edifice. If there are to be cellars and vaults underneath, the foundation is to be dug to the whole extent of the building; if not, it is to be cut in a kind of trenches where the walls are to be raised.

We call by the name of foundations so much of the walls as reaches from the bottom of the digging to the surface of the ground, for the world is equally used for these walls, and for the ground on which they stand. On the proper condition of these walls depends in a great manner the security of the whole edifice; they are therefore to be carefully proportioned in strength to the weight of the intended superstructure. In the same manner the depth of the digging for the foundation, or the height of these walls it to be proportioned to that of the superstructure; in general for these two articles the depth should be about a sixth part of the height of the building, and the thickness of these walls twice that of those which are raised upon them. This is speaking generally; we shall in a succeeding chapter enter upon these particulars more largely.

Sound wood is a common underwork for a foundation on land; and wooll packs have been used very successfully underwater.

In foundations near the edge of waters we should always be careful in sounding to the very bottom. More errors have been seen in this articles, and more accidents happened from them, than almost in any other.

The antients were very seldom guilty of over-sights, or neglect, in this matter: we have in many instances of the remains of their works, reason to be astonished at the strength they gave to their foundations, they sometimes made them massy and solid, and continued under the whole building; as in their arches, aqueducts, and some of the amphitheatres: in other of their structures they worked in the foundations with arches and pillars of such a strength as was fit to support edifices erected for two thousand ages. We should blush to compare this with what we see among our workmen at the present time, who at best are too negligent, and often shamefully dishonest, we see them in some places, when they have dug a trench for the foundation, fill it up with the work materials thrown in carelessly with bad mortar, and call this a wall. They think there is no need to be more careful about what is out of sight, and then they wonder id the work fails.

If the materials were ever so good there would be danger of cracks, settlements, and irregularities, from such a practice, stones and bricks laid corner-wise will not bear like those placed regularly, and there will be cavities in such work that must be crushed together when the weight comes upon them. There is no part of a fabrick that requires to be laid with so much care as the foundation, not is any other negligence so unpardonable.

We have recommended for all marshy and unsound earth the method of pilings this should be done with great accuracy and care, or the architect only betrays himself; but when it is properly executed, he may erect any fabric upon it with the most perfect security. The city of Amsterdam is built upon piles; and many other great structures and vast masses of continued buildings that stand perfectly firm, have the same foundation for security; the piles may be on some occasions mortised into one another: this makes what they call dove-tail piling; and we have an instance of its strength and value in the secure of Dagenham breach.

The piles for this services must be of a proper length and firmness. Palladio advises that they be of an eighth part of the wall in height, and that their thickness be a twelfth part of their length; but in these things some variation must be allowed according to particular circumstances. They must be rammed in as thick as they can stand, and should be driven by quick and frequent blows.

We must not be content with supporting the out-walls in such places by this method; the same care must be used also for those within. The cross-walls or inner walls will in the course of the building, be so connected by the girders that the sinking of one cannot but influence the others; therefore if that necessary care be omitted, the outer walls will be injured while they stand securely upon their foundations by the effect of the sinking of those within. Both the inner and outer walls will crack from such a defect, and the whole building may tumble. Fewer piles will serve for the support of the inner of cross walls, than are needful for the outer ones; but some must be driven with care, and these walls raised regularly upon them, or all the other precaution will be fruitless.

To instruct the practical builder in the fullest manner, we have here given a plate, shewing the manner of working in planking and piling.

EXPLANATION OF THE PLATE.
A.A.A. the foundation across which are first laid three in planks, either of fir of oak, at the distance of three feet from each other; these are marked with the letter B, and drawn with dotted lines, as they lie under other three inch planks, laid lengthways of the foundation. These cross pieces are 12 inches wide, and are buried to the level of the ground.
C.C.C. Are the planks lengthways, dove-tailed together at their end joints, as marked D.D. and they are mitre dove-tailed at every quoin, as at letter E. they are also spiked down to the cross-pieces.
F. the manner of pile and planking where foundations are more swampy, and will not do without piles, these piles, in foundations for buildings, may be about six inches square, drove in depth at the discretion of the architect, and planks laid on the heads of the piles. Spiked or pinned down with oak pins; in large scantlings, and where oak piles are drove and are to remain in water, oak pins cut square (2 inches) and drove into holes bored by an auger of a proper size, will last longer than iron, not being capable of rust.
G. are the piles which are commonly drove with a three-handed beatle; that is, three men lift and strike with it.
H. the planking fastened down on the pile-heads. In some sorts of soil, one thickness of planking laid cross-ways will suffice.
Plate XII. Garden of Fence Walls built with brick.
FIGURE I: the most common and least expensive, bring but nine inches, thick above the plinth, with pilasters at twelve feet distance from each other; one foot six inches broad, projecting four inches; and covered or coped, as described in the section A.

FIGURE II: a wall one brick and a half thick, with pilasters one foot ten inches broad, at twenty feet distance, projecting four inches. When built on arches, as in this figure, they are very useful in gardens for planting fruit trees against them.
FIGURE III. A wall of the same thickness n arches, with pilasters, at a somewhat greater distance, supposed to be built where ground lies hollow, and requires to be filled up to a level. This and the second figure are coped with brick, as drawn on the section. Letter B.
C. is the profile or four inch projection of the pilasters.
D. is the plinth, four course of bricks above the surfaces.
PLATE XIII.
Shews I. the Plan; 2. The elevations; and 3 the section of part of a building: explaining how walls are built of brick and stone.
A. The ground plan
B. The elevation cased with stone, which stone at a medium should be nine inches thick, and this is called ashler.
C and D. In the elevation and section are the foundation of the front wall, four bricks and a half in thickness.
E. E. are inverted arches under all the apertures, which add great strength, and are a means of preventing cracks.
F. arches turned over the windows behind the stone-works, which springing from the bond stones, G. G. that go thought the walls, discharge the weight from the window-heads, and prevent the strait stone arches from sinking.
H. scheme arches over the doors in the section, where lintels should be first laid. The arches are to take their springing from the outside of those lintels, that when time shall decay the timber, the brick arches may keep in their place.
I.I. the lintels
Arches should also be turned over the ends at all the beams that lye in the walls, as marked in the section with K, that they may have free air: under these should be laid pieces of oak or fir, which are called templets. By this method the ends of the beams will remain sound as long as any part of them. In the common practice the ends decay first.
L.M. Is the perpendicular line of the wall cased with stone, and backed with brickwork. In diminishing the wall, care should be taken that it be on each side the said perpendicular line equal.
N.N. are bond stones which are a tye to the front work, and also keep the brickwork from sinking, which it otherwise would do more than the stone facing: for there being so many more joints, and those joints so much thicker than in the stone, this must sink more, and consequently draw the front out of an upright.

CHAP IV: Of laying the foundations of buildings.

The architect has been taught to understand the nature of his ground, and to remedy its defects; we shall now lead him to the working upon it, or the laying of his foundation: it is there the enters upon the practice of his art, and let him be careful that he do not stumble at the threshold.

We are to suppose the ground now prepared for the foundation, and are to advance upon the laying in the materials. First then, care must be taken that the bottom or floor of the foundation be perfectly level. When it is thus prepared, the Italians begins with laying over it an even covering of strong oak plank, and upon that the lay, with most exact care, the first course of their materials. Whether we take this method,, or begin upon the naked surface, all must be laid with the most exact and precise truth, by the rule and line. When the board plat is laid, a course of stone is the best first bed and this is to be laid without mortar, for lime would make the wood decay, which otherwise, in a tolerably dry soil last for ages.

After this the courses should follow with the same perfect evenness and regularity. If the materials be brick, let them be laid with an equal and not too large quantity of mortar: if stone, let them placed regularly, and in the same situation wherein they lay in the quarry: for many stones which will bear any weight flatwise, and in their natural position, are of such a grain that they will split otherwise. Let the joinings of the under course be covered by the solid of the course nest over it all the way up, and let the utmost care be taken that no vacuity be left in the wall, for the weight will certainly crush in it.

There cannot be a greater error than to suppose the work that is under ground should not have as much regularity as that exposed to the eye; it wants this regularity for strength, which is a consideration superior to beauty.

The evener and better the bricks are made for a foundation, the stronger it will be in proportion; and where stone is used it should be hewn stone, or else such as is naturally of a very regular figure.

The less mortar there is in a foundation the better. Its use is to cement the bricks or stones together, and the evener they are the less will be required for that purpose. Where mortar is used to fill up cavities it becomes a part of the wall, and not being of equal strength with the solid materials, it takes from the firmness of the building. A foundation wall, to be good, ought to be every where equally strong, and that it cannot be where there are great intervals between the more solid materials filled up with a softer matter.

We have observed that in general the thickness of the foundation walls should be double that of those to be built upon them, but we allow for exceptions. The looser the ground the thicker ought to be the foundation wall, and it will require the same addition also in proportion of what is to be raised upon it.

The plane of the ground must be perfectly level, that the weight may be pres equally everywhere; for when it inclines more to one side than another the wall will split. Let the architect see in their full light the consequences of the least neglect in this article, and guard with a proportioned care against them.

Let the foundations diminish as they rise, but in this observe that the perpendicular be exactly kept up in the upper and lower parts of the wall, and this caution ought to be observed all the way up with the same strictness, but it is too much neglected.

Let not they young architect think we are too strict in these rules, because he sees them often transgressed by the common practice. Our work would be of little use if it were founded on such basis: we tell the builder what should be done, not what is done. When the practice of others corresponds with our rules, let him observe how it confirms them: when it differs let him follow them, and not be ashamed of building better than his neighbours.

In some ground of the foundation may be arched, and materials and expence will be saved this way, and the superstructure have an equal security. In foundations that are piled this is a very useful and frugal practice.

The care and caution we prescribe in a foundation will be understood to be altogether necessary to those who know the effect of faults in that part; it is the ignorant in all things who are apt to cavil. The faults in the foundation enlarge so in the upper work, that a crack of the breadth of a straw there will make a cleft of five or six inches higher: no care can therefore be too great in guarding against an accident at once so unsightly and so dangerous.

CHAP V. Of walls, their form and diminution.

The foundations being prepared as directed in the preceding chapter, the next thing is the raising the walls upon them; these may be properly called a continuation of those foundations, and nothing is of so much consequences as the raising them in a workmanlike manner. The foundation walls are to diminish in thickness as they are wrought up, and that diminution should be continued to the top of the building, the workman still taking care to keep the center of the wall all the way strait from the bottom of the foundation.

Walls in this country are principally built of one of these two materials, brick or stone; and in building about London brick is much the most common. We see, in some parts of the kingdom, walls built of flints (SILEX/PEDERNAL) cut into a tolerably even form in a very surprising manner. There are at this time some fine walls standing of this material in the city of Norwich; and it is introduced in the old gate at Whitehall, and some of the adjoining buildings of the same period. This was an art unknown to the antients, and it is lost again at this time.

In the walls of common houses, which are of bricks, the general diminution from the bottom to the top, is one half the thickness at the bottom; the beginning is two bricks, then a brick and a half, and at the upper pert one brick thickness. In larger edifices the walls are made proportionally thicker, but the diminution is preserved in much the same manner.

Some walls are plain and continued, others are made with intermissions, where there are columns or pilasters; of these we shall speak in some succeeding chapters, the plain walls are our subject here, where we treat only of the essential parts of all columns and pilasters are ornamental.

When a building is to be strong, the walls must have a proportionable thickness. We have said that they need not be all the way of an equal diameter; the decrease of this is what we call the diminution of a wall, and we have observed already that this diminution should be made equal on each side, that the load may be exactly in the middle. The wall should be carried up all the way exactly perpendicular to the ground work; for the right angle it makes, in this case, is the foundation of strength and firmness.

If the wall be composed of two kinds of material, as stone and brick, the massiest and heaviest are to be used in the lowest part, as being fitter to bear than to be born, and the lightest at the top.

The diminishing in thickness as the wall rises saves both weight and expence: but it is not absolutely necessary; for if the wall were carried up in a perfect perpendicular from bottom to top, and all the way of the same thickness, it would not for that reason be less strong. In this case the keeping the perpendicular perfect would be the great difficulty and the great article of merit. We find the antients were able to do this: for we see, in the remains of their works, walls thus carried up to an exorbitant height; but our architects are more ready to be astonished and admire, than to study and imitate, them.

The great rule for the thickness of the wall in all buildings is, that it be proportioned to the weight it is to support. This is to be carefully computed, and there will be no danger of the strength of the edifice; for the great occasion of that fault is the not observing this proportion. A wall that stands alone is its own burthen and supports; the higher parts press upon the lower, and the lower bear up the higher; this is all, and the structure of it is therefore plain and easy. In a larger building the arches, roof, and the floor are the burthen; the walls are the support: let the architect therefore compute the weight of the one according to his plan, and to that proportion the strength of the other.

The thick walls that bear directly upon their foundations press from top to bottom; the arches press sideways, and to know how much, we must measure their convexity. The floors and the roof have a great pressure perpendicularly, and a little obliquely: all this must be carefully considered, and upon this depends the computation of general load, and of the necessary proportioned thickness of the walls. The strength of a building depends upon the force of its supports: and the great art on this head is that of giving a plain wall the utmost strength of which is capable.

We have advised the young architect to be careful in this computation, that he may know what strength his walls ought to have, for it is as easy to make them too thick as too thin, and either extreme is equally unworthy of a good builder: too much thickness is walls not only is the expence of a great deal of needless money, but it gives the edifice a heavy aspect. The great art is to join strength and delicacy. We see the former consulted in many of our modern buildings at the expence of the latter.

The antients have an art in joining these that we have lost. They were sparing of stone, but they never grudged iron work, and by the means of that assistance, and of a perfect truth in their perpendiculars, they have left us those models we despair of copying. Our houses tumble down after a few years for want of strength; and we have consecrated the heaviness of our work in most of the modern churches.

There is one farther particular which regards strength in the structure of a plain wall, and that is the fortifying of the angles. This is best done with good stone on each side, which gives not only a great deal of strength but a great deal of beauty.

A wall that is raised over arches and pillars, provided they be judiciously directed, and the work carried on in the same manner, stands as firm as one that is begun from a plain foundation.

Pilasters properly applied are a very great strengthening to walls; their best distance is about every twenty foot, and they should rise five or six inches from the naked of the wall. A much slighter wall of brick, with this assistance, is stronger than a heavier and massiest built plain.

In brick walls of every kind, it is and exceeding addition to their strength to lay some chief courses of a larger and harder matter, for these serve like sinews to keep all the rest firmly together, and are of every great use when a wall happens to sink more on one side than another.

In the most perfect way of forming the diminution of walls, the middle of the thinnest part being directly over the middle of the thickest, the whole is of a pyramidal form: but when one side of the wall must of necessity be perpendicular and plain, it must be the inner, for the sake of the floors and cross walls. The diminished part of the outside may be covered in this case with a fascia cornice, which will be at once a strength and ornament.

As the openings in a wall are all weakening, and the corners require to be the strongest parts, there never should be a window very near a corner. Properly, there should always be at least the space of a breadth to the opening firm to the corner.

This is the general idea of a wall, and according to these principles it may be raised of any needful height, and for the support of any weight above: and the young architect being thus acquainted with the form, we shall next lead him to the consideration of its construction of whatsoever materials.

Chapter VI: Of the antient stone and brick walls, and the manner of constructing them

The antients erected their walls sometimes of stone and sometimes of brick, as we do; and by the remains that are yet extant of several kinds, we find they had various ways of constructing them. At present, architecture in this, as in its other branches, is reduced into a much narrower compass than it has been in earlier times; but as it is not impossible to improve upon the present practice, and as the works of the antients are in all respects the best models we can follow in the attempts of improvement, we shall here give a short recital of their several manners of constructing them, before we mention those of our own time.

Their chequer work, or reticulated wall, was at one time famous, but was sooner out of use than the others. This had corners of brick, and courses of brick to bind the whole: there were about three courses at every two foot and half; the inward part of the rest was made of cement, and the facing was chequered.

Their common brick walls were made with the two sides of good bricks, and the middle was filled up with mortar and brick-bats rammed together.

Their cement walls were composed of cement with pebbles and earth laid in a rough manner, sometimes with and sometimes without mortar, but the corners were strengthened with brick or stone, and at every two foot height there ran courses of brick work to bind and strengthened them.

Their rustic walls were built with rough and irregular stones of various shapes and sizes which they laid together as evenly as they could by means of a leaden rule: this being bent according to the place where the stone was to be laid, shewed how it was to be formed and placed.

Their square stone walls were made of larger and smaller stones regularly cut and squared, and laid with great beauty. A course of larger and a course of smaller usually were laid over one another. This was a wall of great beauty and great strength.

Their coffer-work walls were made of rough and ragged stones with strong mortar. These had their names from the manner of working them. They made a kind of oblong coffers of board distant by the intended thickness of the wall, and into these they threw ragged stones, cement, and earth at random; but they began with a course of brick work, and made courses also between. The mortar we use at this time would not hold such rude materials together in a wall; but we have observed in the chapter on that head, that the antinents were much more careful both in the materials and manner of working it: we see an instance of the effect of that care and pains, for there are walls of this structure in which no trowel was used, but the force of the mortar held the most uneven stones; and they are very strong after two thousand years.

There occur also remains of a considerable antiquity, in which we see a kind of cofferwork, of a solid substance, with this rough mixture within, the coffer work being the essential part of the wall: in these two rows of good free-stone were laid at a considerable distance, and there ran cross-bars of the same stone from space to space between them: the rest of the inner space was vacant in form of great square coffers, and this they filled up with rough stones and mortar poured in together, which hardening with the rest became a solid part of the wall.

Vitruvius saw the objection to the chequered wall, that it would be more liable to accidents than the others; and it was found so, and therefore disused.

The double brick walls, with cement and brickbats between, are extremely strong and fit for great buildings: we see remains of them in the rotunda and in the baths of Dioclecian. We have examples of the cement walls in the amphitheatre of Verona: the walls of Praneste afford an instance of the rustic,a nd they paved their streets in the same manner. The square stone walls are to be seen in remains about the temple of Augustus, also of the antique coffer work kind, where the faces and cross works is stone, and the filling up of the coffers mortar and rough stones.

Inigo Jones observes that he had seen the rustic wall of the antients in a house going to Naples, and that it looked very well; and that the squared stone wall made of stones of different bignesses has a grand look in many of the antient buildings.

We see in all these with what knowledge both of the nature of materials and the manner of disposing them, the antients built their walls; what strength, solidity and beauty. We have all their materials, we shall next observe in what manner we employ them.

Chapter VII: Of the modern construction of stone and brick walls

We build walls of part stone, or entire brick, and sometimes face them with hewn stone, or cover them in part with plaister wrought into resemblance of such a stone covering. When brick walls stand single we frequently cope or cover them at the top with stone: but in examining through the whole course of the proceeding, we shall find that we have neither the strength, beauty, nor variety of the antients in this great part of architecture.

We are rarely see instances of walls entire stone rough or wrought without any facing of another kind, and it is only in the most expensive of our buildings the others make any tolerable figure: what we commonly see about houses is a facing of cut stone over a wall of ordinary brick work, better or worse: and as to brick walls, instead of the double facing of the antients, which was filled up between with a rougher stuff, our walls are usually faced with good brick on the outside, and wrought up a coarser kind inwardly, the inner surface not being seen when the building is finished.

In regard to the manner of constructing a brick wall, we are to caution the young architect that in summer he lay the bricks as wet, and in winter dry as he can; for this is the way to make them bind the better mortar.

In summer as soon as they laid they are to be covered up, to prevent their drying to fast, the mortar in that case losing half its binding quality; and, for the same reason, they are to be covered yet more carefully in winter, for rain is a great enemy to the strength of mortar; and frost is worse.

In all cases let him take care that the angles of his walls be well united together, for if the adjoining walls be not wrought up at the same time they never close so well.

Finally, that all the parts of the building where there are walls be raised and finished at the same time, because then they settle equally everywhere, and there are none of those cracks and clefts which are so great a blemish in the building and scandal to the builder.

Treating of walls, we should not omit to mention those inferior kinds which have been once much used, and are in some places to be met with now: for though brick and stone are the general walls at this time, they do not utterly exclude all others.

In framed timber houses there are sometimes used that may be called walls of lath and plaister; and in small buildings, made altogether of wood, there are what may be called boarded walls. The plaister walls are chiefly used in ordinary timber buildings; they are composed of loam or coarse mortar spread over the lathing, which is to continue from beam to beam, and the whole is covered afterwards with a finer mortar. Sometimes the timber work is left naked, sometimes the whole is covered with lathing, and then with loam and mortar: this is the handsomest manner of doing it, and frequently in this way of using it is rough cast over, and while clean makes a pretty appearance.

In what are called boarded walls, the great care is to secure them very well by painting without and by plaistering within, in which case they will endure a very considerable time, and will be no more in danger of accidents by fire than other materials.

These are a very inferior kind, and only fit for meaner purposes, but in a general account of walls it would have been wrong to omit naming them. We shall from these proceed to the consideration of those most expensive and elegant walls which we raise of hewn stone for churches and other elegant buildings. In these the better the stone be wrought the smaller will be the joints, and this is a great excellence in that kind of building. We see the antients have been so accurate in the cutting of their stone on these occasions, that in the remains of many of their great buildings we can scarce perceive a joint, but the whole looks as if of one entire rock wrought to that exactness. There is indeed this much to be said on this head, that they in reality did work down the faces of their stones after their walls were erected their whole care before being to cut the squares that were to join with a perfect exactness. This contributed greatly to the strength as well as beauty of their buildings. We see profs that this was then manner of working among their remains: in stone the faces of the stones are yet rough as they were laid, and in others the very marks of the tools shew how they were wrought.

In buildings of vast extent and expence, they sometimes wrought only the impost arches, the capitals and cornices, leaving the rest rough as they laid it in. this was their manner of executing what we call rustic, in distinction from those walls which they finished up in every part.

There is nothing into the spirit of which we have less entered than this rustic of the antients in their walls. We see they have done it, and therefore we conclude it to be right; but we should examine why they did it, and conform ourselves to the same conduct. They always used this form in their largest buildings, we have therefore no authority from them for using it in small ones.

In our stone walls for elegant edifices this smallness of the joints should be our great concern, and to this end the sides of the stone where they are to join cannot be wrought with too much care and exactness. The use of thin sheet-lead is also excellent: and, upon the whole, as it concerns only buildings of great expence, it is an article in which the price of workmanship never should be spared.

Explanation of the three plates of roofs.
PLATE XIV. Fig 1 and 2. Shews how plates laid on walls are joined together.
Fig. 3 the manner of putting beams together of three pieces, where extraordinary lengths are required. These will be equally strong as if they were of oen piece of timber. A. the 3 pieces laid down and struck out; the scarf or lap is supposed to be 10 feet, divided into 6 lenghts of tables, the hatched ones are sunk an inch or more, and when turned up own will fit into the other with great exactness, which must be bolted together as in letter B.
Fig. 4 is the upper face of a truss beam, where CD, is 1/3 of its length; it is morticed at D. 4 inches down; and as deep at C, as the templet on which it lyes: this must be headed with a right butment, i.e. square with the top or bottom of the breaces.
It is supposed to span 40 feet.
E. Upright of the said beam, with the disposition of its braces.
FIG 5. Another kind of truss of the same length, 40 fee between wall and wall.
F. is a short beam 13 feet 4 inches, and placed on the back of the long beam G. the side braces will be about 14 feet, 4 inches long, 6 inches by 4 inches square, with iron straps to clasp them and the upper beam, which is to be bolted to the lower beam G. the upper beam F. will be 12 inches by 10 inches square, which receive the ends of the bonding joist in the middle; and those on each side will lye upon the under beam G. 12 inches by 12 inches square, the upper binding joist to be 4 inches by 7 inches, the under ones 6 inches by 4 inches square, the ceiling joist 3 inches by 2 inches.
NOTE, the iron straps much be so ordered that they come not soul with the binding joist.
FIG 6 Is a large truss roof which spans 60 feet between wall and wall; its principals are taken from a bridge in Palladio's 3rd book of architecture chap 7.
The beam H.6 5 feet long may be made of 3 lengths of timber put together as before described , and the following scantlings will be sufficient. VIz.

		in		*in*	
H	*Beam*	*12*	*by*	*8*	*square*
I.I.	*Principal rafters*	*10*		*8*	
K.	*Middle king post*	*10*		*8*	
L.L.	*Side king post*	*10*		*8*	
M.M.	*The under rafters to the principals*	*8*		*8*	
N.N.	*Braces*	*8*		*8*	
O.O.	*Level rafters on which boarding is nailed to receive slating*	*6*		*3 ½*	

This roof is framed in an uncommonway, the tenons being made in the head of the king post, and the mortices in the head of the principal rafters, as is whewn more at large Fig 3 Plate 14. The tenons may be about an inch thick, made in the middle, which will admit of strong butment cheeks on each side.

Fig. 7 Is framed after the common manner, except the crown piece.

Plate XV. Fig 1. Is a truss that spans 44 feet, whose perpendicular length is equal to ¼ part of the beam.

		in		*in*	
A.	*The beam*	*10*	*by*	*8*	*square*
B.	*King Post*	*10*		*8*	
C.	*Principal rafters*	*10*		*8*	
D.	*Braces*	*8*		*6*	
	Small rafters	*5*		*3 ½*	

Fig 2. Is a truss whose perpendicular height is equal to half the length of the beam, 22 feet, and is framed with purlins for the small rafters to go downward, to receive laths for laying tiles on.

		in		*in*	
	The beam E.44 feet long is	*10*	*by*	*8*	
	F. and G. Principal rafters and king post	*10*		*8*	
	H.H.H.H. The purlins	*8*		*6*	

The lower purlins must be framed in flush with the upper side of the principal rafter, and the upper one framed 3 inches below, for the upper small rafters to lye upon it, which small rafters are 4 inches by 3 inches square, and the under one 5 inches by 3 inches, and this is called the common pitch of roofs.

FIG 3. Is a truss of 54 feet span, whose sides or principal rafters are made to the common pitch; and for the conveniency of gaining room in the garrets, it is finished with 3 small roofs.

FIG 4. Is the same kind of truss, leaving out the 3 small roofs, and making the top a flat, on which a balustrade may be placed, or a breast work raised as in the figure.

PLATE XVI. Shews a Kind of trusses properly adapted for roofs to churches.

Fig 1 Is the most uncommon and best: this is framed in the manner described at larga in 3rd figure underneath it.

The scantling sufficient for this truss are;

		in		*in*	
A.	*The upper beam*	*12*	*by*	*8*	*square*
B.B.	*Principal rafters*	*10*		*8*	
C.C.	*Lower beams*	*10*		*8*	
D.D.	*Truss braces form the lower beam to the upper beam*	*10*		*8*	
E.	*King post*	*10*		*8*	
F.	*Braces to the king post*	*8*		*8*	
G.	*Middle rib of the compass ceiling, to be in 4 parts*	*8*		*6*	
H.H.	*The side ribs ditto*	*8*		*6*	
I.I.	*Puncheons on the top of the columns*	*10*		*8*	
K.K.	*Truss braces to the middle rib*	*6*		*6*	
L.L.	*Braces to the side ribs*	*6*		*6*	

Scantlings to the 2nd figure.

		in		*in*	
A.	*The beam*	*12*	*by*	*9*	*square*
B.B.	*Puncheons on the top of the columns*	*12*		*9*	
C.C	*Principal rafters*	*12*		*9*	
D.	*King Post*	*12*		*9*	
E.E.	*Braces*	*6*		*6*	
F.F.	*Under short beam*	*12*		*9*	
G.G.	*Braces to it*	*8*		*8*	

FIG 3. Explains the manner of framing truss roofs two different ways; one side shews the king post A, whose scantling is 10 inches by 8 inches square: this has a 4 inches mortice at B. which receives the 4

inches tenon letter C, the head of the principal rafter. D. The beam has a like mortice at E. which receives the tenon F. which is the foot of the principal rafter G. The other side of the king post A. has an inch and quarter tenon in the middle of its thickness, as at H. made fit to receive the mortice I. in the head of the principal rafter. The like tenon is made at the other end of the beam D. as at K. and there is a mortice in the foot of the rafter L. to clasp the same.

In this method of framing, which is quite uncommon, care must be taken that it be done with great exactness, that the butments may be good.

As there are various proportions for the pitch of roofs, we have here inserted the several degrees that are most useful, from the pediment pitch to that of the equilateral triangle, called the pinnacle, and described by

FIG 4

A.	*Is the pediment pitch*
B.	*Rises ¼ the length of its base line*
C.	*Rises equal to one half.*
D.	*Is the medium between that and the pediment*
E.	*Is its height given by the length of the rafter, equal to ¾ of its base line*
F.	*The equilateral triangle*

Chapter VIII: Of roofs

There is no article in the whole compass of the architect's employment that is more important, or more worthy of a distinct consideration, than the roof; and there is this satisfaction for the mind of the man of genius in that profession, that there I no part in which is grater room for improvement.

In order to understand rightly in what manner to undertake such improvement, he must first comprehend perfectly in what manner to undertake such improvement, he must first comprehend perfectly the idea and intent of this part of a building, and what is generally known concerning its structure.

The great caution is, that the roof be neither too massy not too slight: in the one case it will be too heavy, and in the other to light, for the house. Both extremes are to be avoided, for in architecture every extreme is to be shunned; but, perform if too little of the two, the over weight of roof is more to be regarded than too much slightness. This part is intended not only to cover the building, but to press upon the walls, and by that bearing to unite and hold all together. This it will not be massy enough too little timber be employed, so that extreme is to be shunned; but in practice the great and common error is on the other side; and he will do the most acceptable service to his possession, who shall shew how to retrench and execute the same roof with a smaller quantity of timber: he will by this take off an unnecessary load from the walls, and a large and useless expence to the owner.

The roof of a house properly expresses the frame of wood work which is raised upon the walls, and the covering of slate, tile, or lead, which is laid over it; and thus the architect is to understand it, for he is to compute its weight entire when he considers the proportion of its pressure to the supports: but, in the common manner of speaking, only the carpentry or timber work is understood under this term.

The form of a roof may be very various. The three principal kinds are the flat, the square, and the pointed: to these we are to add the *pinnacle* roof, the *double ridged*, and the *mutilated* roof. This last is very beautiful, and is called the *mansard* roof, after the name of a *French* architect its inventor. Lastly we are to name the *platform* and *truncated* roof, and adding to all these the *dome*, we shall have the lift of the principal kinds. We might add here the *ogee* roof, which is a piece of *French* architecture neither commodious nor graceful; and some others which fancy often prefers to better kinds: but of these we shall treat more largely hereafter, the intent in this place being to give a general idea of the roof, its nature, proper weight, and proportion.

When the roof is pointed, its best proportion is to have the profile and equilateral triangle. In the square roof the angle of the ridge is a right angle; this therefore is a middle proportion between the pointed and the flat roof, which is in the same proportion as a triangular pediment. The pinnacle roof has its name from its form,, being carried up in resemblance of a pinnacle. The mansard consists of a true and a false one; the false roof lying over the true. The platform roof is common in the east, and the truncated kind approaches to the nature of it. This is cut off at a certain height instead of rising to a ridge, and this part is covered sometimes with a terrace, and encompassed with a balustrade. Of the dome we shall speak in its place, and of the other species of roofs. This account is sufficient for the general idea of the nature and form of this part of an edifice.

Whatever be the form of the roof, the architect must take care in the construction to preserve its weight equally on the separate parts, that it may not bear more upon one side of the building than another: and in the construction of the whole edifice he eill do well to contrive that the inner walls bear their share of the load; that more than is needful be not laid upon the outer ones.

The roof surrounding every part of the buildings, and pressing equally upon every part, becomes what it was intended, a band of union and firmness, as well as a covering to the whole. It preserves the walls also by throwing the rain off from them. The making the middle or inside walls assist in supporting the roof, is best done by making them support the girders; and this has many ways an excellent effect; for a roof in this case is not in danger of falling from the rotting of the end of a girder, which is otherwise very often either entirely destructive to this part, or at least and inconvenience very difficultly supplied.

Chapter IX: Of floors

We have reserved the mentioning of floors till we had considered and the roof of the edifice, because they are introduced in this order in the building of a house; the practice being not to lay them till the house is enclosed and covered in, because otherwise they would be injured by the weather. We are to advise the young architect to get the boards ready long before, because although they are not to be used of a considerable time, it will be of great advantage to let them stand to season. As soon therefore as the plan of the building is laid, and the dimensions of the several rooms allotted, let the boards for the floor be cut and rough-planed; then being carefully put by in a dry airy place, they will be in a good measure seasoned by that time they are put to use.

The floors of all the rooms upon the same story, and of all the passages between them, should be perfectly even: not so much as a threshold should be suffered to rise above the level of the rest; and if in any part there be a room or closet whose floor is lover than the general surface, it should not be left so, but raised to the level of the rest, what is wanting being supplied by false one.

We have hitherto spoke of timber floors, by which name is properly expressed nothing more than the covering of boards on which we tread; but in the usual acceptation it stands for the whole body of the work, in this part; comprehending the framed work of timber which supports the boards, as well as the covering itself which is fixed upon it. But beside these, which are the most general, and as it were universal floors of common houses about London, there are several other kinds used in country buildings, and by some in the most elegant and highly finished.

The common floors used in mean buildings, are made of loam well beaten and tempered with smith's dust, and with or without an additions of lime. Some also make them of pure clay, ox blood, and a moderate portion of sharp sand; these three ingredients beaten together very thoroughly, and well spread, make firm and good floor; and of a beautiful colour.

In elegant houses the floors of this nature are made of stucco, that is, of plaister of Paris beaten and sifted, and mixed with other ingredients. This may be coloured to any hue by the additional matter, and when worked and laid makes a very beautiful floor, some of it looking like porphyry.

Beside these, we see halls and some other ground-rooms paved of floored with marble or stone, and this either plain or dotted, or of a variety of coulours; and sometimes in a variety of figures, as the boarded floors in some rooms are inlaid with wainscot, and other handsome woods in various forms.

The use of carpeting at this time has set aside the ornamenting of floors in a great measure; it is the custom almost universally to cover a room entirely; so that there is no necessity of any beauty or workmanship underneath.

In country building floors are frequently made also of bricks and tiles. These also, according to their shapes, may be laid in a variety of figures; and they are capable also of some variation of colour, according to the nature of the earth from which the bricks or tiles are made. These may be laid at any time; but for those of earth or plaister they are best made in the beginning of summer, for the sake of their drying. We see these miserably executed in the country, partly through ignorance, and partly through carelessness: and in good houses in London, where there are stucco floors it is too common to see frightful cracks across them. In this the workmen are generally to be censured: stucco floors are very common in many parts of Europe, particularly at Venice, where it is rare to see a crack among a thousand of them. This is more owing to the thorough tempering and working of the materials, than to any secret in the composition.

The architect seed here a variety of materials before him: the boards and plaister are in general the kinds to be used un upper stories, the other heavy sorts being in a manner confined to the lower: but we shall give him this caution, that whatever kind he takes, it be finished with care and exactness; if he will look upon the floors in general in London, eh will see there is reason for the caution.

Chapter X: Of chimnies

In most things relating to buildings, we may refer the modern architect to the practice of the antients for models from which to work, and examples by which to improve; but in this matter of chimnies we have not resources. The accounts the antients give of them in their writings are short and trivial; and the rules of Vitruvius for constructing them are full of obscurity. Indeed they were less acquainted with them because they had less necessity for them: they lived in a warmer country than ours, and they had the use of stoves; so that the construction of chimneys was little regarded. With us the necessity of them is so absolute, and the inconveniences that frequently attend them are so great, that nothing more essentially regards the possession of the architect than their proper construction and disposition.

Fires are necessary, and we wish the smoak to pass free away: in this the effect of the wind is very great; and to be secure of every advantage in that respect, the builder I to have the danger of smoak in his eye, from the first disposition of the building. Let him consider first the nature of the region, and from what quarter the winds most frequently blow, or most furiously: and let him, according to this consideration, dispose the rooms that shall have most need of fires in places where these winds have least power. This is much earlier than builders usually begin their provision against smoaky chimneys; but their not taking the precaution in time is one of the principal reasons why the fault is so difficult to be remedied. He who shall have begun thus can have only the ill construction of a chimney to combat with in the attempt of remedying an error; he would has neglected it may have the disposition of it, which is often impossible, to alter.

The common caused of smoaking are either that the wind is too much let in above at the mouth of the shaft, or the smoke is stifled below: and sometimes a higher building, or a great elevation of the ground behind is the source of the mischief. Finally, the room in which the chimney is, may be so little or close, that there is not a sufficient current of air to drive up the smoke.

When the architect has thus acquainted himself with the several causes of the smoaking chimneys, he will know by what means the may most rationally obviate such inconveniences; and how he may remedy the accident where in spite of all his care it shall happen: when the cause is not considered this is impossible, and it is no uncommon thing to see much labour bestowed perfectly in vain, because the fault is misunderstood.

As smoaking is the greatest inconvenience that can attend this part of architecture, we have set out in this place with its causes: these we shall now caution the architect to obviate by a proper disposition and proportion of his rooms, and judicious construction of the chimney itself. We have seen that the two great causes of this inconvenience are the smoak's being driven back, or lingering in the funnel: the driving back is an accident from without, the lingering in the funnel is from some error within, either in the construction of the funnel itself, or of the room where the chimney stands.

The chimney may be divided into two parts, the first contains the opening, the hearth, and the funnel; the other the jambs or sides, the mantle-piece which rests upon them, and what is called the chimney-piece which comes over the mouth. This is the common distinction, and according to this the first part is what concerns use, the rest ornaments.

A great deal depends upon the opening; if this be too small and low, the smoak of itself naturally is checked at the first setting out, and missing its way returns into the room; and on the contrary, if it be too large and high the same happens, because if there be too much room for the air and wind, the smoak will by that be driven into the room. The proportions of chimneys we shall give hereafter, when we treat of their ornamental parts, and the rooms in which they are to stand; here we are enquiring only into their general structure. The mouth if the chimney, or that part which joins the back, should be something smaller than the rest; for this will make a stop against the smoak when it shall be coming down into the room: and meeting with that resistance it will often return back: indeed the making the funnel narrowest at the bottom is a very great article in the preventing smoaking, because it assists doubly; the smoak getting the easier up, as the space is all the way wider, and coming down with more difficulty as it grows narrower. Yet this prudent caution must not be carried to an extreme, because then the smoak will linger in the upper part, and all the force ot the draught below will not be sufficient to send it up.

Another very good method to assist the discharge of the smoak is the making two holes one over another in each side of the chimneys; one of these is to go sloping upwards, and the other sloping downwards, so that the smoak will always find way throw one of them.

The placing a moveable vane at the top of the chimney is also often successful; this keeps the opening of the funnel screened against the efforts of the wind, let that blow which way it will.

To these we are to add two other contrivances more ingenious than useful; the one is the carrying up the funnel spiral, to prevent the easy descent of the smoak; and the other the hanging an aeolipile in the lower part of the chimney, to drive it up by blowing. This aeolipile is a hollow ball of brass filled with water, with a small opening in one part; this being hung up just over the flame blows forcibly out at the hole as the water heats.

These are the several methods commonly used for the remedying as well as preventing the smaoking of chimneys; but let the judicious architect proceed upon the most certain principles in obviating the danger. Let him observe a due proportion between the size of the room and that of the chimney: let him be careful to place the doors in such manner that they may most favour the carrying up of the smoak; and to give the sides a proper projection, and the back a due distance. As this falls in with the construction and disposition of doors and chimney-pieces, we shall enter upon the particulars under those heads, in their proper place. We have here, in pursuance of the method laid down in our plan, given the general idea.

(127-273: orders)

BOOK III: SECTION I, Containing the general practice of architecture, in the erecting of complete edifices, and proportioning and decorating their several parts.

Chapter I: Of preparing for the regular certain and unobstructed discharge of water.

(…) But as no house, not even the smallest, can be conveniently fitted for the inhabitants without a proper discharge for refuse water, we shall lead him to the erecting of the fabric by this needful preparation. We have, in former chapter, delivered the system and theory of drains, and we are here to proceed to the reducing than, as the other articles to practice.

There must be a passage for water, or it will lodge, and the house will damp and uncomfortable; this passage must be free and unobstructed, or it will remedy the evil but partially, or only for a time: and as soulness of various kinds will make its way with all water, and this will naturally, though by slow degrees, in time fill up those drains intended to carry it off, this choaking and filling of them up, must be guarded against in their very first construction.

Every bricklayer can make a drain that shall receive the water for the time, but it is the architect alone who can form and construct it in such manner that it shall perform its office continually, like the vessels in the human fabric, through which the fluids circulate freely, from our birth to our death, without disorder, interruption, or obstruction.

We see the vast preparation there is made for this service in the regular building of cities; and the same, in a proper degree, must be used for every private house, great or little, or the same inconveniences will follow.

(…)

A private house, as well as a large pile of building, must have its principal drain for receiving from all the rest, and this, as it is the most essential article, is to be the architect's first care. To understand what is needful to be done for conveyance, let him first observe what are the several sources of the wet, and proportion the cavities for the quantities, that upon ordinary, and extraordinary occasions, my fall into them.

Chapter II: of the construction of pipes and small drains, for the conveyance of rain water.

The roof of a house is a space of so much extent that it receives a great deal of rain water, and for this, conveyances are first to be contrived: they must not be proportioned to the common fall of rain, for then every violent shower will thrown more on the roof than they are able to receive; and, in consequence, they will run over: this will be a great disgrace to the architect, as well as a great inconvenience to the family.

As he is to make the conveyances for this larger than might be supposed needful by those who computed only for the common chance, so he must construct the larger and more considerable drains into which this and other abundant water is to be received, much larger than may be needful for common occasions; for accidental redundancies will happen, and he who knows what they may be, will provide and guard.

The water which falls upon the roof of a house must not be permitted to lodge in any part, for the inconveniences of this are plain. Where it can lie, it will soon overflow the lead which is laid to receive it, and when it has only the tiling to keep it in, that will not perform the office long, but the water will loosen the joints, rot the cement, and make its way to the timbers, which will soon be destroyed by it.

To prevent this, which is the first source of water to be carried off, the several parts of the roof must be made so slanting to one or more places, that the water which falls, in whatsoever quarter, may readily and freely run to one of them.

In all these places to which the wet will be carried, there are to be put pipes for receiving it; these must be of a due diameter, that the most violent shower may not over charge their capacity.

This is the first provision for the wet; these pipes convey the whole quantity from the top to the bottom, and it is there to be received into proper channels.

For this purpose, small drains are to be made, beginning at the nose of each pipe, and these are to be carried to the larger. These channels are to be the second conveyance of the water, the pipes being the first. They are to be proportioned to the quantity they are likely to receive on the most extraordinary occasions, and the safe way is to make them something too large for that.

Under the name of the third conveyance is to be understood the drain, or drains, (for, according to the extent and plan of the edifice, one or more may be requisite for this purpose) which are to receive the water from these several small channels.

In all this, the builder is to observe an increasing proportion; and having calculated the diameter of his pipes for the greatest fall of rain on the roof, he is, from that diameter of the pipes, to regulate all the rest, only observing that all is to proceed in a greatly increasing proportion.

As each first channel, or small drain, is to receive the water of one pipe only, it is to be calculated in and increasing proportion of its diameter; and, in the same manner, this larger drain, or third conveyance, is to be calculated from the several diameters of those drains from the pipes which come into it; and this also in a considerably increasing proportion.

Let not the architect be started at the size he will find necessary on this principle; for he may be sure geometry and arithmetic are sciences that will never deceive him. Measures and figures are capable of computation to a mathematical truth, and he is therefore never to deviate from them in his plan.

In this, as in the preceeding articles, we shall caution him that to exceed the proportioned dimension id much better than to fall short of it. The erring of this side can only be attended with a small increase of the charge, where any mistake in the other oversets the whole design. It is in vain he has calculated his first and second conveyances according to truth, if the make the third too small; it will answer no purpose that the pipes and the first channels are wel adapted to the services, and proportioned to one another, if these larger drains be too small. Any obstructions there will have the over as much as if the fault were there.

Chapter III. Of sessfools, their use, proper places, and dimensions.

When the proportion of the pipes and drains are settled so that they shall be able to convey off all that falls from the upper part of the house, the next consideration regards their being put into a condition to continue in a capacity of performing their office freely.

To this purpose care must be taken that they do not choak up. The architect has made his first calculation justly, when he has so contrived the pipes that they will take all the water of the roof, so proportioned the first drains that they will give a free passage to this water, and the second so that they will receive and discharge it again; but if he were to stop here his calculation would serve to but little purpose.

The measure of the several drains has been proportioned to the quantity they were to pass, and if they always retained their first capacity, they would at all times be ready to serve this purpose: but we are to consider that it is not clear water that runs into them; a great deal of soil is washed in with it, and though this runs freely down the pipe, mixed with and suspended in the water, it will separate from it, and settle to the bottom in the secondary channels.

One parcel of settlement will gather upon another, and by degrees, the channels will fill more and more up; as they fill up their capacity becomes less, and consequently, though they might have been made in an over proportion of size at first, they will thus become too small, and the pipes will choak as much as if the conveyances from them had been originally too small, from an error in the construction.

This would be the case if the several drains were built up and finished according to the calculation, without any farther precaution: we represent it to the young builder in its proper colours, that he may see the necessity of providing in time against it.

This provision is to be made by means of certain cavities, disposed in proper places, for the reception of this sediment from the water; these cavities, or holes, are called sesspools, and they are to be contrived and disposed with the same care and caution that is used in making the drains themselves.

The direction to be given the builder with respect to theses sesspols, is, that they be of a due bigness, and disposed at proper distances; and lastly, that they be so contrived that they may be cleaned at times without difficulty, for otherwise they would fill up, though ever so large, and then the evil would be continued to the drains; they would fill up next, and all would take the same ill turn as if the drains had originally been made too small.

It is a good rule to make a sesspool near the opening of ever pipes; this is taking caution in the first instance, for it is preventing a great deal of the grossest and worst of the soulness from coming into the channels or drains at all.

This sesspool at the mouth or opening of the pipe must be made very deep and large, and this for a plain reason; the water comes with such a violence down the pipe, that if the sesspool here where shallow or small, it would all rise over its edges together, and the water would run as thick into the channel as if there were none; but if there be sufficiently large and deep hole made there, the water will deposit its worst and thickest part in it; for, as this will keep full of water, let that which comes down the pipe rush in with ever so much violence, its motion will be checked a little there, and the gross matter will subside; this it is always ready to do when the hurry of that motion does not prevent.

They first sesspools being thus made, one under the nose of each pipe, others are to be dug at proper distances, and in a particular manner, where there are angles in the course of the drain, for in all these places, the strait current of the water being stopt, there is a tendency to the settling of the other matter.

These must be, like the first, large and deep, the bigger in moderation the better they can be of no service if too small: the bigger they are the fitter they are for the intended service, and the seldomer they require cleaning.

The place of the several sesspools being fixed, they are to be so covered that there will be no difficulty, confusion, or inconvenience in opening them; they must be cleaned from time to time, and as to the quantity they may hold before they need it, this is one good rule, that the soul in them should never rise within a foot of the floor of the drain; for if it come so near the level, any violent motion of the water will disturb and raise the mud, and it will carried into the channel or drain, and settle there. This is setting aside the very use for which the sesspools were made.

Chapter IV: Of the ways of discharging the water according to the situations of the house.

We have contrived for the carrying the water from the roof, receiving it from the pipes, and collecting it from the several channels cut for that purpose. We have stopped, as the builder who reduces our rules to practice must, to provide for the reception of such soulness, as, if suffered to continue its course with the water, would interrupt its course, and pervert the intent of all that had been doing; and having taken care to prevent that inconvenience, we are to pursue the course of our collected water.

We have conveyed it now from all parts of the house, however large or extensive, into one common drain, and we are to consider what is to be done with it. It is not to lodge there, but to be conveyed thence in the most free manner, and this is to be done different ways, according to the condition of the place where the house is built.

The drains are to be continued from the several sesspools, and they are to open either into some general conveyance, whence it may be carried quite off, or into large receptacles into which it may be all received.

The first of these is commonly to practiced in London, and is a great convenience; but, as there is not this opportunity in other places, the other method must generally be employed in the country.

In the constructing of great cities, as soon as the course of the street is settled, a large drain, or common sewer, is carried all along it, at such a depth as to receive the wet from the lowest part of all the houses with a sufficient descent; and this is the convenience there, the method, in this part of the construction, is to carry on the large drain, with several sesspols, at proper distances, till it opens into the common sewer as already described, as built for the general service.

This carries all wet, of whatsoever kind, or from whatsoever source, perfectly and clean off: drains are to be laid for the receiving the accidental wet from the various family occasions, which, like those from the pipes that receive the water from the roof, are to be all continued, with sesspools at proper distances, to this main drains; and this, receiving all the wet from the different sources, and discharging it into the common sewer, it is carried of altogether.

In the country this great convenience of a common sewer is wanting, and in some of those spots where town houses are built, there is the same disadvantage. Here the architect is to fall upon another method, which being properly observed, will have all the same advantages.

For this purpose, where there is no method of discharging the water, he is to prepare a place for its reception; this must be no other than a sesspool of proper size, or, if the reader chuse to call it so, a well.

The place for this great sesspool must be the lowest spot of all the ground, that a natural current may lie to it from every part; and it must be there dug of a proper size and depth according to the occasion.

If this well be properly dug it will answer all the purposes of the common sewer: the earth os of a loose an open structure, and water, let into a hollow made for that purpose, will naturally make its way through the crevices.

We see that in most ground, in order to make a cavity hold water any thing near the surface, there is to be a great deal of expence and trouble in claying and ramming the sides; in this present case, the design is that it should not hold water, but let it pass, and therefore, when none of these cautions are used, the wet will make its own way, and be lost as was intended.

(…)

<u>Chapter V: Of the disposition of drains, channels, and sesspools, through the whole ground plan.</u>

In large houses we are not to consider the extent of ground the foundation covers as all that is to be the subject of draining: there will be perhaps an area before, and a garden behind, and the architect is to take all these into his regard on this occasion. He is to look upon the boundary wall as the circuit of the ground he is to drain, and proportion the work to the whole; not that the drains and sesspols will need to be multiplied and enlarged in proportion to the space, as if all covered with building; but still they are to be considered. Water will lodge wherever there is a descent, and it will be easily carried off wherever there is a channel cut below: therefore he may be sure a great deal would naturally lodge in different parts od the area and garden, but he will understand at the same time, that, having made the needful preparation of drains and sesspols for carrying of the wet of the house, it will be easy for him to contrive to discharage all that would settle here the same way.

The best construction of the several drains is this: let the principal drain be cut though the middle of the plan of the house; and let this be, as we have said on every occasion before, something larger than to answer the most sudden fall of water: for the draining the natural wet of the house, a channel may be carried into this main drain, which goes through the centre from every room of the lower story.

This being done, the area will next come into consideration; and this is to be drained by channels, or smaller cuts. In general, a couple of these will be sufficient, or, if not, more than a third is very rarely required; these are to be cut through the extent of that piece of ground, and to open by wide mouths into the middle or great drain already mentioned.

When this is done, the places of the sesspools are to be considered; and first a main one is to be sunk.

To this another large drain is to run, upon the principles already laid down for the draining the roof. We have shewn how the pipes are to discharge themselves, each into its proper small channel, or drain, and those are to open into this main drain, which is to run, like the first, into the common sespool.

The pipes are to be placed at the angles of the building, and these channels conveying the water from them to the drain that opens into the sesspoos, it is thence to be discharged by another large drain into the common sewer, if the house be in town, where there is that convenience; if not, this sessppool must be made the larger, and its situation must be the more considered.

In those places where there is not the great convenience of a sewer in towns, or of running water to carry of all clear in the country, there must be a great deal of regard paid to the construction and situation of the great sesspool.

This is to receive not only all the waste water, but in a manner, all the filth of the house; and it is to remain and stagnate there. Ill smalls, and even unwholesome vapours, will doubtless rise from this, and it may be nor only disagreeable but mischievous: in this respect we should adopt the Italian practice, which is founded in the greatest reason: they never content themselves with shutting up such a place as this, so as to confine the bad air, but always give it vent in a proper manner.

We have many instances of the air being so poisonous in these covered wells, that when labourers go down into them, after they have been long shut up, they are killed by the vapours.

Would not any reasonable person be very averse to having a vapour confined under or about his house, which is of poisonous quality? The method of preventing it is by giving these great sesspools a communication with the open air; this will answer worthy to be our models in other respects as well as the present, always contrive. They place the great sesspool near the out wall in some remote part of the ground, and they carry up two or three brick funnels from it into the open air, on the other side of the wall.

The principal conveyances being now made, regard must be had to all the offices, for wet and filth will be produced in all of them; drains of the smaller kind, such as receive the water from the pipes, must be carried from every one of these, and open into the main drain next to them, and there discharge their water.

After this, the plans of the bog-houses are to settled, and of all other needful conveniences of that kind, and for each of these to be dug a well; from every well there is, in the same manner, to be carried a channel into the next main drain, to discharge their abundant water; these, and other that receive the waste waters from wells sunk for the service of the family, are all to open each by its proper mouth, into one of the large drains, and the whole is thence to be discharged as we have shewn.

We have spoken already of the placing sesspolls at proper distances, and this caution must always be kept in mind, and executed wherever there are drains; for there will be little use in constructing them ever so well, if they be continually liable to fill up.

We have described the two or three main channels made for draining the area, or fore court, and the same are to be made, in the same manner, in the garden, continuing them with a gentle descent to the next large drain; to the great sewer, or to the great sesspool, as their situation renders most convenient.

With respect to the area, or fore court, there will frequently be required small channels to the two or three larger; and, where needful, they must never be spared: there must be also small drains carried from all the lodges into these larger drains, in the same manner as we have directed them to be carried from every room in the lower story to the main drain, passing under the centre of the house. Thus one part of the work will be the rule of another: and when it is once begun with a due sense of the theory, the practice through the whole will be very easy.

Chapter VI: Of the construction of Dry Drain, and the general discharge of water

The necessary precautions are now taken for conveying off the water that is brought by rains upon the roof, or thrown off by the various occasions of the family, but the architect is not to stop here; if he should, after all his care, his whole work might perhaps be useless, and himself censured after all his contrivance.

Beside these waters which the business of the family discharges, and which fall from the clouds, there may rise other water from the ground, and that, in many places, in very large quantity. Conveyances must be made for this, or the care taken on the other hand will be ineffectual.

This must be provided for by what are called dry drains. These are to be small, and, according to their name, laid dry: their use, we have observed, is to carry off the water that may arise from land springs, or drainings from higher ground; and, as the nature of their service is this, they must be adapted in number to the occasions.

It is a very ill choice in any one who can avoid it, to build on swampy ground; but when this is the case a great number of these drains are needful.

These dry drains being laid, and the others disposed according to the directions we have here laid down, the house will be always dry and sweet; these are two very great considerations, for wherever water can lodge, there will be damp vapours and ill smells.

To explain all that is here laid down, by example, and present it to the eye, as well as to the imagination of the builder, we have given, in the annexed double plate, th plan of a house of considerable extent in town, where there is the advantage of a common sewer, for the reception of the water from the several drains. This we have thought the more immediately useful to the town builder, because there is every where this convenience for him; and, as to the country, we have directed what is to be done there. If there be a running water near, that will serve perfectly as well as a sewer, and receive all and carry it off; it not, the large sesspools we have described are to do the business, and we extremely recommended it to the architect to give them openings to the air in the Italian manner.

When the discharge I made into a running water in the country, the owner need not fear any inconveniencies that will arise from it, for all filth is presently carried off this way, and the only consequence will be,, that there will be more and better fifth of many kinds there than elsewhere; the various things discharged from the house inviting and feeding them. Palladio, who mentioned the great sewer in Rome, observes that the finest and largest fish were caught thereabout.

This may be sufficient to recommend to the country architect the method of discharging the waste into a running water, where it can be done, and the constructing his great sesspool properly, where no better convenience can be had.

With respect to an edifice in town, the example we have given in plate XXX, is of a very large and elegant one, and consequently it will answer every purpose to the London builder; for where the extent of ground and variety of offices is less, it is only reducing the number and extent of the drains accordingly.

In our plan, there is the whole constructure for draining a house, its offices, its area, or court, and its garden; nothing more can therefore be required on this head than the referring the design to the account we have given of its several parts, which will be easy to the young student from the annexed explanation.

Chapter VII: Of the construction of the several kinds of Sewers and Drains

We have shewn the young builder in what manner he is to design and dispose his several drains throughout the whole plan of his fabric, and having thus far proceeded in his undertaking, the next thisg is to explain to him their proper construction; it will be in vain that he have disposed and contrived them ever so well, if there be errors in their structure.

We have already explained to him in what manner he is to proportion the capacity and extent of his drains to the uses which they are to serve, and the quantities of water that may fall on them; it remains here, that we shew how such as are of certain given size may be best constructed. It is impossible, by any rule, to say of what particular dimensions all the drains af any house shall be; but we shall here take as instances, some drains of the most usual size, and such as may suit such a plan as we have just given; and these we shall explain here both by words an figures.

In the first place we will suppose the architect finds it proper to make a drain of a foot and half wide, this he may construct in the following manner.

Let the sides be nine inches thick; let them rise a foot high; let the arch be turned four inches; and let the bottom be paved with brick laid flatwife.

Here is, in a few plain words, the method of fabricating an eighteen inch drain, which will be strong, durable, and able to support itself; and all with the smallest expence the nature of the work allows.

If he find it convenient to make a drain of one foot ten inches wide, the side walls are then to be one foot three in height, and the rest to be constructed as before.

In the same manner, for a drain of one foot two inches wide, the height of th eside walls is to be nine inches, and sweep of the arch four.

All these are to be paved in the same manner, with bricks laid flat.

Other small drains are to be constructed upon the same principle and proportions; as to the main drain, that should be a yard broad, and of the same height in the walls; and the arch over it to be turned nine inches thicker: the bottom of this need be paved no otherwise than as the smaller ones, for there is no stress there.

This is the usual way of constructing sewers and drains, and we have accordingly expressed it to the reader's eye in the plate annext; but as we hope he will be always ready to depart from the common tract when there is reason for it, we shall here subjoin and improvement upon that method, first telling him the occasion.

In all the drains we have hitherto named, the floor, or bottom, is flat; and the two walls rising at right anglesupon it, ther are two narrow niches, or corners, all along the drain, one on each side. Now both the flatness of the bottom, and the straitness of these angles, are very exceptionable.

The use of a drain being to carry off water freely, the grat danger is of its lodging some part of the settlement.

We have contrived for the settling of the grosser part of the water, by the numerous sesspools we have directed to be dug at proper places, but still, though the coarsest part is left behind in these holes, the water is not delivered clear into the drains: there still is a great deal of soul matter among it, and this is always disposed to settle from it.

A flat bottom favours this settlement of the mud, and the narrow angles on each side always detain it. This we see in every place; where such corners always presently fill up.

Wherever there is a lodgment of the soul matter from the water begun, it soon increases, and the more the drain or sewer is choacked up, the less it is capable of answering its purposes.

This is the inconvenience to which all drains of the common construction are exposed, and having proposed it to the student, we shall lay before him the proposed remedy.

Instead of making the bottom of the sewer a flat floor, let it be in form of an inverted arch, answering in part to the sweept of the arch above. Every one knows that the freest passage that can be, is through circular channels, and these would sufficiently wear that form; they would in a manner resemble so many vast water-pipes of a circular bore, and there would be no danger of their filling up. The perpendicular walls would detain nothing, because there are no angles in their joining, and the bottom would pass such a drain, if it moved tolerably wuick, without depositing any settlement; and if, from a very slow motion, some small matter should lie at one time, it would be carried off by the next quantity that made its way though the drain.

This method of constructing sewers is used very successfully under the new building of the horse guards; and we have added in this plate a correct drawing of them, and of the great sewer into which they are received.

EXPLANATION OF PLATE XXX.
A plan of a town house and offices, with garden and court, where drains and their uses are particularly described. That part of the plan shaded with a saint tint is the house and offices, and boundary wall; the other lines denote the drains and sesspools.
A. Is the main drain through the middle of the house, to which small ones may be conveyed from every room in the lower story, if required; and this has two branches into it, letters B.B. to drain the fore area.
C. Is a sesspool.
D. A larger drain from the said sesspool, which receives several other small ones, that bring the water from off the house and offices, coming from the several angles of the building marked E. where the lead pipes are fixed that bring the rain water from the roof, and convey the great sewer F. in the street.
G. Are other drains that brings the water from other offices, and also receive the soil from the bog-houses, where wells are sunk; these also take the waste water from the well H. and empty themselves in the great sewer F.
I.I. Are sesspools in the fore court.
K. Are the drains to take off the water from the said court, and from the lodges, they discharges themselves into the great sewer F.
L. Are small drains laid dry, and are called dry drains, as their use is to receive and carry off the waters that arise by land or other springs: they are made use of for draining of swampy lands.
M. Is the elevation of a drain one foot six inches wide, whose sides are nine inches thick, twelve inches high; arch four inches, and the bottom paved with brick laid flatways.
N. Is a drain of the same kind, differing only as to its size; being one foot ten inches wide, and one foot three high the side walls.
O. Is a drain one foot two inches wide, nine inches high the side walls, turned with a four inch arch, and paved with flat brick.
P. A nine inch drain and paved bottom.
Q. Is the main sewer, whereto all the aforesaid drains lead; it is three foot wide, three foot high to the springing of the arch, is turned nine inches thick, and the bottom paved.
R. Is the manner of making dry drains, and which are commonly called weeping drains, and are only four inches wide.
These are the kind of drains which are ordinarily made use of; and being made flat at the bottom, they are very liable to be stopped up from the lodgment of the soil that comes into them.
The most useful sewers and drains are those that are made as described at letter S. and T. their bottoms, being circular, are not so liable to stoppages.
This kind of drains are made under the new building of the Horse Guards, and lead to the great sewer that comes under the middle gate way, of which letter S is a correct drawing; it is worked with the soundest stock brick, and in the inside four inch thick; the bricks are laid in terras.

Chapter VIII: Of the construction of houses

(…)

The mud wall tenement naturally rose first; for we may very well believe that early cabins were built with clay, though we neglect the name of Doxius, the son of Gellius, who, we are told first built them, and smile at the story if his taking a swallow's nest for his model.

The sun would harden these rude walls by his heat, and thence the mind of man would soon conceive the method of cutting out the wet clay into shapes, and drying it before using in his house. Thus bricks must have been an early invention; and they would doubtless have been universal use, had not nature disclosed to those who dug for this poor material, her mines and stores of stone and marble.

These offered a more immediate service, and promised a longer duration; they naturally fell into large pieces in the quarry, and art would soon find the way to break them into smaller: and naturally, from the sight of these greater and nobler materials, men conceived the ideas of greater buildings, palaces and temples.

The quarry supplying stone, clay beat up with sand, or found in the natural condition of loam, ready mixed for the purpose, supplied the place of mortar; and the tools employed to fashion the masses of stone, soon were used to carve and decorate their surfaces.

This I the plain and natural course of things, and this is probably was the origin of architecture: but when it happened, or in what quarter of the world, are points that dreaming monks might be better study than people who enjoy the present advantages of sciences. It is enough for us acknowledge the defect of information; and, while we trace the progress of the art thus from reason, to say it is too old for history.

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Man's sense of feeling would immediately tell him that he wanted a house for shelter and defence; and his reason, given him by the Creator for that purpose, would teach him how to set about it.

The first edifices would be rude and unartfully constructed, but there would be soon improvements, thus let the student in architecture consider it; let him consult reason first, and call in upon that first thought, the assistance of art, which has now established the whole practice upon certain rules, and reduced the flights of wild and ignorant fancy to a regular and noble science, worthy the attention of the greatest genious.

Chapter IX: Of the given an edifice a proper strength

The house is to suited either to the condition of the person who is to inhabit it, or to place where it stands; the first is the point in building by commissions for a family; the other in buildings for the chance of lettings. The later is the common practice in great town; but, even in that, there is something to be considered with respect to suiting it to the inhabitant.

Though the architect, in this case, will not know who is to live in his edifice, yet he can very well guess of what ranks he will be, and this according to the place where it stands: thus much is to be considered in building in this general and random way; the street, or square, the neighbourhood, the conveniences, and the other current circumstances, will instruct the builder; for he would be mad who should build a shed in Grosvenor Square, or a palace in Hedge Lane; and thus far he will be able to proportion the building to the tenant, or purchaser, though unknown.

After this first consideration of the general condition and extent of the buildings, comes the article of strength. Whatsoever be the size, the solidity must be proportioned; for when the house is not able to support itself, all other care is lost upon it.

We see a strange difference between the buildings of earlier ages, and those of the present time, in respect of this article of strength; but the reason is plain: the nature of the tenures in London has introduced the art of building slightly. The ground landlord is to come into possession at the end of a short term, and the builder, unless his Grace tye him down to articles, does not chuse to employ his money to his advantage.

It is for this reason we see houses built for sixty, seventy, or the stoutest of this kind for ninety-nine years. The care they shall not stand longer than their time occasions many to fall before it is expired; nay some have carried the art of slight buildings so far, that their houses have fallen in before they were tenanted.

From this general practice in the common way of working, has been introduced the same conduct in better buildings; and it is but once in an age we see a structure, like the new Horse Guards, built for posterity.

Perhaps the modesty of our generality of architects contributes to this practice. The Greeks and Romans builts for succeeding ages, because conscious their works would be the admiration of all time; our people are not so sanguine in their hopes, and therefore not so solid in their structures.

But whatever the occasion, there is nothing that more deserves or demands the interposition of the legislative power; the safety of the subject is the concern of every wise government, and it is certain the present method or running up houses in London, not only disgraces us in the eye of strangers, but treatments continual disasters. Till such a control shall be laid upon bad builders by publick authority, those who have more skill and more integrity should distinguish themselves from them by their work.

Two things give strength to a building, the choice of a good materials, and the putting them well together: as to the first, we have in the preceding part of this work given all the rules for judging of them, and he who has his eyes, and will observe the characters of them, cannot be deceived; for the other, it is what we are here to inculcate.

The first care, in the regard of strength, is that the supports be equal to the weight they carry; these supports are, in common building plain walls, and these we have treated of already, under the heads of essential parts and therefore need not repeat that doctrine here.

When walls are not able to support the incumbent force, recourse is had to spars and buttresses, but these are an unseemly and very disagreeable sight. To avoid this, the architect should consider in time what the force, or pressure, will be; and proportion the solidity accordingly: great arches are the most subject to impair the strength of walls in this manner, but they should be lightened, and the wall strengthened in the original structure of the building.

The occasion on which buttresses admit most excuse, is on the outside od the walls of gothic churches; though in these a good architect could have contrived to avoid the need of them, by lightening the arch, and strengthening the wall in its plain, perpendicular form. When we see this sort of support on any other occasion, it have shew that, in the instances where it admits of most excuse, it might have been avoided; and this may inform him that he is left without apology, when he brings himself under a necessity of using elsewhere.

The architect having thus, by an honest choice of materials, and a judicious manner of proportioning the superstructure to the supports, taken care of the main consideration of strength, the next regard is to be shewn to proportion and regularity, in the distribution of the several parts.

Chapter X: Of proportioning the several parts of a house with judgment

The extend of ground being determinate, the materials chosen, and the weight of the roof, and thickness of the walls, settled in the builder's mind, he is next to consider the article of proportion.

Here is a space to be covered with buildings: and the great consideration is its division into parts, for different uses; and their distribution. In this regard is to be had to two things, the convenience of the inhabitant, and the beauty and proportion of the fabric. Neither of these should be considered independently of the other, because if it be, the other will not sail to be sacrificed to it; and this, which should be very disagreeable, is never absolutely necessary.

If the house be for a person in trade, the first and principal attention must be shewn to the article of convenience; but with this the builder should always carry in his mind the idea of beauty, proportion, and a regular distribution of the parts; that, wherever it can be done, he may favour the one, while he is absolutely consulting the service of the other: in the same manner, when the house is for a person of fashion, the beauty and proportional disposition od parts is to be principally considered; yet the great and needful article of convenience must not be disregarded.

In the building where there is to be a shop, it would be absurd to thrust the parlour into the middle of it, in order to give that room an exact proportion; but, on the other hand, a little may be retrenched from some less conspicuous parts of the shop, to enlarge that necessary apartment behind it.

The merchant's house must have warehouse-room, but that need not break in upon every apartment, because there I no necessity for any exact inch of ground in a particular spot for this use; though there must be a certain quantity upon the whole.

The parlour, in a small private house, is a very convenient room; but, as it is not the apartment of most shew, there is no necessity it should reduce the passage to an alley; and in larger houses, inhabited by persons of distinction, there must be antichambers, and rooms where people of business may attend the owner's leisure. These must not be ill constructe, because those of some rank may often wait in them; and beside, every thing in a great house should have an air of grandeur: but, on the other hand, the care of rendering these convenient and proper for their use, is not to extend so far as to intrench upon the rooms of state and elegance.

When convenience has been thus far considered in the plan the next regard is to be shewn to proportion.

This is a thing of more strict concern than the other, and must be managed with the greatest accuracy. The matter of convenience falls under the direction of fancy, but proportioning is established upon rule; there is no apology for an unneedful violation of the truth of the science in this article.

The proportion of the several parts of an edifice is of two kinds; for they are to be adapted, in this respect, first to the whole building, and afterwards to the another.

It is strange to see that many of our architects, who have been able to plan our a whole of a good building, have miscarried in the proportion of its parts. It is in this the antient architects are found, by all that remains of them, to have been most particularly excellent; they formed at once an idea of the whole structure they designed, and of all its apartments, and it is evident they throughout kept that general idea always in remembrance. It is hence we see such a perfect harmony in all their works, and from this, as we have shewn in its place, arese those several variations in their larger parts: these, and the least, in all their works, are perfectly suited to one another. It is in this the student who would distinguish himself in architecture should principally follow them in the disposition of a house; we wee greatly, when he turns his eyes up to the antient, there is not any in which he will not find perfect truth.

The first kind of proportion is that if the several parts to the whole, and in this reason is a very plain general guide. We may divide houses under three heads, the large, the middling, and the small; and in each of these classes plain sense will dictate, that the several apartments should be large in the middling they should be middling, and in the small the should also be small.

This is proportioning the parts of a building to the whole; and this rule, which is directed by common reason, is confirmed by all the writers od architecture: for sciences are built upon reason, and experience which supports her determination.

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<u>Chapter XI: Of the disposition of the parts in a edifice</u>

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<u>Chapter XII: Of Edifices without columns</u>

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Chapter XIII. Of drawing the ground plan of an edifice

(315)

Chapter XXI: Of the construction of the exterior part with respect to the strength.

(…)

The first of these is, that, in the raising of the walls, he place solid over solid, and void over void: that is, the piers are to continue entire from bottom to top of the building, and the windows to stand over one another. Reason shews the propriety of this, and it is common as a maxim to a proverb; yet in London we see it frequently violated.

This first rule observed, the next is that the windows be not more, nor larger, than needful. This is a precept also established to a proverb; for, from the days of Vitruvius to the present, it has been a proverbial expression, that all openings are weakening. Indeed, if the proper regard be shewn to the caution we have given before of proportioning the parts to the whole, the article of bigness, in these openings, will be determined by that; but their number still remains a point of great concern.

In this, custom from time to time has differed, bud judgment has been less employed than fancy.

At one time our houses were, in a manner, all window; the piers between them were so slender, that one wondered how the fabric supported itself. From this error, which arise from a desire of abundance of lights, we sell of late into the other extreme of making the windows too few, and too small. In this our builders followed the practice of the Italians too closely, not considering the difference of our climate. All imitations must be guided under the rules of judgment: it is so persons of genius follow the best examples, otherwise they are no better than mimics, a very paltry kind of imitators; that may be proper in Italy, which will be very wrong in England, and the present practice is an instance of it. It is true that our windows were too numerous and too large, because they weakened the fabric in that conditions; but it was possible to err on the opposite side, and these improvers did it; not that they failed to avoid that error, and give the building strength, but they made a great mistake, for they shut out too much of the light.

In Italy, it may be proper to shut out the fun in a greater degree than it can be here, because in that country the air is clearer, and the natural light is much greater; the English air is often thick, and the sunshine is less constant. This should have been considered in the improvements, for the distribution of light is a thing very essential in a building, though it be one of our common builders very rarely take into their consideration.

In the house of the common size for moderate families in town, which, in the old way, used to have four great windows and a slip, our practice, in the reforming of this article, allowed three, and this was much more proper; but, at the same time, the builder, forgetting proportion in his earnestness of improvement, when he had reduced them to a moderate number, made them too small; the rooms were dark, and the house on the outside, though is looked different indeed from the other, yet was equally unpleasing; the fist remembered a lanthorn, the brick-work serving only as ribs to hold the glazing together: the other resembled a prison, where the windows were a heap of brick. Moderation is the rule of pleasing, and that they had not yet found; we are, in general, improved in this article, but there are some who follow the old method introduced by the first improvers too strictly.

In many houses of this size, the builder now puts but two windows in front, and, where the extent is not too great, it is very proper. The pier between these is large, and gives great strength to the building, and it is capable of receiving better and nobler furniture, without more expence: one glass and one table does in this dining-room, in the place of two, and the effect is much finer: but this is attended with some inconvenience for want of room below.

The windows, in this case are to be made larger than they would otherwise have been, and the breadth of the pier between very well suits with this.

We have of late also fallen into the method of retrenching the wood-work in our frames of fashes, in a very happy manner. Those thick bars we used to employ hurt the eye, and obstructed a great deal of light; they made a large window resemble a number of little ones: the intent is, that as much as glass should be seen and as nearly in a continued body as possible; this broke in upon it.

Our present use of brass, for frames of fashes, instead of wood, is a very elegant improvement in the article of windows; but these frames are expensive, and our people, taking the hint from them, have found the way to make them of wood now, with great strength, though no great apparent thickness.

This respect being had to the number and bigness of windows, in houses of ordinary size, we are to caution the young architect, that when he is to build a larger, he is to consider in the first view of increasing his windows, not only in number, as some have done, but in size. A great edifice should have all its parts great; the windows are to come within this designation, and the increase in number is to follow that in dimensions; this is the general rule, but here again comes in the former, as the ground-work of all, which is the proportioning of them to the size of the building.

Lastly, we must caution our young builder never to bring his window to near the corners of the buildings, nor to make any operating there. This will be weaken that part upon the strength of which the firmness of the whole depends.

Thus much, respecting the general dimensions of windows, we have thought necessary to place here, for the finishing the consideration of the design of an elevation. Their particular proportions and ornaments are to be treated of separately in another part of our work, according to our plan. We have gone through the consideration of the outline of the building, and are now to lead our student to its inner division into apartments.

Chapter XXII: Of models for the compartition, or inner division, of a house

Our architects has now marked out the form of his edifice, and determined its elevation; he has made his apertures with discretion, and contrived they shall let in enough light to the extent of the case, without impairing the strength of the fabric; and he has proportioned them in number and dimensions to the building. He can shew his proprietor a surface, and he is now to proceed to the division.

Lines and figures answered very well for the exterior part, and for the outline of the plan, but more substantial matter will be better here. A model in pasteboard, or a slight one in wood, will answer the purpose with much more certain, and be much less liable to deceive, and much more intelligible to the proprietor, than a figure upon paper. This is the advice of all good authors, and it should be the practice of all skilful and honest architects; we are used to see this done for great buildings, and there is no reason why it should not be for the least; the charge will be proportioned, and therefore in small undertakings will be little, and it will always give satisfaction to the proprietor. There has been a custom, when great works were to be undertaken, to bestow a large expence upon models, but this is frivolous; it is employing fancy upon a work wherein all should be the effect of judgment; the model is not to be admired in itself, but to convey a distinct idea of what will be admired in the house; its plainness therefore should be its recommendation. The imagination of the proprietor is not to be captive by ornament in this little piece, but it is to shew him what is the intended division of the house, with perfect plainness, that he may see what to approve, and wherein to propose alteration.

The bigger such a model be the better, because the parts will be the better understood by an unexperienced eye; and, as we advise perfect plainness in it, the expence will be trifling. It is a very needful charge, and one the sparing of which will commonly be severely repented in the carrying on of the building.

We are proceeding to the division of the plan into apartments, but we are to enter these through the principal door; this therefore must first come under our consideration. Most have treated of the doors and windows of the house under one article, but it is wrong. The principal door of which we are here to speak is a thing quite distinct in its nature and office, and demands a separate consideration.

The confusion that has been introduced in the minds of young builders by writers treating these subjects in this manner is very great, and if any one would see how natural it is, from this common method of treating them together, let him turn to a late celebrated dictionary.

That ingenious author has collected what he thought proper to deliver on this subject from the little treatise of Sir Henry Wotton; and, falling into this confusion, has faithfully transcribed, under the article DOORS, all that ingenious author has said of WINDOWS.

We do not write this in censure of an author whose labours have their use, but to caution our young builder that it is not in such writings he is to look for the practical instruction.

The consideration of a principal door is so essential, that we shall treat of it singly, and shall recommend the care of it to the architect's most serious thought. It is and article in which, if any error is committed, it is obvious to the first eye that is cast upon the building; and it is an unlucky one, for this reason, that it will put the vulgar in mind of the builder's stumbling at the threshold of his undertaking.

Chapter XXIII: Of the DOOR of a house (p 319)

(…) The principal door being the entrance to all the apartments, and the passage from them all, nature and reason place it in the centre of the house, yet we see this practice continually violated, in large as well as smaller edifices.

In those little common houses where the extent of the front is limited to a few feet, and there is a necessity of a certain number of apartments, some excuse may be make for throwing the door to one side, though nothing can be said in justification of it; but in large and elegant edifices, it is a practice that admits no apology.

In the common run of houses in London, the old trodden path is universally followed, of placing the door at one side, and making a passage parallel with the fore parlour.

This passage encroaches, in some houses, upon the parlour, and spreads into a kind of hall; and, in others, the parlour encroaches upon that, and squeezes it into an entry. When it is determined to keep up this old way of distribution, it is best to make the passage moderate, for it is ridiculous in either extreme; but a little judgment in the builder may establish a new method of distribution of the inner part of the house. A fore parlour is a room of very little use or value in a small house in London; it is too near the street, and too much in the way of disturbance from the entry; it would be more agreeable to the generality of families to have this whole part of the house, to a small depth, thrown into a hall, by which means, with a moderate skill in the science, there may be a good stair-case, and an excellent back parlour for dining, free from all inconveniences and disturbance, and better than the fore parlour could be.

This would be a method of bringing the door into the centre of the house, even in these small buildings, which it always should be; and the flight of steps to it, and spreading of the rails from it, would in this case utterly take away the confined and mean look it has at present. A house of this construction is represented Plate XXXIV.

The reader will see by this, how necessarily the consideration of a door is separated from that of windows, and how connected with the article of the inner distribution or compartition of the plan.

In large edifices, where there is extent of ground, and where every advantage is before the architect, he is unpardonable in not fixing the door where it should naturally stand, that is, in the centre of the edifice; yet we see this often omitted in great houses, nay in palaces.

The principal entrance, being in the centre, naturally lead to all the apartments; when it is placed elsewhere one is confounded.

Where there is a court before the house the principal entrance into it ought always to be in the centre of the front wall, and the principal door of the house ought directly to face it. We see this rule frequently transgressed.

Two gates are opened at the two sides for the entrance and passage out of coaches, and the principal door of the house fronts a dead wall; where the wall is low, and the first story raised by a large flight of the steps, this is more pardonable; but, in any case, it is an error in the very principle of building. If these two gates be necessary, let them be opened in these very places, but then let the front wall of the court be of sufficient extent, and let there be a central gate larger than either.

The ease, freedom, and readiness, of going in and coming out, are articles of great concern, and nothing should be permitted to interrupt them.

We have, in London, many instances of these side openings in the walls of court, without any central one; and we have one very striking instance of placing the door out of the centre. This errs both in proportion and situation, and must be named as a caution to the young builder.

The house is Grosvenor Square; the edifice is large and conspicuous, but one is puzzled to find which is the way into it. It appears a house without a door, and when the eye is cast upon the little entrance at one side, one scarce knows how to suppose it is the door to that house; it seems to belong to the next.

This is a practice contrary to the reason, utility, beauty and proportion; yet we see it too common in places where it is yet more conspicuous.

The reason the builder assigns for it is a very plain one, and would have its weight it the inconvenience of blemish were not too great for utility; he says, that placing the door in the centre is taking away the best part of the house to make and entrance to it, and that the rooms may be larger, and the chain of them better continued, when it is not interrupted by the passage.

In the first place, this practice contradicts the fundamental rule of proportion we have first established, and which should always be held inviolable; a great house should have all his parts great, but this is impossible in the present plan, for the door must be small that is thrown into a corner.

The principal entrance to a house should be one, not more; and this distribution renders that rule impracticable, at least in the appearance, which is, in architecture, a thing greatly to be considered.

When the door is in the centre, it is naturally one, for there is no place for another. But when, according to this practice, it is thrown into one of the corners, or one of the wings, there must be another, either in reality or appearance, to answer it on the opposite side.

When a stranger advances to a house of this structure, he is shocked with a great blank in the centre, where he naturally expects a door, and where no decoration is so proper, because none is so natural; and when he perceives the two doors at the two corners, it is into easy for him to know which is the way into the edifice.

There is a poor confined inhospitable look in this kind of house, and it always looks blanks and naked in the front, whatever be the decorations. It is certain the apartments may be the better for it, but there is a an appearance of being stinted and reduced to shifts; one would not think the proprietor had generosity of spirit, of the architect true taste, who found themselves obliged to take in the vestibule to enlarge the apartments.

For these plain reasons, it may be laid down as an unanswerable rule, that the entrance, or principal door, of a house ought always to be in the centre; and that we must content ourselves with this string of unbroken or interrupted apartments in the upper floor, and even it is often attended with great inconveniences.

Chapter XXIV: of the general distribution of the apartments

Having fixed our doors, we may proceed to the compartition or division of our plan; but as a first consideration, we are to determinate the distribution of the several apartments in general according to their condition and use. We are not to take the Italians as our perfect model in his article, because they adapted their edifices to their country, and so must we; this is the caution, and the only caution, requisite on the present head: their rules were always excellent, and their practice masterly, for their own climate, but, before they are put in practice with a literal strictness here, let the builder remember that there is a great difference between Italy and England. We shall assist him in this matter by the matter by the manner in which we shall deliver to him their several percepts: such as cannot be useful here we shall omit; such as require to be appropriated, we shall accommodate to the climate of the country, and genius of the people; and such as are universal, and suit equally all places, we shall deliver as they stand. We are now entering in the part of the work in which their practice and their precepts will be extremely useful; and having once premised this caution with respect to the adopting of them, we shall proceed to the several instances. We hope that, by following this course, architecture may be improved greatly more than it is at present; and, under these restrictions, more happily transplanted into Britain.

With respect to the general distribution of apartments, Palladio lays down one excellent and universal rule; which is, that in all buildings, the most beautiful and noble parts should be placed most in view; and those of a meaner kind as much concealed from sight as possible. This is one of those rules which is universal, for good sense is the language of all countries; yet we see this miserably transgressed.

In large houses there is the greatest conveniency for this, yet in these we see it most violated.

Where the proprietor has spirit, and the chosen spot allows of a due extent, the house should have a court before it, and a garden behind. These are the edifices in which the distribution of apartments is principally to be considered, because it is in these the builder has scope for his genius; it is therefore these of which we are properly to speak here, and on this first general distribution will depend the subsequent division of the plan. Though it is needful, to speak of large houses on this occasion, because there are in them only all the variety of apartments, yet so far as smaller houses are concerned in this distribution, all that is here said may be transferred to them. The young architect will here find all his subject, and he may take into consideration with respect to every edifice, such parts of it as concerned. In smaller houses in the country, less will come into consideration; and in the common kind of houses in London very little, because they are naturally cramped for room, and ty'd down to a particular situation; yet, even in these, there will be found use for those rules established upon good practice, in those which are largest and most free; for every house has its apartments of separate kind, and its conveniencies, such as they are, and upon every house the sun must shine in some direction.

To pursue therefore this subject, in such places as afford scope for it, the offices, which will be numerous in proportion as the house is large, must be disposed where they shall be least observed: where the buildings is of so large a kind as to have wings, some of them may be disposed in them, though all cannot conveniently be there. In other cases the lower part of the house it to be appropriate to them.

In the common way of buildings in London, they are all placed under ground; but this is unwholesome, inelegant, and inconvenient.

Here then comes in the use of what the builders call a basement story; this is the lower floor of the house altogether; or though not buried under ground entirely, it is let in some feet below the surface, and is usually and very properly built in front with rustic work: the first apartments are thus raised some height above the ground, and a slight of easy steps leads up to the principal door.

This is an elegant and very commodious manner of building; there is something of dignity given to first apartments by the raisings them above the level of the ground: they are more wholesome also as they are more out of the reach of damps; and the lower floor which conveniently holds all the common apartments, keeps the servants near the body of the house.

The flight of steps also is a very great ornament to the edifice, whether they be plain or more decorated; and when this basement story is faced with rustic, it gives an air of solidity to the superstructure; it looks as a rock upon which all the rest is raised.

Where there is a garden of tolerable extent, some of the principal apartments, supposing the situation proper, may be very conveniently placed in the hinder part of the house. They will by these means be freed from noise and disturbance and they will have a good light; the garden will also be a good prospect. Into this the best entrance is by a door in the centre, opposite to the great door of the house; but if the string of uninterrupted rooms be much desired, it may, in this part of the house, be had by placing the door to the garden at one corner; and the principal front door may still have its proper place.

In these large houses, as there will be numerous rooms, they may be suited to the seasons of the year, as well as to their several purposes. Thus rooms for summer may be placed towards the north, and winter rooms to the south and west, because we seek coolness in summer, and in the winter as much fun as we can have.

Those rooms for summer should also be large, and those for winter small, for the same plain reason, that a smaller room is easier warmed, and that a large one is always more airy.

So plain are the directions for the general distribution and structure of rooms, and yet nothing is more necessary than the laying them down at large, for they are continually violated.

The Italians are very exact in this distribution of their houses; they have rooms fronting the east, which are their favourites for spring and autumn; and they always contrive to have them face gardens, or extensive grounds where there are trees. In both these seasons there is great beauty in this part of nature; the leaves of trees have a fresh and lively green at the time of their first unfolding, which they lose in a few weeks, and never after recover; and toward autumn they have a variety that is not found in any other season. All leaves change colour as they fade, and this they do variously according to their kinds, some earlier, and some later. This gives the autumn a colouring unknown at any other season; painters understand this, and are fond of it in their landscapes, and why should not we be as pleased with it in the reality? All their pencils are faint to nature.

There is the same kind of advantage in the western situation of summer rooms, though from another source. They commend the setting fun, where they are not blocked up, and this is a source of beauty beyond painting, and beyond all else in nature. The great luminary of the heavens dropping gradually below the horizon is a noble object; and the paintings of the clouds, during the succeeding half hour, are very beautiful and varied every moment.

An eastern situation is of all other the most proper for a study, for the morning is the time for resorting thither.

As the apartments of the nobler kind have all their proper place, provided other circumstances so favourably concur that it can be chosen, so the meaner below have also their proper situation: the larder to the north is an everlasting rule, and upon the same principle of reason all the rest are to be situated according to their purposes.

All this general distribution is easy when it is thought of in time, but the unhappiness of our architects is, that they generally neglect it till it is too late to mend their error.

This general distribution must come under consideration before the inner compartition is made, because the situation we see has a right to some regard in the structure of apartment. We have endeavoured to reduce the several parts of architecture to method that the student, taking them into his plan as they naturally rise, may avoid the disgusting necessity of breaking the thread of his study, to turn back for something overlooked in its right place, or the worse error of seeing in the building some mistake than should have appeared to him in the plan.

With these precautions, we hope the danger of such errors may be avoided, and our student, having considered his plan and elevation in all their light , and with respect to all their conveniencies, may now go to work upon his model, to divide the space into rooms, according to these general admonitions.

Chapter XXV: Of the compartition, or inner division of the house

The architect is now to consider his vacant plan as a space to be divided into rooms, which must have passages for getting at them, and a stair-case for rising to those of the upper stories.

With respect to the height of the first apartments above the ground, as it is in itself a great advantage, so it will be the greater the more it is in degree, within proper limitation. Ten foot is the least height the basement story should have in a good building: and, at a medium, we may give fourteen as a very good height. Let the builder remember the great rule of proportion in this matter; let him consider the general height of the edifice before he fixes upon the proper height for this part, for all parts must be calculated according to one another, or there will want that uniformity in the whole which is the first and greatest grace in all buildings.

On examining the best houses in Italy, in this respect, we shall find they have allowed a considerable elevation to the first story, and that they have made a noble use of the advantage. Fifteen foot is a common height of this from the ground, which we generally make upon the level with it, and upon this they built the rest. This basement story contains all the offices, except only the cellars, which are sunk considerably deeper; and, upon the whole, is is vastly advantageous. The building has a loftier air at no grater expence, and every part of the house where the company can fit, is removed out of the way of all annoyance.

This general assortment of the house being determined, the next consideration is the place of the stair-case: for that is a point always of great importance, and in many cases very ornamental.

A good house should always have two stair-cases, one for shew and the use of the company, the other for domesticks. This later should be thrown behind, but the other is to be shewn; and upon the proper placing of it depends, in a great measure, the judicious disposition of the rest of the house.

We shall, in a succeeding part of our work, treat of the structure of stair-cases, and their ornaments; we are here only treating of the division and distribution of the ground, and of the place for a principal stair-case: a thing not sufficiently understood, mistakes concerning which have spoiled many an excellent house. The first consideration is to place it so that it may not obstruct or disturb the order of the rest of the building; and, when this is found, the next concern will be to see that nothing obstruct the stair-case. The place of the stairs must be first marked out in a plan for this reason; and when this is found, the next concern will be to see that nothing obstruct the stair-case. The place of the stairs must be first marked out in a plan for this reason; and when the principal door of the house is as it should be, in the centre, the stair-case should present itself immediately beyond the hall.

It has been at one time held a rule, that nothing should obstruct the sight of this part of the fabric; but the practice at present is, in many elegant houses, different; the stair-case is shut in: custom makes this please , and something may be said for it in point of warmth and cleanliness, but the method of letting an elegant stair-case present itself is better: it is free and bold , and agrees more with a building in a noble taste than the enclosing it, which whatever can be said in its favour, has a confined look.

There is often an air of space and room in throwing back a stair-case; and this may be done to such advantage in a moderate house, as to make it seem much larger than it is, by a great part of it being seen first: but still the stair-case must present itself boldly and freely to the sight; otherwise all has a confused and poor aspect. It looks as if the house had no good upper floor: and there is the same disadvantage in this hiding of it, as there is in misplacing the door of a house; it is as bad not to know how to find the way to the apartments, as not to find it into the house.

As to the situation of the stair-case, with respect to the principal door, it is a point much disputed.

There is in some edifices, no disadvantage in making it face the door, and bringing it very forward; in others, as we have shewn, there is great convenience and beauty in throwing it back, but in the same direction strait before the door: the advantages in this case being no less than the gaining room, and representing the extent of the house larger than it is. Some, on the other hand, prefer the placing the stair-case on one side, and there is examples of buildings very beautiful in this way. Those who are attentive to little things, say that it should, in this case, be on the left hand side, because it is the left foot that is first naturally lifted up on stair-case: but this is a trivial circumstance when there are larger considerations.

The French, in general, are great enemies to the placing stair-cases directly before the door; they have an instance of a very bad one in this situation in one of their palaces, and seeing the inconveniencies occasioned by that, they suppose them essential to such situation; but we can shew them some instances in England, and Italy affords many, in which stair-cases are thus placed, and the whole building very convenient.

Let the architect, whether his building be larger or smaller, keep in his mind the general distribution of the whole, while he designs his stair-case, and he will find he may generally have his choice of placing it either in front, or sideways, as he chuses. It is to be allowed that the stair-case in the palace of Luxemburg has many inconveniences; it is heavy and dark, and it takes up the place of the entrance; cutting the door into the gardens in its height; but thought these are the inconveniences of that stair-case, and it is placed direct; yet they are into necessary consequences of such a situation, but the result of very ill conduct in the architect in this point. It was an error he committed in the compartition of the edifice, and it is therefore we name it as an instance of caution here.

In considering the place for his stair-case, the architect must have two things in his eye; the giving it a good light, and allowing a spacious landing-place.

The window for the stair-case should be in the middle, and it ought to be allowed very large, that there maybe a sufficient light, and that equally diffused: and the landing place ought to lead to the best apartments in a plain direct manner, and to leave space and room for decoration.

If the architect find it convenient, in a large building, it will an article of great elegance to divide the stair case into two flights, which going up, one on each hand, shall unite at the top in one common landing-place. This we name here, because it may be essential in the forming the design of the division of the house, and distribution of the apartments; we shall speak of it more largely when we come to the construction of this part of an edifice.

Chapter XXVI: Of the distribution and proportions of rooms

Our architect has now considered the place of his principal stair-case, and, we will suppose, has marked it faintly in upon his plan; nothing interferes now, with his division, or compartition, of the whole into room.

In this place, let him deliberate before he begins; we have advised him always to keep in mind the proportions the parts are to bear to the whole; therefore let the extent of his plan be his first general guide for the construction of his room.

As these are to be for various purposes, they must accordingly differ in size, and in this let him keep also in mind the subordinate proportion they are to have one to another.

This considered, he may range his design of rooms under the names of three kinds; large, middling, and small; and whatever he on this head first lays down to his own satisfaction upon paper, let him afterwards execute in the plainest manner in his model; that the proprietor may understand it, as the work proceeds as perfectly as himself.

Two things he is to aim at in the distribution of his rooms; that the whole building may, by that division, be rendered graceful and commodious. The article of gracefulness will depend upon the proportion they have, 1st , in themselves, 2ndly, to the another; and 3rdly, to the whole fabric: their commodiousness will arise from their being properly disposed, and having a free communication.

In the planning out of the several rooms, the architect must not forget, on any occasion, to make the best use of all natural recesses for closets; and he must contrive for them where the disposition of the plan does not so readily throw them in his way. There are a multitude of things that must be always at hand, and never in sight; and these are what furnish closets: nothing can be more needful that a place of reception for them.

The commodiousness of a house consists, in a great degree, in the variety and proper number of rooms; therefore let the architect avoid reducing their number to give them a greater magnitude: for that. Beside the rendering the edifice inconvenient, will make its parts disproportioned. When they are thus properly planned in number, and the communication well established, the house will appear airy and larger than it is.

In large houses, where there is a garden behind, the best disposition possible is to throw the whole first floor of back rooms into a string, or suit; these should consist of a saloon, and anti-chamber, and drawing –room, a bed-chamber, and dressing-room: the windows of all these being to the garden will be very pleasant; and the looking through the whole range at once has an air of magnificence and elegance.

There must be closets to these; and a water closet, far removed, and connected by passage, is a useful addition.

Many object the inconveniences of this disposition of rooms, from the necessity of passing through one to go to another; and it would be a great one if it were not easy to be remedied: but the builder, foreseeing this must contrive passages into them from behind.

The architect engaged in a large plan should have this distribution in his eye, and arrange his rooms, and cast his partitions accordingly; and forreseing the inconvenience that would attend the needful passage through all of these to get at the innermost, he must contrive secret ways to them all. In the most cases this means there will be always convenience enough if getting at them, and at the same time the eye runs through them all at once, ant eh elegance, decoration, and furniture of the principal part of a house are thrown into one view.

Sir Henry Wotton, who is an enemy to this practice, yet is obliged to own that it is frequent in Italy: it may be accused of ostentation, and it throws the whole house too open. These are its defects.; but the intent is shew.

In front of may be the dining-room, and other elegant apartments.

This is the foreign method of casting the rooms in great houses; with us the distribution is more easy as we shall shew in the succeeding plans.

Chapter XXVII: Of the proportions of the rooms

We have spoken of the three sizes of rooms; and their proportion to the whole edifice, and to one another; but there remains yet a third kind of proportion to be considered, which is that of the several dimensions of the room one to another. We have hitherto considered the room as part of the house, and had every necessary regard to that whole in the eye; but we now suppose the architect has marked in the several apartments into his ground-plan, and is about to transfer them to the model; therefore their size is severally adjusted, and there remains no consideration but that of their measures respectively to the space each is to occupy. Now as that is not so certainly concluded, but that it may be a little altered if found necessary, one being made to give way to another, the architect is to consider them as marked in, and to adjust their breadth to their length, and their height to both.

This is as nice a circumstance as any in the whole compass of the science, not is there any on which writers have established less certainly.

The proportions of length and breadth are much easier to be ascertained than those of height; for the former we have rules from the works of the antients, but in this other we have none.

In the antique the rooms were of two general proportions in respect of length and breadth, not that these were universal and unexceptionable; fancy amused itself in this as other instances, and none have indulged it so much as those great architects. The two proportions however that were accounted most regular, and were most universal in their works, were 1st, that in which the length and breadth were equal; and 2ndly, that wherein the length was just twice the breadth. These were the standards of propriety in their square and long square rooms; and we know by repeated experience, that these are measures which suit very happily with one another. This we see established into a kind of law by Vitruvius. *(Vitruvius, 1 vi C.5)*

What comes nearest to a certain proportion in their accounts, with respect to height, is that in a room twice as long as wide, the length and breadth were summed up together, and the height was determined at half that measure.

Thus a room of twenty foot long and ten wide, was made fifteen foot high.

These seemed their most established proportions; but they often varied them.

From their time rooms have been made of a variety of proportions, and many of them very happily; but we, no more than the antients, have yet any one rule for what is best of all.

This is the more singular because it is a business of mere mathematical quantity, and, one would think, might be ascertain ed without much difficulty.

The rules the modern have established, or endeavoured to establish, are not so plain and simple as those we have named from antients. Some square the breadth, and then drawing a diagonal from corner to corner of the square; they give this as the best measure of the height. This and other such measures have been used by many, but none of them universally received. Michael Angelo was the inventor of some of them, for he was one of the first who ventured to establish any proportion not found in the antients.

The form a manner of working the ceiling makes a natural variation in any given height of a room, we shall therefore recommend it to the architect always to fix upon the form of this part, before he calculates the heights, and to very that proportions accordingly.

As flat ceiling are the most universal we shall first mention these.

Palladio lays down a rule for rooms upon the first floor with flat ceilings, which is, that their height be equal tot eh breadth, from the floor to the joist.

Others allow more than this, in various proportions; and though Palladio's be a very good general rule, yet more is better. Some have allowed less, but that for rooms upon this floor wrong.

Upon the second story Palladio varies the height by a considerable reduction; for he orders that it be less than the breadth of the room by one sixth.

When rooms on the first story have the ceiling arched, this author makes a difference, and with sufficient reason; for these he allows the height in a square room to be one third more than the breadth.

We see the antients, in square rooms allowed a greater height; and something is to be said in favour of each practice. Their rooms were more magnificent; and these directed by Palladio would be more light; we have instances of both proportions very exactly preserved abroad, some in houses built by Palladio, and others in such as are of an earlier date. It is not easy to determine which, upon the whole, is the better, because there are palpable advantages in each; the wisest method would be to endeavour at a proportion between the two, which should avoid the disadvantage of both, for both have these as well as advantages. Such a middle proportion might have a sufficient addition of dignity in imitation of the antient rooms, and be light enough to the top, though not so light as those of Palladio's proportions: but whoever shall set about this reformation, both of the antique and this eminent master, must remember that it is in England the builds, and not Italy. The same space will not be so well enlightened here, by the same apertures, as there, where the sky is clearer and the sun more bright. Therefore in establishing what we express by a proportion between the two, he is not to take the exact middle number, but certainly something less than half the difference is to be added to Palladio's height. This is taking a mean measure in effect, thought not in feet and inches; because it is allowing for the difference of the Italian and English light.

If this were all, the points were easily determined; but mush more is necessary. Between half and third of the breadth added in the height, there may be innumerable proportions, the measure being minutely divided; of all these some one is indisputably better than any other, but which that is none yet have fairly tried: and it is a point nothing but trial can determine.

As experience here must be certain director, all we can do is to advise the young architect into the right tract for making his experience useful. Let him, on the first opportunity his employment offers of making an arched ceiling, determine the height of the room as we have directed, by allowing something less than ta medium between the one and a half, and one and a third the breadth.

When he sees the effect this has, let him, in the next room he builds of the same kind, vary one side or the other; and so on in every instance; keeping an exact register of the proportions of each.

We shall, in another place, give certain proportions for windows: these he must, in all rooms carefully observe, and then, every thing else being equal, he will be able to judge which of the rooms succeeds best upon the whole. Such a determination, founded on such critical experience, would be a rule of certainty for himself; and the publication of it would be a publick benefit.

In those rooms with arched ceilings,, whose length is greater than their breadth, this author directs a new heighth to be found, by adding the length and breadth, and dividing that measure in half. In room, on this proportion, were twelve foot long, six broad, and had an arched ceiling, the heighth of it must be nine foot; that being the half of the joint measure of the length and breadth , which put together are eighteen foot.

This is a very plain and familiar direction; but it is farther from exact truth and perfection than the other. Its error is one the side of excess, not defect; and we advise the architect to endeavour establishing a proper height by repeating his variations, in making rooms of this proportion less and less, by small degrees in height, than according to the rules of Palladio.

This author's proportions are brought to a fair trial in England, as we have before observed, because they are calculated for a freer, and brighter air; and, upon al these occasions, more height may be allowed to a room of equal dimensions, and with an equal number of windows, here than there.

This author adds another rule, but more difficult, and less accurate, by which he determines, that in a room nine foot long, and only four wide, the height will be determined at six foot. But this is not only worse proportioned, but the rule will not always be capable of being executed, as himself observes, by numbers.

In the succeeding part of this work, we shall reduce the rule we have laid down as best, to practice in various rooms; and the architect will then see that all he can learn from precept is but of limited use; that a great deal is left to fancy, and that there can be no law of height established, which shall generally and universally answer all the variety of dimensions and occasions.

What he should establish from his own experience we have shewn him. By the result of such a practice, he will be enabled to proceed in general; and, in rooms of the more usual dimensions, when he has ascertained himself in this respect, he will be in a condition to vary, on needful occasions, according to his fancy.

This is a very frequently necessary, but it is never done well, unless by him who is first a master of all the settled proportions.

Chapter XXVIII: Of Galleries

We will suppose our architect to undertake an edifice where every part is to come in, that we may not have him deficient in any article under this head. A very good house may be finished without a gallery, because it is an apartment that serves only for particular occasions, and that is of elegance rather than necessity; but when it happens that the person who requires a house to be built desires to have a gallery, it must not appear a new thing to the architect. These several parts of the young builder's business should all come into his study together; when he is making himself master of his science, it is then he should examine all its particulars. When we have gone through this general account of the structure of rooms, we shall come to their decorations, and we would not have him then turn back to consider the past article of their dimensions.

The same course should be kept by the mind in any study, as is followed in a regular work, one is to be plan and rule for the other: and of this he may be assured, who proposes regularly to make himself master of a science, that there is no way to arrive at that end, but by perfectly going though every part as it rises.

We therefore lead him in this place, after the proportions of common rooms, to the structure of the gallery. This, as it is only a part of a great houses, and intended for the most elegant purposes, requires to be finished in every part with the strictest care; for there is no room in which a fault will be so soon shewn, or so hardly censured.

The essential distinction of a gallery is, that it be longer than the usual proportion of rooms; and its great use is for the reception of pictures. Sometimes they are made studies, and sometimes kept for walking in. some use them as eating-rooms, but they are less fitted for this purpose than almost any other form.

The first question, with respect to galleries, is, whether the proprietor desire to have one or two? For on this depends their place in the edifice. The rule is universal, that if only one be required, it must be in the centre of the house, either in the fore or back front; but this makes the gallery occupy a principal part of the edifice, so that it is better there should be two, in which case one is to be placed in each of the wings.

We see people trespassing upon this rule very frequently, and that in elegant buildings. Those who do not care to part with the centre of the house for their gallery, and yet want only one, order a single one to be carried out for that purpose; but, in this case, there should be at least the external part of another to correspond with it.

It is essential to a gallery to have a free and open and obvious communication with the rest of the house. It is a room intended for grandeur, and there should be a handsome opening to it. We have told the architect already, how erroneous a practice it is to have any difficulty about the door of a house, or any blocking up before the principal stair-case; and the same caution is to hold good against the obscuring the way to the gallery: it should be open, spacious, and properly disposed; there should be preparation for the entering such a room; and a stranger should not pop into as into a parlour.

The gallery is at Versailles is liable to this objection, and should stand as a caution to all builders; you drop into it one way in a strange unexpected manner, without the least preparation; and the other way you are to cross a court, and find a blinded stair-case, which opens directly, and without any preparation,, into the great apartments; and, after passing many of these, you come to the salon which is the true entrance to the gallery.

We name these errors is great buildings, because the young student, if they were not pointed out to him as such might take them for examples, and suppose the conduct proper. It is not the common practice to distinguish between great and fine; the vulgar eye supposes every thing that is rich must be elegant.

As to the size of the gallery, that must be adapted to the extent and bigness of the whole building; for this, we have shewn, is a first article of propriety: and no part can be admired that is not of a piece with the whole.

As to the proportions of length and breadth, the architect is at liberty to vary them according to the occasion, and to the paintings they are to receive, for there is nothing so much left to discretion: in general, from fifteen to two and twenty foot, is the measure of breadth for a gallery; and according as it is required to be longer, od intended to be shorter, some measure between these, nearest the largest or smallest breadth, is to be taken. Its length may be from four to eight times its breadth, and its height equal to, or more thant he breadth. The finishing of these rooms we shall shew with that of the orders.

Chapter XXIX: Of Halls, Lorries and Passages

We are coming toward the end of our present part; the distribution and general division of the house is made in the mind of the architect; but he is to remember there will require certain places od common reception and communication.

The hall answers this purpose below, and that he has provided for; above stairs, there must be the same conveniences, and these are to be lobbies and passages. In a great house all is to be great, and these are to be of the same character; and in smaller house they must have their due and adjusted proportion: as there is nothing handsome that has not proportion, there can be nothing perfect in the plainer way that has not commodiousness; and all the careful disposition imaginable of apartments will never give a house this character of commodiousness, if there be no proper passages; and places of reception, and intercourse to, from, and between them.

With respect to the place of common reception, and entrance below, which is usually a passage in small houses, and a hall in larger, we have observed already that it may be made a hall in all houses with great propriety.

In more magnificent houses it should always be made as large as the rule of proportion to the entire building, and to the other rooms, will allow. We have shewn the error of swallowing up the rest of the rooms in this; but when its dimensions are within the bounds of proportion, its large size in an article of great advantage.

In town a hall is a place of reception for servants; therefore, in this, neither magnitude nor elegance are needful: in the contrary, where there are other ways it the house, the hall may be an elegant room, and it is there we propose its being made large and noble.

It serves as summer-room for dining; it is an anti-chamber in which people of business, or of the second rank, wait and amuse themselves; and it is a good apartment for the reception of large companies at publick seats.

A good hall has many other uses, among which, the representing of theatrical pieces, while that instructive diversion was in fashion, was one.

These are reasons for the spaciousness od hall; but then, if the rule of general proportion be not observed, the bigness of this room may make all those look little into which we pass afterwards.

It is a fashion in some places to give halls the form of almost of agalleries; to make them very long in front, and very shallow; this answers the purpose of giving room behind, but it is an ill way of getting it. Halls of any consequence are seldom thought of unless for large houses in the country; and there it will be easy to take in a few feet more of ground, and not to make the hall a flip in order to give depth to the parlours.

The proportions of breadth to length should be very considerable in hall. Palladio says that it may be made twice as long as broad, but never should exceed that length. This is indeed carrying the length of hall to the full proportion; and that author adds, with great justice, that the nearer they approach to square the better. From what we have observed upon a variety of instances, it seems that from one and a third to one and a half of the breadth, is the proper and most proportional length of a hall.

The best height for a hall is somewhat less than its breadth; but here we are to consider the difference of flat and arched ceilings, as in other rooms. In those halls which have coved ceilings the height may be within a twelfth part the measure of the breadth; but in those with the ceiling flat, four fifths of the breadth is a very good general proportion: however in this the architect has a great deal of latitude for the saving room above; for the hall may be lower than either of these allowed proportions, and yet not liable to great censure.

The whole that relates to lobbies, and entrances from room to room, and among the rooms above stairs, is that they be made as spacious as proportion requires, without hurting the shape or dimension of the rooms; and that they have due light; these are points never to be attained unless the construction od these places of intercourse be projected at the same time with the rooms , and there be the design of them kept in mind while the rest is under consideration. The student may be assured that he will never execute that design well which he contrives by piece-meal. All must be planned together, and every part regulated upon a just idea of the whole.

From the hall below, and from the lobby above, if the construction of the whole take in such a lobby,, the doors to the several apartments are to open some on the right and some on the left; and let the young architect set it down as an universal rule, that these are to open directly opposite to, or strait over against one another.

This is an article of regularity, but the consideration extends farther. There is a proper symmetry in the apartments on one side of the a house, answering to those on the other; and this disposition places the walls in such manner, that they equally bear the weight of the roof.

One good consequence as regularly attends on another, as one ill. When the apartments in a house are well proportioned to one another, their walls bear their several regular and just shares of their weight; but when larger rooms are made on one side of a house, and small ones on the other, and their disposition is varied as well as their dimensions, one side of the house will be stronger, and another side weaker, can the consequences of this will be in time the ruin of the whole edifice.

The saloon is another room of state and grandeur that has a place in magnificent houses; we have, in the first chapter of our first book, given the nature and general proportions of this part of an edifice, and shall not repeat it here; what farther is needful for the student, in respect of this, will be distinctly shewn in our succeeding plans; and explained in the references to the plates.

We have thus led our young architect from the door of his intended house, throw his all, up his stair-case, and through his lobbies, into every apartment.

We have before spoke, in the amplest manner, of the roof, and may suppose him a master of that part of his subject; the will therefore understand now in what manner to delineate the plan and elevation of the house on paper, for his own satisfaction and improvement; and to transfer it from the paper to a model; there perfectly and familiarity to explain the design and meaning of every part to the proprietor, to hear his objections; and to answer them with modesty and candour, or to understand such alterations as he requires.

We shall here take some notice of the manner of building among the antients of different periods, from whence various happy thoughts may arise to the architect of geniuous; and having thus delivered him his generally rules, and laid before him the proper sources of improvement in the science, we shall lead him to the construction and finishing of the house he has now planned and modeled, and to which he may add some improvements from the succeeding hints.

Chapter XXX: Of Egyptian manner of building

(…)

Chapter XXXI: Of the houses of Greeks

(…)

Chapter XXXII: Of the houses of Romans

SECTION II OF THE CONSTRUCTION OF HOUSES IN WHICH THE ORDERS OF ARCHITECTURE ARE NOT EMPLOYED.

Chapter I: Of the common houses in London

The common houses in London are built in one way, and that so familiar that it will need little instruction, nor deserve much illustration. The general custom is to make two rooms and a light closet on a floor, and if there be any little opening behind, to pave it.

Some attempt to make flower gardens of these little spots, but this is very idle; plants require a purer air than animals, and however we breathe in London; they cannot live where there is so much smoak and confinement; nor will even gravel continue clean many days from the turning.

In respect therefore, instead of borders under the walls, the best method to lay the whole with a good found stone pavement, at the farther part to built the needful edifice, that cannot in London, removed farther off; and something of similar shape and little service opposite to it. An alcove with a feat is a common contrivance in the space between, but is it a strange place to fit in for pleasure: all this therefore is better omitted; and the young architect is to have a general caution on any proper ornament, nothing is so becoming as perfect plainners.

The lower story in these common houses in London is sunk entirely under ground, for which reason it is damp, unwholesome, and uncomfortable; but the excuse has weight: ground rent is so dear in London that every method is to be used to make the most of the ground plan; but even in the most ordinary houses in the country, where some of the offices may be made without doors, it will always be best, instead of these totally under-ground floors, to have basement story.

The front room below in London is naturally the kitchen; the vaults run under the street with an area between, in which is to be a cistern, or other vessel for holding water, and there mey be behind other vaults beyond another area.

In common houses the fore-parlour is the best room upon the ground-floor: the passage cuts off a good deal from this, and from the back parlour; this usually running strait into the opening, or garden as it is called, behind; but it is a much better practice to make the back parlour the better room. This may be done as we have proposed the garden may be from below, and consequently the breadth of the passage there taken in, which gives the back parlour a greater extent, and another window.

The first floor in these common houses consists on the dining room, over the hall or parlour; a bed-chamber over the back parlour, and a closet over its closet.

This closet is usually a corner added to the building, and continued to the second story, not to the garrets.

In houses something better than the common kind , tha back room upon the first floor should be a drawing-room, or dressing-room, for the lady; for it is better not to have any bed on this floor.

The two rooms on the second floor are for bed-rooms, and the closets being carried up thus far, there may be a third bed there.

Over these are the garrets, which may be divided into a larger number than the floors below, for the reception of beds for servants.

With all the care that can be taken in this article, often the number of servants cannot be lodged there; and in this case a bed for one man, or two maid servants is contrived to let down in the kitchen. But in this case the necessary care of those peoples healths requires it should be boarded.

This is the common construction of a small London house, for the reception of a family of two or three people, with three or four servants.

We have given already the proportions in general of rooms to one another; and nothing will be more familiar, or more proper, than for the young student to begin with a plan and a model for such a house; the subject being perfectly easy, and every part of it familiar in his mind.

From what we have before said on these heads, he will be enabled without much difficulty, to make some improvements; and having the whole in his eye at once, he will perceive where advantages can be given and taken, and how to make the most of every portion of room for the reception of some kind of thing or other that must have its place.

Conveniencies of all kinds are no where so much wanted as in London houses, nor is there any where so little room for them: it is therefore a very proper thing to consider how to add to them.

This is the most trivial and most familiar manner of building; but it is the most universal. There may be many improvements made, and many things discovered in it, and there is no part of the science from which a common builder will draw so much advantage, or bay attending to which he will so much recommend himself in the eye of the middle rank of people.

Such a house as we have here been speaking of is to be built for six or seven hundred pounds, or it will cost upwards, according to a little more extent of ground, and a little more than usual ornament. The common builders of them work jointly, one doing his share of business in the other's house, according to their several subordinate professions; so that is not easy for them to say what they cost; but they are generally ready to sell them for fourteen years purchase, exclusive for ground-rent.

As this is the way of bargaining for London houses, a great deal depends upon the terms on which they are first let. This the owner is therefore carefully to consider. For it absolutely fixes the price of the house.

Chapter II: Of common houses in the contry

When nothing more is intended that a habitation proportioned to the family, the common house in the country is built just as the common house in London for the most part; thought there is room for great improvement at a small expence, because of the quantity of ground. This we shall shew, and in general a great deal more is required. Most who reside in the country meddle, in some degree in rural matters, and they are to be considered as a sort of farmers; in constructing of their houses therefore, when anything more is meant than just a place to sleep and eat in, something of the construction of a farm-house and its offices is to be introduced into the plan of the building.

A house where nothing of this is required, and which is for the reception of a small family, may be built without any under-ground work at all. Upon the level of the ground, if it be a dry wholesome soil, may be an entrance from the principal door; and on each side of it a parlour. In front may be the stair-case; and over these lodging-rooms. Behind may be placed a kitchen and wash-house, which need be no more than sheds well covered; and, as most who devote themselves to a country life take the amusements of reading and of riding, beyond the right hand parlour may be a study covered as the kitchen, and beyond the left a stable. The passage into the study being from the parlour, and the opening into the stable by a door outwards.

This will be a house of some convenience, and of small expense; and of this nature is that we have figured, as a parsonage house in Yorkshire; a small family may find perfect convenience in such a building.

Chapter III: Of the construction of a small farm in the country

When we take in the article of farming in ever so small a way, we must add extent.

To this purpose the whole must consist of the house and out-buildings, with a needful quantity of ground, according to the size of the house, and the compass of the intended business.

Beside the house for the family, there must be a barn for the reception of the produce of the ground, a stable for cattle, and a cart-house for keeping the utenfils under cover, and sheds for lesser purposes. The construction of the house is to be quite different from those in town, or such as we have mentioned in the last chapter for the country; for here no dining-room is required, and in the small concern we propose to begin with in this place, a better kind of kitchen may very well answer the purpose of a parlour.

Let a piece of ground be taken of five times the extent of the front of the house, and enclosed in the least expensive manner.

Back in the centre of this, let the house be placed, and in the front of the ground the barn, and the stable, with the adjoining sheds: there are to be set one on each side, to the extreme measure of the enclosed ground: they will thus fill up a part of the entrance, and will leave all about the house some enclosed ground by way of yard.

From the barn to the stable may be extended a fence with a gate in the middle.

This gate should front the door of the house; and thus the ground will be very well disposed.

Thus much being settled, the plan of the house and out-buildings may be made in this manner.

The door may open into a plain brick passage, at the end of which may be carried up a small stair-case. On one side of the passage may be a common kitchen, and on the other side of it the better or larger kitchen, which will serve the farmer and his family by way of parlour.

Beyond these may stand on one side the pantry, and on the other the dairy-room; the last being of twice the size of the former; and being on the same side with the best kitchen: the heat of the other not being so proper near it.

To these may be added more rooms on the ground-floor as needful; and the upper story is to be divided into bed-chambers for the family, with garrets over them for the servants.

Behind this should be a small garden for use, not shew; and thus the house is finished.

It remains to consider what to do with the ground of the two principal out-buildings; this should be erected of the same size for uniformity, thought their inner division may differ. The barn must be an entire and undivided edifice; but the other may be very well divided into stable and cart-house.

Behind the barn may be the hog-style; and behind the stable a calf-house; both sheds: and, if there be occasion, open sheds may be placed against the house.

This is a very plain and familiar structure and disposition, suited to a little family that engage in some small family.

Under the two kitchens there may be the cellars.

The walls of the cellars should, for such a house as this, be two bricks and a half thick up to the springing of the arch.

The arch itself should be the one brick; and the other parts of the house two bricks to the surface of the ground, and one brick and half from thence to the roof; the gable ends one brick.

The walls of the barn and stable should be built as those of the house: and the walls of the hog-stye and calf-house only one brick. This is a sufficient strength and comes very cheap-

Chapter IV: Of construction of somewhat larger from house

For the construction of a larger house, the first concern is to fix upon a piece of ground somewhat more extensive; and in all these cases the choice is to be made according to the situation of the farm, and nature of the ground. Health and convenience are the two articles that here come under our regard; for the first the spot must be dry, and for the other the more central it is the better: and other respects being equal, the nearer the road the greater the advantages.

The plan may be so made that as this house is to be somewhat larger, it may appear much more considerable to the eye. The barn may now be a detaches building in the middle of the yard; and the stable and cart-house, answered by the cow-house and calf-house, separated from the principal building only by a gate on each side, may stand as two wings; which, with a very little decoration from a judicious builder, will have a very pretty effect.

In this case the plan may very conveniently be disposed thus.

Let the principal door open into a moderately wide passage, with stairs to the upper rooms: on the right of this passage let there be the common kitchen for the family, and on the left a room somewhat larger, which, in very finall farm houses, it is usual to call the best kitchen, but here it may be called the parlour; the place where the farmer, his wife, and children fit retired from their servants when they chuse to do so.

Adjoining to one of these may be the cellar, and to the other the dairy: a couple of closets may be placed through the cellar for various purposes, and behind the milk room may be the pantry.

This takes up the body of the house on the ground floor.

Nothing need be raised over the dairy or cellar, for there will be upper rooms enough in carrying two stories over the parlour, kitchen, and passage.

The two wings we have named may be joined to the body of the house by a couple of gates; one may be stable, and the other the cow-house: and conveniently enough a hog-stye may be made behind the stable, and behind the cow-house a calf-house.

This is also a very plain and familiar construction. Here will be as many rooms as are wanted by moderate family, and, if constructed without elegance, they will lie very conveniently for use.

In this manner the young architect will very easily see how to enlarge or contact his plan for the building of farm houses, according to the intended bigness.

They all consists of the same number of rooms, and in general of the same number of offices: this is where the bare article of convenience for farming is concerned. When the inhabitant is grow rich, and intends to live in another manner, ha may add what he pleases; which the architect may adopt out of the directions for the buildings before mentioned. It is then no longer to be considered as a farm house, but as the house of a person of some fortune, who intends to live as those independent of business do, but withal to have some farming in his eye.

In this case, which is the situation and choice of many country gentlemen at present and probably will be of more, for it is rational and agreeable in the highest degree, the best instructions will be taken from the villas of the antient romans.

The great men of that famous nation, when they retired into the country, always farmed. Their servants of various denominations took care of their affairs in this respect; and they had always one who performed the duty of farmer to the full extent.

We have shew in what manner they placed their houses, with the whole apparatus of a farm before them; and something in the same manner may be very happily and elegantly executed at this time.

May of their houses in the country according to the most accurate accounts we have out of them, were too near their farm yards, and too much people a level with them, so that they were in the way of dirt, damp, and offensive smells, but that is not needful in the construction of such buildings.

If a proper spot were chosen, it is not easy to conceive any thing more agreeable than such a construction might be made. We will suppose the advantage of the ground so taken that the house should stand on the brow of a small hill: from this there should be a gradual descent to a brook, whence the ground rose on the other side again, though to a less height, the farm might be situated just on the other side of the brook; a fine lawn might lead down to the water, and a bridge over that lead directly into the farm yard.

The cattle would thus have the advantage of water, the family would also have it in abundance for all their occasions, and the whole disposition of the farm would seem as a picture, viewed from the house. The cattle sprinkled upon the hilly pastures would afford a prospect vastly beyond that of deer in a barren park; and the successive labours of the farm, the hay-making and harvest-work, while they were all performed in this manner, under the master's eye, would give and everlasting variety.

Chapter V: Of the distribution of the parts in a country house with a farm

We are now considering the house of a man of fortune, who shall chuse to add to it a farm for the advantage of having everything about him; and for the pleasure of enjoying the country in its full beauty: for this certain, that none but the farmer knows the full extent of that satisfaction which poets have so finely described, and which every one affects to admire.

We have placed the house of the servant, who in this case acts as farmer, full in the master's eye, yet at such distance that it cannot annoy him with any ill smell, or other disagreeable accident.

Round about this house of the manager of the farm must be buildings for sheltering and seeding the cattle within doors, and others for preserving the fruits of the ground. These are the stables and barns belonging to the common farmer's house, and they are there built in a careless and slovenly manner, because meant only for use; here beauty must be considered: some more expence will be allowed for the erecting or them, and the business of the architect will be to design them.

As he places the house of the farmer in full view of the principal building, he should dispose, and construct all these its additional parts upon the same principle of having a pleasing effect from thence.

He is to consider all this as a picture, and as the knows where the eye is to be placed, he may very happily and agreeably throw the whole into perspective.

The house of the farmer is to be the principal object, and this must be placed on the highest part of the ground: from this, on either side, the out-buildings are to descend spreading in form of wings toward the brook at the bottom; which terminates the farm territory. These will serve to enclose the proper quantity of ground for the yard, and the very racks and stalls may be so placed in that, with a view to the eye at the propietor's house, that they shall form a picture.

Under the direction of a skilful architect, the barns, stables, and cow-houses, will rise like so many pavilions; and the very sheds will assist in the design.

In this manner every part will join; and nothing will obstruct the intention of mixing perfect utility with great elegance.

As the principal buildings must in this case be proportioned to the dignity of the proprietor, and the number of his retinue; so must the out-houses in particular,, and the whole construction of the farm in general, be calculated according to the natural produce of the quantity of ground to be occupied.

This is an article of which the architect will not be able to judge; therefore let him not be above receiving information concerning it. No man need be ashamed of ignorance in a business which he does not follow, and this is more in the way of the meanest farmer, than of the most judicious builder that ever lived.

The quantity of produce will be proportioned to the extent of land occupied by the possessor; let the builder enquire of the neighbouring farmers what it will naturally yield, and when he has learned from them what bigness his barns and other repositories should be let him follow his own design in the placing them.

The communication between one part and another may be under piazzas of a cheap structure, and the same form may be given to several parts of the out buildings, which require only a back and top: thus expence will be saved by the very construction that gives beauty and elegance to the whole.

There must be in such a piece of building lodging-rooms for several servants of the meaner kind; and this may be much better provided in the out-parts, than in the house.

If some be lodged over the hen-houses, that common thievery of hen-roost robbing will be avoided; and a great deal of mischief of a like kind will be prevented by the same careful disposition in other respects.

With regard to the better kinds of cattle, their houses and stables must be places on the higher ground, that they may have a warm, dry, and airy place. Hogs will do well toward the lower part, and the cribs and stalls for feeding the cattle may conveniently be placed near the bottom, the water being near, into which there should be made a proper descent with a sound bottom for the creatures to enter to drink.

Thus the construction of gentleman's farm may be finished, and the satisfaction as well as advantage attending such a building would be so great, that if the fashion were once properly set on foot, numbers would follow it. Perhaps there is not in the whole extent of the builder's profession, any part so worthy his consideration as this, in point of profit. The mixture of farm and garden is become very much admired, and would be more and more if it were carried to this height; and he who should set the example, by planning out an elegant and pleasant habitation of this kind, would recommend himself by that first structure to many of those which should be undertaken in its imitation. This would certainly happen, because those who undertook another would know no person could be so fit to conduct it, as he who did the first.

SECTION III OF THE CONSTRUCTION OF HOUSES IN WHICH THE ORDERS ARE USED

Chapter I: Of the proper distribution of the orders

Chapter II: Of the Doric under the Ionic order

Chapter III: Of the manner of placing the Ionic order over the Doric order

Chapter IV: Of the manner of using the Ionic and the Corinthian orders in a building

Chapter V: Of the construction of the Ionic order in a lower story

Chapter VI: Of the choice of parts for the Corinthian order in a second story

Chapter VII: Of the choice of Corinthian capitals

Chapter VIII: Of using the Ionic order alone in the front of a house

Chapter IX: Of raising the ionic in a single series over an arcade

Chapter X: Of the construction of the ionic order in this edifice

Chapter XI: Of raising an upper story with the Attick

We are content to call any story Attick which has square windows, and is uppermost in the edifice; but the architect should known, that to deserve that name, it should be decorated with the proper attick order.

We shall shew the manner of its construction.

The attick pilasters must have their vase and cornice, and one of them must be raised over the centre of each columns.

The windows are to stand over the others, between these pilasters, as those do between the columns; and they must so far correspond with the whole, that their cases must have some decoration, though it be less than the others.

At the top of the cornice of an Ionic, which terminates the other story, is to be raised a kind of base, or deep plinth; this is to be determinate with a few mouldings, and from these is to rise the body of the pilaster. At the top it is to be crowned with a cornice; this makes the complete attick order, and this, in the present instance, must be made to correspond perfectly with the cornice below in its disposition. If that have been interrupted, and brought over every column, this, in the same manner, must be brought forward over every pilaster. This correspondence of parts gives what the judicious call harmony to a whole building; and this is, next to proportion, the great consideration in elegant structures.

Though there may have been ornaments between and over the windows in the story below, there are to be none here. The ornaments about them need be only an architrave.

The cornice, in this case, is not to terminate the building; a blocking course is to be carried along upon it; and this must not be plain, but varied according to the distribution of the parts below. Over every pilaster of the Attick there is to project a piece which is to be the pedestal of the statue, when one is placed on the building. This projecture is to be slight, and of answer that of the entablature of the Ionic, and the cornice of the Attic all the way up, and in this case the breaking the line is a beauty.

Chapter XII: Of the use of the Corinthian order alone in a house

Chapter XII: Of the construction of Corinthian columns in a single series

Chapter XIV: Of the upper or Attic story in the before-mentioned house

Chapter XV: Of the Composite order in a single series

Chapter XVI: Of the place and use of the mezzanine story

We have shew in our first chapter of this treatise, under the head of explanation of terms of art, what is meant by a mezzanine story; and we are here taking the first opportunity which has naturally offered in the course of the work, to explain to the students its nature and proper use.

A mezzanine is a small story between two large ones: and in this structure we shall shew it, in a double disposition, between the parlour story and first floor, and again between the first floor and attic.

Though we call it, in compliance with custom, a story, yet it is not to be understood that there is a necessity of carrying it, like the other, through the whole building: on the contrary, that is not its natural or reasonable use.

It is properly, as we shall shew it here, a room in some part, not in the whole of a building; repeated at a certain distance, but not continued; and is made out of that height which is to spare in a smaller room, but is wanted in larger apartments of the same floor.

It is very natural that there should be such small rooms upon the same floor with large ones in many good houses, and this judicious construction gave the first hint of the mezzanine story.

Our architects seldom use it, and more seldom understand it: we shall not be so cruel to them as to recite instances of those buildings where it is used in London; but a complete dwarf story, between the parlour and first floor; and is of a great deal of prejudice to both, while it can be but of very little service itself.

These people had heard of a mezzanine story, and they resolved to make one: taking the form into their consideration, at once, without any knowledge of the origin or design of the story, they have, for the sake of a parcel of useless low rooms, and for the showing a range of little windows, made their parlour too low, and raised their first floor story out of proportion.

We name this as a caution to the young architect; we shew him the conduct of this sort of builders, that he may know what he is to avoid. This is the weak and improper use of the mezzanine story; and, having fully informed him of the error of these builders, we shall lead him to the true use of such rooms by an example in the present instance.

Let him recollect how far we suppose him to have now proceed in the elevation of his edifice. He is at the top of the parlour windows; and he has a large space between the strait arch that terminates or covers them, and the entablature of the Corinthian plasters which are the interior order.

We will suppose this house to have, in the upper story, seven windows in front then on each side of the door there will be, in the ground floor, three windows. Two of these on each will enlighten a very handsome parlour; to admit all the three would be to render it disproportioned. This is an article that concerns the inner distribution of the house; we have threatened it at a large before, and therefore need only refer to it here as a point established upon those principles.

Here is one each side the door a parlour enlightened by two windows, a large and a well-proportioned room requiring the height we have given to the ground story. Thus the room is disposed of within; and on the outside, as this is an elegant structure, in the space between the top of each window, and the cornice of the Corinthian pilasters, there may be placed a square compartment of stone-work, plain or wrought, according to the greater or lesser decoration of the general front. The bottom of this square compartment must rest upon the top of the stones which make the strait arch over the windows; and its top must be crowned with another strait arch of the same kind. The reason of this, and the part with which it will correspond, we shall shew presently.

Here therefore is the room, in respect of height within, and the space without, very well, very properly, and very ornamentally disposed of, in the two windows on each side nearest the door.

There remains towards cach corner a single window. This answers to proper space within, and has its height on the outside just as the others.

The question now is how to employ this part of the edifice.

The space naturally belonging to this window in the inner disposition of the house, will make a very good room; but as it is a great deal smaller than the other parlours, there is no reason why it should have their height: indeed it cannot, nor must. We have shewn before what is the proportion of height to length and breadth in rooms, therefore the height of this room must be determinate at its proper place; its ceilings must be laid there, and there will consequently be a very considerable space over head, between this ceiling and the floor of the upper story. This may be left vacant if the builder please, and a false floor laid to bring all the upper story to a level; but the judicious architect will never suffer any room to be lost in a house. Here, in every instance of this kind, was so much room not employed in the usual way, and this gave the hint to the mezzanine story.

The builder having this space at the top of his corner room on each side, may, if he please, cover it up thus with a false floor, and leave it vacant to be a harbor for rats: but it is best to employ it for a mezzanine. If he determine to make no use of it, the front is to be continued in an uniform manner, and a compartment is to be placed over the window in this place as in the other.

We advise him however to act with more judgment; we advise the making of a mezzanine room of this space at each corner: and, in this case there will be a window in dows; and this, far from being a blemish, will diversify the front of the house, and be a great beauty.

The mezzanine room he is to construct within upon the rules of proportion we have before laid down, and the two at the two corners are to correspond with each other in shape and office.

The French use these for wardrobes; the Italian for places to lay things out of the way; and in England they are generally lodging rooms for servants, when upon a higher floor, and offices when upon a lower.

The Italian architects were the inventors of the mezzanine rooms, and we may see by the use they made of them, how light they held them.

The construction of the room below this mezzanine must be proportioned to its height, as that to its space in length and breadth. The window also must be proportioned to the height; therefore it must not be so high as those which enlighten parlours that are so much more lofty. The window may, by a faint, be made to equal the others on the outside if the builder pleases; but the best method is to make it lower, proportioning it in aspect, as in use, to the room it is made to enlighten.

We have before given the architect his choice, to make mezzanines, or to sink the space over this room in a false floor. According to the method takes in this respect the window of this room is to be formed: if he make no room, the space above in front we have said is to receive such a compartment as is over the rest; and, in that case, the window must certainly be made of the same height with the others. This uniformity demands; but, in the other shoice, which is much preferable, of making a mezzanine in the place, the window will have a very pretty effect in diversifying the front; and the same is the case in respect of altering the proportion of the room below it.

The architect now understand what is the proper use of this space; we advise him to form a mezzanine in it: and, having explained to him the nature and design of that kind of room, we shall proceed to the raising the front in that design.

Chapter XVII: Of finishing the front of the lower floor in the above mentioned house.

The student, we hope, so far understand the design of the plan in the construction of this house, with a single series of composite columns from the ground, that he will not propose the varying the window at each corner.

We have directed to carry up a composite column to the Attic, between every two stories of windows; the shaft of this column will therefore rise between every two of the parlour windows, but there will be no columns beyond the last window each way toward the corner. This is therefore in itself a detached and separated part of the front and becomes susceptible, for that reason, of variation. This variation, properly conducted will be of great beauty to the whole.

In the present instance, the making the corner window lower than the others forms a line of great propriety and beauty, much prefereable to that strait horizontal line which would result from their tops all terminate equally. The bottom of this window must stand in the same line with the others in the cornice of the pedestal high plain wall, but its top must be considerably lower; this being made equally so in both extremes will very well set off the middle; and these windows, by being lower, will agree better with the coupled Corinthian pilasters which are placed at the angles of the building.

The window of the mezzanine must correspond with the compartments over other windows; but in this there is not any strict measure of conformity required. It may be a little larger, and the inner space often requires it should be so; in this case its bottom will come something lower, as well as its top something higher. But with this allowance the bottom of the mezzanine window will not come nearly so close to the strait arch over the other, as the compartments do to the arch of the loftier windows which are between the columns.

Here then naturally falls in a irregular space, but an architect of genious will easily find a way to form it to the rest. A very plain and familiar method is this: let the window below be terminated at its top by a strait arch in the manner of the others, only with shorter or lower stones; over this let there run a cornice: from the top of the cornice let there be raised a very small segment of a circular arch, and over this another row of rustic, like the stones of strait arches. The top of this must make the bottom of the mezzanine window.

This being repeated with the same measures and perfect regularity on the other side of the house, there will be a very agreeable variation from the continued strait line too common in fronts; and the best proportion that can be will be given to the corner room, and the most proper use of the space over it in a good and well-constructed mezzanine.

The front of the parlour floor will be thus completed in a very beautiful manner. The rustic of the wall will rise from a plain wall pedestal high, and diversified with the pedestals of the great columns, and it will be terminated by the Corinthian cornice nice from the pilasters of the interior order. The bodies of these pilasters and the shafts of the columns running up plain between, will give a pleasing diversity,, and the compartments over the windows will crown the disposition, over this is to be raised the upper story, within the height of the great order of columns, in which there must not be too much decoration.

Chapter XVIII: Of raising the second story or first floor apartments of the abovementioned house.

The cornice of the Corinthian entablature, raised upon the pilasters of the inferior order, and supported between the, terminates the parlour story in our intended edifice. The shafts of the principal columns continue through this, and are carried so high that the tops of their capitals range with the top of the case of the windows of that story. The proper entablature of the Composite order is raised upon these, and this terminates the present story.

This will give a general idea of the construction of the front in this part; but we are to descend to the particulars.

The Composite entablature at large, in proportion to the principal columns, is to be carried in a strait line to the extremity of the building each way; and, for uniformity, it must, in these places, have the appearance of a support. In the lower story, the pilasters of the interior order supported their entablature in this place, because they were placed at the angle; but here the much heavier and larger entablature of the great columns must seem to hang in the air, unless some device be found for it. This however, must not be determined till the structure of the wall from the cornice of the Corinthian below is determined.

First then, let a balustrade be raised upon this cornice exactly over every window of the story below, that it may stand under the windows severally in this story; it is to be terminated by a pilaster on each side, and the cornice of this pilaster it to be continued along the wall all the way at that height, connecting the whole in a strait even line. At each corner there must be raised another pilaster, and these must answer those of the balustrades under the windows.

This part of the wall of the upper story will be thus very well finished; there will be at each corner a low pilaster: under every window a balustrade like the pilasters, pedestal high, terminated each way by pilasters, and the mouldings of these are to run on the front of the wall.

Thus much being settled, it will be seen that there is but small height from the top of the low pilasters at the angles, to the hanging entablature continued from the columns. There wants something, as we have observed, that should have the aspect of supporting that cornice, and it is not difficult now to say what it should be; a figure at each corner, placed on the low pedestal, will serve as a Caryatic, and rise to the height of the entablature; this will have a very pleasing effect.

Upon the balustrades are to be raised the windows, which should have ornamented cases, and they should rise to meet the bottom of the architrave continued from the column.

What we have observed, respecting the disposition of the rooms in the lower story, must hold exactly here also. The rooms in the centre of the house will want all the height they have from the cornice of the Corinthian to the cornice of the Composite above; but it will not be so with those two rooms which it will now be convenient to make at the corners, with one window to each, for this reason; these windows are, like those of the lower story, to be much lower than the others, and it will be proper the entablature; in all respects beside they should resemble the others. Their balustrade at the bottom will shew very distinctly the proportion they bear to the others in breadth, which is to be computed according to their diminution from that standard in height; and thus there will be a regularity in these though unlike the others, and they will have a very good effect in the general aspect of the fronts.

As the room enlighten by this single window on each side of the present story will like those below it, be small, it must not have the height that is left for the others. Here therefore is space for another mezzanine; it must be smaller than that below, and its window must be opened in the Composite entablature. This will have no bad effect, for a very good proportion will be to make it nearly the height of the architrave and freeze; so that a little shall be left below of the architrave, and a little above of the freeze.

Though there were compartments of stone-work over the principal windows of the lower story, no such will be required here; in that place there was a large vacant space, because only the shaft of the principal columns ran up between them, and the story was terminated by an entablature of an interior order; but, in this case,, the columns terminate in the story, and their large and proper entablature rises immediately over the considered; this will the great story be terminated, and it will be very elegant. The Attick is to rest from this, and as the columns are here very lofty, and of a large module, the attic should not be too low which they support; it should be proportioned: and as the principal columns are of the most ornamented order, this story, to keep up a uniformity in the whole, should also be decorated.

It will be remember that we have before declared against all extravagance of ornament for Attic story; therefore what we advise here is not to be so far misunderstood as to lead the builder into excess.

The pilasters of the Attic are to be raised, as usual, one over the head of each of the principal columns, and they are to be considerably losty.

These pilasters of the Attic consists of a base, die, and cap; the mouldings and projection of the base are to be continued along the intermediate wall; and in the same manner those of the cap; and if these pilasters project moderately, this gives an air of lightness to the upper part of the structure, and a variety of light and shadow that is very well seen from the ground.

Between the pilasters are to be placed the windows of the Attic, and in this case they can have no better figure than a perfect square. They must be surrounded with and ornamental case. They are to reach, their case included, from the height of the mouldings of the base, to that of the cap of the Attic pilasters, and they should have a projecting part of their own breadth below them, rising from the cornice of the Composite order, and terminating at the base of their cases. This answers to the base of the Attic pilasters, and gives great uniformity and great beauty to the whole story.

Over every pilaster of the Attic is to be placed a figure or other ornament. This depends upon principles explained before, and therefore not needful to be repeated here: and the front being thus terminated will be very great and very elegant, proportioned in all its part, and forming a great, solid and elegant whole.

Chapter XIX: Of the choice of parts for the Composite order in fronts of houses.

(…)

Chapter XX: Of the construction of the Composite capital when used in the front of houses.

(…)

Chapter XXI. Of the general use of the Tuscan and Doric Order.

Chapter XII: The construction of a country sear without columns or other expensive decorations

Nothing can be done properly in these kind of undertaking, without first considering the extent, and then forming in the mind a general idea of the proportion and distribution of the rooms. This is a subject of which we have delivered the theory or principles in a preceding part of the work, and we shall now have an opportunity of illustrating them in the practice.

We will suppose in the present case a gentleman intends to retire from London: he Is displeased with the houses he sees offered to sale, as he may. With sufficient reason eith most of them; and he determines to build himself a seat.

He is first to chuse a spot for it, weighing carefully, on this occasion, the several cautions we have before given respecting the choice of a situation. Many of these would escape the unaccustomed eye, for none can be aware of all the advantages and disadvantages of any particular spot bit those who have been in the way of information, either from their own experience, or that of others.

Setting out with this general knowledge, we shall suppose then the proprietor of the intended edifice to have fixed upon his spot; and he will then naturally call in his builder.

His family is moderate; he intends to build for convenience more than magnificence, but he will have the house handsome, though no pompous. This is the spot, such is the house he intends, and his first demand is. What extent of ground the builder would advise him to cover with it? He will answer, that a house of sixty-five foot in front may answer his purpose. The next consideration is for offices, and here comes in the first principle of elegance and contrivance in the plan. He is not to put the kitchen under the parlours, or the stables in a corner of the yard: a bricklayer could do that, we are speaking of the business of an architect; and we shall shew that these offices are far from being under necessity to be hid, to be inconvenient, or to be placed improperly. Beauty and use may be consulted together; and, instead of a plain square house of this extent, it will be possible, at a small advance in the charge, to add wings to the centre, and connect them by passages. So that from a plain design such as the vulgar builder would have proposed, here shall arise, with little more expence, a centre, its wings, and their communication; the whole regular and uniform.

Chapter XXIII: Of the drawing a ground plan for this edifice

We take the given extent to sixty-five foot for the front of the house, or central building; and the first consideration it the depth proper for that front. This has nothing to do with the additional building, but is a separate concern, we therefore enquire into it here first.

We have given general rules for the proportion of length and breadth before, and shall upon those principles work in this place. For a moderate family an extent of sixty-five foot will make a house wherein there may be some rooms of elegance and shew: and as something is intended for elegance, as well as for convenience in this edifice, we shall suppose the depth made of the larger kind, and give it the measure of forty foot in the centre, and forty five to the two ends, which thus running out five foot, will form agreeable rooms by means of their bow windows.

We shall speak of this presently when we come to the distribution of the rooms, and other internal parts; but let our student go on with regularity. We shall lead him by the hand through every article of his profession, in the design of this plain house: he is now considering the face of the building, and we begin with the ground it is to cover.

The body of the house occupies a space of sixty-five foot, by forty-five in depth. The offices come next to be considered: these we have said may be disposed in for of wings; and for these he is to allot a proper extent of ground.

Though these are to be applied to various purposes as we have mentioned, the stables being intended to be made in the one, and the kitchen in the other; yet that need not be seen in their front. They may in that agree with the rest of the building, and they must correspond exactly with one another.

Thus much premised, the student will understand how he is to go to work upon their plan. In the first place, the wings must not join the centre of the building, for that has a crowded and confined look; it makes a middle and two sides of one continued building, not a centre and two wings of a regular structure; therefore proportioning their distance to the plan of the central building, let him set off on each side twenty-eight foot, and there begin the out-line of each office.

He is first to consider the fronts of these offices, and there two articles occur; their extent and their projection. They might be made upon a lien with the central building; but in such strait courses of work there is no grace, no variety, nor elegance: the eye is tired with the same dull formal look, and a poor dead aspect.

The offices must be made to project therefore, and the communication to recede; this will break the strait line: and the two sides corresponding exactly, it will be broken with regularity, and there will be a variety of light and shadow in the highest degree pleasing.

It is determined then, upon these principles, and for these reasons, that the two wings shall project, and the central building fall back between them. This will be again thrown forward by the recess of the building of communication, and thus the great article of light and shadow will fall gracefully; for there is as much in this article in the real elevation, as in the drawing on paper.

The projection of the wings may be at the builder’s pleasure, but having given him the reason of it in this place, we shall propose such a proportion as will have the happy effect. We shall advise him then to give each wing a projection of thirteen foot from the central building.

He has set off his twenty-eight foot for distance, let him now measure out his thirteen for projection, and then mark the place of the interior angle of each office.

Hi is now to consider the extent of these; and as they must be proportioned to that of the principal edifice, we shall advise him to give each a front of thirty-five foot. This is the best measure in proportion to sixty-five; if they be smaller, the house will look gigantic; if they be larger, they will on the contrary lessen its aspect.

Their extent in front being settled, their depth comes next under consideration; and, for a house of this bigness and design, forty-eight foot will be good measure.

The architect has now the out-line of his central building, and of his offices. They appear very well proportioned, but they stand quite detached. Not only convenience, but beauty, require they should be united one to another; and the manner of doing this is next to be considered. Here is a space of twenty-eight foot set off for that purpose, and now comes the time to employ it: a strait wall might join the stable to the house; but something more is required with respect of the kitchen: there must be a covered communication between these, and therefore something more than a wall is needful; this communication might be made under ground, but this is often subject to inconveniencies, and here it is as well too make it above, as there is a place for it, and proper means.

As there will be some exterior ornament to the house, this passage must not be a plain blank wall; and as the line of beauty is not strait, it must have a recess. This recess must be proportioned to the projection of the offices; and there cannot be a better measure than five foot from the angle of the central building. Thus the front of each office which has but thirteen foot real projection, will have an apparent one of eighteen, and the light will be agreeably broken.

Therefore five foot within the angle of the central building let the architect draw his out-line of the communication, and let him allow a passage of eight foot in the clear.

How this shall be decorated we shall shew hereafter, that being a concern properly connected to the elevation: here we have drawn the out-line of the plan.

Chapter XXIV: Of the internal division and distribution of the rooms

The out-line of the plan is now finished; the architect sees what extent he has to divide for the purposes of use and magnificence; and he is now to proceed to the construction and distribution of the rooms.

The fore front of the house is to project a little forwarder than the two ends: this we shall speak of more particularly when we come to the elevation, it is only named here to give the just proportion of the whole space.

First let him consider the length of sixty-five foot, which by this small projection of the fore front is divided naturally into three parts: let him follow this division within; for it is always best to accommodate the inner distribution of a house to the outer aspect when that can be conveniently done. It may in this case, and he will thus throw the whole front into three rooms: a hall will be proper in the centre, and as this will occupy the whole projecting part, it will be longer than the rest, and its breadth must be proportioned. The thickness of walls being considered, the bigness of these rooms will naturally fall thus; let the hall be set dawn at twenty-four foot long, for that the construction of the front directs; and the length of each of the other rooms will be sixteen foot.

This being marked, the breadth of the hall should be set down at half its length, that is twelve foot; and the two other rooms will be very well proportioned if their breadth be eleven. In the centre of the fore front will be the door opening immediately into the hall; and thus the whole extent of sixty-five foot will be disposed of in front, to the depth of twelve foot, and the thickness of the walls. Of these two front rooms that on the right hand may very conveniently be made a waiting-room for those persons who are of better rank than to be left in the hall; and that on the left may be a dressing room for the master of the house: the passage into the waiting-room is to be made from the hall, and that into the dressing-room from the bottom of the stair-case. This will be in each respect convenient; as those who wait in the right hand room are naturally led through the hall to it, and the master of the house will have no rooms to go through between the stair-case and dressing-room.

Behind the hall there may run a passage of four foot and a half, leading to the apartments in the hinder part of the house, and to the stair-case; these may conveniently be thus disposed.

Directly behind the hall and this passage the space may be occupied by a saloon: its length twenty-four foot, as that of the hall, and its breadth, according to the proportions we have before treated of seventeen. This coming behind the hall, occupies the central part of the house backwards; on the left hand of the passage, behind the hall, is to be placed the grand stair-case; and, as this will not fill the extent of depth, a pleasant common parlour may terminate that side of the house. On the other side, or right hand, the passage is to lead to the door of the great dining-parlour, which may occupy this whole part of the space.

This is a method in which the space included within the ground plan of the central or principal building may be commodiously divided; the upper part serving, by a like division, to all the needful purposes: but as a tasted may vary, and occasions alter the choice, we shall in the next chapter add a different distribution of the rooms, and disposition of the offices, supposing them still to cover nearly the same extent of ground.

Chapter XXV: A second disposition of the building, illustrated by plate LIV

We shall here take nearly the same extent of ground; and design a house of about the same price intended in the former chapter; but we consider a different disposition of parts, and a different distribution of rooms.

We shall propose to the architect to place the offices in wings as before, but we shall propose to him a graceful method of placing them farther from the body of the building. In this case they will be best connected not by strait line, but sweep, and there may be, at very small expence, a plain colonnade in this part.

As we propose the wings somewhat farther removed, we shall advise the adding a little to the extent of the front; instead of sixty-five as before, let it be now sixty-eight foot, and let it consist of a fore front in a little projecting, and two sides as before; to find the place of the wings let the architect measure twenty-eight foot from each angle of the building; and let this be their distance in extent to the inner angle as well as in projection; thus, in drawing his plan, having set off twenty-eight foot sideways, and twenty-eight foot perpendicularly from that, he will have the place of the nearest inner angle of each of the wings. This being fixed, let him draw the out-line of the plan of each of these upon the following proportion: let the length be forty-eight foot, and the breadth thirty-six.

These out-lines being drawn, he has the contour of a centre and two wings. He is to come to the consideration of their distribution into rooms and divisions; but first he is to design their connection to the building.

As the wings are now at considerable distance in projection, they could not be connected to the building by strait line figure without one or more angles; if only one were used, it must be a right angle, and this would be very unpleasing to the eye, and troublesome in the passage. There is the choice therefore of a multangular figure, or of the sweep of a circle, and this latter is vastly to be preferred.

Therefore, the contour of the building and of the offices being drawn, let them be connected together by a sweep of a circle, carried each way from the angle of the central building, to the inner and upper angle of the wing. This makes the inner line of the passage of communication, the breadth of which should be nine foot; therefore at that distance behind is to be drawn another sweep of a circle corresponding with the first.

The out-line of the connecting passage on each side being thus drawn, the contour of the whole plan is finished. The architect will see the form and figure of his intended structure, and he is then to consider the distribution of the space in each, into proper convenient and proportioned rooms and offices.

Chapter XXVI: Of the internal division of the plan

The out-line being finished, the architect sees his space, and he is to consider in what manner it may be most conveniently employed. We will lead him first to the compartition of the plan for the central or principal building, that requiring his greatest concern.

We have, in a preceding chapter, given a convenient and elegant distribution of rooms for a house of this kind; but as various fancies may approve different methods, we shall here give another of an equally correct and useful kind, which we shall illustrate in plate LIV.

Of the door we shall speak in a succeeding chapter, that coming properly under our regard when we treat of the elevation; it is only needful to name it here as the passage must be through it into the several apartments.

This door will be in the centre of the edifice, and it must open into a hall.

We have observed that the central part of the building is to project a little, the two sides falling back; and this projecting part gives the measure of the hall in length, as observed on a former occasion; for this room, including the thickness of the walls, is to occupy this part of the plan. A house like this will admit of a large and noble hall, consistently with the division we are about to propose in this place; and as there will be here no saloon, but a smaller room behind, the hall may be the more spacious and elegant; in this case the given length of the hall will be six-and-twenty foot, and its breadth should be seventeen.

On the right and left of the hall, there will be spaces in the plan equal in front to the two sides in the elevation. That on the left hand may very properly be made a waiting-room; in its length will be sixteen foot, for that is a given thing, counting the entire extent, the length of the hall, and the thickness of the walls. As to its depth there comes more into consideration; a large and elegant room is intended behind it, therefore this retrenches it in that particular; and as its use and office are neither grand or very important, there is no need to pinch the other to serve it. Ten foot six will be a very good depth, and will leave room behind for the construction of a handsome dining-room. The passage into this waiting-room should be at the lower end of the hall, and it should have another door opening into the room behind.

The space on the left of the hall is thus disposed and determined, in extent of depth; there remains that on the right, and that is the place of the great stair-case. This is a part that must not be cramped on any occasion, neither is there any need it should; for as there will be great dining-room on the other side, there is not required an apartment of any extent here. The place of the stairs is thus left to be determined according to use, and it will be well to make it about sixteen foot and a fourth, or three inches. This is to be the depth of the space allotted for the stair-case: its extent in length is the same as that on the opposite side.

Thus the whole front of the ground plan is disposed into a hall, a stair-case, and a waiting-room; and there remains an equal extent behind. This it will be proper to divide in the same manner into three rooms, two of which will be large, and the third, though not extensive, yet very useful.

Behind the waiting-room there may be the great dining-room, twenty-two foot four inches long, and sixteen foot broad; behind the hall, that is in the centre of the building backward, there may be a drawing-room twenty-six foot long, and sixteen foot broad; and, behind the stair-case, there will be room for a common parlour of sixteen foot square.

Thus is the ground floor of the principal building divided. The passage of communication on each side may be formed into colonnades in a cheap manner behind; a flight of steps raised with a sweep, like the whole,, occupying the centre of each, and leading up to a door;, and the covering being no more than a shed supported by the plainest and cheapest columns.

The two wings now remain to be disposed of. That on the right hand may contain the kitchen, and offices belonging to it, and the other the stables.

The front of the right hand wing may be occupied by a kitchen entirely; this will then be thirty foot long, and sixteen and half wide; or it may be made smaller, by setting off a little room to the right, twenty-two foot by sixteen will then be a good bigness. The other room will then have the same depth of sixteen foot, and the width to the front may be seven and a half; behind the kitchen may stand the stair-case, for which seven foot and a half will be a proper allowance; and to the right of this may be a scullery twelve foot ten deep from the back front, by seven in breadth. To the left of the stairs may be servants hall, sixteen foot square; and behind that a larder, twelve foot ten by fourteen foot six.

In the centre of the other wing may be a double coach house; for which there should be allowed the whole breadth of the wing, with ten foot six inches width in the clear, and on each side of this may be the stables.

Chapter XXVII: Of the elevation of the intended building

The plan being finished, the architect is to determine in what manner to execute the elevation; and in that there can be no great difficulty, after what has been said concerning the intent general terms.

It is not to have any rich decorations, neither is it to be altogether plain.

The first principles is, that the principal building and the wings are to be of the same general form and structure; and that there is to run a uniformity through these, and through the connecting sweep.

Let the front wall be raised plain for a foot above the ground, along the whole line of the edifice.

Over this, in the principal building, and in the wings, let there rise a course of rustic to the top of the parlour story. Let the tops of the windows be made in strait arch, with three key-stones to each; and let the door be decorated with rustic, and have its key-stones; corresponding to these of the windows.

This being executed in the centre and wings, there will be a regular course of work which will give the eye satisfaction.

In the sweeps let the wall be carried up plain to the height of the rustic in the fronts, and if and arched door-way be made where the steps rise, and a square window at equal distance on each side, this will be so far finished.

We are now arrived to the top of the parlour-story, and to an equal height through-out the building. At the top of this is to be laid a plain fascia, which is to run in a regular line throughout the whole; and over this is to be raised an Ionic, pedestal of three foot in height.

This is also to be carried in a strait line along the whole building, only that it is to be interrupted in seven places by balustrades; five of these are to be under the windows in the front of the centre building, and one over each of the arched doors of the sweep. The windows of the wings are to rest upon the plain pedestal, with no balustrade or other ornament under them.

We are thus got as high as the bottoms of the first floor windows; three of these are to be in the fore front, and one each side, and there are also to be three in each of the wings.

Here the architect will see room for a needful and pleasing variety.

The windows must all be surrounded by their usual and plain ornaments in the main building, and their tops may be varied to have a pleasing effect; the centre window may have a round pediment; those on each side may be terminated flat; and the two in the sides may have pointed or sharp pediments. The wall being carried up plain between all these, over those in the wings should rise a pediment; and over those in the principal building an Attic story; and then the roof and cornice thus finish the building.

Chapter XXVIII: Of a house with Ionic columns on the parlour floor

Chapter XXIX: Of the plan

Chapter XXX: Of the compartition, or inner division, of the plan of the house

Chapter XXXI: Of the compartition of the wings

Chapter XXXII: Of the elevation

Chapter XXXIII: The construction of a house with a single row of Ionic columns over the parlour story

Chapter XXXIV: Of the out-line of the plan

Chapter XXXV: Of the distribution of the ground within the out line of this plan

Chapter XXXVI: Of the compartition of the plan

Chapter XXXVII: Of the elevation

Chapter XXXVIII: Of the construction of a town-house of the greatest elegance

(…)

We have already given the subterranean construction of this edifice, which is explained in our plate of sewers and drains; and we shall in the succeeding books introduce designs of several of its internal decorations under the article of Ceilings and Chimney-pieces.

We shall, in the account of this capital house, follow the same method as in the preceding numbers; and as we have there pointed out what might best be done upon a given space, we shall here shew the student what has been done; we shall explain to him all that is executed upon this design in an edifice universally applauded; illustrating the several parts with figures of the plan and elevation, engraved by that great master fourdrinier.

Before we enter upon the particulars, it may be proper to observe, that the edifice we here treat of has its front to the west, and has before it a large court; and that the east front commands a spacious garden.

The level of the ground in all this extent behind is eleven foot below that of the forecourt. This might have perplexed the young architect; but he will see here in what manner such an irregularity is to be managed, and made an article of ornament instead of an imperfection.

Into this garden, the descent from the principal floor of the house is, by a double slight of stone steps, disposed with elegance and magnificence, and decorated with balustrades proportioned to the rest of the building.

What house in London it is that we are thus celebrating, few will be at a loss to discern from the elevation; but if any should not discover that, we shall add at the close of the work a table of explanation, in which we shall acquaint the reader, where, and for whom, every one of the designs already executed is built.

The judicious architect who observes the great extent of ground in this structure, the dimensions of the building, the subterraneous construction, the boundary walls, and the extraordinary depths of the foundations from the inequality of the ground, will see it in the light of a great and capital undertaking.

The curious observer who shall enter into the spirit of it, in the free use of the Corinthian order in the colonnade, the elegance of the iron-work on the outside as well as within, and the high finishing of all the principal apartments, will not be startled when he learns the expence was five-and-twenty thousand pounds: perhaps there is not in Europe so much richness and elegance for the same expence.

Chapter XXXIX: The ground plan of the edifice

The young architect who is to enter with us on the consideration of this edifice, must first understand its place with respect to the area before. The principal building has before in a court 177 foot in length, and 94 in breadth, terminated each way from the house by a Corinthian colonnade, and flanked by the wings containing the offices.

At the back of this court, and in its centre, is to stand the house; and its from is terminated by a wall gates. This wall, including the offices, and continued round the garden, gives the general outline of the ground. The student will find the rules we have occasionally laid down in the preceding part of our work exemplified at large in this building.

In the centre of the front wall of the court, and directly opposite to the centre of the house, are placed the great gates of entrance; a law we have shewn to be founded on reason, but often neglected in great and good buildings.

This gateway, to suit it to the edifice, must be decorated wit piers, and within, on each side, ist o be allowed a small square room for a porter's lodge; the places od these are marked M.M. in Plate LXI, in which is given the whole ground-plan and distribution of the rooms.

The boundary wall is to be continued entire to the right; but the wing to the left; containing the coach-house and stables, should have the convenience of an opening to the street. This will require a gateway near the corner; but as this is intended for use, not shew, and is too remote to catch the eye at the same tiem with the house; the less decoration is employed on it the better. Its place is marked by an opening in the wall of the court, and a plain wooden pair of gates will best suit the purpose.

Entering the court the wings are to be seen one each hand; in the centre the principal building, and one each side the colonnade.

This house being intended for elegance and magnificence must have the parts great. On this depends the distribution of the rooms, or compartition of the space: that is not to be thrown into a great number of small rooms, for this would disgrace the external form: and if, as may naturally be imagined, the rooms upon such a disposition would be too few in a house whose ground-plan was proportioned to the centre of the space, there is a remedy without deviating from the principles we have just established.

The young architect must not, for this reason, divide the principal floor into small rooms, for the sake of having a sufficient number for its purpose, but he must add others in adjoining places: this may always be done with ease and convenience, and if they be will disposed they will give a greater air of freedom and extent to the inside of the house, while they are an ornament and not a blemish without.

Thus in the compartition of the edifice, as laid down in the present plan, the rooms within the outline of the building can be only a small number, proportioning them to the intended magnificence.

The entrance must be into a hall, which with the stair-case to the right hand, will necessarily take up more than half the extent in front; the door being in the centre, and opening into it. This hall and stair-case are marked in the figure A.

On the left, in the same range, will be the dining-parlour; this we have marked C, and it will be a handsome room according to the proportion there allowed.

It is easy to see that no more can be done with the front line of the house, placing the stair-case int his manner; and the architect will find, after a thousand trials, that there is no way placing it so well, even in point of room.

Behind the hall and stair-case, there must be back stairs, for it such a house this cannot be wanting, nor is there any other part of the plan proper for it.

As this takes up only a part of the extent of the back of the hall, there will be room for a lobby beside it; and this is the only use that can be well made of that space.

We have in this plan marked the place of these back stairs B, and the lobby with the letter I.

This is all perfectly necessary; and by this we see so considerable a part of the present floor occupied without any considerable room, yet designed, that there remains only a possibility of making one larger and one smaller on this floor.

Three rooms are by no means sufficient in a house of this kind, for the floor of which we are treating ; we shall see what they must naturally be, and then consider how to add to them.

There is in front, on the left hand, only a dining-parlour; this therefore leaves a handsome space behind: but the back stairs and lobby take up so much of the other side in depth, that the space there is smaller.

Now with the regard to the larger space behind the dining-parlour; the architect who thought there was no way to get a due number of rooms but by making them small ones, might divide this into two; but that would spoil both, and be beneath the dignity of the house. Let it therefore be made into one: it will be a magnificent and well-proportioned anti-room, and will become the rest.

The smaller space behind the back stairs and lobby may be divided into two rooms, because there will be two wanted in this part, and neither of them need be large.

A dressing-room, not far from the foot of the stair-case, is a very requisite apartment in a house of this kind; and near it there should be a waiting-room. They are apartments of convenience, not of shew; and there requires no great size for either: therefore this part of the space will very well answer for both. The dressing-room may be the smaller, as marked in this plan at the letter F; and the waiting-room may occupy the space between that an the large room on the left.

A dressing-room in the house of a person of fashion is a room of consequences, not only for its natural use in being the place of dressing, but for the several persons who are seen there. The morning is a time many chuse for dispatching business; and as persons of this rank are not to be supposed to wait for people of that kind, they naturally give them orders to come about a certain hour, and admit them while they are dressing.

This use of the dressing-room shews also the necessity of a waiting-room where we have placed it. Though these persons are expected at certain hour, they cannot always be admitted the moment they come, therefore they must have some place where to stay. When they are not there, it is convenient for the principal servants; who should have a room where they may be near their master, and in call.

This is the necessity of the tow rooms we have here marked in our plan; and thus will the space be disposed of.

The architect will naturally say, that here yet want the two great apartments for such a house as this: there are a drawing-room and a library: they must be on this floor, and yet the whole is disposed of without them.

This is what we were providing for in naming the additional connected rooms. The ground-plan of the body of the house will not contain any more than those we have named upon this floor. We have disposed them in it, and the walls are to be raised accordingly. These are to have other rooms over them to the top; but thought the outline of the edifice terminate at these, there may be elegance, dignity, convenience, and every article that should come into the thought of a good architect, added by means of a couple of additional rooms formed of connected building: of these we shall speak in the succeeding chapter.

Chapter XL: Of the two additional rooms

The body of the house being thus constructed, will be decorated in front with the principal entrance, the door, the steps, and their ornaments; and behind by a slight of stairs into the garden: of these we shall speak more particularly hereafter. They finish the two ends of the house, but the sides are only plain; hence although nothing could be added to, or connected with, the ends, there is no objection in rule or regularity to the adding whatever convenience requires to the sides: therefore there are the places for the two additional rooms: their communication with the house will be natural, and they will open into the proper apartments.

The plan of these two rooms must be laid with perfect regularity; they must correspond with one another in all repects, in length, breadth, and height; and they will then have every article of convenience and grace. The room to the right is to be the library, and at the corner of this should be an adjoining little building for a watercloset; that on the left should be the drawing-room. We have market the first by the letter G, and the other by the letter H, in the plan; the young architect will there see the proportions which reason and the rules of the science approve; and he will find it in the edifice perfectly answered in practice.

We see an addition of a great room now to almost every house of consequence, and we have taken occasion in a preceeding part of our work, to rally that practice as the common race of builders now execute it.

Their faults or follies however, have no right to bring the practice into disgrace; for it is not the adding a part to a house, but the adding it improperly, that is the absurdity.

Let the student here learn the difference: in those houses which are ridiculous for their new rooms; the addition is made without any regard to the whole fabric; but here it is, though an addition, a regular part. In them it is stuck to the house, and here it is a part of the building; in the common practice it is a single part, for few have thought of adding two great rooms upon this vulgar plan; in the instance before is there are two.

Every one knows that in the large and essential part of this kind in a structure, there should always be two, that one may answer another; or if convenience do not require two, the shell, or outside of a second, should be raised for regularity. Thus in the present instance these additions are two; they are alike, and they answer to one another. Instead of the common appearance of a large room added to the fabric, which is always that of wart, deforming the whole, or of a wen, threatening to pull it down, these appear of a piece with the rest; no excrescences or unseemly parts, but a regular addition to a regular building: and being conformable to it in structure, colour, and decoration, they are a beauty instead of a deformity in the out-line; giving at the same time variety and regularity.

This is an essential point in the practice of modern architecture. The builder sees every body wants a large room; let him therefore think of it in time, that his employer may not be reminded by some other person when it is too late: and let him not in any considerable building cramp or diminish the other rooms, and spoil a whole house to give scope to this. Let him construct the several parts as the plan and compass naturally direct; and when he has thrown the space, by a judicious compartition, into a convenient house with proportioned apartments, let him add such room, if fashion continues to require it, as an exterior part; and place opposite to it the resemblance at least of another.

This will serve as a very agreeable deception both ways; for the house on the outside will look larger, than it is, because of the added resemblance of the great room; and within it will have scope by the real addition.

From these, which are the principles of architecture, as old as Greece, and as authentic as the suffrage of the most eminent of modern builders can establish them, we refer the student to the plan of this building, where it is really and very happily carried into execution.

As to the size of such additional rooms, in all particular instances, he must be guided by those laws of proportion we have before laid down; for nothing can make amends for the absurdity arising from ill proportion. If he would fix in his mind the idea of a good general size, he will find and example here.

We have already observed that these two rooms are equal in dimensions, as well as alike in form; and their bigness is, in instance, forty two foot by twenty-four.

Chapter XLI: Of the construction of the additional rooms

Elegance must be observed in the construction of a building like this in every part; and these rooms, though additional, are to be understood as parts; therefore the same degree, and if the builder please, the same kind of decoration must be employed upon them.

Thus they will appear as parts of the whole. This is the first consideration: but there is another. They may be decorated, or they may be concealed; and in many cases the architect will prefer the latter course.

In the building now under consideration he will see a method followed, which at once gives him the choice of appropriating or concealing them; and shews in what manner, and to what purpose, they may be on the one part adapted to the building, and ont eh other concealed from the eye.

We have observed that behind that house is a large extent of garden; therefore there should be care taken that the back front, which is seen entire from it, may be fit for inspection.

These look into the garden; and as that affords an agreeable prospect from them, they will the same manner afford a good object seen from thence. Therefore in this construction and design, their exterior part must be exactly adapted to that of the back front, and they will join with it. Thus there is light for the rooms, and a good object for the garden.

In the next place we are to consider them with respect to the effect they would have seen, from the front. Now as the building is entire without them; and as we shall see by this elevation, sufficiently proportioned to the court, and suited to the wings, there will be no occasion for bringing these additions into sight. That which is perfect without addition, will always be hurt by addition; therefore it would be better in this respect there have been more.

That which is concealed is in respect of the eye as if it did not exist. Therefore if these rooms can be so hid that the eye sees the building without perceiving them, the impropriety of adding where nothing is wanted is concealed, and at the same time all the advantage and convenience are obtained that were desired. Thus it is managed in the present buildings: the inner compartition of the house has the advantage of these rooms; the garden has them as an object; and the front which is entire without them, is seen without them.

The student will observe there is a colonnade in front adjoining each way to the house; this, for the sake of proportion, must be of a certain height there given, and the place of the two additional rooms being understood, they will be found to fall behind it: therefore to a certain height they would be concealed behind this colonnade, and the judicious architect must contrive in such cases, that the building do not exceed that height.

Now although two such rooms were requisite to be added to the plan upon this floor, there is no occasion in a house of this construction and design for more rooms above than may very well be contained within the compass of the principal building: there will be room enough for their number, and for their due bigness.

This takes away the necessity of building any thing over the two additional rooms; and by this is taken away all danger of their rising too high to be concealed by the colonnade.

Thus the fore front is entire; and the stranger when he enters the house is charmed to find two such rooms which were this way externally invisible.

Although there must be for this reason nothing over the two great rooms, there is no objections to any necessary convenience under them; and in the present instance the principal offices are placed, and are connected there, as naturally as the rooms with those under the rest of the house.

Chapter XLII: Of the colonnade and wings

Each way from the house runs in the present instance a colonnade: this is one of the noblest additional ornaments a house can receive, and in this edifice no price has been spared to give it the full dignity. The order is Corinthian, and its effect is very happy. It is one of those decorations that the four rules of criticism would call too rich for the building; but we see in this, one of a thousand instances that genius may depart a little from that cold severity of rule with happy effect.

Under the colonnades are arcades open to east, which make a communication between the offices, under the house, and the north and south wings.

We have observed that the coach-houses and stables are placed in the left wing, that being the north; and in the opposite, which is the right, or south wing, are the kitchen, larders, pastry, scullery, washhouse and laundry.

Over the stables is a mezzanine floor, properly divided for granary; and above this are lodging-rooms for servants.

In the same manner the upper part of the other wing is divided into lodging-rooms for servants, and this is the whole of this magnificent building constructed.

This is all that comes under our consideration in the present place, for the inside finishings belong to a succeeding part of the work, but we shall here observe that they are adapted to the whole.

The great stair-case ascents with three flights of steps; and is of white and veined ble, of a very uncommon size, and degree of perfection.

The screen which divides the hall from the stairs is of the same material, and formed in arches and half columns of the Corinthian and composite order. The rooms upon the principal floor and that above it, have all expensive and rich ceilings and chimney-pieces, designed in the most elegant manner, and wrought in the best marbles; and all by the first artists in their several professions.

Of these we shall treat hereafter, among many other designs of ornamental parts of the same kind; and with this structure, the first in the kingdom for elegance, we shall close the present part of our work.

BOOK IV. OF DOORS AND WINDOWS.

The introduction

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Doors and windows must have been as early as human habitations; for the first man who erected the hurdle hut, or the clay cabbin, could not have been so absurd as to climb in it at the top, or shut himself up in darkness: therefore the construction of any habitation implied the use of these; and reason declares that the door would be suited to the human height, and the window to the proportion of light required for the needful offices of life. Thus have been laid down by nature the laws for their dimensions; but it will astonish is to consider how they have been transgressed. We have seen at one period of late time, doors made of such height that one would think every house inhabited by a giant; and from this extreme, for according to the old Romans' observation, weak minds in avoiding one error always run into another; we have seen them lose the form and fashion, grace and dignity of entrances to a habitation, and wear the aspect of holes cut through the walls, to accommodate houses built for men to the use of pygmies.

It is enough to observe that as all extremes are amiss, one of these is as faulty as the other.

With regard to windows, the same universal law, established by nature and authorized by reason, of admitting a proportioned and useful quantity of light has been as much transgressed. We have in the same manner run from the extravagance of excess, to the absurdity of defect. It is not long since our houses were so many lanthorns, the piers seeming designed only to receive the frames of the windows; and from this we ran into the admitting light only through certain holes, as if for the use of a dungeon.

Let the architect who has thus far formed himself upon the principles of science, learn on this point the golden rule of moderation. We give him the general lesson here, and we shall in the succeeding chapters bring it to practice; and illustrate the theory by examples.

Chapter I: Of doors

Two things are to be considered in the design of a door; the first its aperture, and the second its ornaments. These must both enter into the mind of the architect who is designed and edifice, or he will never proportion or adapt it to the structure.

How often do we see in London doors which appear not to belong to the house, but to be joined to it against nature; that seem to have been stuck on, not raised with the building. It is common to see doors whose breadth occupies near one half of the extent in front; and in Dover street there is one whose top covers half the window placed over it in the upper story. This is the error of those who mean to be magnificent; but the opposite is too common in plain houses. Doors are put which seem to say, no fat man comes into this house, and they always disgrace the whole building.

We have shewn in treating of elevations, how the most plain and small house may be made convenient; and we shall observe here that it may also be erected with a peculiar kind of beauty.

Its sole grace must lie in proportion, therefore let not the architect omit that most essential point.

The variations in the antique are in this instance very great; and from this it was that Palladio evaded giving rules for the dimensions of doors in proportion to houses. He was sensible he could lay down none against which some instance might not be brought in those buildings which were allowed masterly in their kind: and he therefore left in undetermined. He gives no rule, and he says none can be given; all he directs is; that they be proportioned to the dignity of the inhabitant of the house. We must here dissent from him, and determine that, be the conditions or benevolence of the master what it will, the door ought to be proportioned to the other parts of the building.

There are many things in which the antient architects have erred, and it will be a double error in us to copy their faults. This great variation in the height of doors is one, and in their construction there was a greater. They did not in general make the aperture equal all the way, but contracted it upwards. This must have had a strange effect. A door narrower at the top than the bottom must have appeared a deformity in any building, though over it were written the name of Hermogenes as architect.

These antients, thought much greater men than our present architects, were but men; the science, which they carried to such a height, they did not perfect. The limits of these things are not fixed at any certain point, nor are the powers of genius setteredby such boundaries- while we admire the dignity of the Grecian ot the pomp of the Roman doors, let us see also this contraction as an egregious error; and if we refer to Palladio, or to, the oracle of Palladio, Vitruvius, on this account, let it be to dissent from their opinions: if we turn our eyes to the temple at Tivoli, let us place the door there as an object shewing what we should avoid.

With regard to the Italian, we have shewn he was lost in the diversity of what he read, and what he saw: as to the Roman, he seems to have received it as a law in the science, that there should be this contraction; and when he directs that in doors of more than thirty foot height in the opening, there should be no contraction of the diameter, his commentator Philander, who rarely misses his sense, says this was because at that height the nature of vision answered the same purpose; and the contraction was given to the eye by distance.

Chapter II: Of the dimensions of doors

The architect will see by this free disquisition, the antients are not proper instructors in the dimensions of doors; how much soever we may learn from them respecting their ornaments. He will see also that the most famous of the moderns has left him uninformed on this head; and if he look into the common books of designs he will find nothing but absurdity. There are in none of the parts of architecture monsters equal to those we find in these books intended for this purpose: this is the state of the matter in all of them; the more as well as the less respected, and throughout the whole course of time from Francini to Batty Langley.

The defect on this head we shall endeavour to supply; and whatever merit we shall attain by attempting improvement, the student may depend on this, we will not lead him into error.

With respect to the height of doors in the aperture, there is an universal law in reason, though not observed: there is a certain height below which they must not be; tho' for dignity and proportion the field in which they may exceed is almost unlimited.

The human stature is the mark for the least height that can be proper, and this is the same among the vulgar as the noble: he who makes a door is not therefore on any consideration to descend below this established proportion. If he should give it as an excuse that the owner was of low stature, boys would laugh at him; those who visit are not proportioned by the height of the possessor of the house, nor may his son be of his stature; or the next inhabitant.

It is therefore as improper to construct the door to the stature of the owner, as to the greatness of his hospitality. Thought the heart of Bevilacqua was bigger than his door, that of his successor in the palace might have found room in a nut-shell.

For the lowest door then the height must be such as that a man of the highest common stature may go thought it without stopping. This limits the measure to six foot: below this the door of no house should be made, even of the plainest; but above all is left to fancy guided by the general idea of proportion.

The height being this determined, the breadth comes into consideration; the sides must to be so distant that they must not crush the largest body; nor is it fit they should reduce a man to enter with his arms in any particular posture: as he is to go in without stooping, so he ought also to be able to walk in at ease. The smallest dimension therefore in breadth that can be allowed is three foot; and this being the half of the given height has a very good effect in respect of general proportion.

These are the rules laid down by nature; and these being allowed as truth become the foundation of all the other proportions. While we are near this, we are sure not to err; and this ought always to be kept in remembrance for that purpose. He would have reason to complain of the confined laws of the science, who fancied that from this every door must be made the exact double of its breadth in height: there are peculiar constructions which require particular measures; but as in all other cases there are bounds which must not be transgressed, so in this there is a latitude, as we shall shew, within which the fancy may rove, but which is must not pass.

The dimensions being this in their first sense considered, we are to regard them as necessarily varied according to the nature of the building.

In proportion as the house is larger the door must also be enlarged. This is an universal rule: and there being some variations, thought they are of a limited nature, in the proportion of height and breadth, these must be appropriated also to the general form of the house.

We have said that for the plainest doors the proportions of height to breadth must be double; this is to be a little varied at the pleasure of the architect; and he must this employ his liberty.

If the front of the house extend considerably in breadth, in proportion to height the door must be adapted to it, by having a proportion of breadth somewhat too great for its height; upon the preceding principles, and in the same manner, if the building be made a little more than twice as high as broad, to accommodate the figure of that as of other parts to the form of the whole.

We shall in a succeeding chapter speak of the decorations of doors,; but in this place it is necessary to observe thus much, that the ornaments must in the same manner be suted to the aperture of the door, and to the entire body of the building.

The ornaments usually employed will bear to be extended or retrenched at the sides, as the architect shall see proper; and he must make them broader or narrower as the opening of the door is wider or more contracted; and by this means they will be suited at once to the opening and to the edifice, to that part and to the whole.

(…)

Chapter III: Of the elevation of the doors

The form and dimensions of doors having thus been established upon some principles, we are to consider their position. This varies according to their distance from the level of the ground, and is to be governed by the height of the floor to which they belong.

In the plainest and most ordinary houses the door is upon the level of the ground, but this is wrong for a very obvious reason. There is to be some settling expected in the house, and experience shews the ground in all inhabited placed naturally rises in surface.

Therefore a house whose floor of entrance was placed originally upon the level of the ground, will in a few years, from the concurrence of these two accidents, or from one of them, be below that level; the door will then stand below the surface of the ground and we must go down stairs into the house: this is to be avoided both for shew and service. A floor under the level of the ground will be damp, and the door, if well proportioned at first, will be too low for its breadth; at least it will appear so, which in this respect is the same thing.

This is a reason why a door should never rest upon the level of the ground; but if against all rule the builder or the owner will have if so, the proportion to be observed is this; it must be made somewhat high in an over-proportion to the breadth, because the eye at first will reduce it to the appearance of regularity, and probably accidents afterwards will place it below it.

This is a rule that in itself will not, we hope, come often into practice; but it gives the general law to what follows.

Hence is derived a principle that ought to stand as unalterable in itself; that the more the door of a house is raised above the level of the street, the more its breadth should exceed the natural proportion with respect to height.

This depends upon the nature of vision, which in these near objects ought always to be consulted; for the higher the door is placed, the narrower it will appear by distance, and therefore the broader it should be made in the reality.

These are points which deserve to be considered much more strictly than they are, for upon them depends entirely the proportion: at the same time we are to tell the young architect, that all we speak here of variations, is meant to those of a very small kind; for when a certain rule of proportion is established; no cause must lead us too far either way from it.

In the earliest architecture find that the custom was to place the door at a considerable height above the level of the ground; and in all magnificent buildings it should be thus raised, and in others in proportion to their size.

The raising the door after the old Greek manner gives many advantages. The floor to which it opens has elevation, better air, and the advantages of prospect. There is the benefit of rising to it by flights of steps, which whether single or double are of great ornament, and may be carried to any degree of elegance according to the pleasure of the purchaser: it also gives a good floor below for the use of the better sort of servants.

For all these reasons we see it best to give the door and elevation, and we have directed the architect to the only method by which one of this situation ever can be rendered truly graceful.

Chapter IV: Of the use of columns in the ornament Doors

Chapter V: The construction of a door in the Doric, and in the ionic order

Chapter VI: Of the use of the more elegant orders in doors

Chapter VII: Of the original decoration in doors

Chapter VIII: Of the fanciful orders about doors

Chapter IX: Of the symbolical figures in the ornaments of doors

Chapter X: of the use of terms, as ornaments to doors

Chapter XI: Of the use of pilasters in the ornaments of doors

Chapter XII: Of the use of the Corinthian order in a Door

Chapter XIII: Of a door in the Composite order

Chapter XIV: Of decorating the orders for doors

Chapter XV: Of the panels of Doors.

We have now considered the ornaments: we have explained to the student what he is to undertake, and in what manner to execute the great concern of the decoration of door-cases, whether in the plain and common manner, or, with the highest grace the science affords for them, the orders of architecture. We have considered also the opening and its dimensions and form; and all that remains is to treat of the door itself which is to close that aperture, and to occupy the centre of the proposed decoration.

The door must be of due thickness to prevent its warping; and must be farther secured also by its being made of seasoned timber, and framed in panels. With respect to the kind of timber, notwithstanding the great variety our own country affords, that is reduced in a manner to two, oak and fir; against the first nothing can be objected, for it has both strength and beauty; but the other is inferior to many kinds of our growth.

The oak or wainscot doors are appropriated to the better kind of buildings, and are intended to shew their true surface and their natural colour. These are often wrought with a great deal of beauty, and are an ornament in themselves exclusive of decorations.

The fir or deal doors are meant to be painted. They are most common in houses of least expence; and when they get into better edifices they are so well framed and wrought that they often make no bad appearance.

The advantages of these is their lightness; those of wainscot, of the same dimensions and diameter, being much heavier.

Beside wainscot, we see in some places inside doors of great elegance and expence, wrought of mahogany, or inlaid with rose-wood, and decorated with sculpture. Either of these kinds are very elegant; and those who have been familiar with them, will not approve a painted in an elegant apartment.

The opening of the door is next to fall under consideration, and the common architect will think that he has no more choice than to place the hinges on one or the other side, so that it may open one way or the other, inwards or outwards: for one of these two ways he will suppose every door in the world must open. We shall tell him no.

There is a way different from either of these, and it is a method of extreme elegance.

A street door opening inward is of no inconvenience, because it opens into a hall, which is a room of no consequence; but this is not the case in the more elegant apartments, where the communication is by a door in the partition wall, and the entrance immediately out of one room into another.

We will suppose the two principal rooms a first floor communicate by a door in the centre of the partition. In and evening, when they are lighted up, this door is thrown open, and the furniture in both being alike, it becomes as one apartment. In this case the door, according to the modern custom, must open into one or into the other of the rooms, and into whichsoever of the two it is, it will there be blemish; an awkward slating piece, standing in the room with a disagreeable sharp angle.

This may be prevented by making a cavity somewhat more than equal to the depth and substance of the door in the thickness of the wall. Into this the door may slide by a gentle touch, and remain undiscovered; and a handsome brass ring being fixed to the edge, it may come out again when it is to be shut with as flight a motion. This is done at the house late Mr.

De Pestres, near Hanover square, and the manner of is there may serve as an example to other buildings.

The opening, in the usual way, is either by the whole door on one side, or by half of it each way, the door being composed of two folding in the middle: but in either case it is not comparable to the method we have here proposed of sliding it into the wall on many occasions.

Last of all we come to the structure of the fabric of the door itself: this is should be contrived for strength, beauty, and straitness. All these purposes are answered by making it in many panels. The folding, or half doors, are best made of four panels, two larger, and two smaller; and the entire door of eight. The framing must be found, and the joints well secured. They may be varied in form many ways: but to be minute in these things shews a poorness of genius in the architect.

The best form of the panels is the plainest, and this is a long square; the two or four larger should be long upwards, and the others cross-wise. This is a construction that shews strength and firmness, and this is all that should be consulted here, the decoreation belonging to the other parts.

Chapter XVI: The several kinds of windows

Having gone through the consideration of doors, we are naturally led to that of windows; the apertures most of their species, and capable of the same kind and degrees variation. Their number and their nature we have considered already, as also their places, ant their proportions to the building. These are things we shall not repeat; the student who has read the preceding part of our work with care, has them in this remembrance; and he may therefore now be led to the article of their decorations.

They are a very essential pat in the elevation of a building: therefore, in order to be understood in what we shall particularly say of the several kinds, we shall here lay before him in figures, and a general detail of their several forms and parts, as well as ornaments.

The best windows are to be the ornament of the principal story in all great buildings: and that the architect may see at one view the great variety that is in his power, we have represented in Plates LXVI and LXVII here annexed, a variety of forms; beginning with the plainer, and advancing to the more richly ornamented.

The heights of windows for this principal story are to be proportioned to their breadths, the student will see, by the several figures, that we allow, as the most general proportion in plain windows, twice the measure of the aperture in breath for its height; and he is to know that he need not be tied down to this with so much strictness, but that twice and one sixth may be allowed without violence to true proportion. This is the more proper, the richer are the ornaments; and he will see it reduced to practice in the composite window in plate LXVIII.

The Venetian window is a very noble and ornamental kind; it admits a peculiar proportion; the measure of which the figures here represent; and of the reasons for it we shall speak in a succeeding chapter.

These are the several kinds of windows, speaking in general, that are proper for a principal story: but there are others for the upper and middle apartments.

The height of the rooms enters here into consideration, and as these are lower in the chamber-floor than in that below, the windows should also be lower; therefore, instead of twice the breadth for height, the best measure for these is the diagonal, which is once and a half the breadth; this is what the builders express by the same name of a diagonal window.

The Attic story should have the windows square, as we have directed already; and this is a founded on the same principles in reason, which is the lowest of those rooms. And finally, there are to be considered the mezzanine floors. In these the best measure is to give the window three quarters of their breadth in height. This, like the former proportion, is suited to use, and proportioned to the height of rooms; and the builder may be assured all that is this proportioned will be right.

Chapter XVII: Of the plainer windows for a principal floor

In ordinary houses the window may be like the original door; no more than an opening of a proper measure in the wall: what this measure should be we have shewn, and no more is therefore needful on that head: we come to the ornaments that should be bestowed on it in elegant buildings.

The least that should be allowed the windows of the principal story in such buildings, is the ornament of architrave, freeze and cornice.

Builders indulge their fancy in these parts, and are very fond of confounding, under the name of improvement: they put together parts of the proper cornice, and other divisions belonging to the distinct orders, and these they call composed ornaments.

There requires much more knowledge of the science than usually falls to the lot of these people, to mend the parts of an order; and we shall recommend them to be more prudent, and chuse one as they find it. The Ionic is of a middle nature, and answers very happily; and if they use the swelling or rounded freeze, it will add to the grace of it.

In such a window the cornice terminates the whole; and as no more decoration is allowed at the top, there should be a proportioned decency observed at the bottom. This window will appear best when supported on a plain pedestal, and none so proper for the use as that which belongs to the Ionic order.

Thus all will be proportioned, natural, and of a piece; and the window will have a simple elegance very becoming. Such a window is represented in the first figure of plate LXVI.

We will suppose that upon the architect's presenting such a design, the proprietor thinks it not enough ornamented; he is to consider in what manner to add decorations. They are of many kinds and the richest of them call in the use of the orders: but before he arrives at these, which are always expensive, and which suit only elegant edifices, he has a great deal in his way. A pediment may be added to the top; but then let him take care that he, in proportioned manner, enrich the bottom.

Without this addition, which gives a height mot always eligible, the architrave may be enriched by sculpture of some of its mouldings; and in this case, as in the other, the principal care must be to enrich very part in a proportioned manner.

Beside this addition of one ornament to answer another, there must, in this particular case of adding a pediment, be a consideration of the height and measure.

Whatever adds to the height of a window apparently diminishes its real breadth, and really diminishes its proportional. The height and breadth in ornaments must be now considered as strictly as we have before proportioned it in the aperture; the pedestal must be extended to a proper breath, and there must be a continuation each way to the architrave.

The breadth being suited to the height, the ornaments come next into consideration. The pediment may, at the pleasure of the designer, be either pointed or circular; and where there are several windows in a range thus ornamented, the common practice is to make them alternately round and pointed. This is supposed on sufficient authority, though it might be liable to the cavils of strict rule.

In no case let the pediment be broken, or open at the top. This, though sometimes practiced, can never be justified. Some who have seen pediments broken in the inside finishing of rooms, to admit a bust, or other ornament, have transferred the practice to the tops of windows; not regarding that they were without.

In the finishing of rooms fancy must be allowed its liberties; and there is nothing in that use of the broken pediment which contradicts reason, but when we see it on the outside of a house the eye is disgusted. The pediment has its use, which is to throw off the water; and in these cases the architect seems to have opened it purposely to let it in. this is destroying the use of a thing, under the notion of beautifying it; a practice reason abhors.

The pediment may seem supported by a seroll; and this, though of no real use, yet has an appearance of it, and adds to the gracefulness of the whole.

This being adjusted, the upper part is finished; and we may therefore return to the pedestal. Its increase in breadth we have named; but that, unless some farther care be employed about it, instead of adding to the decoration, will make it appear plainer by shewing more of the die.

Therefore to suit it to the rest, let there be added a balustrade of the breadth of the aperture. This will give an air to the bottom proportioned to the top, and the whole will be not only elegant but uniform. Such a window will be seen in the second figure of Plate LXVI.

Last among the decoration of windows, without the addition of the orders, we are to consider the effect of sculpture in the mouldings; in our first instance we meant to represent the plainest of these kind of decorations, and in such a one sculpture could find no place. In our second design the addition of a pediment with its scrolls render any other kind of decoration needless; and it is therefore in a third kind we are to examine its use.

We will suppose the proprietor thinks our first window too plain, and our second with its pediment too heavy: he is not willing to admit the orders, and he requires a richer ornament.

The purpose must therefore be to make a light and elegant window: this is the proper use and design of sculpture on the present occasion.

The contour of our first design was plain, and the outline of the architrave perpendicular; this gave it the air of simplicity which we intended as its character: in this, which is to be more ornamented, let the outline swell gracefully at the bottom, and project in a square form at the top; this gives that uneven line which is essential to beauty; and if a row of sculptured ornament be carried round the edge, there is a very decent and pretty action.

To receive this swelling in breadth at the bottom, the pedestal must be extended; and, to suit this to the whole, there must be a balustrade as in the other case. Thus will rise a beautiful and light window, proportioned and uniform. A design of such a one have given in the third figure of plate LXVI, before mentioned.

Chapter XVIII: Of windows with the orders

Chapter XIX: Of the use of the Doric order in a simple window

Chapter XX: Of the projection of the columns in a plain Doric window

Chapter XXI: Of executing an Ionic window plain

Chapter XXII: Of constructing a plain window in the Corinthian and Composite order

Chapter XXIII: Of Venetian Windows

We have led the student now through the whole consideration of plain windows, with their ornaments; from the simplest and cheapest, the richest and most expensive: and we are from these to advance to the Venetian, a kind calculated for shew, and very pompous in their nature: and, when executed with judgment, of extreme elegance. They may be made upon several plans, and all elegant; but their best forms are those we have represented in plates LXVI and LXVII.

The Venetian window take their proportions from the middle aperture, whose height should always be twice and one half its breath. Being divided into three parts, sometimes one of those three parts in sound convenient for the side openings; but where a considerable body of light is wanting two must be given to the breadths of the side apertures.

It is a common practice, and a common error, to make the side openings one half of the middle; and this is attended with a great inconvenience in dividing the fash squares; the principal light should be divided into three parts for the squares, and the side light should be either one or two of those parts; but where a very large Venetian windows is required, another proportion, different from these, may take place: let the middle void be divided into five parts, two of which give to each of the sides, and the squares will be all equal.

BOOK V. OF INSIDE DECORATIONS.

Chapter I: of the decorations for the sides of rooms in general

Chapter II: Of the practice of the antients decorating their rooms

Chapter III: Of the introduction of columns into rooms

Chapter IV: Of the introduction of pedestals in the finishings of rooms

Chapter V: The oringin of ornaments in plain rooms

Chapter VI: Of decorating the upper part of the wall

Chapter VII: Of the modern decoration of rooms, deduced from the antient practice

Chapter VIII: Of suiting the ornaments to one another

Chapter IX: Of designing a finishing from the principal parts

Chapter X: Of taking the general design from the chimney-piece

Of three principal parts we have named, the cornice, the door-case, or the chimney-piece, either may be the choice upon which to form the rest. The general mistake is, that no part is chosen for this purpose: the doctrine of appropriation in ornaments is not understood in this case; and it is therefore we scarce ever see it decently practiced. We will suppose of these three parts the architect chuses his chimney-pieces for the purpose.

We have supposed it decorated with an order of architecture, and here we are to tell him he is somewhat limited: for that the inferior are more proper for chimneys in these ornamented.

This will seem strange, but we shall make the reason evident; we write upon a subject none has yet considered, and we are therefore to explain all we advance.

All architecture is comprised within certain rules; and they are the same, to whatever part they are applied: where it otherwise this were not a science, nor could it be reduced to a rule.

The reader will recollect, that in treating of exterior decorations of houses, we have laid down as an everlasting rule, that when an order of architecture is employed in a building as a part of its main front, and the window are also decorated with columns; these last should always be of that order which is next in degree below that employed in the principal columns.

This, though a rule not established before, we have supported on the authority of the greatest architects; drawn, though not from their writings, yet from their works.

This rule being established with respect to outside decorations, must therefore hold, according to what we have here shewn, with regard of those within. It follows therefore, that the chimney-piece being the first thing designed, and the fixed point from which the architect is to direct his work in the rest, all is to rise from it in a like proportion.

Thus considering the three parts in the light of their importance, in their place, nature, and situation, the cornice is the principal, the decoration of the doors has the second place, and the chimney the third, or last and lowest. It would have been equal if the student had begun with drawing his cornice, and proceeding downward from that; but as it is all one from what part he proceed, provided he regularly do proceed from some part, we have chosen the chimney-piece as the most natural, and the easiest for the conducting of the whole.

If in any apartment for a middle degree of a decoration, the doors be intended to be executed without columns, then the cornice and the chimney-piece are the only two parts in which the orders are concerned.

The pedestal we have directed already to be constructed with an exact truth according to the cornice; and these forming the principal part, the chimney-piece is to be looked upon as the second, or inferior decoration.

According to our rules before established, the cornice is, in this case, to be of an order next above that employed in the construction of the chimney-piece: thus, if the chimney-piece be Doric, the finishing of the walls should, for that reason, be an Ionic cornice; if the chimney-piece be Ionic, the cornice should be Corinthian.

This pleases the eye, and satisfies the judgment. The chimney-piece is nearest, and it naturally catches the first attention. It is elegant; and therefore the eye, being directed higher, looks for more elegance: if what it sees above were of the same order, there would be a tameness and poorness expressed in it: if less elegant, it would be carrying the eye to what was worse, and that would be abominable.

Reason therefore directs what we have laid down as the true course; the eye is thrown from one degree of elegance to another which is grater: and this is not rashly, or by an unmeasurable start, but soberly and in proportion.

Thus far the student comprehends, that whether he establish the cornice, or the chimney, as his first principle or regulation, provided there be no other order in the room, these must gradually and proportionally rise or descent by a single step, one from, or to, the other.

He will begin to see from this, why we declared against the use of the richest orders in chimney-pieces on this occasion; because there was an advance needed from the chimney to the cornice, and this could not be where the richest was employed below: but we are to name a farther consideration, which is the introducing another part, decorated with an order, into the same room. This third article is the door; and we have only postponed it in this consideration that the rule of construction might be less embarrassed by the number of parts.

It is natural that such a room as we here treat of should have the door-cases finished with an order; and there is no finishing which will give the whole such an air of grace and dignity.

In this manner all will be conformable to the rules of truth, and the practice of the antients; and, if executed with the discretion we are about to recommend, all will be great and graceful.

The door being intended to receive the decoration if an order, has its natural place in this disquisition; the eye ranks it, according to its height, as of a middle kind between the chimney and the cornice; and the judgment gives it the same regard. Therefore the same law of the science which decrees that the cornice shall be of a higher and richer order than the chimney, places the door between them.

In this case the advance from the chimney to the cornice, must not be by a single step, as in the former, where there was nothing to attract the eye between them, but it must be by two steps, the order employed at the door filing up the gap between.

These principles being laid down, we may proceed with our student to practice.

If he will adapt any of his three fancied parts into his new design, he sees how he is to construct the rest according to them. If it be the cornice he preserves, the order to which belongs must be considered: not only the pedestal must be appropriated to that order, but the ornament of the door and chimney must be deduced from it; the door being decorated with that order is next below, and the chimney with that inferior to the order used in the door.

Thus serves as the general rule, and upon this foundation he may appropriate every other part. We have given him in this short lesson the whole ground-work of the practice; and we have in the annexed, and the three preceding plates, represented to the eye several methods of finishings, where the architect is less tried down to rule, and will find all open to fancy.

We hope from the rules on the one part, and examples on the other, he will be qualified for undertaking this matter under any form with truth and elegance.

BOOK V. PART II. OF CEILINGS

INTRODUCTION

(…) Thus he will see the British Palladio, Inigo Jones, conducted himself in these noble ornaments: and thus Palladio himself.

Since their time, such as have studied their works, have formed their ideas, and constructed their edifices upon the same sole principle; nor is it a less glory to the late lord Burlington to have adopted at Chiswick a Roman ceiling, that it would have been to have devised a new one.

(…)

Our people err, not only in the degree of ornaments, but in their very nature; the antients offended in neither of these articles, and it is therefore from them alone we can deduce a juster knowledge.

Chapter I: Of the ornaments of ceilings in general

Chapter II: Of Stair-case ceilings

Chapter III: Of a stair-case ceiling with other decoration

Chapter IV: Of placing the circular and elliptical compartments

Chapter VII: Of ceilings of rooms and their compartitions

Chapter VIII: Of decorating the compartments

Chapter IX: Of finishing a ceiling with all curvilinear figures

Chapter X: Of decorating curvilinear compartments in a ceiling

Chapter XI: The way of constructing a curvilinear division, with smaller side and end compartment

Chapter XII: Of decorating the compartments of the preceeding ceiling

Chapter XIII: Of ceilings of more expence.

Chapter XIV: Of a large ceiling in the true taste

Chapter XV: Of the division into compartments

Chapter XVI: Of finishing the panels

Chapter XVII: Of decorating the panels

Chapter XVIII: Of enriching the compartments

Chapter XIX: Of decorating a ceiling with mixt figures

Chapter XX: Of the shape of the compartments in this ceiling

Chapter XXI: Of the manner of forming the compartments

Chapter XXII: Of ornamenting this ceiling

Chapter XXIII: Of the proper kinds of ornament

Chapter XXIV: Of decorating the compartments in a richer manner

Chapter XXV: Of decorating the space

Chapter XXVI: Of decorating a ceiling in a fanciful manner

Chapter XXVII: Of constructing a ceiling for a music room

Chapter XXVIII: Of the general figure of this ceiling

Chapter XXIX: Of forming the lines of this distribution

Chapter XXX: Of the farther ornaments

Chapter XXXI: Of the more peculiar and appropriate ornaments

Chapter XXXII: Of a large ceiling with mixt compartments

Chapter XXXIII: Of the proper ceiling for mixed figures

Chapter XXXIV: Of the compartition of this ceiling

Chapter XXXV: Of the choice of the figures, and their disposition

Chapter XXXVI: Of the addition of ornaments in this ceiling

Chapter XXXVII: Of decorating a ceiling with a single compartment

Chapter XXXVIII: Of striking the compartment.

Chapter XXXIX: Of filling the central space.

Chapter XL: Of a division of the exterior space.

Chapter XLI: Of filling the space within the compartments.

Chapter XLII: Of ornaments for such a ceiling.

Chapter XLIII: To form a fanciful and very rich ceiling

Chapter XLIV: Of the compartments

Chapter XLV: Of the principal figures

Chapter XLVI: Of the construction of these figures

Chapter XLVII: Of finishing the compartition

Chapter XLVIII: Of the decoration of this ceiling

BOOK VI. OF CHIMNEY-PIECES

Chapter I: Of the general structure of chimney-pieces and their several materials

We are in nothing left so much to the dictates of fancy, under the whole science of architecture, as in the construction of chimney-pieces. Those who have left rules and examples for other articles lived in hotter countries; and the chimney was not with them as it is with us, a part of such essential importance, that no common room, plain or elegant, could be constructed without it.

With us no article in a well-finished room is so essential. The eye is immediately cast upon it on entering, and the place of sitting down is naturally near it. By this means, it becomes the most eminent thing in the finishing of an apartment; and, as fancy is to stand in the place of rule and example in its construction, nothing is more essential than to direct the young architect how he shall employ this wild guide properly: on what occasions he is to give the reins to imagination; and when it is to be limited by method.

This will be our subject in the succeeding chapters, in which we shall endeavour to lay before him all the variety that can be properly introduced; and every kind of allowable ornament: adding to these what he may transport from other part in the antique structures, and upon what plan he may devise innumerable and unexceptionable decorations.

In the present chapter, to advance regularly to the ornaments, we shall first consider the structure of the part, and passing over the slighter, rest upon the more worthy materials.

The square body of a chimney opened on one side from the level of a floor to a due heighth for the convenience of making a fire, and the advantage of receiving its heat, gives the whole idea of the plain chimney-piece; that is a square aperture in one side of the structure with the raw bricks as edges.

Thus is appears to us in the first construction of rooms; thus it appeared to whose whom necessity first taught its use; and thus it stands before the architect to be finished.

The form and dimensions we have considered among essential parts; and its decoration now comes into the regard among those which are purely ornamental.

To trace this matter from its origin, we shall be led to the rise of the first plan chimney-pieces, formed as all other ornaments that have their foundations in a sense of utility, from the inconvenience of the part to be ornamented in its natural condition.

The edges of a brick wall thus furnishing the original chimney, would crumble and break of; and they would be inconvenient to those who sat near them by their roughness and soulness. To take off this disagreeable look and inconvenience at once, a frame of wood work was carried round it, a board on each side, and a third at the top; and this upper one, whose thickness first seemed as a ledge to hold things, gave to the mantelpiece, not so common and so proper and ornament to the construction.

The first improvement was painting these boards; and the next was supplying their place with more proper, or more ornamental materials. Stone was fitter to be near a fire than wood, because no liable to the accidents of burning; and the use of this soon introduced that of marble.

The stone chimney-piece, while it banished the fear of fires, renewed the other inconveniency of the original chimney, though in a less degree; for though less soul than brick, it was not near so cleanly as wood. Here marble supplied the deficience; as secure from fire as stone, and more beautiful than wood, as well as more cleanly.

Chapter II: Of simple and continued chimney-pieces

This far the first efforst of the rude architecture in early time carried the decoration of the chimney. In after ages, a variety of marbles, exceeding one another in beauty, took each others place in magnificent apartments; and to these first the sculptor added the graces of his art; and afterwards the architect, judging the construction of the ornament not unworthy his most serious attention, enriched it with columns and their entablatures, till the workmanship eclipsed the best material.

We shall consider in the succeeding chapters; the variety of materials the ancients had for their greater purposes, most of which remains for our service in these articles; and shall then treat of the addition of ornament. We have, in our first book, given a general idea of the kinds of marble, and shall here avoid repetition, and consider which kinds can be best applied to each purpose of ornament in this part of elegant room.

In order to ascertain the propriety of the peculiar kinds of marble we shall recommend, for it is not every one we can recommend to the architect for his purpose, we shall first consider the chimney-piece as suited to rooms of more or less elegance, by placing it before him in the two general conditions, simple, or continued to the ceiling: by simple, we mean a chimney, which terminates at its mantle-piece, or by a pediment, or other such ornament over it: and by this kind of chimney, continued up to the ceiling we understand an entire work finishing that part of the room, and consisting of the proper or simple chimney and ornaments above correspondedt to it in breadth; leaving a panel for a picture, terminated at the height of the room, with sculpture, accommodated in nature and degree, to that of the lower part.

These are the two general ideas the student is to entertain of a chimney-piece; and this he will understand we mean in the succeeding chapter. When we name a simple or a continued chimney-piece.

Those kinds of marble may be very suited to the one of these, which may be altogether improper for the other; for the continued chimney-pieces we shall give for many purposes the upper work is to be of wood or stucco, plain or gilded; and in all these cases there are rules to be had from its nature and intended surface, for the kind of marble which will be fitted for the work below.

That nothing may be spoken in the succeeding part of this disquisition which the student will not understand perfectly from the beginning, we have added to this number of two figures, one a simple chimney-piece, intended for a common-parlour, in a good house; and the other great apartment. By the figure 84, the simple chimney, the young architect will see, that we do not under this term exclude ornament; we only limit the extent of the work to the proper circumference of the opening in the chimney, without consideration of what comes above it.

By the second figure 85, he will see we mean a chimney from which an ornament is continued to the top of the room, which is connected with it, and properly a part of it.

<u>Chapter III: Of the serious ornaments of chimney-pieces</u>

When we have introduced the student to the first distinction and general division under which he is to reagard this part of a room, we shall consider the various ornaments of which each kind is capable. With respect to their appropriation and use, he will find that the simple chimney is best suited to a papered or plain room, or to one that has little additional decorations; the continued kind to those which have higher finishings; and he will find that the whole praise of this work will depend upon the suiting this continued ornament to the rest of the finishing.

Both the one and the other are susceptible of all the grace of ornament, and in these two figures we have sketched the various kinds by common sculpture.

We shall afterwards treat of the distinct kinds of decoration, which are proper to either in particular, or common to both; and shew the use of columns and similar decorations; in figures of chimney pieces, suited to various degrees of expence.

From these we shall proceed to the introduction of figures; the Caryatick, or Persian orders: and having in that manner settled the idea of the student, respecting the variety of kinds, shall give designs of the various species suited to different prices, and the elegance or plainness of different apartments.

Chapter IV: Of the appropriation of the materials to chimney-pieces

Upon the before mentioned distinction we shall be able to speak intelligibly to the student with respect of the different kinds of marble, and their proper use. When we can be distinctly understood what is the character of the simple and continued chimney-piece, that with mere sculpture, that with columns, and that with figures, we can without tediousness explain, what is the kind of marble suited in general to either purpose.

Having given this distinction of chimney-pieces, that of marble follows; the nature of the materials being a proper appendage to the variety of works.

We shall consider the several species particularly hereafter; but for the present it will be necessary t establish only one general distinction, this is, into the plain and variegated marbles.

By the plain, the student is to understand those marbles which are throughout of one colour, whatsoever that be; and the variegated, such as have more than one colour, however disposed.

Of this latter kind there are a great number, and they have their variegations in different manners and degrees, but in whatever degree or form they are distributed, our rules to be established in this place suit them alike.

Many of the variegated marbles are very expensive in the first purchase, and dome of them have a vast additional charge attending the cutting. Those to whom expence is a recommendation (and there are too many of that class) determine generally by this, and allot the most expensive kinds for the richest chimneys: but let our student guide himself by better rules: let him consider to what purpose each will best serve, which have the most compact substance, and will best answer to the artist chisel, and which from their shattery nature are to be wrought plain.

This is a rational and great distinction: the architect that goes to work without this consideration, and without a knowledge in the nature of the several kinds, will involve his proprietor in expence to no purpose, and hurt his own reputation.

This is a distinction founded on the nature of the materials; and is therefore to be observed inviolably; but there is also another scarce of less importance, though much less regarded, which results from their plain or mixed colouring. The ancients were aware of the effects of this upon the eye, and they conducted themselves in general accordingly. There are exceptions: for there were unavoidable necessities in some cases, and there were among them some workmen of less judgment; but in general the rule by which they guided themselves was this, when they intended a great deal of ornament, they employed a plain marble: and where they proposed less workmanship, they allowed the most variegated kinds. The reason of this is evident, and it is wonderful that all ages have not attended to it; the beauty of sculpture depends upon light and shade; and therefore every thing which disturbs the light in this respect, defeats the purpose of the artist. Any thing creates this disturbance that occasions a different reflection of the rays of the light; and we know that the rays differ from every colour.

The shades give the eye all the idea it has of this great ornament; and these are diversified when the light is reflected from an object in different colours.

Therefore for all sculpture rule and ornament, the best material is that which is of one simple colour.

This is an invariable rule; founded upon unalterable principles in the nature of things: and this the young architect is to make the first guide of his conduct.

This will him upon a determination very different from that we have named as the common opinion of common judges: instead of bestowing the richest coloured marbles upon those chimney-pieces where he intends the greatest expence of ornament, he will reserve these painted kinds for such as the intends should be wrought with less assistance of the chisel; and he will adopt for these high sculptured pieces always a plain marble of one uninterrupted colour.

Chapter V: Of the choice of marbles for particular chimneys

This which we have delivered in the preceding chapter is to be an essential rule for the architect in his choice of marbles; but the degree of ornament are so many, that he is not to suppose coloured marbles excluded from them all. Let us bring this subject to the particular enquiry allotted in the former division.

Usually, simple chimney-pieces have less sculpture than the continued kinds. Therefore, as one general rule, he is to observe that of the two kinds, the variegated marbles are best suited to the simple, and the plain ones to the continued chimney-pieces.

This is not a rule without exception, for a great deal of sculpture, may, without any absurdity, be allowed in some cases to a simple chimney: and in the same manner some of the finest designs for the continued kind may be of species wehre proportions takes the place of ornament by sculpture.

In these cases, as the chimneys themselves are wrought in a manner different from the natural and accustomed method, the materials must be suited to that alteration: a plain marble, will, in the eye of reason, be prefereable for such a simple chimney, while the continued one will properly receive all the luster of various colouring.

In the two instances we have given, in the plates 84 and 85, the matter is moderated on either side, and they are such, as may admit the use of either plain or variegates marbles in either; but upon the whole, the inverted rule would be proper;, rather than the general doctrine.

Thus if the parlour chimney-piece, (pl. 84) be considered as one of the simple kinds, a variegated marble would be, at first thought, allotted for it; and in any of that kind it would make a handsome figure: but if we consider the dolphins, the faces, the ornament of the sides, and the sculpture allowed to the mouldings, we may, very properly make the exchange, and prefer a plain colour.

Let us suppose this chimney wrought in each way, and we shall by that be best enabled to judge.

If it be done in one of the clouded marbles, (the common purple and white for instance) the plain part, which is considerable, will shew the polished surface to advantage, and the vases will make a very graceful figure: but in the dolphins it will begin to appear irregular; in the faces it will be confused, the features will be scarce distinguished by the eye from the mixed perplexity of the colours; and when we come to the little foliage, and the sculpture of the mouldings, all will be confused, imperfect, and irregular to the sight, thought it have proceeded for the hand of the artist in the highest perfection.

Let us now take the other side, and suppose the same design wrought in statuary, or plain white marble: here the plain parts will be very graceful, because a plain surface of a well-polished white is very agreeable: the fishes and the faces will be perfectly distinct, and the eye will follow the least strokes of the chisel with perfect regularity, as it traces the several mouldings.

Therefore, upon the whole, when a chimney of the simple kind, has this degree of ornament, it is better to allow it a plain than a variegated marble: and when there is yet more sculpture, the advantage lies all on the side of the plain colour. We have given this as the extream of ornament, in which a judicious architect should ever allow a clouded or veined marble to be used;a nd the rule is universal on the other hand, according to the first determination, that in all simple chimneys, where there is less sculpture, as it usually the case in those kinds, a clouded or figures marble is preferable. The use of these variegations in the marble, in the hand of a good architect it ot hide a deficiency of work.

On the same principle, our continued chimney piece, (plate 85) which is much less decorated then the succeeding designs we shall give in that kind, and as little as a chimney of that construction ever should be, instead of a plain marble, which is the kind we have recommend "for the construction of this chimneys" in general, a coloured one may be very will be used.

It is true, the faces will be less distinct than when the marble is plain, and the sculpture of the mouldings will suffer to the eye, whatever justice it hath received from the hand of the workman; but when so much pomp is intended as so moderate an expence, and the labour of art has contributed in so slight a degree to it, the high colouring and beauty of the marble will assist in the design, and serve happily to suit the chimney to the luster of the other parts of the room.

These are the variations, which the general rule we first laid down admits; and having given them their full and fair scope, we may proceed in the course of nature and reason, and in respect of all succeeding designs, adapt the materials to the work upon the general plan.

Chapter VII: Of a Doric Chimney-piece

Chapter VIII: Of the disposition of the columns

Chapter IX: Of finishing the order

Chapter X: of the ornaments of the rest of the chimney-piece

Chapter XI: Of the kinds of marble most fit for this chimney

Chapter XII: Of a chimney-piece with figures

Chapter XIII: Of a chimney with the Caryatick order

Chapter XIV: Of the construction of the figures

Chapter XV: Of the drapery

Chapter XVI: Of the construction of this chimney

A great deal is now done towards the general construction of the chimney-piece; for it considering the several parts, we have observed, that there are to be two females figures supporting an entablature, whose top serves as the flat of a mantle-piece. We have established is as a necessity, that the whole work be of considerable extent; and there remains only to place the figures, and add an inward ornament to compleat the structure.

Let the figures be placed near the entream edge, but not absolutely upon it, for they will be the better shewn when a part of the flatwork projects beyond them; and they will also be more secure.

Let a kind of plinth be placed under them, for it is by no means proper they should rest immediately upon the hearth; and this will serve the same useful pupose in preserving the toes from injuries, that the freeze of the entablature answered for the defense of the hands. They may be disposed both firmly upon it, and be made of one piece with it; or that foot which projects forwardest, and is there in most danger of hurt may be so disposed, and the other which is backward may be made with more freedom, to rest lightly upon it by the toes, or if the sculptor pleases to be absolutely removed from it, it will be safe from its position; and he may employ all his delicacy in constructing with security.

As the foot rest upon a plinth, the head is crowned by the entablature. It must be brought forward to answer the projection of the figure: and this will give a relief of light and shade to the whole, and be an ornament to the construction.

As there is a small space of the back beyond the figure on each side; there must be a larger within, and this will require decoration; every architect knows this, and the fault is commonly that of employing too much.

The opening of the chimney will be much lower than the mantle-piece; or, properly speaking, there will be a considerable space between the ornaments of that aperture and the lower member of the entablature: this must be allowed some ornament, but let it not be too much. A vase be very proper in the middle; and a festoon on each side to the edge. The ornaments which surround this aperture must be handsome mouldings. They must not be continued to the level of the hearth, but terminate at the bottom on a plinth of the same form with that which supports the statues. These may be ornamented with sculpture; but it is an expence better saved. There is a corespondency of parts which is preferable to decorations of fancy; and this is only to be found in such construction in plainest.

We have given the student his choice in the two sides of our figure, but every eye must give the preference to the plain mouldings. In this case the figures appear a part of the work, in the other they seem stuck upon it.

Chapter XVII: Of the material of this chimney

The first principles is, that the figures be of pure marble, of one simple colour; and none is so proper as the plain white, which we known by the name of statuary marble. If the whole structure be of the same, none can object to it; but there will be elegance in giving the back and body of the work in marble of another colour.

There will be great beauty in making the body of the chimney of the green and white marble, which is commonly called Egyptian; but the greatest elegance of all would be to work in porphyry. The common purple marble would not answer the purpose, because the spots and clouding would confuse the eye; and as it is not easy to find a person of such expensive taste as to go to the price of porphyry, we shall propose to make the back of Syenna marble: this is of a colour which very finely shews white, and will elegantly answer the purpose; and finely ornament the figures.

We have added to this number for the use of the practical student, two designs of handsome chimneys at a smaller expence, and suited to the common purposes. These need no explanation.

Chapter XVIII: Of a chimney-piece whose sole ornament is sculpture

Chapter XIX: A Chimney-piece with single Doric columns

Chapter XX: Of the several parts in this chimney

Chapter XXI: Of the materials for this chimney

Chapter XXII: Of a chimney with termini

Chapter XXIII: Of the construction of this chimney-piece

Chapter XXIV: Of the material for this chimney-piece

Chapter XXV: Of continued chimney-pieces

Chapter XXVI: Of propriety in the ornaments

(…)

With regard to the first article, we have in general observed already, that a continued chimney-piece can only be proper where there are ornaments of sculpture about the room: for otherwise there will be nothing with which it can correspond: therefore, against all other considerations, let him design at all times a simple chimney-piece for a room that is hung, and continued one for a room that is finished any other way.

No wainscot is or can be made without panels; and it will be easy to make the upper part of a continued chimney-piece correspond with them, let them be of whatsoever kind.

This would recommend to the attention of the builder, even in the plainest and meanest rooms. There will be a regularity in it which will never fail to please, and the expence nothing. In this cse no more will be required than to form a regular design of an upper part for the chimney-piece intended to be placed there, and to execute it with the common mouldings of the panels.

There will be no more expence in disposing them properly than improperly, regularly than irregularly; and yet the effect will be pleasing, and the architect will have credit.

A design of this plain kind may be taken from some of those we shall give in the succeeding chapters, only omitting the sculpture and expensive ornaments. A few pieces of mouldings extraordinary will in these cases add a vast grace to the room, and please every eye.

This is not all we have in view in describing such a plain continued chimney-piece. We have, in all other articles of the science, begun from the simple original, and thence let the student to the refinements of the art. This is the familiar original of all continued chimney-pieces,a nd he will from this be naturally led t those which are more elegant.

(…)

Chapter XXVII: Of enriching a continued chimney

Chapter XXVIII: Of suiting the upper work to the room

Chapter XXIX: Of the upper work

Chapter XXX: Of the decorations

Chapter XXXI: Of a richer continued chimney-piece

Chapter XXXII: Of the ornaments

Chapter XXXIII: Of a simple chimney-pieces, with various ornaments

Chapter XXXIV: Of the ornaments.

Chapter XXXV: Of a marine chimney-piece

Chapter XXXVI: Of the decoration of this chimney-piece

Chapter XXXVII: Of a small chimney-piece with sculptured moulding

Chapter XXXVIII: Of the decorations of such a chimney

Chapter XXXIX: Of a chimney-piece for a room more enriched

Chapter XL: Of the ornament of this chimney

Chapter XLI: Of a chimney-piece, and wind dial

Chapter XLII: Of the construction of this chimney-piece

Chapter XLIII: The lower part in this chimney-piece

Chapter XLIV: Of the ornaments of this chimney-piece

Chapter XLV: Of the decorations for the rest of the lower part

Chapter XLVI: Of the superstructure

BOOK VII. OF EXTERIOR DECORATIONS

Chapter I: Of Piers

Chapter II: Of the propriety of piers

Chapter III: Of the construction of piers

Chapter IV: The manner of using the Corinthian in a pier

Chapter V: Of the construction of a Corinthian pier

Chapter VI: Of working the order

Chapter VII: Of the disposition of the column

Chapter VIII: Of the decoration for a garden

Chapter IX: Of the great beauties of nature

Chapter X: Of buildings adapted to particular occasions

Chapter XI: Of various places for seats in gardens

Chapter XII: Of the choice of ground

Chapter XII: Of the disposition of ground

Chapter XIII: Of buildings proper for such a garden

We have led our student to the idea of a great and elegant garden; and we shall shew him with what buildings it should be enriched.

Let him remember these must not be crowded upon another. Too many take away that idea of nature we have so strongly labored to inculcate, and so earnestly desired should be preserved.

As they must not be too numerous, neither must they be all erected in conspicuous places: their nature and their proper offices are various; and they will become different parts of the garden. Full in the fight may be disposed an edifice which terminates a view by design, or hides some distasteful object. This should be large without weight, noble without gaudiness, and elegant in its simplicity. Such a building we have designed in our 103 plate; and having annexed the plan of it, the student cannot be perplexed in reducing it to practice.

In some retired part of the garden there may burst at once upon the eye a temple with its dome, plain, elegant, and proportioned: such we have given in plate 102. Its depth will give room for useful purposes, and in the centre may be a noble bath. The building will allow a holl before it; and a recess behind for dressing and undressing. We have given the plan of the building, by which a convenient compartition of the space may be laid out; and the utility of this structure will be a consideration not less than its beauty.

In the construction of either of these the same taste must prevail; and this two words deliver, elegance and simplicity. A flutter of ornaments would be absurd and detestable; and the want proportion would be as displeasing and unpardonable.

The building most exposed to shew may very naturally and very well bear the addition of an irregular rustick at the corners, and at the principal part in front; but in the other there need be nothing of this variation of work; and a pure and perfect simplicity will perfectly become it.

The order we have allowed it is the Ionic; and as the columns are so few this will be no great expence; for the rest, the perfect way of raising it will be with plain and simple walls cased with smooth stone.

This construction will give an air of cleanness and solidity: the water in the bath will be preserved more cool; and whether in its new and unsullied beauty, or stained with mossy green and various tincts of meer antiquity, it will become the place with equal splendour.

Chapter XIV: Other Pavilions

Chapter XV: Of the disposition of flower-beds

Chapter XVI: Of water

We have omitted to this place the consideration of the water properly to be introduced into gardens, that we might treat of it without interruption. This is an essential article, though many have contrived to make gardens either without it wholly, or with but a poor supply. They have been wrong: because they denyed themselves one of the greatest benefits of nature, and one of the first decorations to the garden. The situation we propose will not admit a quantity of stagnant water, not could any one desire that; but there will be with good choice a quantity sufficient for the purposes of pleasure and service.

Coolness is one of the great articles for which we value a garden, and this we can never so well have, even in idea, as by means of water. The whole ground will be refreshed by it, even to distances, that it could not be so well supposed to affect; and the groves will all be fresher and more pleasant.

In our proposed plan it is probable something may be done by way of fall, and it this be ever so little, it will be still agreeable. The murmur of water on the slightest decline of ground is pleasing, and the more that decent, the nearer it approaches to the fiercer beauties of the cascade. The pleasing noise that water interrupted in its course makes, always composes the mind, fills it with the ideas of those poetical descriptions we have read, and places us in the scene with fancied nymphs and deities of the rural kind, as from immemorial time these writers have described them: it gives that cast of sedate and composed thought which makes a natural part, and a very considerable one, of all rural enjoyment, and by the various disposition always adds a new beauty to places where it is wanted.

If there be any thing in which the old taste was worse than in the cutting of trees and figuring of parterres, it was their management of water; the artificial was all they sought; and this has been of ten introduced under foolish forms at an expence that would have drawn in a river. We see in such gardens stone-basons with some image in the centre, which once a year, or perhaps once in a seven years, spouts up a stream for two hours, like a burst water-pipe; and for all the rest of the time we find the furred, and the soul bason half filled with stinking water, green with overgrowing moss, and the habitation of newts and frogs.

Water to be agreeable must be clean; and it should be continual: in whatsoever form it once appears, that it should have for ever. We do not come into a garden to see tricks and seats of art, but agreeable nature. The least stream that runs constantly is a treasure above all valuation; it may be extended, enlarged, and turned about a thousand ways, and all with little expence. With the advantage of a slight fall, heads may be made to convey it over parts where it is wanted; here it may swell into a bason, and in another place its stream confined within narrow bounds may run swift in a deep, clean channel, paved with large, loose gravel. Here a beam laid cross shall give it a fall pleasing at once to the eye and ear; and there its own rapidity down a small descent shall, with the interruption of some large pieces of stones thrown loosely into the middle, or raised at the sides, curl and twist, and form itself with a mixed noise of rattling, murmuring, and bubbling, into a thousand shapes of fleeting clouds. Where swift and shallow, it shall shew its gravelly bottom washed every moment by its course, and shining with an artificial polish: where deeper and more quiet, it shall reflect the flowers which the ingenious gardener plants on its green verge for that purpose; and every lilly shall be doubled.

The stream may be admitted through a piece of plain and natural rock-work; and may go out unseen. Thus will be compleat all that water can do, which is agreeable to the eye or ear, and all that should be expected from it in a garden, and this at an expence much less than the foolish work of fountains.

Near some expanded part of this may be erected one of the temples we are about to describe; and this will have the new grace of reflection, if well contrived, from some frequent part of the garden.

Chapter XVII: Temples in garden

BOOK VIII. OF BRIDGES.

Introduction.

Chapter I: Of fixed bridges

Chapter II: Of wooden Bridges

Chapter III: Of bridges if one arch

Chapter IV. Of the construction of such a bridge

Chapter V: Of wooden bridges over larger rivers

Chapter VI: Of Stone Bridges

Chapter VII: Of the form and covering of arches

Chapter VIII: Of the duration of stone bridges

Chapter IX: Of the construction of the stone bridges

Chapter X: Of dividing the water

Chapter XI: Of bridges without decorations

Chapter XII: Of more magnificent bridges

BOOK IX. OF THE CONSTRUCTION OF ELEVATIONS UPON TRUE PRINCIPLES OD ARCHITECTURE

Chapter I: Of Corinthian front

Chapter II: Of accommodating the orders to the building

Chapter III: Of the modern practice

(…)

The occasion of a liberty may sometimes plead in its excuse: nay, we have seen where it turned the bold fault into merit. The antients when they reduced or extended the parts of an order, reconciled it to their own minds by the forms of the other parts of the building which came in view with it. If they shortened the capital, or lengthened the shaft beyond what would have been their practice in the absolute construction, they reconciled it to their own minds, when they considered it in the relatively to the other parts: this they would have given for answer if questioned why they had done it: and though we have not their apologies in their writings, their works speak for them. Of all those antient edifices where enough remains for such consideration, we see at the same time the variation from ordinary rule, and the reason for it: while we observe that the column is not constructed according to the general rule, we perceive also that it suits the rest of the front better than it would have done if had been soo constructed as to answer general measures. Thus whenever we see their variations we see the cause; and add to this we always find them little. On the contrary, in modern practice we see the violent liberties taken in proportioning the parts, and the most inquisitive eye cannot distinguish the reason.

There appear columns whose proper construction and right capital would perfectly have suited the elevation and degree of ornament, but we see the wildernesses of a childish fancy employed instead of that precision which would have arisen from knowledge; and a front where the expence has been sufficient for a great elegance, covered with fantastic forms; a building executed at a time when the science of architect I well understood, yet sunk into a kind of barbarism; so much the more unpardonable, as the vitiated parts shew he who used them did not want, however he perverted the means of knowledge.

(…)

<u>Chapter IV: Of false reasons for this practice</u>

<u>Chapter V: Of the right practice on these occasions</u>

<u>Chapter VI: Of the necessity of practice</u>

<u>Chapter VII: The conduct of Palladio in this instances</u>

<u>Chapter VIII: Of the height of windows</u>

This extream is the worse, because the common construction of our rooms is deficient in this particular; and all our windows would be more agreeable if they came lower.

The purpose of looking out cannot be obtained but sitting in them, or standing up to look through them. It would be much more pleasing that the company as they sat in the usual places could see before them, whether it were the fields, the garden, or the street.

This may be done without transgressing the rules of science; and we see it done often in the neighbouring countries; and sometimes here.

In France it is no unusual to bring the windows down to the level of the floor, and to run a brass rail before them to keep off feet, and prevent accidents.

This is not the perfect method, for in nothing is perfection obtained at once; the rail is awkward: it cannot be considered as any proper part of the finishing or furniture of the room. It resembles those coarse contrivances to keep children out of the fire, and in that sprightly nation a man is often thrown by it upon the window.

The propriety would be to bring down the window so far that the command of the prospect should be within the reach of the eye sitting, and no lower. The rest is unuseful, and the lowest part most offensive. Less than is commonly thought would answer this purpose; and in the Corinthian front before given the reader will see a method of doing it on all occasions.

That article of accommodating the inner construction to the measures of an outer order, is the most difficult that can occur on this occasion; and we have shewn how it is to be regulated. The same method which will succeed in the most difficult cannot fail to answer in that which is less so; and the student will on the same principle find it easy to manage the lesser appropriation.

In regard to this edifice of Palladio's, we have shewn in what it is plainly defective; and though it be an unprecedented presumption to say what would be better in Paladian structures, we shall venture so far as to observe, that if the English artist should chuse to erect an edifice upon the same principles, he would do well to accommodate the inner and outer parts of this lower floor, according to the principles laid down in our first floor of the Corinthian, in which we have explained this Doctrine.

What we say does not amount to the liberty of finding fault with what that great master has done in this instance. We do not know the use to which those lower rooms were put by the noble proprietor of the building; or for which they were intended. We know what would be their use in this country; and as we see the propriety of placing the windows so as to admit the common use of looking out at them, and seeing through them: we also know in what manner the floor may be placed to give these advantages; while all the propriety and exactness of method is observed without.

Chapter VIII: Of farther improvements

(…)

While these restrictions must the British architect form his designs upon those of modern Rome, in great and sacred buildings; nor is less required in the common houses. The bright sky of Italy is very different from the foggy air of this island; and we have observe before, that it requires consideration to adapt the measures, in him who copys buildings from thence.

A smaller aperture admits light enough where the light is itself stronger and less encumbered; and one rule of these parts may hold where the whole year affords the same degree of light, or nearly so: with us the builder, who should calculate nicely his proportion of light for a bright day in summer, would shut up the inhabitants more than half the year in dungeons. Our houses a century ago were too light, and the best built are not too dark. Thick walls with their broad, plain sides contribute to darken the room into which too little light is originally admitted; and it is not the shelving off the angle that will make the due atonement. It will be necessary to enter upon a new calculation on these occasions; and even wehre there are no errors in the Italian structure, yet to adapt it to the service of the country where it is to be raised.

Chapter IX: Of retrenching errors

Chapter X: Of the method of studying the writers on architecture

This is the plan upon which he who deserves the title of an architect will study the work of others of that character: thus he will consider the structure entire, and by the same strict rules he will judge of the several parts. But let the student remember that it is after he has made himself a master of the theory of the science, that he takes these liberties (even supposing them confined to his own mind) with those who have made themselves immortality by the practice. The world is in a state of improved knowledge, and every one to whom he takes upon him to speak on such a subject will be able to judge whether these freedoms be the result of fancy or of knowledge. No contempt can be greater than that which will attend him who censures Palladio's works before he has read those principles of Vitruvius on which they are established; no honour too great for him who having read and understood those rules, remarks upon that practice with a modest freedom. He who proceeds thus sets himself upon a level with the great Italian in the knowledge of the science, before he presumes to consider the works which shew his genius; and while he will allow that great man his due praise, yet name his imperfections, he will shew that he is able transfer the structures of one country to another; where necessity and the difference of climate compel him to alter, and what his genious may induce him to improve.

This he may do, but this such as he alone can: to tohers the practice of that great man must be sacred; because it is supported by his character, and superior to their understanding.

Vittruvius has no obscurity to those who consult those remains on which he built his principles; nor will there be a beauty or an imperfection in the works of Palladio hid from him who first has understood that writer, and formed upon his rules a judgment of the science.

We now write to an established architect, for he who has gone through this work and cannot assume that character has read to little prupose; and to him we shall observe, that Desgodets furnishes the best comment on Vitrivius; and that Palladio should be judged by those rules on which he is known to have established his practice.

Thus considered, they will both afford, beside the common fund of knowledge, new lights to the subject: the architect will be able to select from both without copying either; and to accommodate in such manner the parts to their offices, that the whole shall be his own, while things beyond invention are known to be borrowed; and he shall have, and shall deserve the credit of novelty, where there is nothing but what may be supported by the remains of antiquity, the writings of the great Roman, and the works of the no less great Italian Architect.

BOOK X. OF SCIENCES AND ARTS SUBSERVIENT TO ARCHITECTURE.

Introduction

Chapter I: A System of arithmetic: addition, substraction, multiplication, division, the golden rule, geometry, perspective is a branch of the opticks.

Chapter II: mensuration; we shall thus give mensuration at large; mason, plumber; joyner; plaisterer, glazier; smith; painter; digger; bricklayer; slater; carpenter

INDEX: ALPHABETICAL ORDER OF THE WORDS

AUTOR	Stephen Riou
TÍTULO	THE GRECIAN ORDERS OF ARCHITECTURE DELINEATES AND EXPLAINED FROM THE ANTIQUES OF ATHENS: ALSO, THE PARALLELS OF THE ORDERS OF PALLADIO, SCAMOZZI AND VIGNOLA, TO WHICH ARE ADDED REMARKS CONCERNING PUBLICK AND PRIVATE EDIFICES, WITH DESIGNS
AÑO PUBLICACIÓN	Londres 1768
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NOTAS SOBRE EL LIBRO	El libro empieza con: - Agradecimientos - Lista de suscriptores - Prefacio - Una explicación (An Explanation) THE GRECIAN ORDERS OF ARCHITECTURE TABLE OF CONTENTS ➢ Chapter I: Introduction ➢ Chapter II: Of the orders ➢ Chapter III: Daviler's Comparison of Profiles… ➢ Chapter IV: Of the Doric. ➢ Chapter V: Of Pedestals. ➢ Chapter VI: Of the Corinthian Orders. ➢ Chapter VII: Of the Appertures, of Doors and Windows… ➢ Chapter VIII: Some Parallel Remarks upon the three Orders. ➢ Chapter IX: Of placing one order upon another. REMARKS Concerning Public and Private Edifices: ➢ Chapter I: General Hints concerning the Modern Architecture of Europe. Brief Accounts of Some eminent British Architects. (p 53). ➢ Chapter II: Some general reflections about the Embelliment of Towns and Cities. Of Public Edificies. (p 58) ➢ Chapter III: Practical considerations. Distribution of Plans. Explanations of ten Designs (p 61) En el capítulo I habla de la evolución de la arquitectura en Europa y de la biografía de arquitectos ingleses: Henry Wotton, Inigo Jones, Ralph Bathurst, Christopher Wren, James Thornhill, John Vangbrough, William Talmar, William Willson, James Gibbs, The Earl of Burlington, Willian Kent. En el capítulo II, hace una reflexión de cómo la arquitectura embellece las ciudades. En el capítulo III habla de construcción: dice que la construcción tiene 3 partes básicas, los cimientos, las paredes y la cubierta. De los cimientos dice que son fundamentales, hay que tener cuidado donde se cimienta; si hay roca, ésta ya puede ser un buen cimiento, pero que previamente se ha de regularizar, para que el edificio está cimentado en plano; y que el cimiento ha de ser el doble de la pared de planta baja, que es la que apoya directamente sobre los cimientos. De la pared, destaca que ha de disminuir el grosor a medida que suben las plantas, y la importancia de las ventanas en ella: hay que iluminar los espacios y son necesarias, pero demasiadas o demasiado grandes, provocan demasiado frío en invierno y calor en verano. Con respecto a la cubierta, destaca su importancia, y sus proporciones.
COMENTARIOS	Es un volumen grande, de la página 1 a la 53 habla básicamente de los órdenes, como calcularlos, las diferencias entre ellos, las proporciones y hay varios diseños preciosos y muy exactos sobre el tema. A partir de la Página 63 que es el tercer capítulo de los "remarks" es cuando podemos extraer "saber constructivo" te lo explica todo sin grandes números, para que te hagas una idea de cómo ha de ser la construcción. A parte hacia el final te da unos "planos tipo" de cómo han de ser las diferentes tipologías constructivas en función de su uso. No dice nada nuevo, pero la verdad es que la última parte es muy clara e instructiva, a parte de que el libro en si es bonito.

Notas Ficha Riou.

Chap III (p 61)Practical considerations. Distributions of plans. Explanation of ten designs.

Whoever intends to build should previously be informed by the designs of the artist of the plan, it's elevations and sections: and whenever the building is considerable, it should be recommended to have the model of it in wood or paste-board; at the same time the estimate of the expences should be considered, that no impediment may happen on their account.

The drawings intended for the use of workmen, must be correctly made out, and for fear of mistakes, the heights and breadths, &c. are al to be set down exactly in figures.

The several materials used for a building, should be collected together in time, at the intended place, and in such quantities as to occasion no delays; for if the walls are not carried up equally in all their parts, there may be danger of some of them settling, notwithstanding all the care of the most expert and diligent workmen.

It is always necessary to examine attentively, the qualities of materials, in order to insure both strength and beauty in the workmanship.

It is always necessary to examine attentively, the qualities of material, in order to insure both strength and beauty in the workmanship.

An edifice is composed of three principal parts

I. The foundation, which bears up the whole mass or pile.
II. II. the walls that enclose it, and those which divide it
III. The roof that covers it.

Every part of the foundation must be solid, and in proportion to the mass to be laid thereon. As different soils require different methods of securing the foundations, no particular rule can be prescribed, but upon the spot. However, in general, it may be said, that there is no trusting to old foundations for a new structure, that where the quality of the earth is of different strata in the spot intended for a building, as loam and sand, the ground must be dug by steps, in order to find the same bottom throughout the whole extent of the foundation, or it must be planked. Some swampy grounds require planks and piles: all these things the sagacity of the architect is best able to determine from the circumstances themselves. We shall only observe, that depth of foundations is less necessary than breadth, for the security of the incumbent walls, because breadth gives them a sole or patten, whereby they are preserved from falling by any inclination out of their centers of gravity.

The thickness of walls is to be determined by their uses and heights, and these, as we have shewn occasionally, by the orders. The thickness of the walls of a house, must be diminished at every story, because the foundations should not be loaded with an unnecessary weight. The best method to diminish walls, is, that the middle of the thinnest part be over the middle of the thickness; but if one side of a wall must be perpendicular, let it be the inner, on account of floors and cross walls, then the diminished part without is covered with a plinth or cornice; this will be both ornament and strength.

This leads us to speak a word of false bearing, one of the greatest, real and apparent faults in a structure; a false bearing may be said of any part that is not sustained directly from the ground, so that solid may always rest upon solid; any columns, pilasters or piers that bear upon the crown of an arch, or upon the projectures of platbands or trusses in the air, are so many false bearings. Gothic edifices abound with these abuses; the old houses which project at every story into the street, to gain in the air what would have not been allowed on the ground, are absurdities against the first mechanical principles of building, which require that the bas eof every structure should be broader than the summit.

Windows are apertures left in the walls of an edifice, to admit a necessary quantity of light and air into the interior parts. For this reason, windows in large apartments are made twice as high as they are abroad; they admit of more light than square ones, and the proportion becomes more beautiful being 1:2. The wall between two windows is called the pier, or interfenestration : when windows require to be made very large, as for a stair-case, gallery, a chapel or a church, &c. it is requisite to make their upper parts circular, because an architrave drawn in a right line would not be strong enough to support the weight. Indeed over all windows, occult arches behind the external course of materials, should be turned to discharge the weight from above; without this caution there would be great risk of the lintels and architraves breaking.

The upper windows in any edifice must be placed directly over the under ones, this is not only indispensable by the laws of solidity, which require that solid should rest upon solid, but also by the rules of symmetry, which require the same distribution in the upper and lower parts.

The above considerations for the height and breadth of windows are hinted to avoid that disagreeable obscurity which reigned in the apartments of most of the antient barbarous buildings: the advantages they claim, which are not to be neglected, are, that they excluded cold in the winter, and heat in the summer; but such lodgings have all the appearance of caves, and make it necessary at noon day to bring the light of lamps and candles, since they were constructed impervious to that of the sun.

The contrary mistake of too large windows, or what is the same, of too many windows in a certain space, are carefully to be avoided; the winters cold, and summer’s heat, penetrate into the apartments, notwithstanding every contrivance to exclude them: now dwelling is intended to secure us against the injuries of the weather, and to receive light; therefore the size and number of the apertures for windows, must be proportioned to the places they are intended to enlighten; all these several places bearing a certain analogy to the whole edifice, the windows in them should also have their apertures proportioned to the whole.

The interior architraves of the windows should be sufficiently below the ceiling to allow for a cornice to the room.

The lower part of the window should be about three feet from the floor, and there should be no internal thickness of the wall, to prevent anyone from standing up close to the sash.

If a chamber is twelve feet high in clear, from floor to ceiling, the cornice may be allowed twelve inches or more, and taking three feet from the bottom of the window to the floor, there remains then eight feet for the height of the window, half of which is given for its breadth.

A range of windows should never have the intervening pier between two windows less in breadth, than the breadth of the aperture of one window, nor more than twice that breadth; the angular pier of a building should be allowed something more than the breadth of the pier between two windows.

All windows less in height than two squares, or at least than the diagonal of one of them, should not appear in the front of the house, where the smallest degree of magnificence is intended.

A door is an aperture left in the wall for the conveniency of entering into the building, or from one apartment or division thereof into another, when there are two or more.

A door must not be less than six feet high, and three feet abroad; this is determined by the height and breadth of a man, for whose conveniency is made. But the height and breadth is increased or diminished as other uses and proportions may require.

The door of a principal front, should always be placed in the middle of that front, with and equal number of equidistant windows on each side. From this is follows, that the number od apertures in grand front is always unequal.

It often happens, that in houses having from three to five windows, or an equal number in front the door is not placed in the center, and this is insisted on, to give up the symmetry of the front for the conveniencies of the interior distribution; whenever this is allowed, the dressings of the door should not be richer nor different from that on the window; for it would be the highest absurdity to signalize this irregularity by any particular marks; if one side od such a building is to a street, the door would be best placed on that side.

When several doors are required in the same front, (this supposes it of vast extent) the principal door must be placed in the center, and should be more ornamented than the rest; the other doors should be equal distances from the middle.

The most eligible figure for chambers, is a rectangular quadrangle, because the necessary furniture, such as chairs, tables, looking-glasses, sophas, beds, &c. can be better placed in such a figure than any other; sometimes an oval, or circular, or octagon plan, &c. is allowed to some particular room, as it introduces a variety.

The proportion of the breadth to the length of rooms, is 1:1 or 2:3 or 1:2. Of galleries 1:3. The height from floor to ceiling of room, should neither be too great or too little, and should have a relative proportion with their breadth and length. When chambers are too large, and their ceilings very high, they cannot be warmed in cold weather but with much trouble and expence. If on the contrary they are too small, with low ceilings, they are very prejudicial to the health of those who frequent them, because the volume of air in so confined a space is soon tainted; without these two considerations let us observe, that the beauty of a room requires; that its height should have the relative proportion with its breadth and length. This height is variously determined. Either divide the breadth into three, and take two, or seven equal parts, and take five; or into four, and take three for the several heights. If a room is to be vaulted, take the heights as follow; divide the breadth into six equal parts, take five; or into eight, and take seven; or into twelve, and take eleven.

Chambers should communicate one with the other. Doors are the means of this communication: we are not of the opinion of those who allow but one door to a room, the idea is confines, and doors may be made to shut close.

A bed room should communicate with a dressing room, this with and anti-room; a drawing room with a dining room, &c. &c. but the secret passages may be preserved.

The use of one chamber should not obstruct or prejudice the use of another. Thus a kitchen next to a parlour or drawing room, would be intolerable; nor should a study be placed near the childrens apartments, because the noises and cries of these lively little folks, would be very troublesome to any person retired to read and meditate.

The distribution therefore of each chamber, should be made in such manner as to afford, by it's situation, every suitable conveniency, with a few obstructions as possible; for example, if the back front of the house is to the east, and the fore front in a public street or square, where there is a constant noise and bustle, then is better to have the study and drawing room backwards, because the noise of the street is equally offensive to the studious, as to the conversation of a select society.

Groined arches used for ceilings of basement and under-ground rooms, are described by the intersection of the segments of a circle, or of an ellipsis.

Sometimes a place is vaulted in with semicircular arches, or lesser segments. A spherical vault is a hemisphere or less. Every sort of arch should be supported upon walls and piers, capable to bear its weight and thrust.

In carrying up a building, the proper piers are made for the intended arches, but these are not turned, till the upper floor and the roof are laid, left the fall of any materials might happen to damage arches.

The flatter the arches are, the greater the thrust, therefore they require stronger piers and thicker walls.

The stairs are a number of steps one above another, and serve for the ascent and descent to and from one floor to another; the place set apart for the stairs, is called the stair-case; stairs are either strait, or flyers, or winders, or mixt.

All stairs should have sufficient light, and be as easy of ascent as possible. In small buildings one stair-case is sufficient, and goes quiet from the bottom to the top.

In greater buildings, two stair-cases, and sometimes three, and more, are necessary, but then the principal stairs only ascent to the principal floor.

Stairs should be described and accounted for exactly at the very time that the plant of a building is delineated; for want of which, oftentimes unpardonable errors have been committed, such as having a little blind stair-case to a large house, and a large spacious stair-case to t small house, or not a sufficient number of stair-cases to the extent of the building, or not room sufficient to rise to the intended height.

The narrower steps require the higher rise, because the breadth of a step added to a double the rise, must be equal to two feet, the common extent of a man's step upon plain ground. The rise of each step must not be less than five inches, nor more than seven, that one may go up and down without fatigue; and the tread or breadth of each step must not be less than ten inches, nor more than fourteen: the length of the step may be any thing above three feet, as the place will allow, though ten or twelve feet is sufficient even for a palace.

After every nine, eleven, or thirteen, steps, there should be a quarter pace, for the greater ease and conveniency in ascending and descending. The number of steps are made unequal, that you may finish with the same foot with which you began

Winding stairs are describe round, a circle, and oval, a square, or an equilateral triangle; for each of these, some wind round a solid newel, and other round a hollow newel. It must be observed, that the middle of every oblique step has its tread equal to that of the other square steps.

A chimney is an opening in the wall of a room, its use is for the placing the fire intended to warm that chamber. It consists of the hearth, the jambs, the mantle and the funnel. It is by the good construction of all these parts of a chimney, that the heat of the fire is given to the greatest advantage, and without the least disposition to fill the chamber with smoak.

The breadth and height of the fire-place, should be proportioned to the size of the room; the funnels of the different floors all go up in the thickness of the wall and unite in one stack; the stack should be carried a sufficient height above the ridge of the roof, that the smoak may ascend freely in the air. The tops of the funnel should not be left with too wide apertures, that the smoak be not driven back, neither with too small vents, because they being soon choacked up, would produce the same bad effects. A grate placed too low, the situation of the doors in a room, and may other things, are often the cause of the smoak not ascending; but whatever may occasion it, if once discovered, the evil may be remedied.

The roof of a house is that part, which, after the perpendicular walls are carried up to their prescribed height, covers in the whole superior plan, and secures it against the injuries of the weather. The inner, as well as the outward walls, should bear their share of its pressure. It should neither be too light or too heavy.

The most common roofs are composed of timber scantlings, which are covered with different materials, as plain or pan-tiles, flat-stones, flate, lead, copper, &c. each kind requires a different pitch or slope for the rafters, sufficiently known to every skilful carpenter. Sheet lead used for roofs is very weighty, liable to crack, and is expensive in keeping in repair: pieces of copper used as slates, about two feet square, are to be preferred: slate is a light covering that does keep itself up without frequent repairs: tiles are of more general use; to be good, they should be well burnt, well moulded, and when stricken should yield a clear sound.

The roof of a house, should neither be of too high or too low a pitch; for a high pitched roof is of an aukward appearance, is an useless load upon the walls od any edifice, exposes it more, especially in great towns and cities, to the danger of taking fire, on account of the greater quantity of timber used. If a roof is flat or too low pitched, the snow and rain lodges upon it and drains off but flowly, so that it occasions the timber too rot, requires frequent repairs; all this ruins the ceilings, floors, &c. it is intended to cover and preserve. The m. roof does honour to its inventor. The mansard or broken roof has in it's upper part the disadvantages of the flat roof, and it's sides have all the disagreeable appearance of a high pitched roof.

Nothing is so easy as to make a convenient apartments in a building; but nothing is more difficult than to make this distribution of plans with symmetry in the elevations. For symmetry almost always occasions much trouble in determining the measures and the situations of each part, agreeably to it's conveniency and use, oftentimes the symmetry of one part is an insurmountable obstacle to the symmetry of another, e.g. when a partition wall falls upon the aperture of a door or a window. In this case, a sham door, or a sham window, or a double cieling must take place, rather than transgress the symmetry of the correspondent parts.

It is impossible to give any positive rules about the distribution of plans, the situation of the edifice, it's greater or lesser extent, the regularity or irregularity of the ground, the use it is intended for by the person for whom it is built, the expences assigned, are all so many different causes which will allow of great variety in the distribution of plans, and the rules for these purposes are almost numberless. We must then limit ourselves within some general observations upon the arrangements of the rooms, and remark any advantages they may have form certain convenient passages to and from them; for want of this require attention, irreparable faults are committed.

The person who intends to build, most commonly forms the first idea of a plan for his own use, and considers the particular conveniences that he may require; and having fixed the sum intended to be distributed, he leaves to the skill and experience of the architect, to delineate a plan for the execution of those ideas, in such a manner that the irregularity of the spot, nor any other difficulty that might arise therefrom, do not prevent him from composing a convenient and acceptable design.

The general disposition of the plan, is the only thing that demands the very first attention. A building to be well placed, must have an advantageous entrance, must present itself well, must be in a good exposure, and distant from all nuisance. First then, a house of any degree of magnificence in town, should be situated to have a court-yard before it, and garden behind, though if the situation is in a grand square, or that it enfilades a fine street, or some such like consideration, then the principal part of the building may be upon the street; and the inferior parts, in the wings or backwards.

The second general observation is, to place the offices and stables, so as not to be offensive to the apartments. There are three ways of doing this, according as the spot of ground will permit. The first is to place them in the wing, when the front of the ground is not too narrow. The windows of the kitchen should look towards the north, that it may be at all hours of the day cool and shaded.

On the contrary, the stables should be opened to the south, to dry up the moisture; the coach-houses to the west, that the sun may not damage the varnish or paintings of the coaches. The best situation of the kitchen and stables, is at the extremity of the wings, and to the street, that the litter and sweepings may be carried off without entering into the principal court-yard, and that the forage and other articles may be delivered in from the street.

The second way to prevent any nuisance is, when the area of the ground will allow it, to have one or more yards, besides the principal court; within these yards, which are never seen in the avenue to the house, are placed the kitchen, and other offices, the stables, coach-houses, pumps or wells, and watering troughs &c. in these yard also the coaches are washed, the horses curried, carts are unloaded of the wood, coals, hay, corn, &c. and whatever is brought for the service of the house and stables, do that by these means, the principal court-yard or avenue, is never dirtied or embarrassed on these occasions, and the main body of the dwelling is not troubled with the noise of all these transactions, by the proper distance and separation from them. Lastly, when there is place sufficient for two yards, besides the principal avenue, in the one is the servants hall, with the kitchens, and other offices: in the other, are the stables, coach-houses, bog-houses, granaries and lodgings for the servants.

This is at present the most approved disposition of these parts of a building, it being more eligible that the servants should have further to bring the things under covers, from the kitchen and offices, than to have these places in vaults under the main body of the house, whence arise many inconveniences, viz. their being ill lightened, and not airy, but close and damp, is attended with many disagreeable and offensive circumstances, as the noise of servants, the smell of victuals, and the blackness of the smoak, diffused into the best apartments, to the great damage of the decorations and furniture.

When the kitchens are at a great distance, it is attended with difficulty in serving up the dishes hot and in order; a greater number of servants are then necessary; these might be an outward room, or some place to heat and place things again in their proper order, before they are served up at table, especially in cold and rainy weather. But a covered passage will prevent this trouble, and if it cannot be made above, it may be contrived to pass under ground.

Having fixed the situation and general disposition of a building, one should examine id the ground is extensive enough to admit upon one floor, all the rooms and necessary conveniences required; this without doubt would be the most convenient, as well as the most elegant choice; but not being adopted, we must come to a distribution of the upper floors; but it should be alledged, that not more than one story upon a basement, should be given to a house of the first elegance; the rooms will be the loftier and more healthy.

It may be imagined, that when several floors are made one above another, it saves expence, as they are all covered with the same extent of roof; however, it happens quite the contrary; for although the foundations and the roof are more extensive, the lower the building is with the same number of rooms, yet the height and thickness of the walls, and depth of foundations are reduced; then likewise, floors, ceilings, and stairs, are retrenched, which save much expense, not to mention the stacks of chimneys, and many other articles that would be tedious to enumerate; and it is matter of wonder that buildings of one story only, especially where the ground plot will allow it, are not more in vogue.

To guard against the dampness of ground floors, they should be raised several steps above the level of the ground, and vaulted underneath, or at least, which is less expensive, the joists of the floors must be laid upon ranges of dry bricks; but this guards not so effectually against the moisture that arises from the ground, as the vaults. And here be it observed for the health of the public, that even the meanest dwellings should never be suffered to have their ground floors level with the earth, but raised a foot or two higher, especially in the country where lives are so much the more precious to the community, as their labour continually serves to provide the food and raiment of those who live in ease and plenty.

It remains now to explain the order of the rooms, in one apartment, the use of each in particular, and the passages leading to and from them, that they may be found with every requisite convenience; and we may attend to the instructions which the French authors have delivered upon this subject, because they, above others, have studied to contrive the most commodious division of plans.

A grand apartment should consist at least, of a hall, or vestibule, or lobby, of a first and second anti-room, of parlour, a saloon, a bed chamber, several light closets, wardrobes, &c. all adapted to the rank of the owner and his visitors.

The vestibule leads to the great stairs, and communicates with the first anti-rooms; these are the places for the servants in waiting. The second anti-rooms, are designed to receive persons who deserve better notice: they are used likewise for eating-rooms, and therefore should be chosen on that side of the house nearest to the kitchen.

The saloon, or room for company, opens generally into the second anti-rooms: on some particular occasions it is used as a ball or musick room, or card room, being, after the gallery, the most distinguished for size.

If on the same floor there is made a bed chamber, it is more for parade and state than for use.

The principal cabinet or drawing room, is a place designed to receive such persons or rank, who come to treat about an affair. It must be so disposed as to be entered through the anti-room, without passing through the whole range of state rooms.

Another closed is designed for writing and reading; this should communicate with a gallery whenever the expence and the plan will allow of it; such a place is very convenient to walk in for recreation and exercise, in the intervals of reading or writing.

The gallery is the room that we should mostly endeavour to render magnificent. The length od it is generally three times the breadth, it may be adorned with bronzes, marble busts and statues, pictures, and such other valuable curiosities.

The wardrobes are contiguous to the bed chambers; they open into the secret passages that the servants may not be obliged to pass at all times through their master's apartments. The waiting women, or valets de chamber, sleep in the wardrobes, to be near at hand when wanted, or if called up in the night.

The dressing rooms, with toilets, &c. are placed near the state bed-room and wardrobe.

An apartment for baths. These baths should have the conveniency of being made hot or cold, from different pipes and stoves, as the season of the year or the case for bathing may require.

The second rate apartment is composed of fewer rooms, and the inferior apartments still of fewer in proportions; in every one the rank of the person who is to inhabit them, is to be considered, and the use that is to be made of each room. We shall give two or three plans, to shew, by way of examples, the manner of disposing the several conveniences; and the situations of what we have already mentioned, as anti-rooms, saloon, study, wardrobe, bed chambers, galleries, &c.

The necessary rooms for the service of the kitchen, are a servants common room, the scullery, larder, pantry, cellars, &c.

The right distribution of all these necessary places, is very convenient; every thing is kept in its place, and thus moderate sized kitchen is sufficient; whereas formerly it was made very spacious, as it served for all purposes. There should be in every kitchen, plentry of water, either by a pump or pipes from reservoir.

The offices should be composed of four contiguous rooms; the first is for the common room of the servants out of livery, and here is kept the table for them. Herein should be a stove for making tea and coffee, &c. and a little cistern with water, as it is often wanted and served up.

The second room is surrounded with tables and shelves; here the deserts are arranged,, and the table linen for present use is kept.

The third room, is properly the house-keeper's store-room, the china ware, glasses and plate, after being used, are here locked up; and the fourth room is the house-keeper's or butler's bed chamber, for the greater safety of the things under care.

The stairs that go down into the beer and wine cellars, should be contrived to be near the butler's office, for the greater readiness in bringing up the liquors, and that they may always pass under his eye.

In very considerable houses three separate stables are necessary, otherwise the building must be sufficiently spacious to be divided into three. One for the sets of coach horses, another for hunters and other raiders, and the third for the stone horses, or for such as are sick. But these things are reduced in lesser buildings, according to the numbers required by the persons for whom they are designed. At one end of the stables is a spacious room with a fire place, where the best saddles and richest harnesses are kept; over this room is the bed-chamber for the coachmen and grooms: beside this, ther should be a forge, with necessary utensils, especially for a very grand house, or above the coach-houses, of which nothing particular can be said, are the bed-chambers for the footmen. The landry and brew-house, wash-house, slaughter-house, &c. in the country, are situated as conveniency and their uses may require, observing, that all the buildings be subordinate to the main body.

Notes Builders Magazine. (1779)

DICTIONARY. (p22)

ARCHITECT: person skilled in architecture, who not only drawns the plans of edifices, but also superintends and directs the artificers. It is his business to consider the whole manner and method of the building, and also to calculate the expence. In the management of which he ought to have regard to its situation, contrivance, strength, beauty, form, and materials. The term architect is also used for the surveyor or superintendent of an edifice, the management being wholly committed to his circumspection. Vitruvius enumerate twelve qualifications requisite for a complete architect: be docile and ingenious, literate, skilled in designing, in geometry, opticks, arithmetic, history, philosophy, music, medicine, law and astrology,. The most celebrated architects among the ancients are Vitrivius, Palladio, Scamozzi, Serlio, Vignola, Barbaro, Cataneo, Alberti, Vida, Bullant, De Lorme, and many others.

ARCHITECTURE, the art or science of erecting edifices, either for habitation or defence. It gives the rules for designing and raising all sorts of structures, according to the rules of geometry and proportion, and includes all those arts which conduce, in any degree, to the framing of houses, temples palaces, &c. the scheme or projection of a building, is usually laid down in three several designs or draughts. The first is a plan, which exhibits the extent, division, and distribution of ground into apartments and other conveniences. The second shews the stories, their heights, and the external appearances of the whole building: and this is usefully called the design or elevation. The third is commonly called the section, and shews the inside of the fabric. From these three designs, the surveyor makes and estimate of the charges of the whole building, and the time require to complete it. As to the antiquity of architecture (… history, orders…)

(p.25) the authors who have written on architecture since Vitruvius, are Leon Baptist Alberti, who published in Latin ten books of the art of building, designing to outvie Vitruvius; but he has not, however, succeed in his design, though his books contain a number of excellent things; for he is deficient in the doctrine of orders.

- Sebastian Serlio/ seven books of architecture (5 orders) 1602 (the 7th in 1675)
- Philip de Lorme 9 books of architecture, in French 1667
- J. Barozzio de Vignola "rules of the five orders" in Italian 1681.
- Translated by Daviler, under title "Course d'Architecture"
- Scamozzi "Idea of Universal Architecture" in Italia 1615
- Car.Phil.Dieussart's Theatre of Civil Architecture, High Dutch 1697
- R. Freart de Cambray a parallel between the ancient architecture and the modern in French in 1650, translated by Mr. Evelyn to English with additions.
- Fr. Blondel course of architecture in French 1698
- Nich Goldman " about the orders" in Latin in 1661
- Sir Henry Wotton, elements of architecture

BACK NAILS, a kind of nails made with flat shanks, so as to hold fast without opening the grain of the wood, used in nailing guts together, for saving water under the eaves of a house; or by back-makers, in nailing of boards together for coolers, or any vessels made of planks or boards for containing liquors.

BAKE-HOUSE,, a room or office or an apartment belonging to noble buildings, and other private buildings in which an oven is built. As to the position, it ought, according to the rules laid down by Sir Henry Wotton, to be placed on the south-side of any building.

BASIL, among joiners &c. the angle to which the edge of an iron tool is ground. To work any softwood, they usually make their basil twelve degrees; and for hard, eighteen degrees; it having been observed, that the more acute or thin the Basil is, the better and smoother it cuts; and the more obtuse, the stronger and fitter for service.

BEAM, in architecture, the largest piece of wood in a building, which always lies cross the building or the walls, serving to support the principal rafters of the roof, and into which the feet of the principal rafter are framed.

No building has less than two of these beams, viz. one at each head. Into these the girders of the garret-floor are also framed; and if the building be of timber, the teeazle tenons of the posts are framed. The teazle-tenons are made at right angles to those which are made on the posts to go into the raisons; and the relish or cheats of these teazle-tenons, stand up within an inch and an half of the top of the raison, and the beam is cauked down (which is the same thing as dove-tailing across) till the cheeks of the mortises in the Beam conjoin with those of the teazle-tenons on the posts.

As to the size of the beams. The proportions of beams in or near London are fixed by a statute or act of parliament.

Sir Henry Wottom advises, that all beams, summers and girders, be made of the strongest and most durable timber. Herrera informs us, that in Ferdinand Cortez's palace in Mexico there were seven thousand beams of cedar; but then he must be understood to use the word Beam in a greater latitude than it is used with us. The French, under the word Poutre, which signifies a Beam, take in not only the pieces which bear the rafters, but also those which sustain the joists for the ceilings. Some French authors have considered the force of beams, and brought their resistance to a precise calculation; as particularly, M. Varignon and M. Parent; the system of the latter of which is follows.

When two plans of fibres, which where contiguous before, are separated in a Beam, which breaks parallel to his base, (which is supposed to be a parallelogram) there is nothing to be considered in these fibres, but their number, largeness and tension, before they are broken, and the lever, by which they act; all these together making the resistance of the beam of the same wood, where the base is likewise a parallelogram , and of bigness, with regard to the other, at pleasure. The height of each of these, when laid horizontal, being divided into an indefinite number of equal parts, and their breadth into the same number, in each of other bases will be found an equal number of small quadrangular quadrangular cells, proportional to the bases of which they are parts; then these will represent little bases; or, which is the same thing, the thickness of the fibres to be separated for the fracture of each Beam, and the number of cells being equal in each beam, the ratio of the bases of both beams will be that of the resistance of their fibres, both as to number and thickness. Now the two beams being supposed to be of the same wood, the fibres most remote from the points of support, which are those which break the first, must be equally stretched when they break.

It is evident, that the levers, by which the fibres of the two beams act, are represented by the height of their bases; and consequently the whole resistance of each beam is the product of its base by its height; or, which is the same thing, the square of the height being multiplied by the breadth, which holds not only of parallelogrammick, but also of elliptical bases. Hence, if the basis of two beams are equal, thought both their heights are unequal. Their resistance will be as their heights alone; and consequently one and the same beam laid on the smallest side of its base, will resist more than when laid flat, in proportion as the first situation gives it a greater height than the second. And thus and elliptical base will resist more, when laid on its greatest axis, than on its smallest. Since in beams equal in length, it is the basis which determine the proportion of their weights or solidities; and since their bases being equal, their heights may be different, two beams of the same weight may have resistance different to infinity. Thus, if in the one the height of the base be conceived infinitely great, and the breadth infinitely small; while in the other, the dimensions of the base are finite, the resistance of the first will be infinitely greater than that of the second, though their solidity and weight be the same. If therefore, all required in architecture were to have beams capable of supporting vast loads, and at the same time have the least weights possible, it is plain they must be cut as thin as laths, and laid edge-wise.

If the bases of the two beams are supposed to be unequal, but the sum of the sides of the two bases equal. If they be either 12 and 12, or 11 and 13, or 10 and 14, &c. so that they always make 24; and further, if they are supposed to be laid edge-wise, pursuing the series, it will appear, that the beam of 12 and 12, the resistance will be 1728, and the solidity or weight 144, or that in the last, or 1 and 23, the resistance will be 529, and the weight 23; therefore the first, which is square, will half the strength of the last with regard of its weight. Hence M Parent remarks, that the common practice of cutting the beams out of trees as square as possible, is an imprudent method; and thence he takes occasion to determine geometrically, what dimensions the base of a Beam to be cutout of any tree proposed should have, in order to its having the greatest resistance possible; or, which is the same thing, a circular base being given, he determines the rectangle of the greatest resistance that can be inscribed, and finds that the sides must be nearly as 7 to 5, which agrees with observation.

We have hitherto supposed the length of the Beams too be equal; if it be unequal, the bases will resist so much the less, as the Beams are the longer. To this may be added, that a Beam sustained at each end, breaking by a weight suspended from its middle, does not only break there, at least immediately before the moment of the fracture, which is that of the equilibrium between the resistance and the weight, its fibres are as much as stretched at the extremes, as in the middle; so that of the weight sustained by the middle, there is but one-third part that acts at the middle to make the fracture; the other two only acting to induce a fracture in the two extremes.

A beam may be supposed to be either loaden only with its own weight, or with other foreign weights, applied at any distance, or only with those foreign weights. Since, according to M.

Parent, the weight of a beam is not in common above one-seventieth part of the load given to sustain it, it is evident, that in considering several weights, they must be all reduced by the common rules, to one common centre of gravity. M. Parent has also calculated tables of weights, which will be sustained by the middle in Beams of various bases and lengths, fitted at each end, into walls, on a supposition, that a piece of oak of an inch square, and a foot long, retained horizontally by the two extremes, will sustain three hundred and fifteen pounds in its middle, before it breaks; which has been found by experiments that it will.

BEAM-FILLING, is plaisterers work, and is the filling up the vacant space between the reason and roof, whether tiling, thatching, or any other roof, with stones or bricks laid between the rafters of the raison, and plaistered on with loam, frequent where the garrets are not paregated or plaistered; or sometimes they set come tiles with one edge upon the raison; and the other leaning against the roof; and then these tiles are plaistered over with loam. This sort of work is very common in the country, where they do not parget or plaister their garrets.

BEARER, in architecture, a posts, pier, or wall erected between the two ends of a piece of timber, to shorten its bearing, or to prevent its whole weight resting on the two ends only.

By and act of the parliament od the 14th year of the reign of George the Third, it is enacted, that "no bearer to wood stairs, where and old party wall has been cut into for that purpose, must be laid nearer than eight inches and an half to any chimney or flue whatever, or nearer than four inches to the internal finishing od the building adjoining". But this act extends only to the bills of mortality, the parishes of St. Mary-le-Bow, Paddington, St. Pancras, and St Luke at Chelsea, in the county of Middlesex. There are several other particulars in the above mentioned act respecting carpenter, which we shall introduce at large under the article CARPENTER.

BED OF STONE, in masonry, a course or range of stones, and the joint of the bed is the mortar between two stones, placed over each other.

BED OF MOULDING, a term used to signify those members in a cornice which are placed below the coronet: and now, a bed moulding, with joiners, usually consists of these four member, an ogee, a lift, a large boultin, and another lift under the coronet.

BEVEL OR BEVIL (p. 51)in masonry and joinery, a kind of square, one leg of which is frequently crooked, according to the sweep of an arch or the vault. It is moveable on a point or centre, and so many be set to any angle. The make and use of it are merely the same as those of the common square an mitre, except that those are fixed; the first at an angle of ninety degrees, and the second at forty –five; whereas the bevel being moveable, it may some measure supply the office of both, and yet supply the deficiency of both, which is chiefly intended for, serving to set off or transfer angles, either greater or less than ninety or forty five degrees. Hence, any angle that is not square, is called a Bevel-angle, whether it be more obtuse, or more acute than a right-angle: but if it be one half as much as a right –angle, viz. forty-five degrees, then workmen call it a mitre; they have also a term half-mitre, which is an angle that is one quarter of a quadrant or square, viz. and angle of twenty two degrees by act of parliament.

BOLTS OF IRON, for house buildings are distinguished by ironmongers into the three kinds, viz. platem round, and spring bolts; plate and spring bolts are used dor the fastening of doors and windows, and these are of different sizes and prices. There are also brass-knobbed bolts, short and long.

BOND, a term among workmen; as make good Bond, signifies thaht the should fasten two or more pieces together, either by tenanting, mortifing, or dove-tailing, &c.

BOUTANT OR ARCH-BOUTANT, in architecture, a flat arch, or part of an ach, abutting against the reins of a vault, to prevent it giving way.

BRACE, in building, a piece of timber framed in with bevel joints; the use of which is to keep the building from swerving either way. When the brace is framed into the king-pieces, or principal rafters, it is sometimes called a strut.

BRADS, among artificers, a sort of nails used in building, which have no spreading heads. They are distinguished by ironmongers, by six names, as joiners-brads, flooring-brads, batten-brads, bill-brads, or quarter-heads, &c. Joiners-brads, are used when a floor is laid in haste, or for shallow joists subject to warp.

BRAZING, the foldering or joining two pieces of iron together, by means of thin plates of brass melted between the two pieces to be joined. If the works is very fine, as when the two leaves of broken saws are to be joined, it is covered with beaten borax, moistened with water, that it may be incorporated with the brass dust, which Is here added; and the piece is exposed to the fire without touching the coals, till the brass is observed to run. Lastly, to braze with a still greater degree of delicacy, they use a folder made of brass, and two thirds of silver; or borax and rosin; observing, in all these methods of brazing, that the pieces be joined close throughout; as the folder holds only in those places that touch.

TO BREAK IN, in architecture, used, by some, to signify the same member in a column, that others call a thorus.

BREAST-SUMMER, in timber buildings, such pieces in the outward parts of a building, into which the girders are framed in all the floors but the ground-floor, then they call it a cell; and garret floor, then it is called a beam. As to their size and square, it is the same according to the act of parliament, with that of girders; it is here to be observed, that it is not here meant, all the pieces which have girders in them, (and are not in the garret, or ground-floor); but all such as are in the exterior part of the building; whether in the front, flanks, or exterior part of the building; for the pieces in the internal part of the building, into which girders are framed, are called summers.

BREW-HOUSE, a building adapted to the brewing, &c. of malt liquors. In erecting a large a public brew-house to the best advantage, several should be carefully observed. 1. That three sides in four of the upper part, or second floor, be built with wooden battons about three inches broad, and two thick, that a sufficient quantity of air may be admitted to the backs or coolers. 2. That the coppers be erected of a proper height above the mashing stage, that the hot water may be conveyed by means of cocks into the mash-turns, and the worts into the coolers. 3. That the fire-places of the coopers be very near each other, that one stocker, or person who looks after the fire, may attend all. 4. That the yard for coals be as near as possible to the fire-places of the copper. 5. That the malt be ground near the mash tuns, and the mill erected high enough that the malt may be conveyed from the mill immediately to the mash-tuns, by means of a square wooden spout or gutter. 6. That the upper backs be nor erected above thirty-three feet above the reservoir of water, that being the greatest height water can be raised by means a common single pump. 7. That the pumps which raise the water, or liquor, as the brewer call it, out of the reservoir into the water-backs, and also those which raise the worts out of the jack-back into the coppers, be placed so that they may be worked by the horse-mill which grinds the malt.

BRICKS, as they supply the place of stone in our common buildings, and are composed of an earthy matter hardened by art, to the resemblance of that kind, may be very well considered as an artificial stone. Bricks are of a very ancient standing, as appears from sacred History (… history)

Of the matter whereof Brick are made, Pliny says, if you would have good bricks, they must not be made of any earth that is full of sand or gravel, nor of such as is gritty or stony, but of greyish marl, or whitish chalkey clay, or at least of reddish earth. But if there is a necessity to use that which is sandy, choice should be made of that which is tough and strong. He also adds, that the best season for making bricks is the spring; because they will be subjected to crack and be full of chinks, if made the summer. He directs, that the loam of which bricks are made, be well steeped or soaked, and wrought with water.

Bricks are made of a clayey or a loamy earth, pure, or with various mixtures; they are shaped in a mould, and after some drying in the sun or air, are burnt to a hardness. This is our manner of making bricks; the use of them was very antient, but whether they were always made in the same manner admits doubt; we are not clear what was the use of straw in the bricks for building in Egypt, and there is room to question whether those of many later periods were ever exposed to the fire. There are remains of great Brick buildings of the Romans, in which the bricks seem never to have been burnt, but to have been hardened by very long exposure to the sun; and this their own accounts confirm; mention being made in some of their writers of four or five years drying for this purpose. The Greeks built with bricks, and they used them of six different shapes, or at least so many different sizes; three being the principal, and there being as many exact half sizes; this gave a variety to their appearance.

We are in general tied down by custom to one form and one size, which is truly ridiculous; eight or nine inches in length, and four in breadth, is our general measure; but beyond doubt there might be other forms and other sizes introduced very advantageously. Sir Henry Wotton mentions with commendation a particular form of brick from Daniel Barbaro, which is shape triangular, of equal sides, and each a foot long. The thickness he mention is an inch and half, so that his may be well enough called a kind of thick tiles, but that may be altered at pleasure. There is no doubt but bricks of this and other regularly angular forms might be used with advantage in many parts of our common buildings.

It has been proposed by some to steep bricks in water after the burning, and then burn them over again, in order to give them greater strength; but this way be much better done by proper choice of the materials, and through skill and sufficient labour in tempering them.

It is an observation of Palladio, that the antients made their Bricks of a larger size, which were intended for great buildings, and this was certainly right and reasonable; but he is aware of the difficulty there must have been in thoroughly and equally baking of such; we are assured, by the very names, that the Greeks had bricks of five palms long, that being the sense of the name given to the largest sort they used in common buildings.

The manner of burning is a thing very essential in the structure of Brick. It is commonly done in a clamp about London; but in some places in a kiln. Some of the finest bricks are burnt in the kilns erected for tiles.

The degree of burning makes a considerable difference in the condition of the bricks; but their principal distinction is from the nature of the materials with which they are made; these being not only various in themselves, but made different in a much greater degree by the mixtures given them in working.

A great variety of Bricks have been contrived by different persons, and made at different times; and long perplexed descriptions have been given of the way of fabricating them; but at present they are in a manner reduced to four sorts, our builders finding these sufficient to answer every purpose. These are place Bricks, grey Stocks, red Stocks, and the finest red or cutting bricks. adding to these two or three foreign kinds imported for particular purposes, we have before us all that is used in this way, and it would be needless for us to meddle with any other; our purpose being to write not for the satisfaction of an idle and useless curiosity, but for the service of the practical builder, and of the gentleman who employs him.

As to the materials of bricks, we have already said they are all made of earth of a clayey or loamy nature; the more pure the earth used is, the harder and firmer the brick will be; but then the less mixture there is with it, the more labour it will require in working. The brick-makers regulate themselves according to this rule, and finish their work according to the service for which it is intended.

Grey Stocks are made of a good earth, well wrought, and with little mixture.

Place bricks are made of the same earth, or worse; with a mixture of dirt from the streets; and there are often so very bad they will hardly hold together. This is the principal difference between the two kinds of common bricks, as to their substance; the grey stocks being found and firm, because the earth of which they are made is purer, and the Place Bricks, being poor and brittle, because of the mixture of other matter with that earth and less working.

Red stocks and the red bricks, called also from their use, cutting bricks, owe their colour to the nature of the clay of which they are made; this is always used tolerably pure, and the bricks of the better kind are called by some clay bricks, because they are supposed to be made of nothing else.

We do not pretend here to enter into the niceties of the brick-maker’s business, every profession has its secrets, which are kept among those who follow it; neither is it our business to instruct the reader in making of bricks, but in using them in building.

Thus much it was necessary to say, that he might understand the nature of these as well as that of the other materials wherewith he is to work; and this is the general account of them. The grey stock, he fees, are made of purer earth, and better wrought, and they are used in front in building, being the strongest and handsomest of this kind; the place bricks are made of the clay, with a mixture of dirt and other coarse materials, and are more carelessly put out of hand; they are therefore weaker and more brittle, and are used out of sight, and where little stress is laid upon them; the red bricks, of both kinds are made of a particular earth well wrought, and little injured by mixtures, and they are used in fine works, in ornaments over windows, and in paving. These are frequently cut or ground down to a perfect evenness, and set in putty instead of mortar; and on many occasions they make a very beautiful appearance in this manner.

These are the three kinds of bricks commonly used by us in building, and their difference is owing to this variety in the materials. The place bricks and grey stocks are made in the neighbourhood of London, wherever there is a brick work; the two kinds of red bricks, depending upon a particular kind of earth, can only be made where that is to be had; they are furnished from several places within fifteen or twenty miles of London.

We have already observed, that there were two or three other kinds of bricks to be named which are imported from other countries; and there is also one of the red or cutting brick sort that is of our own manufacture, and for its excellence deserves to be particularly mentioned; this is the hedgerly Brick; it is made at a village of that name of the famous earth called Hedgerly Loam, well known to the glass-makers and chemist. The loam is of yellowish colour, and very harsh to the touch, containing a great quantity of sand; its particular excellence is, that is will bear the greatest violence of fire without hurt; the chemist coat and lute their furnaces with this, and the ovens of glass-houses are also repaired or lined with it, where it stands all the fury of the heat without damage. It is brought into London for this purpose, under the name of Windsor loam, the village being near Windsor, and is sold at a large price; the bricks made of this are of the finest red that can e imagined, they also call them fire bricks, because of their enduring the fire; and they are used about furnaces and ovens in the same ways as the earth.

The foreign bricks that are to be named the Dutch and the Flemish bricks and clinkers; these are all nearly of a kind, and are often confounded together; they are very hard, and of a dirty brimstone colour; some of them not much unlike our grey stocks, others yellower. The Dutch are generally the best baked, and the Flemish the yellowest. As to the clinkers, they are the most baked of all, are generally warped by the heat. These are used on particular occasions, the Dutch and the Flemish for paving yards, and stables, and the like; and the clinkers, which come also from the same places, in ovens.

The reader, who has thus far acquainted himself with the nature and qualities of the several kinds of bricks, their different strength, colours and beauty, will easier enter into the distinctions that are made in the use of them. As to their nature it is proportiones to their several degrees of goodness. The fine red-cutting bricks are twice, or more than twice, the price of the best grey stocks; the red are a great deal worse, so they are much cheaper than any of the others.

The grey Stocks, and place bricks, are employed in the better and worse kinds of plain work; the red Stocks, as well as the grey, are used sometimes in this business, ans sometimes for arches, and other more ornamental pieces; the fine red cutting bricks are used for ruled and gaged work, and sometimes for paving; but the red stones are more frequently employed when a red kind is required for this purpose.

The red cutting brick, or fine red, is the finest of all bricks. In some places they are not at all acquainted with this; in others they confound it with red stocks, and use that for it, though, where the fine red brick is to be had pure and perfectly made, the difference is five to three in the sale price between and the red stock.

The red and grey stock are frequently put in arches gauged, and one as well as the other set in puttey instead of mortar; this is an expensive work, but it answers in beauty for the regularity of the disposition and finesses of the joints, and has a very pleasing effect.

The fine red brick is used in arches ruled and set in puttey in the same manner; and, as it is much more beautiful, is somewhat more costly. This kind is also the most beautiful of all cornices ruled in the same manner and set in puttey.

The grey stocks of an inferior kind are used in bricking walls.

The place bricks are used in paving dry, or laid in mortar, and they are put down flat or edgewise. If they are laid flat, thirty two of them pave a square yard; but if they are placed edgewise, it takes twice that number: in the front work of walls the place bricks should never be admitted, even in the meanest building. That consideration therefore only takes place in the other kinds; and the fine cutting bricks come so very dear this way, that few people will be brought to think of them; so that it lies in a great measure between the grey stocks and re stocks. Of these the grey are most used; and this not only because they are cheaper; but in most cases where judgment is preferred to fancy they will have the preference.

We see many very beautiful pieces of workmanship in red brick, and to name one, the front of the green-house in Kensington Gardens will be sure to attract every eye that has the least curiosity; but this should not tempt the judicious architect to admit then in the front walls of the buildings. In the first place, the colour itself is fiery, and disagreeable to the eye; it is troublesome to look upon it; and, in summer, it has an appearance of heat that is very disagreeable; for this reason it is most improper in the country, though the oftenest used there from the difficulty of get grey. But a farther consideration is, that in the fronts of most buildings of any expence, there is more or less stone-works; now it were to be wished, that there should be as much conformity as could be had between the general nakedness of the wall and these several ornaments which project from it; the nearer they are of a colour the better they always range together; and if we cast our eyes upon two houses, the one red, and the other grey brick, where there is a little stone-work, we shall not be a moment in doubt which to prefer. There is something harsh in the transition from the red Brick to stone, and it seems altogether unnatural; in the other, the grey stocks come so near the colour of stone that the change is less violent, and the sort better together. For this reason also the grey stocks are to be judged best coloures when they have least of the yellow cast; for the nearer they come to the colour of stone, when they are not be used together with it, it is certainly the better. Where there is no stone work there generally is wood, and this being painted white, as is commonly the practice, has yet greater effect with red brick than the stone work; the transition is more sudden in this than the other; but, on the other hand, in the mixture of grey bricks and white paint, the colour of the bricks being soft, there is no violent change.

They grey stocks are made at this time to a great excellence about London, as many new pieces of brick work she to the credit of the undertakers. The duke of Norfolk was so nice in this respect, that he had the bricks brought from his estate in that country for the building the front of his house in St. James's square; but the event shews, that his Grace might have been better supplied near at hand, as to colour, with equal hardness.

The greatest advantage that a grey stock, which is the standard brick, can have, is in its found body and pale colour; the nearer it comes to stone the better, do that the principal thing the brick-maker ought to have in view, for the improvement of his profession, is the seeking fot earth that will burn pale, and that will have a good body, and to see it has sufficient working. The judicious architect will always examine his Bricks in this light, and will be ready to pay a price where it is merited by the goodness of the commodity.

The utility and common practice of building all our edifices of brick, both in London and the country, arises from motives too obvious to need a definition, since it is generally considered to be much the cheapest, as well as the most eligible substance that can be invented for the purpose, both in point of beauty and duration, and inferior to nothing but wrought stone.

The great principle in the practice of Brick-work lays in the proclivity, or certain motion of absolute gravity, caused by a quantity od multiplicity of substance being added or fixed in resistible matter; therefore naturally tends downwards, according to the weight and power impressed. From which observations the requisite inferences may be drawn, and such remarks made, as may enable the journeyman to erect his works with accuracy, that no bad consequences may attend, and, moreover, avoid unnatural settlements.

And first it may not be amiss to consider the motive of this abovementioned proclivity, which is chiefly caused through the yielding mixture of the matter of which mortar is composed, and cannot well be reduced to any system of certainty; because the absolute weight of the brick, or any other substance laid in mortar, will naturally decline according to the substance or quality of it; in which case particular care should be taken, that it is of a regular quality all the way through the building; and likewise that the same force should be used to one Brick as another; I mean the stroke of the trowel; a thing, or point in practice, of much more consequence than is generally imagined; for if a brick be actuated upon by a blow, it will be a much greater pressure upon it than the absolute weight of twenty bricks; before which can be properly laid, in form and arrangement, with the advantage of the weather in a favorable season, may be so dried or consolidated, that no settlement can ensue from other defects than that of an oversight in the foundation. The many bad effects that arise from mortar not being of a property quality, should make masters very cautions in the preparation of it, as well as the certain quantity of materials of which it is composed, that the whole structure may be of one substance.

There is one thing which often causes a building in large flank-walls, especially when they are not properly set off on both sides; that is, the irregular method of laying bricks too high to the front edge; that, and building the walls, to high on one side, without continuing the other, often causes the above defects. Notwithstanding, of the two evils, this is the least; and bricks should incline rather to the middle of the wall, that one half of the wall may be a shore to the other. But this method, too much followed, will be more hurtful than beneficial, because the full width of the wall doth not take its absolute weight, and entirely removes the specific gravity from its first line of direction, which in all walls should be perpendicular and united; whereas, if the above method is stretched to excess, and the walls have a supper-incumbent weight to bear adequate to their full strength, a disjunctive digression is made from the right line of direction; the conjunctive strength becomes divided; and instead of a whole or united support from the wall, its strength is separated in the middle, and takes two lateral bearings of gravity; each insufficient for the purpose; therefore like a man overloaded either upon his head or shoulders, naturally bends and stoops to the force impressed; in which mutable stare the above grievances usually happen.

Another great defect we frequently see in the fronts of the houses; in some of the principal ornaments of brick-works, viz. arches over windows, &c. and which is too often caused by want to experience in the rubbing of them; which is the most difficult part of the branch, and ought to be very well considered. The faults I mean, are the bulging or convex situation we often see arches in, after the houses are finished, and sometimes loose in the key or center bond. The first of these defects, which appears to be caused by too much weight, is in reality no more than a fault in the practice of ribbing the bricks too much off on the insides; for it should be a standing maxim (if you expect them to appear straight under their proper weight) to make them the exact gauge on the inside, that they bear upon the front edges; by which means their geometrical bearings are united, and all tend to one center of gravity.

The latter observations, of chamber arches not being skewed enough, is an egregious fault; because it takes greatly from the beauty of the arch, as well as its significancy. The proper method of skewing all camber arches should be one-third of their height. For instance; if an arch is nine inches high, it should skew three inches; one of twelve inches, four; one of fifteen inches, five, and so of all the numbers between those. Observe, in dividing the arch, that the quantity consists of an odd number; by so doing, you will have proper bond; and the key-bond in the middle of the arches; in which state it must be always be, both for strength and beauty. Likewise observe, that arches are all drawn from one center; the real point of camber arches is got from the above proportion. First, divide the height of the arch in three parts; one is the dimensions, for the skewing; a line drawn from that through the point at the bottom to the perpendicular of the middle arch, gives center; to which all the rest must be drawn.

There are many other difficult jobs in Brick-works; as groins, niches, &c all which shall be treated of in their proper order.

OF BRICK GROINS.

A groin is the intersecting or meeting of two circles, &c. upon their diagonal elevations drawn upon the different sides of a square, or any other figure, and whose principle of strength lies in the united force of elevation divided by geometrical proportions to one certain gravity, which is the center to which all the bearings tend. The difficulty that attends the execution of a brick groin lies in the peculiar mode of appropriating proper bond at the intersecting of the two cercles, as they gradually rise to the crown to an exact point; in the meeting or intersecting of those angles will be formed a kind of rib in the inside, which should be particular streight and perpendicular to a diagonal line drawn upon the plan. There is no definition of a thing of this sort, either by lines or description, equal to what will occur to the learner in the practice of them. After the centers are set, let the bricklayer apply two or three bricks to an angle; by which means he will effectually see how to cut them as well as the requisites of bond.

There is nothing so certain as practice for the solving any difficulty; it is by this axiom that every proof is founded, and without it the most flagrant idea of lines, and theoretical speculation, would be in many cases defective; because a false notion, or a wrong conception, might lead the wisest man into an error. It is upon this principle of practice I propose to render my instructions familiar.

But to return to the groins. The workman must observe, that the manner of turning groins will respect to the sides, is the same as other arches and center, except in the angles, which must be traced for its properties, as a I observed by applying the bricks; and if the arch is to be rubbed and gauged, you must divide each arch into an exact number of parts, and extend the lines till they meet in the groin; by which means you will easily find the curve for the angle, from which you must make your templets;, observe, in fixing the centers, that the carpenters raise them something higher at the crown, to allow for settling, which frequently happens, sometimes by the pressure upon the butments, otherwise from the length of the crown.

Observe in buildings of vaults, that the piers or butments are of sufficient strength; all butments to vaults, whether groined, or only arched, should be one-sixth part of the width of the span; and moreover, if there is any great weight to be sustained, bridging sod timber should be framed, to discharge the weight from the crowd from the arch; after a vault or groin is finished, it is highly necessary to pour on a mixture of terras, or lime and water, on the crown; and give it some little time to dry, before you strike the centers, in order to cement the whole together.

Rough groins have no more value put upon them than common vaults, which are included at per rod with common brick-work, except the angles of groins, which are measured after run literal, and sometimes allowed by surveyors 1s. per foot; many masters charge 1s 2 d. per foot.

OF NICH IN BRICK-WORKS.

A nich is the inner or concave quarter of a globe, and usually made in walls on the exterior parts of a building, to place figures or statues in. the practice of this in brick-work is the most difficult part of the possession, on account of the very thin size the bricks are obliged to be reduced down at the inner circle, as they cannot extend beyond the thickness of one brick at the crown or top; it being usual, as well as much the neatest method, to make all the courses standing.

The most familiar way to reduce this point to practice, is to draw the front, back, &c. and make a templet of pasteboard, after you have divided the arch for the number of bricks. my reader must observe, that one templet for the standing courses will answer for the front, and one for the side of the brick; and at the top of the straight part, from whence the Nich takes its spring, you must remember to make a circle of the diameter of eight or nine inches, and cut this out of the plateboard also, and divide it into the same number of parts at the outward circle; from which you will get the width of your front-templet at the bottom. The reason of this inner circle is to cut off the thin conjunction of points that must all finish in the center, and which in bricks could never be worked to that nicety; it being impossible to cut bricks with any accuracy nearer than half an inch thick; within the inner circle the bricks must be lying. It will be necessary to have one templet made convex, to try the faces of bricks to, as well as setting of them, when they are at one end in the exact form of the Nich, or it will be impossible to face them proper. The level of the flat sides of the bricks is got by dividing the back into the number of parts with the front, and all struck to the center; from the circle of the front of one brick set your level, which will answer for the sides of the whole: observe, that the bricks hold their full gauge at the back, or when you come to set them you will have much trouble. Jobs of this kind are; and when they happen, should bear a price equal to their value.

The following is what materially concerns the bricklayer, in and act of the 14th of Geo. 3. For the regulations of brick buildings and party walls, in London Westminster, St Mary le Bone, Paddington, Pancras, and St. Luke at Chelsea.

It will be necessary to observe a few things which respect the bricklayer, before we immediately enter into the description of the manner he is to execute his work.

1st, that there are only the first, second, third and fourth rates of building, whose thickness od external and party-walls are described in the act.

THE FIRST RATE.

Every church, chapel, meeting-house, and other place of public workship.

Every house or building, for distilling or brewing liquors for sale, for making of soap, for melting of tallow, for dying, for boiling or distilling turpentine, for casting brass or iron, for refining of sugar, for making of glass for chemical works, for sale, of what dimension so ever the same respectively are built.

And every warehouse and other building (except such buildings as are described to be of the fifth, sixth or seventh rate) not being a dwelling-house, which exceeds three clear stories above ground, exclusive of rooms in the roof, or measures in height 31 feet from the foot-way of either of the fronts, to the top of the blocking course or parapet.

And every dwelling-house with offices belonging and adjoining, or connected otherwise than by fence or fence-wall, or covered passage open on one or both sides; when finished exceeds the value of 850 l.

And also every dwelling-house which exceeds nine squares of building on the ground plan. Are all and each of them of the first rate.

THE SECOND RATE.

Every warehouse, stable and other building, (except such buildings as are described to be of the first, fifth, sixth or seventh rate) not being a dwelling house which exceeds two clear stories, and does not contain more than three clear stories above ground, exclusive of rooms in the roof, or measures in height 22 feet, and not amounting to 31 feet from the foot-way of either of the fronts, to the top of the blocking-course, or parapet.

And every dwelling-house with offices belonging and adjoining, or connected otherwise than by a fence-wall, or covered passage open upon one or both sides, when finished exceeds the value of 300 l. and does not amount to more than 850 l.

And also every dwelling house, which exceeds five square of building on the ground plan, and does not amount to more than nine square, are all and each of them of the second rate.

THE THIRD RATE.

Every warehouse, stable and other building, (except such buildings as are described to be of the first , fifth, sixth or seventh rate) not being a dwelling-house, which exceeds one clear story, and does not contain more than two clear stories above ground, exclusive of the rooms in the roof, or measures in height more than thirteen feet, and does not amount to twenty-two feet, from the foot-way of either of the fronts, to the top of the blocking-course, or parapet.

And every dwelling-house with offices belonging and adjoining, or connected otherwise than by a fence, or fence-wall, or covered passage open on one or both sides, when finished, exceeds the value of 150 l, and does not amount to more than 300l.

And also every dwelling-house, which exceeds three and and half square of building on the ground plan, and does not amount to more than five squares, are all, and each of them, of the third rate.

THE FOURTH RATE.

Every warehouse, stable, and other building (except such buildings as are described to be of the first, fifth, sixth or seventh rate) not being a dwelling-house, which does not exceed one clear story above gground, exclusive of rooms in the roof, and measures in height not more than thirteen feet from the foot-way of either of the fronts to the top of the blocking-course, or parapet.

And every dwelling-house, with offices belonging and adjoining, or connected otherwise than by a fence, or fence-wall, or covered passage open on one or both sides, when finished, does not exceed the value of 150l.

And also every dwelling-houses, which does not exceed three and an half square oddf building on the ground plan, are all, and each of them of the fourth rate.

The art directs, that every master-workman, or owner, shall give 24 hours notice to the surveyor, in whose district any building whatever, from the first to the seven rate, is to be altered or erected.

That as it is found by experience, that most buildings, in general are more often began by the bricklayer than by the carpenter, there will be no kind of impropriety in saying, it will be the bricklayer's business to give such notice, except where a foundation is to be piled or planked; and then it becomes the business of the carpenter.

But be this at it may, the observation is only made from supposing, that the workman who lays the first stone would wish to lay it right, and therefore if the surveyor cannot attend within the 24 hours, he must himself observe the directions of the act, which will be hereafter severally explained. And first of external walls.

The act calls every front, side, or end wall &c. (nor being a party wall) an external wall: and as it has before been said, that there are but four rates of building, whose thickness of walls described by the act.

The walls to each rate both in substance and form, according to the express declaration of the act, are not to be less in thickness than as they are described, yet in must in course be presumed, that they be made as much thicker as the nature of the building, or the owner od it may require.

The footings to the walls are to be with equal projection on each side, but where any adjoining building will not admit of such projection to be made on the side next adjoining to such building, the act allows it to be done as near as the case will admit, and this to each of the four rates.

The bearing of the timbers in each rate, as girders, beams, or trimming joists, &c. which in all cases, and in all the above four rates, may be as much as the nature of the wall will admit, provided there is left four inches between the ends of such timbers and the external surface of the wall.

The stories are to be made in number agreeable to the rate to which they belong; but their height may be made discretionally.

The act expresses the thickness of the walls in feet and inches, as well as the number of bricks of which such thickness it to be composed; this last method being thought most familiar to workmen in general.

The joints of the brick-work must answer to the express number of bricks of which such wall is to be composed.

External walls, and other external inclosures to the first, second, third, fourth and also the fifth rate of building, when built hereafter, must be of brick, stone, artificial stone, lead, copper, tin, slate, tile or iron; or of brick stone, and such artificial stone, lead, copper, tin, slate, tile and iron together, except the planking, piling, &c, for the foundation, which may be of wood of any sort.

If any part to an external wall of the first and second rate is built wholly of stone, it is not to be less in thickness than as follows.

First rate, 14 inches below the ground floor; 9 inches above the ground floor.

Second rate, 9 inches above the ground floor.

Where recess is intended to be made in any external wall hereafter to be built, it must be arched over, and in such manner, as that the arch, and the back of such recess, shall respectively be of the thickness of one brick in length; therefore it follows, that where a wall is not more than one brick thick, it cannot have any recess.

No external wall to the first, second, third, and fourth rate, is ever to become a party wall, unless the same shall be of the height and thickness above the footing, as is required for each party-wall of its respective rate.

Party-walls. Every building of the first, second, third and fourth rate, hereafter to be built, which is not designed by the owner thereof to have separate and distinct side-walls, on such parts as may be contiguous to other buildings, must have party walls; and they are to be placed half and half, on the ground of each owner, or of each building respectively, and may be built thereon, without any notice being given to the owner of the other part, that is to say, the first builder has a right so to do, where he is building against vacant ground.

All party walls, and all chimneys, and chimney-shafts hereafter to be built, must be of good sound bricks or stone, or of sound bricks and stone together, and must be coped with stone, tile or brick.

When the situation of the floors are different levels, it may not be improper to shew in what manner the walls must be built, where such difference of level may happen; as for example suppose a party-wall is to be built between two old houses, and there is occasion to sink the cellar story of one of the houses below the level of the floor of the other; in that case the wall must have its declared depth, below the floor of the lowest building, and so under the greound-floor; and also above the garret-floor, which is to be carried up to its proper thickness, as high as the under side of the floor of the highest building.

Stone corbets must be inserted where the wall will not allow of a sufficient bearing, because the act expressly says, there shall be 8 inches ½ of solid brick-work, between the ends and sides of all timbers which lay opposite to, or on a level with other timbers of the adjoining building.

Party-walls, or additions thereto, must be carried up eighteen inches above the roof, measuring at right angles with the back of the rafter, and twelve inches above the gutter of the highest building, which gables against it; but where the height of a party wall so carried up. Exceeds the height of the blocking course or parapet, it may be made less than one foot above the gutter, for the distance of two feet six inches from the front of the blocking course of parapet.

and where dormers or other erections are fixed in any flat or roof, within four feet of any party-wall, such party-wall is to be carried up against such dormer, and must extent at least two feet wider, and to the full height of every such dormer or erection.

There is no recess to be hereafter made in any party-wall of the first, second, third and fourth rate, except for chimney flues, girders, &c. and for the ends of walls of piers, so as to reduce such wall in any part of it, to a less thickness than is required by the act, for the highest rate of building to which such wall belongs.

No opening to be hereafter made in any party-wall, except for communication from one stack of warehouses to another, and from one stable building to another, all which communication must have wrought iron doors; and the panels thereof no t to be less than one quarter of an inch thick, and to be fixed in stone door-cases and fills. But there are may be openings for passages or ways on the ground, for foot passages, cattle, or carriages, and must be arched over throughout with brick or stone, or brick and stone together, of the thickness of a brick and a half at the least, to the first and second rate, and one brick to the third and fourth rate. And if there is any cellar or vacuity under the passage, it is to be arched over throughout, in the same manner as the passage over it.

No party-wall or party-earch, or shaft of chimney, new or old is to be cut into, other than for the purposes as follow.

Where the fronts of buildings are in a line with each other, a break may be cut, both in fore and in back front of such building, (as may be already erected) for the purpose of inserting the end of such other external wall which is to adjoin thereto; which break must not be more than nine inches deep, from the outward faces of such external walls, and not to be cut beyond the centre of the party-wall thereto belonging.

And further, for the use of the inserting bressumers and story posts, that are to be fixed on the ground floor, either in the front of the back wall, which recess may be cut from the foundation of such new wall, to the top of such bressumer fourteen inches deep from the outward face of such wall, and four inches wide the cellar story, and two inches wide on the ground story.

And further, for the purpose of tailing-in stone steps, or stone landings, or for bearer to wood stairs, or for laying in stone corbels for the support of chimney jaumbs, girders, beams, purloins, binding or trimming, joists, or other principal timbers.

And further, perpendicular recesses may be cut in any party-wall whose thickness is not less than thirteen inches, for the purpose of inserting walls and piers therein, but must not be made wider than fifteen inches, or more than four inches deep, and no such recess to be nearer than ten feet to any other recess.

And all, and every such cutting and recesses must be immediately made good and effectually pinned up, with brick, stone, slate, tile, shell, or iron, bedded in mortar.

But no party-wall is to be cut for any of the above purposes, if the same will injure, displace, or endanger the timbers, chimneys, flues or internal finishings of the adjoining buildings.

And further also the act allows the footing to be cut off the side of any party-wall, where an independent side-wall is intended to be built against such party-wall.

When buildings (except the inns of court) that are erected over gateways, or public passages, or have different rooms and floors, the property of different owners, come to be rebuilt, they must have a party-wall, with a party-arch or arches, of the thickness od a brick and a half at the least, to the first and second rate, and of one brick to the third and fourth rate, between building and building, or between the different rooms and floors that are the property of different owners.

All inns of court set apart for the study or practice of the law are excepted from the regulation as above, and are only necessitated to have party-walls, where any room or chamber communicates to each separate and distinct stair-case, and which are also subject to the same regulations as respect the other party-walls.

Where a building of a lower rate is situated adjoining to a building of a higher rate, and any addition is intended to be made thereto, the party-wall must be built in such manner, as is required for the rate of such higher rate of building adjoining.

When any party-wall is raised, it is to be made of the same thickness, as the wall is of, in the story next below the roof of the highest building adjoining, but is not allowed to be raised at all, unless it can be done with safety to such wall; and the building adjoining thereto.

Every dwelling-house hereafter to be built which contains four stories in height from the foundation, exclusive rooms in the roof, must have its party-wall built according to the third rate, notwithstanding such dwelling-house may be of the fourth rate.

And every dwelling-house hereafter to be built which exceeds four stories in height, from the foundation, exclusive of the rooms in the roof, must have its party-walls built according to the first rate, notwithstanding such house may not be of the first rate.

CHIMENYS, &c. no chimney whatever to be erected on timber, except on the piling, planking, &c. of the foundations of the building.

Chimneys may be built back to back, in party-walls; and where so built, must not be less in thickness from the center of such party-wall than as follows.

First rate, or adjoining thereto to be one brick thick in the cellar story; and half a brick in the upper stories.

Second, third and fourth rat, or adjoining thereto, to be three-fourths of a brick thick in the cellar story; and half a brick in any of the upper stories.

Where chimneys in party-walls do not stand back to back, they may be built in any of the four rates fellow.

From the external face of the party-wall to the inward face of the back of the chimney in the cellar story, one brick and an half thick from the hearth, to twelve inches above the mantle.

Backs of chimneys not in party-walls, to the first rate must not be less than a brick and a half thick in the cellar story, and one brick thick in every other story, and to be from the hearth to twelve inches above the mantle.

N.B. if such chimney is built against any other wall, the back thereof may be half a brick thinner than as above described.

Backs of chimneys not in party-walls of the second third and fourth rate, must be in every story at least one brick thick from the hearth, to twelve inches above the mantle.

N.B. these backs may be also half a brick thinner, provided such chimney is built against any other wall.

All breast of chimneys, whether in party-walls or not, must not be less than one brick thick in the cellar story, and half brick thick in every other story.

All withs between flues are not to be less than half a brick thick.

Flues may be built opposite to each other in party-walls, but not to approach to the centre of such wall nearer than two inches.

All chimney breasts next the rooms and chimney back also, and all flues are to be rendered or pargetted.

The backs of chimneys and flues in party-walls against vacant ground are to be lime whited, or marked in some durable manner, but to be rendered or pargetter as soon as any other building is erected to such wall.

No timber whatever is to be over the opening of a chimney for supporting the breast thereof, but must have a brick, or stone arch, or iron bar or bars.

All chimneys are to have slabs, or foot paces of stone, marble, tile, or iron at least eighteen inches broad; and at least one foot longer than the opening of the chimney when finished, and which slabs or foot places must be laid on brick or stone trimmers at least eighteen inches broad from the face of the chimney breast, except where there is no room or vacuity beneath, and then they may be bedded on the ground.

No brick funnel is to be made on the outside of any building of the first, second, third or fourth rate, next to street, square, court, road, or way, so as to extend beyond the general line of the building therein.

No funnel or tin , copper, iron, or other pipe for conveying smoke or steam, is thereafter to be fixed next any public street, square , court, or way to the first, second third, or fourth rate, nor such pipe is to be fixed on the inside of any building nearer than fourteen inches to any timber, or other combustible material whatever.(p72)

(p.91) BUILDING, is used to signify the art of constructing and raising an edifice, in which sense is comprehends the expences, as well the invention and execution of the design. In the art of building, conveniency, firmness, and pleasure, are to be considered; and these Sir Henry Wotton considers under two heads, the situation and the work.

As to the situation, either that of the whole is to be considered, or that of its part. In the first, regard must be had the quality, temperature and salubrity of the air; to the quality of the soil; to the conveniency of the water, fuel, carriage, &c. and to the agreeableness of prospect. As to the situation of the parts, the chief rooms, studies, and libraries, should lie towards the east; those offices which require heat, as kitchens, brew-houses; bake-houses, and distillations, towards the south; those that require cool, fresh air, as cellars, pantries, and granaries, to the north; as also galleries for paintings, museums, &c. which require a steady light. The ancient Greeks and Romans generally situated the fronts of their houses towards the south , but the modern Italians vary very much from this rule. An indeed is absolutely necessary to have regard to the country, each being obliged to provide against its own inconveniences.

The simple form of building are either circular or angular. The circular form is very commodious, and the most capacious of any, strong, durable and very beautiful; but is the most chargeable of all others, and much room is lost by the bending of the walls, when it comes to be divided into apartments; besides an ill distribution of lights, unless it be from the center of the roof. For these reasons, the ancients employed this form only in their temples and amphiteatres, which had no need of compartimentations. As for angular forms, building neither loves many nor few angles. The triangle is condemned above all others, as wanting both capaciousness and firmness, as also on account of its not being resolvable, in the internal partitions, into any other figure than its own. Buildings with five, six or more angles, are more fit for fortifications than civil edifices. The rectangle therefore, is generally chosen, as being a medium between the triangle, and the pentagon, &c. as to a mixed form, party circular, and party angular, a judgment may be made of them, from what has been already said of simple ones. Let the builder however, remember not to lose sight of uniformity, while he is in pursuit of variety.

The accessories or ornaments of a building are fetched from sculpture and painting. (…)

(…)

(p93) CABINET, the most retired place in the finest apartment of a building, set apart for writing, studying, or preserving anything that is curious or valuable. A complete apartment consists of hall, anti-chamber, chamber, and cabinet, with a gallery on one side. Hence we say a cabinet of paintings, curiosities, &c.

(…)

(p.96) CARCASE, the shell or ribs of a house, containing the partitions, floors and rafters, made by carpenters; or it is the timber work, or, as it were, the skeleton of a house, before it is lathed and plaistered; it is otherwise called the framing.

(p.97) CARPENTRY, the art of cutting, framing and joining wood for the use of buildings. It is one of the arts subservient to architecture, and is divided into house-carpentry, and ship-carpentry: the first is employed in raising, roofing, flooring of houses &c. and the second of the building of ships, &c. the rules in carpentry are much the same with those of joinery; the only difference is, that carpentry is used in the larger coarser work, and joinery in the smaller and more curious.

There are very few regulations contained in the late act passed in the 14th of George III. Respecting carpenters work; the directions are short, and are as follow.

Timber partitions between building, and building that was erected, or begun to be erected before the passing of the act, may remain till one of the adjoining houses is rebuilt, or till one of the fronts, or two-thirds of such fronts, which abut on such timber partitions, is taken down to the bressummer or one pair of stairs floor, and rebuilt.

No timber whatever is at any time hereafter to be laid into any party-arch, other than for bond to the same. Nor into any party-wall other than for bond, &c. and the ends od the principal timbers to the floors and roof.

But no timber bearer to wood stairs, where an old party-wall has been cut into for that purpose, must be laid nearer than eight inches and an half to any chimney or flu whatever, or nearer than four inches to the internal finishing of the building adjoining.

No timber to be laid in any oven, copper, stove, still, boiler, or furnace, nor within two feet of the inside thereof.

No timber whatever to be laid nearer than nine inches to the opening of any chimney.

Nor nearer than five inches to any flue of a chimney, oven, stove, copper, still, boiler, or furnace. Or nearer than nine inches, if such timber is placed nearer than five feet of the mouth of the same respectively.

No timber to be laid under any hearth to a chimney, nearer than eighteen inches to the upper surface of such hearth.

No timber whatever to be laid nearer than eighteen inches to any door of communication through party-walls between ware houses or stables.

All wood-work, whatever, against any breast, back or flue, of any chimney, must be fixed by iron nails or hold-fasts, and not to be drove more than three inches into the wall, or nearer than four inches to the inside of the opening of any chimney.

Bressumers, story-posts, and plates thereto, are only allowed in the ground story, and may stand fair with the outside face of the wall, but to go no deeper than two inches into a party-wall, nor nearer than seven inches to the centre of a party wall where it is two bricks thick, nor nearer than four inches and an half, if such party-wall does not exceed one brick and an half in thickness.

All window-frames, and door-frames to the first, second, third and fourth rate, must be recessed in four inch reveals at least.

Door-cases, and doors, to ware-houses only, as shall be of the first, second, third and fourth rate, may stand fair with the outward face of the wall.

Every corner story-post, which is fixed for the support of two fronts must be of oak or stone, at least twelve inches square.

No external decoration whatever to be of wood, except as follows: cornices, or dressings to shop-windows, frontispieces to door-ways, of the second, third, and fourth rate; covered-ways, or porticos to a building, but not to project before the original line of the houses in nay street, or way, and which covered-ways or porticos, must be covered with stone, lead, copper, slate, tile or tin.

N.B. No such covered-way, or the cornice to any shop-windows, nor the roof of any portico, is to be higher than the underside of the fill to the windows of the one pair of stairs floor.

All other external decorations whatever the first, second, third, and fourth rate, are to be of stone, brick, artificial stone, stucco, lead, or iron.

Every flat gutter and roof, and every turret, dormer, and lanthern light, or other erection, placed on the flat, or roof, of any building of the first, second, third, or fourth and also the fifth rate, must be covered with glass, copper, lead, tin, slate, tile or artificial stone.

No dripping eaves to be made next any public way, to any roof of the first, second, third or fourth rate, except from the roofs of porticos or other entrances.

Wood-trunks are not to be higher form the ground than to the tops of the windows od the ground-story, the pipes from thence upwards, must be lead, copper, tin, or iron, and may discharge the water into channel-stones, on or below the surface of the ground. Or the wood-trunks may be continued down below the surface of the ground into drains, &c. or into brick or stone funnels, and such funnels must in every part thereof be below the surface of the foot pavement.

This building-act, however, extends only to the bills of mortality, and the parishes of St. Mary-le-Bone, Paddington, St. Pancras, and St Luke at Chelsea.

(P.104) CAVAZION, OR CAVASION, in architecture, the hollow trench made for laying the foundation of a building, which according to Palladio, ought to be one sixth part of the height of the whole building.

(P105) CUSEWAY, OR CAUSEY, a massive body of stones, stakes, and fascines; or an elevation of that vicious earth, well beaten; serving either as a road in wet marshy places, or as a mole to retain the waters of a pond, or prevent a river of overflowing the lower grounds.

CELL, cella, a little apartment or chamber, such as those wherein the ancient monks, solitaries, and hermits, lived in retirement. The hall wherein the Roman conclave is held, in divided by partitions into divers cells for the several cardinals to lodge in.

CELLAR, the lowest room in a hose, the ceiling of which is level with the surface of the ground on which the house stands, or at most but very little higher. As to the situation of cellars, Sri Henry Wottom says, they ought, unless the whole house be cellared, to be situated on the north-side of the house, as requiring of cool and fresh air.

Cellars are usually dug by the solid yard, which contains twenty-seven solid feet; and therefore the length breadth , and depth being multiplied together, and the product divided by twenty-seven, the quotient will give the content of solid yards.

CEMENT or CAEMENT, in a general sense, any glutinous substance capable of uniting and keeping things together in a close cohesion.

Cement, in architecture, a strong sort of mortar, used to bind or fix bricks or stones together, for some kind of mouldings; or in cementing a block of bricks; for the carving of capitals, scrolls, or the like. It is of two sorts, one called hot cement, and the other cold cement; because the hot cement is made and used with fire; and the cold cement is made and used witout fire.

To make the hot cement, take of bees-wax two pound, and of resin one pound; mix them, and add one pound and half of the same powdered, as the body to be cemented is composed of, strewing it into the melted mixture, and stirring them well together; and afterwards kneading the mass in water, that the powder may be thoroughly incorporated with the wax and resin. The proportion of the powdered matter may be varied, where required, in order to bring the cement nearer to the colour of the body on which it is employed.

This which forms an excellent strong cement, must be heated when applied; as must also the parts of the subject to be cemented together; and care must be taken likewise that they are thoroughly dry. Where a great quantity of cement is wanted for coarser uses, the coal-ash mortar, or Welch terras, as it is called, is the cheapest and best, and will hold extremely well, not only where it is constantly kept wet, or dry; but even where it is sometimes dry, and at other times wet; but where it is liable to be exposed to wet and frost, it should, at its being laid on, be suffered to dry thoroughly before any moisture can have access to it; and in that case, it will likewise be a great improvement to temper it with the blood of any beast. This mortar, or Welch terras, must be formed of one part of lime, and two ports of well fisted coal-ashes; and they must be thoroughly mixed by being beaten together; for on the perfect mixture of the ingredients, the goodness of the composition depends.

Where the cement is to remain continually under water, the true terras is commonly used, and will very well answer the purpose. It may be formed of two parts of lime, and one part of plaister of Paris, which should be thoroughly well beaten together, and then used immediately.

For the fixing shells, and other such nice purposes, putty is most generally used; but it may be formed of quick lime and drying oil, mixed with an equal quantity of linseed oil; or, where the drying quicker is not necessary, it may be made with lime and crude linseed oil, without the drying oil.

Resin, pitch, and brick-dust, in equal parts, melted together and used hot, are much the cheapest cement for shell work, and will perform that office very well, provided the bodies they are to join together be perfectly dry when they are used.

The cold cement is less used, and is reckoned a secret known but to few bricklayers. It is made after the following matter.

Take a pound of old Cheshire cheese, pare off the rind and throw it by, then cut or grate the cheese very small, put it into a pot with a quart of cow's milk; let it stand all night, and in the morning take the whites of twenty-four or thirty eggs, and a pound of the best unflacked or quick lime, and beat it in a mortar to a very fine powder, fist it in a fine hair sieve, put the cheese and milk to it in a pan, or bowl and stir them well together with a trowel or such like thing, breaking the knobs of the cheese, if there be any, then add the whites of eggs, and temper all well together, and it will be fit for use. This cement will be white colour;, but if you will have it of the colour of brick, put into either some very fine brick-dust, or some almegram, just sufficient to give it a colour.

CHAMBER, in a house or building, andy room situate between the lowesmost, excepting cellars, and the uppermost rooms. So that there are in some houses two, in others three or more stories of chambers. Sir Henry Wottom directs, that the principal chambers for pleasantness be situated towards the east.

As to the proportions: the length of a well proportioned lodging should be the breadth and half of the same, or some small matter less, but should never exceed that length. As for the height, three-fourths of the breadth will be a proper height. Palladio directs, that chambers, anti-chambers and halls, either flat or arched, should made of the following heights. If they are flat, he advises to divide the breadth into three parts, and to take two of them for the height of the story from the floor to the joist.

In the building of chambers regard ought to be had the place of the bed, which is usually six or seven feet square; and the passage , as well as to the situation of the chimney, which for this consideration, ought not to be placed just in the middle, but distant from it about two feet, or two feet and an half, in order to make room for the bed; and by this means the inequality is hardly discerned, if it be not in buildings of the breadth at least of twenty-four feet within the work; and in this case, it may be placed exactly the middle.

(p.109) CHIMNEY, that part of the house where the fire is made, having a funnel to carry away the smoke.

In most things relating to building, we may refer the modern architect to the practice of the ancients for models from which to work, and examples by which to improve; but in this matter of chimneys we have not that resource. The accounts the ancients give of them in their writings are short and trivial; and the rules of Vitruvius for constructing the are full of obscurity. Indeed they were less acquainted with them, because they had less necessity for them; they lived in a warmer country than ours, and they had the use of stoves; so that the construction of chimneys was little regarded. With us the necessity of them is absolute, and the inconveniences that frequently attend them are so great, that nothing more essentially regards the profession of the architect, than their proper construction and disposition.

Fires are necessary, and we with the smoak to pass free away; in this the effect of the wind is very great; and to be secure of every advantage in that respect, the builder is to have the danger of smoak in his eye from the first disposition of the building. Let him consider first the nature of the region, and from what quarter the winds most frequently blow, or most furiously: and let him, according to this consideration, dispose the rooms that shall have most need of fires in places where these winds have least power. This is much earlier than builders usually begin their provision against smoaky chimneys; but their not taking the precaution in time is one of the principal reasons why the fault is so difficult to be remedied. He who shall have begun thus can have only the ill construction of a chimney to combat with the attempt of remedying and error; he who was neglected it may have the disposition of it, which is often impossible to alter.

The common causes of smoaking are either that the wind is too much let in above at the mouth of the shaft, or the smoke is stifled below; and sometimes a higher building, or a great elevation of the ground behind is the force of mischief. Finally, the room in which the chimney is, may be so little or close, that there is not a sufficient current of air to drive up the smoke. When the architect has thus acquainted himself with the several causes of the smoaking of chimneys, the will know by what means he may most rationally obviate such inconveniences; and how he may remedy the accident, where in spite of all his care it shall happen: when the cause is not considered, this is impossible, and it is no uncommon thing to see much labour bestowed perfectly in vain, because the fault is misunderstood.

As smoaking is the greatest inconvenience that can attend this part of architecture, we have set out in this place with its causes; these we shall now caution the architect to obviate by a proper disposition and proportion of his rooms, and a judicious construction of chimney itself. We have seen, that the two great causes of the inconvenience are the smoke's being driven back, or lingering in the funnel; the driving back is an accident from without; the lingering of the funnel is from some error within, either in the construction of the funnel itself, or of the room where the chimney stands.

The chimney may be divided into two parts, the first containing the opening, the hearth, and the funnel; the other the jambs or sides, the mantle-piece which rests upon them, and what is called the chimney-piece, which comes over the mouth. This is the common distinction, and according to this, the first part is what concerns us, the rest ornament.

Much depends upon the opening if this be too small and low, the smoke of itself naturally is checked at the first setting out, and missing its way, returns into the room; and on the contrary, if it be too large and high, the same happens, because if there be too much room for the air and wind the smoak will by that be driven into the room. The proportions of the chimneys we shall give hereafter, when we treat of their ornamental parts, and the room in which they are to stand; here we are enquiring only into their general structure. The mouth of the chimney, or that part which joints the back, should be something smaller than the rest; for this will make a stop against the smoak, when it shall be coming down into the room; and meeting with that resistance, it will of course return back; indeed the making the funnel narrowest at the bottom is a very great article in the preventing of smoaking, because it assist doubly; the smoak getting the easier up, as the space is all the way wider, and coming down with more difficulty as it grows narrower. Yet this prudent caution must not be carried to an extreme, because then the smoak will linger in the upper part, and all the force of the draught below will not be sufficient to send it up.

Another very good method to assist the discharge of the smoak is the making two holes one over another in each side of the chimney; one of these is to go flopping upwards, and the other sloping downwards, so that the smoak will always find way through one of them. The placing a moveable vane at the top of the chimney is also often successful; this keeps the opening of the funnel screened against the efforts of the wind, let that blow which way it will. To these we may add tow other contrivances more ingenious than useful; the one is the carrying up the funnel spiral, to prevent the easy descent of the smoak; and the other the hanging the aelipili in the lowes part of the Chimney, to drive it up by blowing. This aeolipili is a hollow ball of brass filled with water, with a small opening in one part; this being hung up just over the flame, blows forcibly out at the hole as the water heads.

These are the several methods commonly used for the remedying as well as preventing the smoaking od Chimneys; but let the judicious architect proceed upon the most certain principles in obviating the danger. Le him observe a due proportion between the size of the room and that of the Chimney; let him be careful to place the doors in such manner, that they may most favour the carrying up of the smoak, and to give the sides a proper projection , and the back a due distance.

Chimneys hooks are hooks of steel and brass, put into the jaumbs of Chimneys, into each jaumb one, for the handle od the fire-tongs and firepan to rest in.

Chimney jaumbs, are the sides of a chimney, commonly standing out perpendicularly (but sometimes circularly) from the back, on the extremities of which the mantle-tree rests.

CHIMNEY-PIECE, is a composition of certain mouldings of wood or stone, standing on the fore-side of the jaumbs, and coming over the mantle-tree.

(p111-p158, ornaments of chimney-pieces)

(p160) CISTERN, is properly used for a subterraneous reservoir of rain water, or a vessel serving as a receptacle for rain or other water, for the necessary uses of a family. If you would make your cisterns under the house, as a cellar, which is the best way to preserve water for the culinary uses, then lay the brick or stone with terras, and it will keep water very well. Or you may make a cement joint your brick or stone with, with a composition made of slacked fisted lime and linseed oil, tempered together with tow or cotton-wool. The bottom should be covered with sand, to sweeten and preserve it. Or you may lay a bed of good clay, and on that lay the bricks for the floor; the raise the wall round about, leaving a convenient space behind the wall to ram in clay, which may be done as fast as the wall is raised; so that when it is finished, it will be a cistern of clay walled with brick; and being in a cellar, the brick will keep the clay moist (thought it should sometimes be empty of water) that it will never crack. Mr. Worlidge says, he has known his to hold water perfectly in a shady place , though not in a cellar. Thus in garden or other place may such a cistern be made, and covered over, the rain-water being conveyed thither by declining channels running to it. Also in or near houses, may the water falls from them be conducted thereto. Authors speak of a cistern at Constantinople, the vaults of which are supported by two rows of pillars 212 in each row, each pillar being two feet in diameter. They are planted circularly, and in radii tending to that in the centre.

Some persons are very scrupulous about these waters, which are received in cisterns; for they pretend that they are not all good, without distinction; that rain which falls in a small quantity during heats, and the great rains which falls presently after great droughts, are reckoned in the number of those that are bad; and thence it is, they say that the water which is sometimes out of Cisterns has a very disagreeable taste, and very often stinks. As for those rains that fall during the autumn, spring and winter, when the weather is not violent; these, say they, are tolerably good. And in all fine weather, they esteem the small rains that fall in the month of May, which should be carefully saved, to be the best, as being the purest and lightest, and even to putrify the water already in the cistern.

As to the making cisterns, let it be observed, that the walls should be good, and built to advantage, for fear the water should be lost, that the insides should be well cemented, especially in the angles without any necessity of doing the same by the arch or roof through which the water cannot pass. As to the sizeof the cistern, that depends upon the fancy of the person. The manner of bringing together rain water, is of channels made of different materials, fixed to the edge of the roofs of hoses, which convey the water into small bafon made of lead or tin, in the midst of which there is a hole, through which the water passes into a pipe that is there; and which, before it enters into the cistern, helps it to fall into a stone through made on purpose near the Cistern. This through is placed to receive the rain that falls from the roofs to the houses, from whence it runs into the cistern; but, as it has been observed before, that there is a difference to be made between the rains that fall, and which are received into these conveyances, without distinction, it is necessary you should know how to save those that are good and wholesome, and get rid of the rest; it must be by the means of this trough, which has a hole in the bottom, in a corner, on that side where the most declivity appears. This hole must, at the time you judge it convenient to save the water, be stopped, to the end that the trough coming to be filled up to a certain place, where there is a grate on the side of the Cistern, it may supply a passage for the inclosed water to fall into the cistern; and when, on the contrary, they do not value the rain that falls, they only leave open that hole, so that as fast as the water comes into the trough, so fast it runs out.

There are some who do not use any such trough as this, but suffer the rain to fall without any distinction into a subterraneous place built higher that the cistern, in which they put some river sand, pretending that the water which passes through is purged of all ill qualities it may have; and that consequently the water they take out of the cisterns to drink, ought to be extremely good.

CLAMP, among brick-makers, a pile of unburnt bricks built up for burning. These clamps are built much after the method that arches are built in kilns, with a vacuity betwixt each brick's breadth, for the fire to ascent by, but with this difference, that instead of arching, the trussover, or over-span, as they term it, i.e. they lay the end of one brick about half way over the end of another, and so till both sides meet within half brick's length, and then a biding brick at the top finishes the arch. The mouth, at which the fire is to be put in, is left open about two feet and half wide, and about three feet in height; and then the begin to truss-over, which they do for three bricks in height; and which, with a binding brick at the top will close up the arch. But after they have begun to make the place to receive the fuel, before it is closed at the top, they almost fill it with wood, and upon that, lay sea-coal; then being over-spanned like an arch, the strew sea-coal on all the surfaces, and then lay another course of bricks the other way, placing them a little distance from one another, and strewing sea-coal upon them; and thus they continue laying one course one way, and another the other, and strowing sea-coal betwixt each course, till they come to eight or ten feet high, according as the clamp is to be for size; when they have done this, they set the wood on fire, and that fires the coals, which being all burn out, the whole clamp of bricks in burnt.

CLAMP-NAILS. Are such nails as are used to fasten on clamps in the building or repairing of ships.

CLAMPING, in joinery, c& is when a piece of board is fitted with the grain to the end of another piece of board cross the grain, the first board is said to be clamped. Thus the ends of the tables are commonly clamped, to prevent them from warping.

CLINKERS, those bricks which having naturally much nitre, or saltpeter in them, and lying next the fire in the clamp or kiln, by the violence of the fire, are run and glazed over.

CLOSET, a general name for any very small room, generally without any chimneys; it is steemed one great improvement of our modern architects.

COLLAR-BEAM, a beam framed across betwixt two principal rafters.

(…)

(p168) COMMISURE, in architecture, is the joint of two stones, or the application of the one to that of the other.

COMPARTITION, in architecture, the useful and graceful disposition of the whole ground-plot of an edifice, into rooms of office, of reception or entertainment.

(…)

(p171) CONTRAMURE, in architecture, an out-wall built about the wall of a city.

(…)

(p174) CORNER STONES, are two stones commonly of Rigate or fire-stone; of which there atands one in each jaumbs of a chimney, thir faces are hollow in breadth, being a certain sweep of a circle. The breadth of each stone is equal to the breadth of the jaumb, and their height reaches from the hearth to the mantle-tree.

(…)

(p180) CORRIDOR, in architecture, a gallery, or long isle around a building, leading to several chambers, at a distance from each other.

(…)

COVING, in building, when houses are built projecting over the ground-plot, and the turned projecture arched with timber, turned with a quadrant of a circle or semi-arch, lathed and plaistered, under which people may walk dry, as is much used at Tunbridge-Wells, on the upper walks, the work is commonly called Coving.

COUNTER-FORTS, buttresses, spurs, or pillars of masonry, serving to prop or sustain walls, or terrasses, subject to bulge or be thrown down. These works are usually bent into arches, and placed at a distance from each other, when anything is built on the descent of a mountain, it must be strengthened with counterforts, well bound to the wall, and at the distance of about twelve yards from each other.

(…)

(p181) COUNTER-MURE, a little well built close to another, to fortify and secure it, that it may not receive any damages from buildings made contiguous to it.

COURSE, in architecture, a continued range of stones, level, or of the same height throughout the whole length of the building, without being interrupted with any aperture. A course of plinths, is the continuity of a plinth of stone or plaister, in the face of the building, to mark the separation of stones.

(…)

CRAMP-IRON, or CRAMPS, a piece of iron bent at each end, serving to fasten together pieces of wood, stones, or other things.

CRANE, a machine used in building and commerce, for raising large stones and other weights. It is of two kinds, in the first, only the gibbet moves upon its axis; and in the second, called the rats tail crane, the whole crane, with its load, turns upon axis.

(…)

CROSSETTE, in architecture, the returns in the corners of chambranles, or door-cases, or window-frames, called also ears, elbows, ancones, prothyrides. The Crossette of a luthern is the plaister or covering near a luthern.

(…)

(p182) CUPOLA, in architecture, a spherical vault, or the round top of the dome of a church, in the form of a cup inverted.

(…)

DESIGN, in a general sense, the plan, order, representation, or construction of a building, book, painting, &c. In building, the term ichnography may be used, when by design is only meant the plan of a building, or a flat figure drawn on a paper; when some side or face of the building is raised from the ground, we may use the term orthography; and when both front and sides are seen, in perspective we call scenography. (…)

(…)

(p191) DIGGING, the digging of the ground for cellars, and for the foundations of buildings, is commonly done by the solid yard, containing twenty-seven solid feet, which is commonly counted a load. Therefore take the dimension in feet, multiply the length by the breadth, and the product by the depth, and then divide the last product by twenty-seven, and the quotient will give the content in solid yards.

(…)

(p193) DISTRIBUTION, in architecture, the dispensing of the several parts and pieces which compose a building, as the plan directs. The distribution of ornaments, is an equal orderly placing of the ornaments in any member of architecture.

DOORS, two thing are to be considered in the design of a door, the first its aperture, and the second its ornaments. These must both enter into the mind of the architect who is designing and edifice, or he will never proportion or adapt it to the structure. How often do we see in London, doors which appear not to belong to the house, but to be joined to it against nature, not raised with the building. It is common to see doors whose breadth occupies near one half of the extent in front; and in dover-street there is one whose top covers half the window placed over it in the upper story. This is the errors of those who mean to be magnificent; but the opposite is too common in plain houses. Doors are put which seem to say, no fat man comes into this house, and they always disgrace the whole building.

The variations in antique are in this instance very great; and from this is was that Palladio evaded giving rules for the dimensions of doors in proportion to houses. He was sensible he could lay down none against which some instance might not be brought, in those buildings which were allowed masterly in their kind; and he therefore left in undetermined. There are many things in which the antient architects have erred, and it will be a double error in us to copy their faults. They did not in general make the aperture equal all the way, but contracted it upwards. This must have had a strange effect. A door narrower at the top than the bottom must have appeared a deformity in building. The limits of these things are not fixed at any certain point, nor are the powers of genious fettered by such boundaries. While we admire the dignity of the Grecian, the pomp of the Roman Doors, let us see also this contraction as an egregious error, and if we refer to Palladio, or to the oracle of Palladio, Vitruvius, on this account, let it be to dissent from their opinions. With regard to the Italian, he was lost in the diversity of what he read, and what he saw; as to the Roman, he seems to have received it as a law in the science, that there should be this contraction; and when the directs that in doors of more than thirty feet height in the opening, there should be no contraction of the diameter, his commentator Philander, who rarely misses his sense, says this was, because at that height the nature of vision answered the same purpose; and the contraction was given to the eye by distance.

The architect will see by this free disquisition, that the antients are not proper instructors in the dimensions of doors; how much soever we may learn from them respecting their ornaments. He will see also, that the most famous of the moderns has left him uninformed on this lead; and if he looks into the common books of design he will find nothing but absurdity.

With respect to the height of doors in the aperture, there is an universal law in reason, thought no observed; there is a certain height below which they must not be, thought for dignity and proportion the field in which they may exceed is almost unlimited. The human stature is the mark for the least height can be proper; he who makes a door is not descend below this established proportion. For the lowest door then the height must be such, as that a moan of the highest common stature may go through it without stopping. This limits the measure to six feet; below this the door of no house should be made, even of the plainest; but all above is left to fancy guided by the general idea of the proportion. The height being thus determined, the breadth comes into consideration; the sides must be so distant, that they must not reduce a man to enter with his arms in any particular posture; as he is to go without stopping, so he ought to be able to walk in at ease. The smallest dimension therefore in breadth that can be allowed is three feet; and this being half of the given height has a very good effect in respect of general proportion.

These are the rules laid down by nature, and these being allowed as truth, become the foundation of all other proportions. While we are near this, we are sure not to err; and this and this ought always to be kept in remembrance for that purpose. He would have reason to complain of the confined laws of the science, who fancied that from this every door must be made the exact double of its breadth in height; there are peculiar constructions which require particular measures; but as in all other cases there are bounds which must not be transgressed, so in this there is a latitude, as we shall shew, within the fancy may rove, but which is must no pass. We have said, that for the plainest doors the proportion of height to breadth must be double; this is to be a little varied at the pleasure of the architect, and he must thus employ his liberty.

If the front of the house extend considerably in breadth, in proportion to the height, the door must be adapted to it, by having a proportion of breadth somewhat too great for its height; upon the preceding principles, and in the same manner, if the building be one of those which rise to a height without any great breadth, the door for it should be made a little more than twice as high as broad, to accommodate the figure of that as of the other parts to the form of the whole. There are liberties he is to take, but they must be taken with discretion; great variations from common proportions will be always wrong; and it is needful, because a door is so obvious a part, that lesser will be seen.

The form and dimensions of doors having thus been established upon some principles, we are to consider their position. This varies according to their distance from the level of the ground, and is to be governed by the height of the floor to which they belong. In the plainest and most ordinary houses the door is upon the level of the ground, but this is wrong for very obvious reasons. There is to be some settling expected in the house, and experience shews, that the ground in all inhabited places naturally rises in surface. Therefore a house whose floor of entrance was placed originally upon the level of the ground, will in a few years from the concurrence of these two accidents, or from one of them, be below that level; the door will then stand below the surface of the ground, and we must go down stairs into the house; this is to be avoided both for shew and service. A floor under the level of the ground will be damp, and the door, if well proportioned at first, it will be too low for its breadth, at least it will appear so, which is respect is the same thing. This is a reason why a door should never rest upon the level of the ground; but if against all rule the builder or the owner will have it so, the proportion to be observed is this; it must be made somewhat high in an over-proportion to the breadth, because the eye at first will reduce it to the appearance of regularity, and probably accidents afterwards will place it below it.

Hence is derived a principle that ought to stand as unalterable in itself; that the more the door of a house is raised above the level of the street, the more its breadth should exceed the natural proportion with respect to the height. This depends upon the nature of vision; which in this near objects ought always to be consulted; for the higher of the door is placed, the narrower it will appear by distance, and therefore the broader it should be made in reality. These are points which deserve to be considered much more strictly than they are, for upon them depends entirely the proportion. In the earliest architecture we find, that the custom was to place the door at a considerable height above the level of the ground; and in all magnificent buildings is should be thus raised, and in others in proportion to their size. The raising the door after the old Greek manner gives many advantages. The floor to which it opens has elevation, better air, and the advantages of the prospect. There is the benefit to it by flights of step, which whether single or double, are of great ornament, and may be carried to any degree of elegance, according to the pleasure of the purchaser; it also gives a good floor for the use of the servants. For all these reasons we see it best to give the door an elevation, and we have directed the architect to the only method by which one of this situation ever can be rendered truly graceful.

We are now naturally led to the ornaments of doors, and are to propose, as their first and greatest decoration, the use of orders. They are the noblest and most graceful part of architecture, and are therefore suited to what is to make the first impression, as a door naturally does. Their expence is no where an article of so little consideration, because they are smaller and fewer than in common uses; and the architect of taste has this reason to pleased with them, that he has in their construction a scope for all the boldness of his genius, and the best sights of his regulated fancy. Great variations are authorized by the remains of antiquity in the construction of every one of the orders; in the ornaments of doors there is full scope for the imitation of all those of the antients, and for the devising new ones; and from this may arise a dignity and grace unknown hitherto in architecture. From these he may select what will best suit the purpose of every particular door; for it will be proper for him to give the greatest heights to his columns and their capitals, where the door is to be, according to its situation, narrower than usual in respect of height; and on the contrary, to select those columns from among our examples of each order, which are lowest, where the door is broader than the exact proportion of height would dictate. This is the true use of these remains of the antique, and by such a method of employing them they will obtain as much credit for the architect, as in a random choice they would disgrace him.

One thing remains to be observed with respect to diminution of columns used in ornamenting doors, that the greater this is, the less they are suited to the purpose. This is one of many reasons that ought to banish the Tuscan order from this piece of service. Its diminution is not only the greatest of that of any order (decoration of the doors, orders… 197-200)

(p200)while we prefer the enriching our door-cases by the hand of art to the more expensive treasures that are to be had from nature, we must observe, that some regard should be paid to each. The materials should be adapted to the workmanship; for it would be a pity to bestow labour and genious upon such materials as would disgrace them; or upon such as would not long enough support themselves against the force of accidents. Stone moulders quickly when exposed to the air; therefore when a very elegant door-case is intended for the outside, the proprietor should not grudge the use of marble.

In the same manner with regard to the Door-cases for rooms in which these orders shall be admitted, the choice naturally falls upon wood; but there is as much difference between wood and stone and marble. Our fathers worked in oak, a wood unfavourable to the tool, but which, in their masterly hands, admitted every stroke, and repaired the toil with immortality; we now use fir, the weakest, and poorest of all woods that could have been employed for this purpose; and we can give for this but two reasons, equally mean; these are, that it comes cheap, and cuts easy. It will not admit of delicate strokes which have eternalized the chisels of our fathers; nor support itself, on those tender parts into which they cut their fin works. We have the same materials in which they wrought, and not one kind, but many, of wood that will be very useful for the purpose. The pear-tree is famous, and the maple more; this last was known in the earliest time of which we have account, and celebrated for its excellence for this purpose; what then is the reason our people do not use them? They cut as freely as deal, and they are not nearly so liable to break off in pieces to the discredit of the work. It is not needful the whole door-case should be made of such wood; no, not the whole columns; let those who calculate expence so nicely, save in these articles, and only make the pieces of this wood that are for sculpture, the capital of a column, the ornaments of a freeze, or the like. The difference of colour, to us who cover all with paint is nothing; and the work would shew in a finer manner, and would be much more lasting.

(painting, sculptors, ornaments… p201-202)

(P202) the opening of the door is next to fall under consideration, and the common architect will think, that he has no more choice than to place the hinges on one or the other side, so that it may open one way or the other, inwards or outwards: for one of these two ways he will suppose every door in the world must open. But there is a way different from either of these, and it is a method of extreme elegance. A street door opening inwards is no inconvenience, because it opens into a hall, which is a room of no consequence; but this is not the case in the more elegant apartments, where the communication is by a door in the partition wall, and the entrance immediately out of one room into another.

We will suppose the two principal rooms upon a first floor, communicate by a door in the center of the partition. In an evening, when they are lighted up, this door is throw open, and the furniture in both being alike, it becomes as one apartment. In this case the door, according to the modern custom, must open into one or into the other of the rooms, and into which soever of the two it is, it will there will blemish; an awkward slanting piece, standing in the room with a disagreeable sharp angle. This may be prevented by making a cavity somewhat more than equal to the depth and substance of the door in the thickness of the wall. Into this the door may slide by gentle touch, and remain undiscovered; and handsome brass ring being fixed to the edge, it may come out again when it is to be shut with as flight a motion. This is done at the house of a gentleman near Hanover-square, and the manner of it there may serve as an example to other builders. The opening, in the usual way, is either by the whole door on one side, or by half of it each way, the door being composed of two, folding in the middle; but in either case it is not comparable to the method we have here proposed of sliding it into the wall on many occasions.

Last of all we come to the structure of the fabric of the door itself; this should be contrived for strength, beauty and straitness. All these purposes are answered by making in many panels. The folding, or half doors, are best made of four panels, two larger and two smaller; and the entire door of eight. The framing must be found, and the joints well secured. They may be varied in form many ways; but to be minute in these things shews a poorness of genius in the architect. The best form of the panels is the plainest, and this is a long square; the two or four larger should be long upwards, and the other cross-wife. This is a construction that shews strength and firmness, and this is all that should be consulted here, the decoration belonging to the other parts.

(P204) DORMER, in architecture, is the window made in the roof of a house, or above the entablature, being raised upon the rafters.

DORMANT-TREE, is a name given by workmen to a great beam lying cross a house commonly called summer.

DOVE-TAILING, in carpentry, is a manner of fastening boards together by letting one piece into another, in form of the tail od a dove. It is the strongest of the kinds of jointing or assemblages, wherein the tenin, or piece of wood which is put into the other goes widening to the extreme; so that it cannot be drawn out again by reason the extreme or tip is bigger than the hole. It is called by the French, *queue de aron*, i.e. Swallow-tail, which name is also used by the English themselves in fortification.

DRAG, a door is said to drag when in openings or shutting, it hangs or grates upon the floor or cell.

DRAGON BEAMS, are two strong braces or struts which stand under a brest-summer, meeting in an angle upon the shoulder of the king-piece.

DRAUGHT OR DRAFT, in architecture, the figure of an intended building described on paper, in which apartments, rooms, doors, passages, &c, in their due proportion to the whole building. It is customary, and convenient for any person, before he begins to erect a building, to have a designs or draughts drawn on a paper or vellum, wherein the ichnography or ground-plot of every floor or story is delineated; as also the form or fashion of each front, with the windows, doors, ornaments, in an orthography, or upright. Sometimes the several fronts, &c. are taken and represented in the same draught, to shew the effect of the whole building, which is called scenography or perspective.

DRIP, in architecture, are a certain kind of step, made on flat rooms to walk upon; a way of building much used in Italy, where the roofs is not made quite flat, but a little raised in the middle, with drips or steps. Lying a little to the horizon.

(p206) EAVES, in architecture, the margin or edge of the roof of an house, being the lowest tiles, slates, &c. that hang over the walls, to throw off water to a distance from the wall.

(p.207) ELM, is of singular use, where it may lie continually wet or dry in extreams, therefore proper for water-works, mills, ladles, and soles of wheel pipes, aqueducts, pales, ship planks, beneath the water line. Some of it sound in bogs has turned like the most polished and hardest ebony. It is also of use for wheel-wrights, handles for single saws, the knotty parts for naves and hubs; the straight and smooth for axle-trees; and the very roots for curious dappled works, kervs of coppers, featheredge and weather-boards, trunks, coffins, and shuffle-board tables. The tenor of grain makes it also fit for all kinds of carved work, and most ornaments belonging to architecture. Vitruvius recommends it for tenons and mortoises.

EMBRASURE, in architecture, the enlargement made of the aperture of a door or window on the inside of the wall, its use being to give the greater play for the opening of the door, or casement, or to admit the more light. When the wall is very thick, they sometimes make embrasures on the outside.

(p208) ENTERSOLE, in architecture, a kind of little story, sometimes called a mezzanine, contrived occasionally at the top of the first story,, for the conveniency of a wardrobe, &c.

(p211) FABRIC, the structure or construction of any thing, particularly a building, as a house, hall church, &c.

FAÇADE, OR FACE, in architecture, the front of a building, or the side which contains the chief entrance. It is also sometimes used for the side which it presents to the street, garden, court, &c. and sometimes for any side opposite to the eye.

FENCE, a hedge wall, ditch, bank or other enclosure, made round gardens, fields, wood, &c. In hotter climates than England, where they have not occasion for walls to ripen their fruit, their gardens lie open, where they can have a water fence and prospects; or else they bound their gardens with groves, in which are fountains, walks, &c. which are much more pleasing to the sight than a dead wall; but in colder countries, and in England, we are obliged to have walls to shelter and ripe our fruit, although they take away much from the pleasant prospect of the garden. Since therefore we are under the necessity to have walls to secure our gardens from the injuries of the winds, as well as for the convenience of partitions or enclosures, and also to ripen our fruit, brick walls are accounted the best and warmest for fruit; and these walls, being built panel-wise, with pillars at equal distances, will safe a great deal of charge, in that the walls may be built thinner than if they were built plain, without this panels; for then it would be necessary to built them thicker everywhere; and, besides, the panels make the walls look the handsomer.

Stone walls are to be preferred to those of brick, especially those of square hewn stones. Those that are made of rough stones, though they are very dry and warm, yet, by reason of their unevenness, are inconvenient to nail up trees to, except pieces of timber be laid in then here and there for that purpose. But in large gardens it is better to have the prospect open to the pleasure-garden, which should be surrounded with a fosse, that from the garden the adjacent country may be viewed; but this must depend of the situation of the place; for, if the prospect from the garden in not good, it had better be shut out from the sight by a wall or any other fence, than to be open. As also, when a garden lies near a populous town, and the adjoining grounds are open to the inhabitants; if the garden is open there will be no walking there in good weather, without being exposed to the views of all passengers, which is very disagreeable. Where the fosses are made round a garden which is situated in a park, they are extremely proper; because hereby the prospects of the park will be obtained in the garden, which renders those gardens much more agreeable than those which are confined.

In such places where there are no good prospects to be obtained from a garden, it is common to make a enclosure of park paling, which if well performed, will last many years, and has a much better appearance than a wall; and this pale may be hid from the sight within by plantations of shrubs and ever-greens; or there may be a quick hedge planted within the pale, which may be trained up, so as to be an excellent Fence by the time the pales begin to decay. There are some persons who make stockade Fences round their gardens to keep out cattle, &c. which, when well made, will answer the purpose of fences; but this being very expensive in their making, and not of very long duration, has occasioned their not being more commonly in use.

As to fences round parks, they are generally of paleing; which, if well made of winter-fallen oak, will last many years. The fence may be six feet and half high, which is enough for a fallow deer; but, where there are red deer, the fence should be one foot higher, otherwise they will leap over. Some inclose their parks with brick walls; and in countries where stone is cheap, the walls are built with this material; some with, and others without mortar. The height of garden-walls should be twelve feet, which is a moderate proportion, and if the soil be good, it may in time be well furnished with bearing wood in every part, especially with that part planted with pears, notwithstanding the branches being trained horizontally from the bottom of the walls.

(P214)FIRE-STONE, a sort of stone called also rygate-stone, of the name of the place from whence it is chiefly brought, being very good for fire-hearts, ovens, stoves, &c.

FLEMISH BRICKS, a neat, strong, yellow kind of bricks, brought from Flanders, and commonly used in paving yards, stables, &c. being preferable for such purposes to the common bricks. these bricks are six inches and a quarter in length, two and a half in breadth, and one and a quarter thick. Now allowing one fourth of an inch for the joint, seventy-two of them will pave a yard square; but if they be set edgeways, then a yard square will require one hundred.

FLOOR, in architecture, is the under side of a room, or that part whereon we walk. Floors are of several sorts, some of earth, some of brick, some of stone, and some of wood. Carpenters by the word Floor, understand as well the framed work od timber, as the boarding over it. Earthen floors are commonly made of loam, and sometimes (for floors to make malt on) of lime and brook sand, and gun-dust, or anvil-dust from the forge.

FLOORING, a rural sort of work, by which, in this place, are not meant floors laid with boards or planks, but such as are used in plain country habitations, and the manner of making them.

Take two-thirty of lime, and one of coal-ashes well fisted, with a small quantity of loamy clay; mix the whole that you intend to use together, and temper it well with water, making it up into a heap, let it lie a week or ten days, in which time it will mellow and digest; then temper it well over again, and be sure that your quantity of water does not exceed, but rather than it may obtain a mellow softness and toughness from labour: then heap it up again for three or four days, and repeat the tempering very high, till it becomes smooth and yielding, tough and glewy. Then the ground being leveled, lay your floors therewith about two and a half, or three inches thick, making it smooth with a trowel; the hotter the season is, the better; and when it is thoroughly dried, it will continue time of mind. This makes the best floors for houses, especially for malt-houses; but as for those who cannot get these materials, or go to the charge of them, they may take of clayey loam and new soft horse-dung one third, with small quantity of coal-ashes, if they can be had, and temper these after the aforementioned manner, and lay the floor with the stuff, three or four inches thick, smooth and even, which will cement, become hard, strong, and durable, being done in a hot and dry season, good for cottages, barns, and other small houses.

But if any would have more beautiful floors than these, they must lay their floors even, smooth and fine, either with the first or last mentioned Flooring; then take lime made of rag-stones, and temper it with a little whites eggs, the more eggs the better, to a very high pitch, with which cover your floor about a quarter or half an inch thick, before the under flooring be too dry, that they may well incorporate together; this being well done, and thoroughly dry, if sometimes rubbed over with mops or cloths, with a little oil thereon, it will look very beautiful and transparent, as if it were polished metal or glass, provided that the eggs and lime were thoroughly tempered, and otherwise well performed.

Sir Hug Plat gives a receipt for making an artificial composition wherewith to make smooth, glittering, and hard floors, and which may also serve for plaistering of walls. Ox blood and fine clay tempered together, he says, makes the finest floor in the world; and that this mixture, laid in any floor or wall, will become a very strong and biding substance.

Concerning boarded floors, it is to be observed, that the carpenters never floor their rooms with boards, till the carcase od the house is set up, and also is enclosed with walls, left the weather should wrong the flooring; yet they generally rough plane the boards for flooring, before they begin any thing else about the building, that they may set then by the season, which is done as follows: they lean them one by one on end-end aslant, with the edge of the board against a balk, so that the boards cross one another above the balk; then on the first side they set another board in the same posture, and on the second side another, and so proceeding alternately, till the whole number of boards is thus set on end. The boards being set up in this posture, there is left a space of the thickness of a board all the length of the boards, but just where they cross one another, for the air to pass through to dry and shrink them; but they are set under some covered shed, that neither the rain nor sun may come at them; for if they should be wetted with rain, that would swell them instead of shrinking them; and if the sun should shine very hot upon them, it would dry them so fast, that they will split or crack, which is what they call tearing, or shaking.

There is another way of drying and seasoning boards for floors, viz. by laying them flat upon three or four balks, each board about the breadth of a board asunder, the whole length of the balks; then they lay another lay of boards athwart the last, and so till they have laid them all after this manner; so that in this position they also lie hollow, for the air to play between them.

Of measuring floors: boarded floors are usually measured by the square (of one hundred superficial feet) by multiplying the length of the rooms in foot by the breadth in feet, and the product is the content in feet; then the chimney-ways and well holes for stairs are measured by themselves, and their content in feet is deducted from the whole content; and afterwards cut off two figures from the remainder on the right hand, and what remains on the left hand is squares, and what are cut off are odd feet of the content of the flooring that room.

FLYERS, in architecture, such stairs as go straight, and do not wind round; nor have the steps made tapering but the fore and back part of each stair, and the ends respectively, parallel to one another; so that if one flight do not carry you to your intended height, there is a broad half space, from whence you begin to fly again, with steps every where of the same length and breadth as before.

FOOT-PACE, HALF-PACE, is a part of a pair of stairs, whereon, after four or six steps, you arrive at a broad place, where you may take two or three paces before you ascent another step, by that means to ease the legs in ascending the rest of steps.

FORGE, a little furnace wherein smithies, and other artificers of iron or steel &c. heat their metals red hot, in order to soften and render them more malleable and manageable on the anvil. Forge is also used for large furnace, wherein iron ore, taken out of the mine, is melted down; or it is more properly applied to another kind of furnace, wherein the iron ore, melted down and separated in a former furnace, and then cast into sows and pigs, is heated and fused over again, and beaten afterwards with large hammers, and thus rendered more soft, pure, ductile, and fit for use. Of these there are two kinds: the first is called the finery, hwere the pigs are worked into gross iron , and prepared for the second, which is called the chaser, where it is further wrought into bars fit, for use.

FORGING, in smithery, the beating or hammering iron on the anvil, after having first made it red hot in the forge, in order to extend it in various forms, and fashion into works. There are two ways of forgering and hammering iron; one is by the force of the hand, in which there are usually several persons employed, one of them turning the iron and hammering likewise, and the rest only hammering. The other way is by the force of water-mill, which raises and works several large hammers beyond the force of men, under the strokes of which the workmen present large lumps, or pieces of iron, which are sustained at one end by the anvils, and at the other with iron chains fastened to the ceiling of the forge. This last way of forging is only used in the largest works, as anchors for ships &c. which usually weight several thousand pounds. For lighter works , a single man serves to hold, heat, and turn with one hand, while the hammers with the other.

FOUNDATION, in architecture, is that part of the building which is under ground, or the mass of stone, brick, &c. which supports the building, or upon which the walls of a superstructure are raised, or it is the coffer or bed dug below the level of the ground, to raise a building upon; in which sense, the foundation either goes to the whole area or extent of the building; as when there are to be vaults, cellars or the like; or it is drawn in cuts or trenches, as when only walls are to be raised. Sometimes the foundation is massive, and continued under the whole building, as in the antique arches and aqueducts, and some amphitheatres; but it is more usually in spaces or intervals, either to avoid expence, or because the vacuities are at too great distance, in which latter case, they make use of insulated pillars, bound together by arches.

There are several things to be well considered, in laying the foundations of a building, the most material of which are here extracted from the best architects antient and modern. That we may found our habitation firmly requires the exacted care; for, says Sir Henry Wotton, "if the foundation dance, 'twill marr all the mirth in the house". Therefore, says that excellent architect, we must first examine the bed of earth upon which we are to build, and then the under fillings or substruction as the antients call it. For the former, we have general precept in Vitrivius, twice repeated by him as point indeed of main consequence; subtructionis fundationes fodiatur sequeant inveniri ad solidium et in solido. By which he recommends not only a diligent, but even jealous examination what the soil will bear; advising us not to rest upon any appearing solidity, unless the whole mould through which we cut have likewise been solid. But he has no where determined how far we should go in this search, as perhaps depending more upon discretion than regularity, according to the weight of the work.

Palladio has ventured to reduce it to a rule; and allows a sixth part of the height of the whole building for the hollowing or under-digging, unless there be cellars under-ground; in which case he would have it sometimes lower. See Sir Henry Wotton's elements of architecture. Palladio also says down several rules to know the earth be firm enough for the foundation, by observations from the digging of wells, cisterns and the like, and from herbs growing there, if there be such as usually spring up in firm ground; also if a great weight be thrown on the ground, it neither founds nor shakes; or if a drum being set on the ground, or lightly touched, it does not refound again, nor shake the water in a vessel set near it. These, says he, are signs of firm ground. But the best way to discover the nature of the soil, is to try it with an iron crow, or with a borer, such as is used by well-diggers. Architects ought to use the utmost diligence in this point, for, of all the errors that may happen in building, those are the most pernicious, which are committed in the foundation; because they bring with them the ruin of the whole building; nor can they be amended without very great difficulty.

Foundations are either natural or artificial; natural, as when we built on a rock, or very solid earth; in which case, we need not seek for any further strengthening: for these without digging, or the other artificial helps, are of themselves excellent foundations and most fit to uphold the greatest buildings. But if the ground be sandy or marthy, or have lately been dug, in such case, recourse must be had to art. In the former case, the architect must adjust the depth of the foundation by the height, weight, &c. of the building; a sixth part of the whole height is looked upon as a medium; and as to thickness, double that of the width of a wall is a good rule. If you build upon mossy and loose earth, then you must dig till you find sound ground. This sound ground, sit to uphold a building, is of divers kinds; as Alberti well observes, is in some places so hard, as scarcely to be cut with iron, in other places very stiff, in other places blackish, which is accounted the weakest, in others like chalk, and in others sandy; but of all these, that is the best that requires most labour in cutting or digging, and when wet, does not dissolve into dirt.

If the earth to be built on is very soft, as in Moorish grounds, or such that the natural foundation cannot be trusted, then you must get good pieces of oak, whose length must be the breadth of the trench, or about two foot longer than the breadth of the wall; these must be laid across the foundation, about two feet asunder, and being well rammed down, lay long planks upon them, which planks need not lie so broad as the pieces are long; but only about four inches of a side wider than the basis or foot of the wall is to be, and pinned or spiked down to the pieces of oak on which they lie. But if the ground be so very bad, that this will not do, then you must provide good piles of oak of such a length as will reach the good ground, and whose diameter must be about one-twelfth part of their length. These piles must be forced or drove down with a commander, or a machine or engine for that purpose, and must be placed as close as one can stand by another; then lay planks upon them , and spike or pin them down fast. But if the ground be faulty, only here and there a place, and the rest of the ground be good, you may turn arches over these loose places, which will discharge then of the weight. You must not forget to place the piles not only under the outer walls, but also under the inner walls that divide the buildings, for if these should sink, it would be a means to make the outer wall crack, and so ruin the whole building.

Having thus far considered the bed of the earth on which the building is to be erected, we shall next to consider the substruction, as it was called by the ancients, but the moderns generally call it the foundations. This is the ground work of the whole edifice, which must sustain the walls, and is a kind of artificial, as the other was natural; as to which, these things that follow are most necessary to be observed. 1. That the bottom may be exactly level; therefore lay a platform of good boards. 2. That the lowest ledge oor row be all of stone, the broader the better, laid closely without mortar, which is a general caution for all parts of a building that are contiguous to board or timber; because lime and wood are utter enemies to one another; and if unfit confiners anywhere, then they are more specially so in the foundation. 3. That the breadth of the substruction be at least double of the breadth of the wall that is to be raised upon it. But even in this case, art ought to give way to discretion; and the substruction may be made either broader or narrower, according as the goodness of the ground, and the ponderosity of the edifice requires. 4. That the foundations be made to diminish as it sires but yet so, that there may be as much left on the one side as on the other; so that the middle of that above may be perpendicularly over the middle of that below, which ought in like manner to be observed in diminishing the walls above the ground; for by this means, the building will become much stronger than it would be, if the diminutions were made any other way. 5. That you ought never to built upon the ruins of an old foundation, unless you are well assured of its depth, and that its strength is sufficient to bear the building.

Lastly, there is a curious precept in the writings of some antient architects, that the stones in the foundations should be laid as they naturally lay in the quarry; they supposing them to have most strength in their natural position. This precept is generally observed by all good modern artist not only in the foundation, but also in all the parts of the superstructure; and for the better reason than that of bare conjecture, viz. because they find the stones to have a cleaving grain, or that they are subject to cleave that way of the stone lay horizontally in the quarry; and for that reason, if the horizontal position of the stones in the quarry should be placed vertically in the building the super-incumbent weight would be apt to cleave them, and so render the building ruinous. For, as it has been observed by Philip de l'Orme, the breaking or yielding of a stone in the foundation, although it should it should be but the breadth of the back of a knife, it will make a clift of more than half a foot in the fabric aloft. In some places they found the peers of bridges, and other buildings near the water, or sacks of wool laid in mattresses, which being well pressed and greased, will never give way nor rot in the water.

Of all the antients, says M. Gautier, in architecture, who have left us any rules for the founding on bridges (… p 220-222)

Mr Blondel makes it appear, that whatever precautions take to secure their works by good foundations, yet they are very conjectural and uncertain. He in this compares an architect to a physician, who proceeds only upon conjectures. For who can venture to say, says he, that building upon a foundations of consistence, as it appears too him to be, that she shall not meet with soft or bad ground underneath, which the weight of the buildings will press down and sink into, and by that means be overturned. Upon this occasion, says Mr. Gautier, I can give an example that happened in one of the isles of Oleron or Rhe, where the king caution fortifications to be built on a bank of rock; because it had a hollow underneath, which could not be, or was not discovered. Blondel also relates in confirmation of what he has said, that the vast walls of the church of Val the Grace, sunk on one side, thought built upon a good foundation; because there were underneath large hollows which had been made in former times for taking out of stones some fathoms lower, there having been a quarry there.

Michael Ange Bonarote caused the foundation of the dome of St. Peter's Rome, to be laid with all the precautions imaginable. But for all that, this work did gape or split, which they cured by binding it about with a hoop of iron of an extraordinary breadth and thickness, which cost 100.000 crowns. It is supposed, that this fracture in the dome is and effect of the waters of a subterraneous source, from a spring which have washed the foundations of this huge edifice. So that according to these examples, no body can be answerable for the foundations of a buildings.

The corderie of Rochefort, the design of Mr. Blondel, is in length two hundred and sixteen toises, not comprising the pavilions that are at the two ends, and four toises, the breadth between the walls, the two stories, built upon a grillage, or grate-work, as well in the full, as in the void of ten or twelve inches thick, laid upon a bottom of potters clay. Upon this grillage are laid platforms well fastened together with pins, and upon them a couch, or course of hewn stones, and good rough stones, the building being raised everywhere equal, that there may be no more weight on the one side than the other, that all the parts of the work may be in aequilibrio. This building thus raised, has succeeded perfectly well. M. Blondel remarks further, that the materials at Paris not being of the same solidity as those of Italy, as perhaps marble, and harder, will not permit to make bridges at Paris with so much delicacy and so disengaged, as those which are made in Italy; which have a great deal less thickness at the place of the keys of the arcades.

FRAMING, of a house, among carpenters, denotes all the timber work therein; namely, the carcase, flooring, partitioning, roofing, ceiling, beams, asherling, &c. all together.

(P226) FUNNELS OF CHIMNIES. The funnel is the shaft, or smallest part from the waste, where it is gathered into its least dimensions. Palladio directs that the funnels of chimneys be carried through the roof, three, four, or five feet at least, that they may carry the smoak clear from the house into the air. He advises also, that care be taken as to the width of them; for that if they be too wide, the wind will drive back the smoak make its way. Therefore chamber chimneys, whose breadth is four or five feet within the work, from the place where the brest ends, to the top of the funnel. Now the said brest reaches from the mantle-tree to the cienling or pitch of the arch, always diminishing within the work, till you come to the measures of depth and breadth before-mentioned; and from thence to the end of the funnel, it must be carried up as even as it possibly can be; for if there be a failure in this the smoke happens to be offensive.

(p 227)FURRING, in architecture is the making good the rafters feet in the cornice. Thus, when rafters are cut with a knee, these Furrings are pieces which go straight along with the rafter, from the top of the knee to the cornice. Also when rafters are rotten, or sunk hollow in the middle, there are pieces cut thickness in the middle, and tapering towards each end, which are nailed upon them to make straight. Such pieces are called furs, and the putting them on, furring the rafter.

GABLE-END, of a house, is the upright triangular en from the cornice or eaves, to the top of its roof.

GAIN, the leveling shoulder of the joists, or other stuff. It is also used for the lapping of the end of the joists, &c. upon a trimmer or girder; and then the thickness of the shoulder is cut into the trimmer, also leveling upwards, that it may just receive the gain, an so the joist and trimmer lie even and level with their surface. This way of working is used in floors and hearths.

GALLERY, in architecture, is a covered place in a house, much longer than broad, and usually in the wings of a building; its use being chiefly to walk in. It is also a little isle or walk, seving as common passage to several rooms, placed in a line or row. Their length, according to Palladio, ought to be at least five times their breadth. They may be six, seven or eight times their breadth, but must not exceed.

GATE, in architecture, a largo door giving entrance to a city, town, castle, palace, or other considerable building; or a place giving passage where persons, horses, coaches, or wagons are to pass, &c. as to their proportion, the principal gates for entrance through which coaches and wagons are to pass, ought never to be less than seven feet in breadth, nor more than twelve, which last dimension is fit only for large buildings. The height of a Gate is to be one and a half of the breadth, and somewhat more; but as for the common gates in inns, under which wagons go loaded with hay, straw, &c. the height of them may be twice their breadth.

GIRDERS, in architecture, are some of the largest pieces of timber in a floor, the ends of which are usually fastened into summers and bressummers, and joists are framed in at one end to the girders. The scantlings and size of Girders and summers, upon the rebuilding of London, after a consultation of experienced workmen, were settle by act of parliament.

GLAZIS, in building, &c. is an easy insensible slope or declivity.

GLAZIER, and artificer in the building branch, and whose principal business is in fitting panes of glass to ashes, picture, &c. and making lead lights for window frames, cleaning of fash-windows, &c.

GLUE, to make the best glue for gluing the joints of deal boards. Put half a pound of the best glue into a quart of water, and boil them gently together over a slow fire, till the glue be entirely dissolved, and of a due consistence; for if it be too thin, the wood will so drink it up, that there will not remain a body sufficient to bind the parts together; on the contrary, if it be too thick, it will not give way for the joint to shut close enough to be strongly joined; for though it is glue that makes the joints stick, yet where there is so much of it, that the joint cannot close exactly, it will never hold firm. When glue is used, it must be made thoroughly hot; for glue never takes firm hold of the wood, when it is not thoroughly hot. And see that the joints to be glued have not been touched with oil or grease; for if so, the glue will never take fast hold. The joists of the boards being shot true, and the glue hot, set both the faces of the joint close together, and both turned upwards; then dip a brush in the glue, and besmear the faces of the joists as quick as possible, and clap the two faces of the joint together, and slide or rub them long-ways one upon another two or three times, to settle them close, and so let them stand till they are dry and firm. The best glue is that which is the oldest; and the surest way to try is goodness, is to lay a piece to steep three or four days, and if it swell considerably without melting, and when taken out resumes its former driness, it is excellent.

A glue that will hold against fire or water, may be made thus: mix a handful of quick-lime with four ounces of linseed-oil; boil them to a good thickenss, then spread it on tin-plates in the shade, and it will become exceeding hard, but may be easily dissolved over a fire, as Glue, and will effect the business to admiration.

(P229) GRADATION, in architecture, a flight of steps, particularly ascending from the cloister to the choir in churches. Also an artful disposition of several parts, as it were, by steps or degrees after the manner of an amphitheatre; so that those which are placed before do no dis-service, but are rather serviceable those behind. In painting it is used to signify and insensibly change of colour, by the diminution of the teints and shades.

(P235) GROVE OR GROOVE, in joinery, &c. a term used to signify the channel that is made by their plough in the edge of a moulding stile, or rail &c. to put their panels in, in wainscoting.

(P236) GUTTERS, in architecture a kind of canals in the roofs of houses, serving to receive and carry of the rain. These gutters are of two kinds in respect to their position, for they are either such as come near a parallel with the horizon, or such as incline in a vertical position to the horizon.

The first kind of gutters may be called parallel gutters, and may be distinguished into three sorts, which are covered with lead: 1. Either it is a gutter between two roofs, which stand parallel to each other, being made upon the feet of the rafters of two roofs, which meet together; 2. A gutter where a building has a cantaliver or modillion cornice, which projects one foot and a half, or two feet beyond the walls, then the roof is set with the feet of the rafters no farther out than the wall, but rather within it, so that the joists of the upper floor lie out beyond the walls, and also beyond the feet of the rafters, which is covered with the lead. The third sort of these parallel gutters are in flat roofs, which are usually called platforms, where also gutter for the water that run form the platform to descent to, which is from thence conveyed off from the building by leaden pipes. In the laying of parallel lead gutters, great care should be taken that the gutter boards, &c. lie not too near parallel with the horizon, but in such a position that there may be a good current, for if it be laid too near a level, the water will be very subject to stand in plashes, if it chances to stick a little in the middle, which some gutters are apt to do. Some gutters have a layer of sand for the lead to lie upon, but there are reasons that render this method not approveable. Because some sorts of sand does very much corrode and decay the timber that lies near it; and when a gutter is laid on sand, a very small weight falling on it will make dents in it, and in those dents the water will stand, and this will be a means of decaying the lead the sooner.

In laying of leads for gutters upon boards, it is common for plumbers to folder them when they are so long, that a sheet of lead will not reach. In doing this, they usually cut a channel cross the Gutter-boards at the end of the sheet where the foldering is to be, and to beat down the ends of both the sheets thata are to meet here, into the channel, which, when is done, there will remain a little cavity, which is filled up with the folder level with the rest. The lead which is usually laid in gutters is that which weights about eight or nine pound to the foot.

VERTICAL GUTTERS, are such as are made by two roofs meeting at right angles one to another, or, which is the same thing, made by the end of one roof joining to the side of the another. These gutters are made either of lead or tile. As to those made with lead, unless the builder will be at the charge, they need not be altogether so thick for these vertical ones, as for the parallel ones; for these vertical ones will last as long, if laid with lead of about six or seven pound to the foot, as parallel ones with lead of nine or ten pound to the foot.

Gutters laid with tiles, are also of two kinds; those made of concave or gutter-tiles, and plain tiles. In the plain tile-gutters, there is a gutter-board laid, which raises them from pointing to an angle. And in laying on the tiles, the workman begins at the one side of the gutter, and so works across, as if it were plain work, and then brings the next row of tiles back again; so that he works from right to left. Gutters which are laid after this manner, are not angular, but of a distorted curvilineal form; by which means they are not so subject to be furred up with the mortar which washes out the adjacent tiles.

In laying of three point gutters, they begin and lay one tile on one part of the roof, it is no matter which part first, and lay one corner of the tile just in the middle of the gutter; and then lay another on the other part of the roof, with its corner just in the middle of the gutter, also that the corner of the second tile is contingent with the first; and then lay another tile in the gutter, with its corner, as it were betwixt the other tow, and to them. When they have done thus, they proceed in the work and lay a tile on each part of the roof, as before, and another betwixt them in the gutter, proceeding in their work in this manner, till they have finished the gutter. And this is what is called the three-point gutter; for three points, or angles of tiles, always come together. Here you are to take notice, that only three inches square of the middle tile is visible, if the gage be seven inches, the rest of that tile being covered with the next row of tiles above it. These gotters are very handsome, and if well done, secure also; yet if they let the water into the house, by reason of some stoppage, or broken tile in the gutter, they are very troublesome to mend. Either of these plain tiles are cheaper to the master-builder, than concave ones; because plain tiles are cheaper than gutter tiles, they being in many places not above one-fourth part of the prince.

GUTTER-TILES, are of a quadrangular form, consisting of two streight sides, of about ten inches and a half long, and of two circular sides, the one convex, the other concave; the convex side is about fourteen inches, and the concave one about two inches. This is their form as to their edges or sides. With respect to the plane; at the little end they are bent, circular, and so likewise at the convex great end, at first like a corner tile; but then they bend the corners of the great end back again; so that if a person look against the end of the broad edge, it consists of a circular line betwixt-two straight ones. This you are to understand , is when you hold the concave side of the tile downwards. These tiles are laid with their broad ends and hollow side upwards.

(p238) HALL, in architecture, a large room in the entrance of a fine house, and palace. In the houses of ministers of state, magistrates, &c. it is the place where they dispatch business, and give audience. In very magnificent buildings, where the hall is larger and loftier than ordinary, and placed in the middle of the house, it is called a saloon. The word hall in old writers is used for mansion-house, and to this day, in many parts of kingdom, gentlemen’s seats are called halls.

In town a hall is a place of reception for servants; therefore in this, neither magnitude not elegance are useful; in the country, where there are other ways into the house, the hall may be an elegant room, and it is there we propose its being made large and noble. It serves as a summer-room for dining; it is an anti-chamber in which people of business, or of the second rank, wait and amuse themselves; and it is a good apartment for the reception of large companies. A good hall has many other uses, amongst which are the representation of theatrical pieces. These are reasons for the spaciousness of a Hall; but then, if the rules of general proportion be not observed, the bigness of this room may make all those look little into which we pass afterwards.

It is a fashion in some places, to give halls the form almost of galleries; to make them very long in front and very shallow; this answers the purpose of giving room behind, but it is an ill way of getting it. Halls of any consequence are seldom thought of unless for large houses in the country; and there it will be easy to take a few more feet of ground, and not to make the hall a slip, in order to give depth to the parlours.

The proportion of breadth to length should be very considerable in a Hall. Palladio says that it may made twice as long as broad, but never should exceed that length. This is indeed carrying the length of a Hall to the full proportion; and that author adds, with great justness, that the nearer they approach to square the better. From what we have observed upon a variety of instances, it seems, that from one and third to one and a half the breadth, is the proper and most proportional length of a Hall. The best height for a hall is somewhat less than its breadth, but here we are to consider the difference of flat and arched ceilings, as in other rooms. In those halls which have coved ceilings, the height may be within a twelfth part the measure of the breadth; but in those with the ceiling flat, four fifths of the breadth is a very good general proportion; however in this the architect has a great deal of latitude for the saving room above; for the hall may be lower than either of these allowed proportions, and yet not liable to great censure.

(P240) HOUSE, in architecture, a habitation or place built with conveniencies for dwelling in; thus we say town House, country house, &c. it will not be improper, in this place, to speak the original construction of houses.

Caverns and arbours were undoubtedly the first habitations, for nature’s own hand constructed these, and men destitute of better security, would take to them and finish them; but these thought the first houses, could be long their habitations. The mud wall tenement naturally rose first, for we may very well believe that early cabins were built with clay. The sun would harden these rude walls by his heat, and thence the mind of man would soon conceive the method of cutting out the wet clay into shapes, and drying it before using in his house. Thus bricks must have been and early invention, and they would doubtless have been in universal use, had not nature disclosed to those who dug for this poor material, her mines and stores of stone and marble. From the sight of this greater and nobler material, men conceived ideas of greater buildings. This is the plain and natural course of things, and this probably was the origin of architecture; but when it happened, or what quarter of the world, are points which dreaming monks might be better study than people who enjoy the present advantages of science. It is enough for us to acknowledge the defect of information; and, while we trace the progress of the art thus from reason, to say it is too old for history. Man's sense of feeling told him that the wanted a house for shelter and defence; and his reason, given him by the creator for that purpose, taught him how to set about it.

The next thing to be considered is, the giving the edifice a proper strength; the house is to be suited either to the condition of the person who is to inhabit it, or to the place where it stands; the first is the point in building commission, for a family; the other in building for a chance of letting. The latter is the common practice in great towns; but even in that, there is something to be considered with respect to suiting to the inhabitant. Though the architect in this case will not know who is to live in his edifice, yet he can very well guess of what rank he will be, and this according to the place where it stands; thus much is to be considered in building in this general and random way; the street, or square, the neighbourhood, the conveniences, and the other concurrent circumstances, will instruct the builder; for he would be very indiscreet who should build a shed in Grosvenor-Square, or a palace on Salt Petre Bank; and thus far he will be able to proportion the building to the tenant, or purchaser, though unknown.

After this first consideration of the general condition and extent of the building, comes the article of strength. Whatsoever be the size, the solidity must be proportioned; for when the house is not able to support itself, all other care is lost upon it. We see a strange difference between the buildings of early ages, and those of the present time in respect of this article of strength, but the reason id plain; the nature of the tenures in London has introduced the art of building slightly. The ground landlord is to come into possession at the end of a short term, and the builder, unless his Grace tie him down to articles, does not to chose to employ his money to his advantage. It is for this reason we see houses built for sixty, seventy, or the stoutest of this kind of ninety-nine years. The care they shall not stand longer than their time occasions many to fall before its expired; nay, some have carried the art of slight building so far, that their houses have fallen in before their tenanted. From this general practice, in the common way of working, has been introduced the same conduct in better buildings; and it is not often that we see a structure, like the horse guards, built for posterity. But whatever be the occasion, there is nothing that more deserves or demands the interposition of the legislative power; the safety of the subjects is the concern of every wise government; and it is certain the present method of running up houses in London, not only disgraces us in the eyes of strangers, but threatens continual disasters. Till such control shall be laid upon bad builders by politic authority, those who have more skill and more integrity should be distinguish themselves from them by their work.

Two things give strength to a building, the choice of good materials, and the putting them well together; and the first care, in the regard of strength, is that the supports be equal to the weight they carry; these supports are, in common building, plain walls. When walls are not able to support the incumbent force, recourse is had to spars and buttresses; but these are unseemly and very disagreeable sight. To avoid this, the architect should consider in time what the force, or pressure, will be, and proportion the solidity accordingly; great arches are the most subject to impair the strength of the walls in this manner, but they should be lightened, and the walls strengthened in the original structure of the building. The occasion on which buttresses admit of most excuse, is on the outside of gothic churches; though in these a good architect could have contrived to avoid the need of them, by lightening the arch, and strengthening the wall in its plain, perpendicular form. When we see this sort of supports on any other occasion, it is a great disgrace to the architect. The architect having thus, by an honest choice of materials, and judicious manner of proportioning the superstructure to the supports, taken care of the main consideration of strength, the next regard it to be shewn to proportion and regularity, in the distribution of the several parts.

The extent of ground being determines, the materials chosen, and the weight of the roof, and thickness of the walls, settled in the builder's mind, he is next to consider the article of proportion. Here is a space to be covered with building; and the great consideration is its division into parts, for different uses, and their distribution. In this regard is too be had to two things, the convenience of the inhabitant, and the beauty and proportion of the fabric. Neither of these should be considered independently of the other, because if it be, the other will not fail to be sacrificed to it; and this, which would be very disagreeable, is never absolutely necessary. If the house be for a person in trade, the first and principal attention must be shewn to the article of convenience; but with this the builder should always carry in his mind the idea of beauty, proportion and a regular distribution of the parts; that, whenever it can be done, he may favour the one, while he is absolutely consulting the service of the other; in the same manner, when the house is for a person of fashion, the beauty and the proportional disposition of the parts is to be principally considered; yet the great and needful article of convenience must not be disregarded. In the building where there is to be a shop, it would be absurd to thrust the parlour into the middle of it, in order to give that room an exact proportion; but on the other hand, a little may be retrenched from some less conspicuous parts of the shop, to enlarge that necessary apartment behind it. The merchant's house must have warehouse-room, but that need not break in upon every apartment, because there is no necessity for any exact inch of ground in a particular spot for this use, though there must be certain quantity upon the whole.

The parlour, in a small private house, is a very convenient room; but, as it is not the apartment of most shew, there is no necessity it should reduce the passage to an alley; and in larger houses, inhabited by persons of distinction, there must be anti-chambers, and rooms where people of business may attend the owner's leisure. These must not be ill constructed, because those of some rank may often wait in them; and beside, every thing in a great house should have an air of grandeur; but, on the other hand, the care of rendering these convenient and proper for their use, is not to extend so far as to intrench upon the rooms od state and elegance.

The proportion of the several parts of an edifice is of two kinds; for they are to be adapted, in this respect, first to the whole building, and afterwards to another. It is strange to see that many of our architects, who have been able to plan out the whole of a good building, have miscarried miserably in the proportions of its parts. It is in this the ancient architects are found, by all the remains of them, to have been most particularly excellent; they formed at once an idea of the whole structure they designed, and of all its apartments, and it is evident they throughout kept that general idea always in remembrance. It is hence we see such a perfect harmony in all their works. It is in this the student who would distinguish himself in architecture should principal follow them in the disposition of the house. The first kind of proportion is that of the several parts to the whole, and in this reason is a very plain and general guide. We may divide houses under three heads, the large, the middling and the small; and each of these classes plain sense will dictate, that the several apartments should be of the same character with the whole; that the rooms in the large hose should be large in the middling, they should be middling , and in the small they should always also be small. This is proportioning the parts of the building to the whole; and this rule, which is directed by common reason, is confirmed by all the writers on architecture; for sciences are built upon reason, and experience which supports her determinations.

The dimensions not only of every room, but of every part of a House whatsoever, should be laid in a just proportion to the extent of the ground plan; for it would be absurd to see a great House divided into a multitude of closets, or a little house consisting only of a hall and dining room. Here proportion falls in with the rule of convenience; for such a house would not be more absurd than inconvenient. The apartments being thus suited to the house in general, are next to be proportioned to one another; this, one would think, were as rational and plain a precept as the other, yet we see it continually violated. Nothing is more common than to see a house built for the sake of one room; and in that case the rest not being proportionate to that room, it seems not to belong to the house, and there wants that symmetry which is the great beauty in buildings. In houses which have been some time built, and which have not hat an out of proportion room, the common practice is to build one to them; this always hangs from one end, or sticks to one side, of the house, and shews to the most careless eye, that, thought fastened to the walls, it did not belong to the building.

The custom of routs has introduced this absurd practice. Our forefathers were pleased with seeing their friends as they chanced to come, and with entertaining none of them when they were there. The present customs is to see them all at one, and entertain none of them; this brings in the necessity of a great room, which is opened only on such occasions, and which loads and generally discredits the rest of the edifice. This is the reigning taste of the present time, a taste which tends to the discouragement of all good and regular architecture, but which the builder will be often under necessity to comply with, for he must follow the fancy of the proprietor, not his own judgment. Whatever the false taste of any particular time adopt, the builder though he complies with it from the orders he receives, yet he must never suppose that the caprice, or fashion, can change the nature of right and wrong. He must remember that there is such things as truth, though the present mode will not follow it steps; and establish it as a maxim in his own mind, that proportion and regularity are real sources of beauty, and always of convenience.

In the disposition of parts in an edifice, it is incumbent upon the architect to give a proportion and harmony to the whole building, and to make every part of it as suitable to that whole as its nature will admit, yet he must not endeavour to make all equally elegant. This has been the false taste of some, who have been profuse of ornament, and yet have not been able to give any real beauty. They have wondered at the effect, but this is the reason; various parts of the house are suited to various services and purposes, and they are not all too be contrived fro shew. The plainest of some will set off, and shew to advantage the beauty of others. To avoid this error, when the architect has laid down the dimensions of the several parts of the edifice, let him consider which of these are calculated for greater, and which for lesser services, and accordingly distribute among them all that gives dignity or plainness. There is no objection of plainness, when it is suited to the occasion, and the variety between that and such apartments as are spacious and elegant, gives a luster even to the latter; the plain decency of the humbler rooms, while it is proper, because it suits them to their purposes, makes them also serve as a soil to the others. Thus much may be sufficient to mention in this place, concerning those ornaments whose foundation enters into the original designs of the apartments, all other decorations we shall speak of hereafter under their proper heads.

(p245) JAMB, or JAUMB, among carpenters, an appellation given to doorposts, as also to the upright posts at the sides of the window-frames; and among the bricklayers, it denotes the upright sides of the chimneys, from the hearth of the mantle-tree.

ICE-HOUSE, is a building contrived to preserve ice for the use od a family in the summer season. Ice-houses, are more generally used in warm countries, than with us, particularly in Italy, where meanest person, who rents a house, has his vault or cellar for ice.

ICHONOGRAPHY, in architecture, a description or draught of the platform or ground-work of a house, or other building. Or it is the geometrical plan or platform of an edifice or house, or the ground-work of an house or building delineated upon paper, describing the form of the several apartments, rooms, windows, chimneys, &c. in perspective, the view of any thing cut off by a plane parallel to the horizon, just at the base of it. Amount painters it signifies a description of images, or of ancient statues of marble and copper, of busts and semi-busts, of paintings in fresco. Mosaic works, and ancient pieces of miniature.

INSULATED, in architecture, detached from any other building. A church is insulated when it stands contiguous to no other edifice, and so of any other building. The word comes from the latin insula, an island, these buildings being separate from others as islands are from the continent, or nearest main land. A column that stands alone, and free from any wall is call insulated columns. The columns of periptere temples of the ancient were insulated; the monument in London is an insulated column.

JOIST, OR JOYST, in architecture, those pieces of timber framed into the girders and summers, on which the boards of the floor are laid. Joists are from six to eight inches square, and ought seldom to lie at a greater distance from each other than ten, or at most twelve inches, nor ought they ever to bear a greater length that ten feet, or to be less into the wall than eight inches. All joists on the back of a chimney ought to be laid with a trimmer, at six inches distance from the back. Some carpenters furr theis joists, as they call it; that is they lay two rows of joists, one over another, the undermost of which are framed level with the underside of the girder; and the uppermost, which lie cross the lower ones, lie level with the upper side of the girder.

(P247) KEY-STONE, of an arch, or vault, that placed at the top or vertex of an arch, to bind the two sweeps together.

LANTERN, in architecture, a little dome raised over the roof of a building, to give light, and serve as a crowning to the fabric.

(P 248) LINTEL, in architecture, a piece of timber that lies horizontally over door-posts and window-jambs, as well to bear the thickenss of the wall over it, as to bind the sides of the wall together.

(p249) LUTHERN, in architecture, a kind of window over cornice, in the roof of a building; standing perpendicularly over a naked wall, and serving to illuminate the upper story. Lutherns are of various forms, as square, semi-circular, round, called bulls eyes, flat arches, &c.

MANTLE, OR MANTLE-TREE, in architecture, the lower part of the chimney, or that piece of timber which is laid across the jaumbs, and sustains the compartment of the chimney-piece.

(P251)MASON, person employed under the direction of an architect, in the raisin of stone building.

MASONRY, in general a branch of architecture consisting in the art of hewing or squaring stones, and cutting them level or perpendicular, for the uses of building; but in a more limited sense, masonry is the art of assembling and joining stones together with mortar.

All the kinds of masonry now in use may be reduced to these five, viz., bound masonry; that of brick-work, where the bodies and projectures of the stones inclose spare spaces, or panels, &c. set with bricks; that de moilon, or small work, where the courses are equal, well squared, and their edges or beds rusticated; that wehre the courses are unequal, and that filled up in the middle with little stones and mortar.

MASSIVE, among builders, an epithet given to whatever is too heavy and solid; thus a massive column is one too short and thick for the order whose capital it bears, and a massive wall is one whose opening or lights are too small in proportion.

(p252)MEZANZINE, a kind of little story, called also an entersole, it is placed between two principal stories, and serves for apartments for upper servants.

(P254) MOOR-STONE, a valuable stone much used in the coarser works of the present builders; being truly a white granite, of a marble texture.

MORTISE, OR MORTOISE, in carpentry, &c. a kind of joint, wherein a hole of a certain depth is made in a piece of timber, which is to receive another piece called a tenow.

(p257) MULLER, a stone flat and even at the bottom, but round a-top, used for grinding of matters on a marble. The apothecaries use mullers to prepare some of their testaceous powders, and painters for their colours, either dry or in oil.

NAILS, in building, &c, small spikes of iron, brass, &c. which being driven into wood, serve to bind several pieces together, or to fasten something upon them. The several sorts of nails are very numerous; as 1. Back and bottom nails, which are made with flat shanks to hold fast and not open the wood. 2. Clamp-nails, for fastening the clamps in building, &c. 3. Clasp—nails, whose heads clasping and sticking into the wood, render the work smooth,, so as to admit the plane over it. 4. Clench-nails, used by boat and barge builders, and proper for any boarded buildings that are to be taken down; because they will drive without splitting the wood, and draw without breaking; of these there are many sorts. 5. Clout nails, for nailing on clouts to axle trees. 6. Deck nails, for fastening of Decks in ships, doubling of shipping, and floors laid with planks. 7. Dog nails, for fastening of hinges on doors, &c. 8. Flat points, much used in shipping, and are proper where there is occasion to draw and hold fast; and no conveniency of clenching. 9. Jobent nails, for nailing thin plates of iron to wood, as small hinges on cup-board-doors, &c. 10 lead nails, for nailing lead, leather, and canvas to hard wood. 11. Port-nails, for nailing hinges to the ports ships. 12. Pound nails, which are four square, and are much used in Essex, Norfolk, and Suffolk, and scarce any thing else except for paleing. 13. Ribbing nails, principally used in ship building, for fastening the ribs of ships in their places. 14. Rose nails, which are drawn for square in the shank, and commonly in a round tool, as all common two penny Nails are; in some countries all the larger sort of nails are made of this shape. 15. Rother nails, which have a full head, and are chiefly used in fastening rother-irons to ships. 16. Round-head nails, for fastening on hinges; or for other use where a neat head is required; these are of several sorts. 17. Scupper nails, which have a broad head, and are used for fastening leather and canvas to wood. 18. Sharp nails, these have sharp points and flat shanks, and are much used, specially in west Indies, for nailing soft wood. 19. Sheathing- nails, for fastening sheathing-boards to ships. 20. Square nails, which are used for hard wood, and nailing up wall fruit. 21. Tacks, the smallest of which serve to fasten paper to wood, the middling for wool cards, &c. and the larger for upholsterers and pumps. Nails are said to be toughened when too brittle, by heating them in a fire-shovel, and putting some tallow or grease among them. Nails are sold at six score to the hundred: in lathing, five hundred are usually allowed to a bundle or five feet laths, and six hundred to a bundle of six feet laths; in flooring, two hundred are sufficient for a square of flooring.

(P259) OFFICE, in architecture, in the plural denotes all the apartments appointed for necessary occasions of a palace or great house, as kitchens, pantries, confectionaries, &c.

(p261) ORDONANCE, in architecture, is a term used by some express the same as order, but in its general sense, it means the composition of a building and the disposition of its several parts; it being this that determines the bigness of the several portions of which a building is composed , and the proper and judicious arrangement of them. In painting, it whole piece, or to the several parts; as the groups, masses, contrasts, aspects, &.

ORTHOGRAPHY, in architecture, the elevation of a building. This orthography is either external or internal. The external orthography is taken for the delineation of an external face or front of a building; or, as it is by others defined, the model, platform, and delineation of the front of a house, that is contrived, and to be built, by the rules of geometry, according to which pattern the whole fabric is erected and finished. This delineation or platform exhibits the principal wall, with its apertures, roof, ornaments, and everything visible to an eye placed before the building. Internal orthography, which also called section, is a delineation or draught of a building, such as it would appear, were the external wall were removed. Orthography in perspective, id the front or fore view of any plane; that is, the side or plane that lies parallel to a straight line, which may be imagined to pass through the outward convex point of the eye, continued to a convenient length.

(p262)PALACE, palace in architecture, is a name generally given to the dwelling-houses of kings, princes, bishops, and other great personages; and taking different epithets, according to the quality of the inhabitants, as imperial palace, royal palace, pontifical palace, cardinal palace, ducal palace, Episcopal palace, &.

PALING, a sort of fencing for fruit-trees planted in the fields, wherein three small posts are erected at a foot and a half distance one from another, and near the top nailed to each other with cross-bars.

PANNEL, in joinery, a tympanum of square piece of thin wood, sometimes carved, framed, or grooved in a larger piece, between two upright pieces and two cross pieces.

PARAPET, is a little wall raised breast high on a terrace or building. The parapet may be made of brick, or wood, a wall or rail, and may serve as an enclosure, as well as defence. The word is derived from the Italian parapetto, which signifies a defence to save the body, breast high; or a wall raised to the height of breadth.

(p263)PAVEMENT, a layer of stone, or other matter, serving to cover and strengthen the ground for the more commodious walking on.

PAVILLION, in architecture, a kind of turret or building usually insulated, and contained under a single roof; sometimes square, and sometimes in form of a dome; thus called from the resemblance of its roof to a tent. We have presented our readers with the plan and elevation of an elegant design for a new harmonic pavilion.

(p265)PERRON, in architecture, the steps in the front of a building, raised before the doors of great houses, and leading to the first story, when raised above the level of the ground.

PILASTER, in architecture a square column sometimes insulated, but more frequently let with a wall, and only shewing a fourth or fifth part of its thickness. The pilaster is different in different orders; it borrows the name of each, and has the same proportions, and the same capitals, members and ornaments with the column themselves. (…)

(p266)PILE, in building, is a large stake rammed into the ground in the bottom of the rivers, or in marchy land, for a foundation to build on. The word is used among architects for a mass of building.

PILLAR, in architecture, a column of an irregular make, not formed according to the rules, but of arbitrary parts and proportions; free of disengaged of the wall in every part, and always deviating from the measures of any of the orders of regular columns. This is the distinction of the pillar from the column. The column in our churches of the Italian architecture is always one of the orders; the pillar in the Gothic-buildings is often vastly too high for its thickness, and has no diminution. This irregularity of structures makes it a pillar, while the just proportions of the other entitle them to the names of columns.

These pillars, as they are without proportions in their parts, so they want to proportion with respect to the building; we constantly see them either too thick, or too slender, and commonly extravagantly in one of these extremes or the other. The eye is at once a judge of this disapproving the pillar.

There are buildings about London in which the architect has deviated so far from rule in his columns, that they cannot be afraid to belong to any order, and may be better called pillars.

(p267) PINNING, in building, the fastening of tiles together, with pins of heart of oak, for the covering of an house, &c.

PLAN, the term plan is particularly used for a draught of a building, such as it appears, or is intended to appear, on the ground; shewing the extent, division, and distribution of its area, or ground plot, into apartments, rooms, passages, &c. A geometrical plan is that wherein the solid and vacant parts are represented in their natural proportions. The raised plan of a building is the same with what is otherwise called an elevation or orthography. A perspective plan is that exhibited by degradations, or diminutions, according to the rules of perspective.

To render plans intelligible, it is usual to distinguish the massives with a back wash; the projectures on the ground are drawn in full lines, and those supposed over them in dotted lines. The augmentations, or alterations to be made, are distinguished by a colour different from what is already built; and the tints of each plan made lighter, as the stories are raised. In large buildings, it is usual to have three several plans, for the three first stories.

PLASTER, among builders, &c. the plaster of Paris in a preparation of several species of gypsums, dug near Mont Maître, a village in the neightbourhood of Paris; whence the name. the best sort is hard, white, shining, and marbly; known by the names of plaster-stone, or parget of Mont Maître. It will neither give fire with steel, nor ferment with aquafortis, but very freely and readily calcines in the fire, into a very fine plaster; the use of which in building and casting statues is well known.

As the modern taste runs greatly into plastering, it were to be wished that this art could be brought to its antient perfection. The plasterers of the Romans were exceeding durable; witness several yards of it still to be found on the top of the Pont de Garde, near Nismes. At Venice they use a very durable plaster; but as the secret of preparing it is not known among us, it would be worth while to try whether such a substance might not be made by boiling the powder of gypsum dry over the fire, for it will boil in the manner of water; and when this boiling or recalcining was over, the mixing with the refin, or pitch, or both together, with common sulphur, and the powder of sea-shells. If these were all mixed together, and water added to it hot, and the matter all kept hot upon the fire till the instant of its being used, so that it might be laid on hot, it is possible this secret might be hit upon. Wax and oil of turpentine may also be tried as additions; these being the common ingredients in such cements as we have accounts of are the firmest. Strong ale-wort is by some directed to be used, instead of water, to make mortar of lime-stone be of more than ordinary strength. It is possible that the use of this tenacious liquor in the powdered ingredients od this proposed plaster, might greatly add to their solidity and firmness.

(p268) PLATFORM, in architecture, a row of beams, which supports the timber-work of a roof, and lie on the top of the wall, where the entablature ought to be raised. This term is also used for a kind of terrace, or broad, smooth open walk at the top of a building, from whence a fair prospect may be taken of the adjacent country. Hence an edificie is said to be covered with platform, when it is flat at top, and has no ridge; like the late Duke of Newcastle's house, in Lincoln's Inn Fields. Most of the oriental buildings are thus covered, as were all those of the ancients.

PORTAL, a word used to express a smaller gate, where there are a larger and smaller, some use it at random for the gate where there is only one. It is also used to express and arch over a door-way; and formerly it signified a square corner of a room, cut off from the rest, for the doors or entrance.

PORTICO, in architecture,, a place for walking under shelter, raised with arches, in the manner of a gallery. The portico is usually vaulted, but it has sometimes a soffit of ceiling. The portico is a piazza encommanner. The word seems to refer to the gate or entrance of some place, porta in Latin signifying a gate; but it is appropriate to a disposition of columns, forming this kind of gallery, and has no relation to the openings.

(p270) PUNCHEON, in carpentry, is a piece of timber placed upright between two posts, whose bearing is too great, serving, together with them, to some sustain some large weights.

PURLINS, in building, those pieces of timber that lie across the rafters on the inside, to keep them from sinking in the middle of their length.

PUTLOGS, OR PUTLOCKS, in buildings, are short pieces of timber about seven feet long, used in building scaffolds. They lie at right angles to the wall, with one of their ends resting upon it, and the other upon the poles which lie parallel to the side of the wall of the building.

(p271) QUARRY, a place under ground, from whence are taken marble, free-stone, slate, lime, stone, or other matters proper for buildings. Quarries of free-stone are in many places opened, and the stone brought out, in the following manner; they first dig a hole in the manner of a well, twelve or fourteen feet in diameter, and the rubbish drawn out with a windlass in large osier baskets, they heap up all around, placing their wheel, which is to draw up the stones, upon it. As the hole advances, and their common ladder becomes too short, they apply a particular ladder for the purpose. When they have got through the earth, and are arrived at the first bank of the stratum, they begin to apply their wheel and baskets to discharge the stones as fast as they dig through them. In freeing the stone from the bed, they proceed thus; as common stones, at least the softer kinds, have two grains, a cleaving grain, running parallel with the horizon, and a breaking grain, running perpendicular thereto; they observe by the grain where it will cleave, and there drive in a number of wedges, till they have cleft it from the rest of the rock. This done, they proceed to break it, in order to which applying the ruler to it, they strike a line, and by this cut a channel with their stone axe; and in the channel, if the stone be three or four feet long, set five or six wedges, driving them in very carefully with gentle blows , and still keeping them equally forward. Having thus broken the stone in length, which they are able to do of any size within half an inch, they apply a square to the straight side, strike a line, and proceed to break in the breadth. This way of managing stone is found vastly preferable to that where they are broken at random; one load of the former being found to do the business of a load and a half of the latter. But it may be observed, that this cleaving grain being generally wanting in the harder kinds of stones, to break up these in the quarries, they have great heavy stone-axes, with which they work down a deep channel into the stone; and into this channel, at the top, lay two iron bars, between which they drive their iron wedges. Some, in dividing the stone, especially the very hard kinds, make use of gun-powder, with very good effect. In order to which making a small perforation pretty deep in the body of the rock, so as to have that thickness of rock over it judged proper to be blown up at once, at the further end of the perforation they dispose a convenient quantity of gun-powder, filling up all the rest with stones and rubbish, strongly rammed in, except a small place for the train. By this means is the rock blown into several pieces, most of which are not too big to be managed by the workmen.

(p272)QUARTERS, in building, those slight upright pieces of timber placed between the puncheons and posts, used too lath upon. These are of two sorts; single and double: the single quarters are sawn to two inches thick and four inches broad; the double quarters are sawn to four inches square. It is rule in carpentry, that no quarters be placed at a greater distance than fourteen inches.

QUOINS, in architecture, denotes the corners of brick, or stone walls. The word is particularly used for the stones in the corners of brick buildings. When these stand out beyond the brick-work, their edges being chamfered off, they are called rustic quoins.

RABETTING, in carpentry, the planning or cutting of channels or groovesin boards, &c. in ship carpentry, it signifies the letting in of the planks of the ship into the keel; which, in the rake and run of a ship, is hollowed away, that the planks may join the closer.

(p273)RAFTERS, in building, the pieces of timber, which standing by pairs on the reason or raising piece meet in an angle at the top, and form the roof of a building. It is a rule in building, that no rafters should stand farther than twelve inches from one another. Principal rafters should be nearly as thick at the bottom as the beam, and should diminish in their length one fifth or one sixth of their breadth; the king post should be as thick as the principal rafters, and their breadth according to the bigness of those that are intended to be let into them, the middle part being left somewhat broader than the thickness.

RAIL, in architecture, denotes those pieces of timber which lie horizontally between the panels of wainscoat. It is also applied to those pieces of timber which lie over and under balusters, in balconies, stair-cases, &c. as also from post to post in fences with pales or without.

RAISER, in building, a board set on edge under the fores-side of a step, stair, &c.

RAISIN-PIECES OR REASON PIECES, in architecture, pieces that lie under the beams, and over the posts or puncheons.

RAMPART, in civil architecture, is used for the space left between the wall of a city, and the next houses.

RANGING, in building, signifies running straight; when the sides of a work do not break into angles.

REJOINTING, in architecture, filling up the joints of the stones in buildings.

(p 274) RETURN, in buildings is a side or part that falls away from the foreside of any straight work.

RIDGE, in architecture, the highest part of the roof, or covering of a house, &c.

ROOF, in architecture, the uppermost part of a building. The roof contains the timber-work, and its covering of slate, tile, lead, &c. though carpenters usually restrain the word to the timber-work only. The form of roof is various; sometimes it is pointed, in which case the most beautiful proportion is to have its profile an equilateral triangle; sometimes is square, that is, the pitch or angle of the ridge is a right angle, which therefore, is a mean proportion between the pointed and flat roof, which last is in the same proportion as a triangular pediment: this is chiefly used in Italy, and the hot countries, where there is but little snow. Sometimes roofs are made in a pinnacle form; sometimes they have a double ridge; and sometimes they are mutilated, that is, consist of a true and a false roof, which is laid over the former: sometimes again they are in the form of a platform, as most of the eastern buildings are; and sometimes they are truncated, that is, instead of terminating in a ridge, the roof is cut square of at a certain height, covered with a terrass, and incompassed with a balustrade; and sometimes, again, a roof is made in the manner of a dome. When the walls have been raised to their designed height, the vaults made, the joists laid, the stairs, &c. brought up, then the roof is to be raised, which embracing every part of the building, and with its weight equally pressing upon the walls, is a band to all the work; and besides, defends the inhabitants from rain or snow, the burning heat of the sun, and the moisture of the night, and is of no small advantage to the building, in casting off the rain water from the walls.

(p275) RUDERATION, in building, a term used by Vitruvius for the laying of pavement with pebbles. To perform the ruderation it is necessary that the ground well beaten , to make it firm, and to prevent it from cracking; them a stratum of little stones is laid to be afterwards bound together with mortar made of lime and sand. If the sand be new, its proportion may be to the lime as three to one; if dug out of old pavement or walls, as five to two.

RUSTIC, in architecture, implies a manner of building in which every thing that is rough and coarse is affected to be used, and where an appearance of nature is more studied than the rules of art. When the stones in the face of a building are purposely cut and hacked into a irregular roughness, this is called Rustic work. Rustic work and rustic quoins are commonly used in the basement part of a building.

(P 276) SALON OR SALOON, in architecture, a great room intended for stare; or for the reception of paintings, and usually comprehending two stories or ranges of windows. Its place is in the middle of the house, or at the head of a gallery, and it is a kind of magnificent hall, spacious, and continued with symmetry on all its sides, and coved at the top. It may be square, oblong, or octagonal, or of other regular forms. The salon at Blenheim house is a very fine one: the purpose for which these rooms were originally contrived was the reception of great visitors.

(P277) SCAFFOLD, among builders, an assemblage of planks and boards, sustained by trffels and pieces of wood fixed in the walls whereon masons, bricklayers, &c. stand to work in building high walls, &c. and plasterers in plastering ceilings, &c. scaffold also denotes a timber-work, raised in the manner of an amphitheatre, for the more commodious viewing andy shew or ceremony; it is also used for a little stage, raised in some public place whereon criminals are executed.

SCENOGRAPHY, in perspective, the representation of a body on a perspective plane; or description thereof in all its dimensions, such as it appears to the eye. The ichnography of a building, &c. represents its plan or ground-work; the orthography is a view of the front, or one of its sides; and the scenography is a view of the whole building, front, sides, height, and all raised on the geometrical plan. To exhibit the Scenography of any body. 1. Lay down the basis, ground-plot, or plan of the body. 2. Upon the several points of the plan raise the perspective heights; thus will the scenography of the body be completed, excepting that a proper shade is to be added.

SCRIBING, in joinery, &c. a term used when one side of a piece of stuff is to be fitted to another that is irregular. In order to make these join close all the way they scribe it, that is, they lay the piece to be scribed close to the other they intend to scribe it to, and opening their compasses to the widest distance these two pieces stand from each other,, they bear the point of one of the legs against the side they intend to scribe to, and with the other point draw a line on the staff to be scribed. Thus they form line on the irregular piece parallel on the edge of the regular one; and if the staff be cur exactly to the line, when these pieces are put together, they will seem a joint.

(P279) SEALING, in architecture, the fixing a piece of wood or iron in a wall, with plaster, mortar, cement, lead, and other solid binding. For staples, hinges, and joints, plaster is very proper.

SECTION OF A BUILDING, in architecture, is the same with its profile; or a delineation of its heights and depths raised on a plane, as if the fabric was cut asunder to discover its inside.

SELL, among builders, the lowest price in timber-building, being that on which the whole superstructure is raised. It is also applied by some to the bottom part of a window frame.

SESSPOOL, a well or deep hole sunk under the drain for the reception of sediment, and other gross matter; which, if not prevented, would choak and stop the drain. The direction to be given to the builder with respect to these sesspols, is, that they be of a due bigness, and disposed at proper distances; and lastly, that they be so contrived, that they may be cleaned at times without difficulty, for other wise they would fill up, though ever so large, and then the evil would be communicated to the drains; they would fill up next, and all would take the same ill turn, as if she drains had originally been made too small.

SEWER, a drain, conduit, or conveyance, for carrying of water, soilage, &c. from a house, street, field, or the like. It is necessary that every house have conveniences for discharging its refuse water, and other useless and offensive matters; these are obtained by digging and laying sewers and drains at proper depths, and with the needful outlets. As to sewers and drains, the great care is that they be large enough; that they be placed deep enough, and have a proper descent; that they be well arched over, and have to see a passage, that there be no danger of their choaking up; the cleaning them being a work of trouble and expence.

Instead of making the bottom of the sewer a flat floor, let it be in form of an inverted arch, answering in part to the sweep of the arch above. Every one knows that the freest passage that can be, is through circular channels, and these would sufficiently wear that form; they would in a manner resemble so many vast water-pipes of circular base, and there would be no danger of their filling up. The perpendicular walls would detain nothing, because there are no angles in their joining; and the bottom being round and free, all would run off easily and as it should. The thickness water would pass such a drain, if it moved tolerably quick, without depositing any settlement; and if, from a very slow motion, some small matter should lie at one time, it would be carried off by the next quantity that made its way through the drain. This method of constructing sewers is used very successfully under the building of the horse guards.

(p280) SHINGLES, among builders, small pieces of wood in the form of wedges, four or five inches broad, and eight or nine long; they are used instead of tiles or slates for covering the roofs, &c. of buildings.

SLAB, an outside sappy plank or board sawed off from the sides of a timber-tree; the word is also used for a flat piece of marble.

SLATE, a bluish fossiile stone, very soft when dug out of the quarry, and therefore easily cut or sawed into thin long squares, to serve instead of tiles for the covering of houses, also for making tables, &c.

(P281)SOFFIT, in architecture, any timber ceiling, formed of cross beams of flying cornices, the square compartments or panels of which are enriched with sculpture, painting or gilding; such are those in palaces of Italy, and in the apartments of Luxemburg at Paris. This word is particularly used for the under side or face of architrave, and for that of the corona or larmier, which the ancients called lacunar. The French plafond; and we usually the drip. It is enriched with compartments od roses, and has eighteen drops in the Doric order disposed in three ranks, six in each, placed to the right hand of the guttea, and at the bottom of the triglyphs.

SOLIDITY, in architecture is applied both to the consistence of the ground whereon the foundation of a building is laid; and to a mass of masonry of extraordinary thickness, without cavity therein.

SOLIVE, in buildings, a rafter joist, or piece of wood slit or sawed wherewith builders lay their ceilings. The thickness of them differ according to their length, and their distances are commonly equal to their depth.

STAIR-CASE, in architecture, the ascent inclosed between walls, or a balustrade, consisting of stairs, or steps, with landing-places, and rails, serving to make a communication between the several stories of a house. The construction of a complete stair-case is one of the most curious works in architecture. The common rules to be observed are as follows: 1. That it have a full free light to prevent accidents of flipping, falling, &c. 2. That the space over-head be large an airy, which the Italians call un bel sfocato, i.e. good ventilation, in regard a man spends much breath in mounting. 3. That the half paces of landing-places, be conveniently distributed for re-passing in the way. 4. That to prevent reencounters, &c. the stair-case be not too narrow; however, this last is to be regulated by the quality of the building. 5. That care be taken in placing the stair-case, so as the stair may be distributed without prejudice t the rest of the building.

(p283) STILL-HOUSE. The Dutch have much the advantage of us in the structure of their still-houses. The general rules in building in those houses, according to shaw, should be such as follow. The first caution is, to lay the floor aslope, not flat, where any wet work is to be performed. It should also be well flagged, with broad stones, so that to wet be detained in the crevices, but all may run off, and be let out at the drains made at the bottom and sides. The stills should be placed a-breast on that side of the still-house to which the floor has its current. Fronting the stills, and adjoining to the back of the wall, should be a stage for holding the fermenting backs, and these being placed at a proper height, may empty themselves by means of a cock and a canal into the stills, which are thus charged with very little trouble. Near this sett of fermenting backs should be placed a pump or two, that they may readily supply them with water, by means of a trunk, or canal, leading to each back; under the pavement, adjoining to the stills, should be a kind of cellar, wherein to lodge the receivers, each of which should be furnished with its pump, to raise the low wines into the still for rectification, and through this cellar the refuse wash, or still bottoms, should be discharged by means of a hose, or other contrivance.

SUMMER, in architecture, a large stone, the first that is laid over columns and pilasters, in beginning to make a cross vault, or it is the stone which being laid over a piedroit or column, is hollowed to receive the first haunce of a platband. In carpentry, it is a large piece of timber, which being supported on two stone piers or posts, serves as a lintel to a door, window, &c.

SWALLOW'S TAIL, in carpentry and joinery, a peculiar way of fastened together two pieces of timber so strongly as they cannot fall asunder.

(p285) TALUS OR TALUT, in architecture, the inclination or sloppe of a work; as of outside of a wall, when its thickness is diminished by degrees, as it rises in height to make it the firmer.

TEMPLE, a general name for places of public worship, whether Pagan Christian, or otherwise. But the word, in a restrained, is used to denote the places or edifices, in which the Pagans offered sacrifice to their false gods. Thus we hear of temples Jupiter, Apollo, Bacchus. &c. (…)

(p286) TENON, in building, &c. the square end of a piece of wood, or metal, diminished by one-third of its thickness, to be received into a hole in another piece, called a mortise, for the jointing or fastening the two together. It is made a various forms, square, dove-tailed for double mortises, and the like.

(p 287)TIMBER, includes all kinds of felled and seasoned woods used in the several parts of building, as carpentry, joinery, turnery, &c. the sorts of timber are numerous; we shall only mention some of the most useful from Evelyn's Sylva, &c. as,

1. Oak, the uses of which need no enumerating; to endure all seasons and weathers, there is no wood like it; hence its use in building ships, in posts, rails, &c. for eater-works it is second to none, and where it lies exposed both to air and water, there is none equal to it.
2. Elm. This felled between November and February is all spine or heart, and no sap,, and it is of singular use, in places where it is always wet or dry, its being tough makes it useful to wheel-wrings, millwrights, &c. and its not being liable to break and fly in chips, makes it fit for dressers and plank to chop on.
3. Beech: its chief use is in turnery, joinery, and upholstery, and the like, as being of a white, fine grain, and not apt to bend or slit. Of late it is used for building timber, and if it lie constantly wet, is judged to out-last oak.
4. Ash, its us is almost universa; it is good for building where it may lie dry. It serves the carpenter, cooper, turner, plough-wright, wheel-wright, gardener, and at sea for oars, hand-spikes, and many other uses.
5. Fir, commonly known by the name of deal, is of late much used in buildings, especially within doors, for stairs, floors, wainscot, and most works of ornaments.
6. Walnut-tree, is of universal use, unless for the outsides of buildings; very fit for the joiner's use, being of a more curious brown-colour than beech, and less subject to worms.
7. Chesnut-tree, next to oak, is the timber most sough for by joiners and carpenters; it is very lasting.
8. Service-tree, used in joinery, as being of a delicate grain, and fit for curiosities: it also yields beams of considerable bigness for buildings.
9. Poplar, abel; this and aspen differing very little in their nature, are of late much used instead of fir; they look as well and are more tough and hard.
10. Alder, much used for sewers, or pipes, to convey water; when always wet, it grows hard like a stone, but soon rots, if it is alternately wet or dry.

The uses of timber are so many, and so great, that the procuring a sufficient supply of it extremely well deserves the care of every state, as it must be a great disadvantage to it to be obliged to have recourse to its neighbours, and purchase, at a very considerable and continually renewed expence, what might, by an easy economy, be sufficiently supplied at home.

Preserving of timber. When boards, &c, are dried, seasoned, and fixed in their places, care is to be taken to defend and preserve them; to which the smearing them with linseed-oil, tar, or the like oleaginous matter, contributes much.

For measuring hewn or square timber, the custom is, to find the middle of the length of the tree, and there to measure its breadth, by clapping two rules to the sides of the tree, and measuring the distance betwixt them; in like manner they measure the breadth the other way.

If the two be found unequal they are added together, and half their sum is taken for the true side of the square.

(p290) TRIMMERS, in architecture, pieces of timber framed at right angles to the joints, against the ways for chimneys, and well-hole for stairs.

(p292) TYLE, OR TILE, in building, a sort of thin, fictious, laminated brick, used on the roofs of houses; or more properly a kind of fat clayey earth, kneaded and moulded of a just thickness, dried and burnt in a kiln like a brick, and used in the covering and paving of houses. There is so much conformity in the substances of bricks and tiles, that the earth that makes one will in many cases serve for the other. The clay of which tiles are made may always be wrought into bricks, but only the best of the brick earth can be wrought into tiles; because, being thinner, they require more toughness in the substance. All tiles are made in the manner of bricks, by tempering and beating up, the clay to a due consistence, and then fashioning them in a mould; but more care and pains are required in this work than in making of bricks, for the tile-making approaches more to the pottery work, and the earth on which they are made is such as might be employed in potteries. More care is also required in the management of the fire for burning them, than is needful in bricks; for if it is too flack they do not get a proper hardness, and if too violent they suffer in their shape, and are glazed. The fire must be watched and managed with discretion, and he must be a truly as well as a knowing person to whom this care is committed for a little neglect may be of vast mischief and loss to the proprietor.

The tiles for all sorts of uses may now be comprised under six heads. 1. The plain tile for covering of houses, which is flat and thin. 2, the plain tile for paving, which is flat also but thicker, and its size 9, 10 or 12 inches. 3. The pantile, which is also used for covering buildings, and is hollow and crooked, or bent, somewhat in the manner of an S. 4. The Dutch or glazed pantile. 5. The English glazed pantile. And 6, the gutter tile, which is made with a kind of wings.

Common tiles are best when they are firmest, soundest, and strongest, there are not so many differences in these as in bricks, either in respect of body or colour, but according to the nature of the clay, and the degree of fire in burning, some are duskier and some ruddier in colour. The dusky coloured are usually the strongest; the workmen sometimes, when they have both colours, amuse themselves with laying them separately in rows, in which case they give the roof a striped aspect. But this is a pitiful idle fancy.

Paving tiles are made of a more sandy earth thant he common or plain tiles; the materials for these last must be absolute clay, but for the others a kind of loam is used, though it must be of a tough substance, or they will not have due strength and firmness. This loam burns to a fresher red colour than the best of the common roof tiles; and when care has been taken in the choice of the earth, and the management of the fire, they are very regular and beautiful.

PANTILES, when of the best kind are made of an earth not much unlike that of the paving tiles, and often of the same; but the best sort of all is a paler coloured loam that is less sandy; they have about the same degree of fire given them in the baking, and they come out nearly of the same colour.

GLAZED PANTILES, whether Dutch or English, get that addition in the fire, many kinds of earthy matter running into a glassy substance in great heat , as is seen in the glazing of common earthen-ware, and it is a great advantage to them, preserving them much longer than the common pantiles, so that they are very well worth the additional charge that attends the using of them.

GUTTER TILES, are made of the same earth as the common pantiles, and only differ from them in shape; but it is adviceable, that particular care be taken in tempering and working the earth for these, for none are more liable or accidents.

DUTCH TILES, for chimneys, are of a kind very different from all these, some are white, and some quite black. The clay of which these Dutch tiles are made, is very fine, soft, and tender; it is much the same with that whereof the apothecaries pots are made, and it is glazed in the same manner. These were once in great reputation in ordinary houses, but at present they are grown into neglect.

Of the manner of using tiles (p293). The great use of tiles is for the covering of houses; and for this purpose where either service or beauty are regarded, the plain common tile is greatly preferable to any other; but this, in its best condition is not at all comparable to slate. Plain tiles we have observed, are in colour either reddish or dusky. In the first condition they have a fiery look, and in the other they appear poor and dirty; either way they have a rough, coarse and heavy aspect; and the mortar in the best manner of laying them is seen very plainly in irregular white joints and seams.

The neatness and pale look of the common slate gives that covering a vast preference. Having nothing coarse or fiery in the appearance, it agrees perfectly well with the stone or wood-work, and with the grey brick of the chimneys. Then in the place of the harsh and heavy aspect of the tiles, slate has a light and elegant appearance; the pieces are thin and lie regular, and the joints of mortar are so slender they are scarce at all seen. This preference is so very great, that entirely banishes the use of tiles from elegant edifices, or other buildings of expence; and when we consider how vastly more durable slate is, as well as handsome, we shall be inclined to prefer it all.

If the plain tiling be thus inferior to slate, the paintling is much work that both in duration and aspect. There are occasions on which tiling is proper, and there are particular buildings whereon pantiling is better than the plain method; but we have said is delivered as general, and admits these exceptions: in ordinary buildings adjoining to houses, and particularly in such as have flat roofs, the pantiling does very well, and comes cheaper than the other kind, the tiles being a great deal larger, and laid with less trouble. The plain or common tiles have holes for pins, and are hung on by means of those pins. The pantiles has a lump in the place of a pin, and hangs by that; a few of them cover a great deal of roof, and where they are not in the way of accidents, they will last a great while, but they easily loosened injured, or broken.

They Dutch glazed pantiles are better then English glazed, but either are much superios to the common pantile, and for most uses to the plain tile; they are dearer, but their bigness makes great amends for that, and they are very lasting. In the common paintiling, the difference in size is so great an article, that where seven hundred and sixty plain tiles, at six inch gauge, are required, the same space which is a square will be covered by one hundred and seventy pantiles. The use of gutter tiles is explained by their name, their place being in the vallies or gutters of cross buildings, and when they are used they are laid plain, without any railing, the broad end upwards.

As to the thick tiles, when they are found and the colour good, they are very pretty paving for country ground floors in meaner houses, and for the offices of such are better. They easily gather dirt, but they easily wash again, and when cleaned they have a pretty and bright appearance. In the manner as Portland paving is made with dots of black marble, a paving with these tiles dotted with black, may be done pretty. This will have an agreeable effect in the hall of a small country house, where a plain and rural look is affected.

The Dutch tiles are in a manner neglected, though they used to be in general repute about chimneys. They are indeed inferior to ordinary stone for that purpose, because of their continual falling. The joints are required to be small, for the sake of beauty, and this makes the setting weak, and the continual effect of the fire destroys the force of the lime, so that they are often dropping; then their thinness is such, that a small blow cracks them, and when cracked they soon fall out. This is the greatest defect, for it must be confessed, that when entire, they look very pretty. If they were made thicker, and some contrivance was used to keep them firmer, they might be worth bringing into fashion again, where the expence of marble is not allowed, for there is a particular brightness in their glazing, and nothing looks so clean; nor is this the only advantage, for they reflect the heat much better than stone. In this case all the trouble they take about the figures is ridiculous, and would be better spared; they are ill done, and the plain white are much cleaner in the look and prettier; if anything were done by way of colour, it should be throwing on a little blueish loosely to imitate the veining of marble. The plain black also look very well.

(p297) VESTIBLE, in architecture, a kind of entrance into a large building, being an open place before the hall, or at the bottom of the stair-case. Vestibules intended for magnificence are usually between the court and the garden. The Romans had Vestibles at the entrance of their hoses, for sheltering those persons who were obliged to stand at the door; and we usually called porches. The term vestible is sometimes also used for a little anti-chamber, before the entrance of an ordinary apartment.

(P298) WAINSCOT, in building, the timber work that serves to line the walls of a room, being usually made in panels, and painted, to serve instead of hangings.

WALL, in architecture, the principal part of a building, as serving both to inclose it, and support the roof, floors, &c. Nothing is of so much consequence as the raising them in a workman-like manner. The foundation walls are to diminish in thickness as they are wrought up, and that diminution should be continued to the top of the building, the workman still taking car to keep the center of the wall all the way strait from the bottom of the foundation.

Walls in this country are principally built of these two materials, brick or stone, and in building about London brick is the most common. We see, in some parts of the Kingdom, walls built of flints cut into a tolerably even form in a very surprising manner. There are at this time some fine walls standing of this material in the city of Norwich, and it was introduced in the late old gate at Whitehall, and some of the adjoining buildings of the same period. This was an art unknown to the ancients, and it is lost again at this time; but it was strong and beautiful.

In the walls of common houses, which are of brick, the general diminution from the bottom to the top, is one half of the thickness at the bottom; the beginning is two bricks,, then a brick and a half, and made proportionably thicker, but the dimension is preserved in much the same manner. Some walls are plain and continued, and others made with intermissions. When a building is to be strong, the walls must have a proportionable thickness. We have said they need not be all the way of an equal diameter; the decrease of this is what we call the diminution of the wall, and we have observed already, that this diminution should be made equal on each side, that the load may be exactly in the middle. The wall should be carried up all the way exactly perpendicular to the ground-work; for the right angle it makes in this case is the foundation of strength and firmness. If the wall be composed of two kinds of materials, as stone and brick, the massiest and heaviest are to be used in the lowest part, as being fitter to bear than to be born, and the lightest at the top.

The diminishing in the thickness as the wall rises, saves both weight and expence; but it is absolutely necessary, for if the wall were carried up in a perfect perpendicular from bottom to the top, and all the way of the same thickness, it would not for that reason be less strong. In this case the keeping the perpendicular perfect would be the great difficulty and the great article of merit. We find the ancients were able to do this; for we see in the remains of their works, walls thus carried up to an exorbitant height; but our architects are more ready to be astonished and admire, than to study and imitate them.

The great rule for the thickness of the wall in all buildings is, that it be proportioned to the weight it is support. This is to be carefully computed, and there will be no danger of the strength of the edifice; for the great occasion of that fault id the not observing this proportion. A wall that stands alone is its own burthen and support; the higher parts press upon the lower, and the lower bear up the higher; this is all, and the structure of it is therefore plain and easy. In a larger building the arches, roofs and the floor, are the burthen; the walls are the supports: let the architect therefore compute the weight of the one according to his plan, and to that proportion the strength of the other. The thick walls that bear directly upon their foundations pres from top to bottom; the arches press side-ways, and to know how much, we must measure their convexity. The floors and the roof have a great pressure perpendicularly, and a little obliquely: all this must be carefully considered, and upon this depends the computation of the general load, and of the necessary proportioned thickness of the walls. The strength of a building depends upon the force of its supports: and the great art on this head is that of giving a plain wall the utmost strength of which it is capable.

We have advised the young architect to be careful in this computation, that he may know what strength his walls ought to have, for it is easy to make them too thick as too thin, and either extreme is equally unworthy of a good builder; too much thickness in walls not only is the expence of a great deal of needless money, but it gives the edifice a very heavy aspect. The great art is to join strength and delicacy. We see the former consulted in many of our modern buildings at the expence of the latter.

The ancients had an art in joining these that we have lost. They were sparing of stone, but they never grudged iron-work, and by the means of that assistance, and of a perfect truth in their perpendiculars, they have left us models we despair of copying. Our houses tumbel down after a few years for want of strength; and we have consecrated the heaviness of our work in most of the modern churches.

There is one farther particular which regards strength in the structure of a plain wall, and that is the fortifying angles. This is best done with good stone on each side, which gives not only a great deal of strength but a great deal of beauty. A wall that is raised over arches and pillars, provided they be judiciously directed, and the work carried on in the same manner, stands as form as one that is begun from a plain foundation.

Pilasters properly applied are a very great strengthening to walls; their best distance is about twenty foot, and they should rise five or six inches from the naked of the wall. A much slighter wall od brick, with this assistance, is stronger than a heavier and massier built plain.

In brick walls of every kind,, it is an exceeding addition to their strength to lay some chief courses of a larger and harder matter, for these serve like sinews to keep all the rest together, and are of very great use when a wall happens to sink more on one side than another.

In the most perfect way of forming the diminution of walls, the middle of the thinnest part being directly over the middle of the thickest, the whole is of pyramidal form; but when one side of the wall must of necessity be perpendicular and plain, it must be inner, for the sake of the floors and cross walls. The diminished port of the outside may be covered in this case with a fascia or cornice, which will be at once a strength ornament.

As the openings in a wall are all weakening, and the corners require to be the strongest parts, there never should be a window very near a corner. Properly, there should always be at least the space of a breadth of the opening firm to the corner. This is the general idea of a wall, and, according with the principles, it may be raised of any needful height, and for the support od any weight above; and the young architect being this acquainted with the form, we shall next lead him to the consideration of its construction of whatsoever materials.

The ancients erected their walls sometimes of stone and sometimes of brick, as we do; and by the remains that are yet extant of the several kinds, we find they had various ways of constructing them. At present, architecture in this, as in its other branches, is reduced into a much narrower compass than it has been in earlier times; but as it is not impossible to improve upon the present practice, and as the works of the ancients are in all respects the best models we can follow in the attempts of improvement, we shall here give a short recital of their several manners of constructing them, before we mention those of our own time.

Their chequer work, or reticulated wall, was at one time famous, but was sooner out of use than the others. This had corners of brick, and courses of brick to bind the whole; there were about three courses at every two feet and half; the inward part of the rest was made of cement, and the facing was chequered.

Their common brick walls were made with the two sides of good bricks, and the middle was filled up with mortar and brick-bats rammed together.

Their cement walls were composed of cement with pebbles and earth laid in a rough manner, sometimes with, and sometimes without mortar, but the corners were strengthened with brick or stone, and at every two feet height there ran courses of brick-work, to bind and strengthen them.

Their rustic walls were built with rough and irregular stones of various shapes and sizes, which they laid together as evenly as they could by means of a leaden rule; this being bent according to the place where stone was to be laid, shewed how it was to be formed and placed.

Their squared walls were made of larger and smaller stones regularly cut and squared, and laid with great beauty. A course of larger and a course of smaller usually were laid over another. This was a wall of great beauty and strength.

Their coffer-work walls were made of rough and ragged stones, with a strong mortar. These had their names from the manner of working them. They made a kind of oblong coffers of boards distant by the intended thickness of the wall, and into these they threw ragged stones, cement, and earth at random; but they began with a course of brick-work, and made courses also between. The mortar we use at this time would not hold such materials together in a wall; but we have before observed, that the ancients were much more careful both in materials and manner of working it; we see an instance of the effect of that care and pains, for there are walls of this structure in which no trowel was used, but the force of the mortar held the most uneven stones, and they are very strong after two thousand years.

There occur also remains of a considerable antiquity, in which we see a kind of coffer-work, of a solid substance, with this rough mixture within, the coffer-work being the essential part of the wall; in these two rows of good free stone were laid at a considerable distance, and these ran cross –bars of the same stone from space to spade between them; the rest of the inner space was vacant in form of great square coffers, and they filled up with rough stones and mortar poured in together, which hardening, with the rest became a solid part of the wall.

Vitruvius saw the objection to the chequered wall, that it would be more liable to accidents than the others; and it was found so, and therefore duisused.

The double brick walls with cement and brick-bats between, are extremely strong and fit for great buildings; we see remains of them in the rotunda and in the baths of Dioclesian. We have examples of the cement walls in the amphitheatre of Verona: the walls of the praeneste afford an instance of the rustic, and they paved their streets in the same manner. The square stone walls are to be seen in remains about the temple of augustus, also of the antique coffer-work kind, where the faces and cross works is stone, and the filling up of the coffers, mortar, and rough stones.

Inigo Jones observes, that he had seen the rustic of the wall of the ancients in a house going to Naples, and that it looked very well, and that the squared stone wall made of stones of different bignesses has a grand look in many of the ancient buildings. We see in all these with what knowledge both of the nature of the materials and the manner of disposing them, the ancients built their walls: what strength, solidity and beauty. We have all their materials, we shall next observe in what manner we employ them.

We built walls of part stones, or entirely bricks, and sometimes face them with hewn stone, or cover them in part with plaister wrought into resemblance of such stone covering. When brick-walls stand single we frequently cope or cover at the top with stone; but in examining through the whole course of the proceeding, we shall find that we have neither the strength, beauty, nor variety of the ancients in this great part of architecture. We rarely see instances of walls or entire stone rough or wrought without any facing of another kind, and it is only in the most expensive of our buildings the others make any tolerable figure; what we commonly see about houses is a facing of cut stone over a wall of ordinary brick-work, better or worse; and as to brick walls, instead of the double facing of the ancients, which was filled up between with rougher stuff, our walls are usually faced with good brick on the outside, and wrought up a coarser kind inwardly, the inner surface not being seen when the building is finished.

In regard to the manner of constructing a brick-wall, we are to caution the young architect that in summer he lay the brick as wet, and in winter as dry as he can; for this is the way to make them bind the better with the mortar. In summer as soon as they are laid, they are to be covered up, to prevent their drying to fast; the mortar in that case losing half its biding quality; and, for the same reason, they are to be covered yet more carefully in winter, for rain is a great enemy to the strength of mortar, and frost is worse. In all cases let him take care that the angles of his walls be well united together, for if the adjoining walls be not wrought up at the same time, they never close so well. Finally, that all the parts of the building where there are walls to be raised and finished at the same time, because then they settle equally every where, and there are none of those cracks and clefts, which are so great a blemish in the building and scandal to the builder.

Treating of walls, we should not omit to mention those inferior kinds which have been once much used, and are in some places to be met with now; for though brick and stone are the general walls at this time, they do not utterly exclude all others. In framed timber houses, there are sometimes used what may be called walls of lath and plaister; and in small buildings made altogether of wood, there are what may be called boarded walls. The plaister walls are chiefly used in ordinary timber buildings; they are composed of loam or coarse mortar spread over the lathing, which is to continue from beam to beam, and the whole is covered afterwards with a fine mortar; this is the handsomest manner of doing it, and frequently in this way of using it is rough cast over, and while clean makes a pretty appearance. In what are called boarded walls, the great care is to secure them very well by painting without, and by plaistering within, in which case they will endure a very considerable time, and will be no more in danger of accidents by fire than other materials.

These are a very inferior kind, and only fit for meaner purposes, but in a general account of walls it would have been wrong to omit naming them. We shall from these proceed to the consideration of those most expensive and elegant walls, which we raise of hewn stone for churches and other elegant buildings. In these the better the stone be wrought the smaller will be joints, and this is a great excellence in that kind of buildings. We see the ancients have been so accurate in the cutting of their stone on these occasions, that in the remains of many of their great buildings we can scarce perceive a joint, but the whole looks as if of one entirely rock wrought to that exactness. There is indeed thus much to be said on this head, that they in reality did work down the faces of their stones after their walls were erected, their whole care before being to cut the squares that were to join with a perfect exactness. We see proofs that this was their manner of working among their remains; in some the faces of the stones were yet rough as they were laid, and in others the very marks of the tools shew how they were wrought.

In buildings of vast extent and expence, they sometimes wrought only the impost of arches, the capitals and cornices, leaving the rest rough as they laid in it. This was their manner of executing what we call rustic, in distinction from those walls they finished up in every part. There is nothing into the spirit of which we have less entered that this rustic of the ancients in their walls. We see they have done it, and therefore we conclude it to be right; but we should examine why they did it, and conform ourselves to the same conduct. They always used this form in their largest buildings, we have therefore no authority from them for using it in small ones.

In our stone walls for elegant edifices this smallness of the joints should be our great concern, and to this end the sides of the stone where they are to join cannot be wrought with too much care and exactness. The use of thin sheet lead is also excellent; and upon the whole, as it concerns only buildings of great expence, it is an article in which the price of workmanship never should be spared.

Of all materials for building walls for fruit trees, bricks is the best, it being not only the handsomest, but the warmest and kindest for the ripening of fruit, and affording the best conveniency for nailing, as smaller nails will serve in brick than will in stone walls, where the joints are larger; and if the walls are coped with free stone, and stone pilasters or columns at proper distances, to separate the trees, and break off the force of the winds, they are very beautiful, and the most profitable walls of any others.

WATER-TABLE, in architecture, a sort of a ledge left in stone or brick-walls, about eighteen or twenty inches from the ground, from which place the thickness of the wall begins to abate.

WATER-WHEEL, is an engine for raising water in great quantities out of a deep well.

WATER-WORK, in general, denote all manner of machines moved by, or employed in raising or sustaining water, in which sense, water-mills of all kinds, fluices, aqueducts, &c. may be called water-works. The term water-works, however is more particularly used for such machines as are employed only in raising water.

WELL, is a hole under ground usually of a cylindrical figure, and walled with stone, brick, &c. and mortar; its use is to collect the water of the strata around it. The rising of water in wells is thus accounted for. Suppose a well be sunk at the foot of a hill to such a depth as will bring the digger to an eruption of spring, whose water is brought by a duct from a cavity in the hill, or otherwise from a pond, a river, the sea, &c, it is evident the water in the well will rise from the bottom to an altitude, where the surface of the water is upon a level with that in the reservoir, and constitutes a well. Well, in the military art, is a depth which the miner sinks under ground, with branches, or galleries running out from it, either to prepare a mine, ot to discover and disappoint the enemy's mine.

WICKET, a small door in the gate of a fortified place, &c. or a hole in a door, through which to view what passes without.

AT THE EARNEST REQUEST OF MANY OF OUR SUSCRIBERS, WE SHALL GIVE A COMPLETE ABSTRECT OF THE

ACT OF PARLIAMENT, OF THE FOURTEEN, OF GEORGE THE THIRD, FOR REGULATING BUIDING AND PARTY WALLS, &C.

The Preamble of the Act of the 14th of George III, recites, that the act made in the 12th year of the same reign, for the purpose of regulating Buildings and Party-Walls, &c. hath been found insufficient to answer the good purposes intended thereby; and therefore that it may tend to the safety of the inhabitants, and prevent greater inconveniencies to builders, and workmen employed in buildings, the present act has been made, and began to take effect on the 24th of June, 1774.

This present act is made to repeal entirely the said act of the 12th of George the Third; and also so much of all other Acts whatever as relates to the regulation of buildings and party-walls.

All irregular erections whatever built since the passing the said act of the 12th of George the Third, and contrary thereto, (except where prosecutions have been commenced, and the penalties paid) are to be altered, and made in every respect conformable to the several regulations contained in that of the 14th.

The King's palaces, or any building in the possession of himself, his heirs, or successors, or employed for his use; also the queen's Palace, or any building in her possession or employed for her use, are exempted by this present act from the several regulations therein contained.

By the sais Act, all other buildings whatever now built, or hereafter to be built, are by the Act divided into seven different rates or classes.

We shall now proceed to the several regulations contained in the act, which we are enjoined to observe.

RATES OF BUILDINGS. IN WHAT MANNER DETERMINED

FIRST RATE OF BUILDINGS.

Every church, chapel, meeting-house, or any other place of public workship.

Every house, erection, or building for distilling or brewing liquors for sale, for making of soap, melting of tallow, dying, boiling or distilling turpentine, casting, brass or iron, refining of sugar, making of glass for chymical works for sale, of whatsoever dimension the same respectively are or may be built.

Every ware-house and other buildings (except such as are described to be of the fifth, sixth or seventh rate), not being dwelling-house, roof, or measures in height 31 feet from the footway of either of the fronts, to the top of the blocking course, or parapet.

And every swelling-house with offices adjoining, or connected otherwise than by a fence or fence-wall, or covered passage open on one or both sides, when finished, exceeds the value of 850 l.

Also every dwelling-house which exceeds nine squares of building on the ground plan.

SECOND RATE OF BUILDINGS.

Every ware-house, stable, and other buildings, (except those described to be of the first , fifth, or seventh rate) not being a dwelling-house which exceeds two clear stories, and does not contain more than three clear stories above the ground, exclusive of rooms in the roof, or measures in height 22 feet, and not amounting to 31 feet from the footway of either of the fronts, to the top of the blocking course, or parapet.

Every dwelling-house with offices adjoining, or connected otherwise than by a fence or fence-wall, or covered passage open on one or both sides, when finished exceeds the value of 300 l, and does not amount to more than 850l.

Every dwelling-house, whoch exceeds five square of building on the ground plan, and does not amount to more than nine square.

THIRD RATE OF BUILDINGS.

Every ware-house, stable and other building, (except those described to be of the first, sixth, or seventh rate) hot being a dwelling-house, which exceeds one clear story, and does not contain more than two clear stories above ground, exclusive of rooms in the roof, or measures in height more than 13 feet, and foes not amount to 22 feet, from the footway of either of the fronts, to the top of the blocking-course, or parapet.

Every dwelling-house with offices adjoining, or connected otherwise than by a fence, or fence-wall, or covered passage open on one or both sides, when finished, exceeds the value of 150l and does not amount to more than 300l.

Every dwelling-hose which exceeds three and a half squares of building on the ground plan, and does not amount to more than five squares.

FOURTH RATE BUILDINGS.

Ever ware-house, stable and other building (except those described to be of the first, fifth, or seven rate) not being a dwelling-house, which does not exceed one clear story above ground, exclusive of rooms in the roof, and measures in height not more than 13 feet from the footway of either of the fronts to the top of the blocking-course, or parapet.

Every dwelling-house with offices adjoining, or connected otherwise than by a fence, or fence-wall or covered passage open on one or both sides, when finished, does not exceed the value of 150l.

Every dwelling-house, which does not exceed three and an half squares of building on the ground plan.

FIFTH RATE OF BUILDINGS.

Every dwelling-house, ware-house, stable and other building (except those not being dwelling-houses, as are described to be of the first or seventh rate) which is at the distance of 4 feet, and not 8 feet from any public road, street or causeway, and is detached from any other building, not in the same possession, 16 feet at the least, and not 30 feet, or connected with any other building only by a fence or fence-wall. These are of the fifth rate, and may be built of any dimensions whatever.

SIXTH RATE OF BUILDINGS.

Every dwelling-house, ware-house, stable, and other building (except not being dwelling-houses, as are described to be of the first rate) which is at the distance of 8 feet from any public road, street, or causeway, and is detached from any other building, not in the same possession, at least 30 feet, or connected with any other building only by a fence or fence-wall. These may be built of any dimensions, and with any materials whatever.

SEVENTH RATE OF BUILDINGS.

Every crane-house, on any wharf or quay, every shamble, wind-mill or water-mill; every building situated without the cities of London and Westminster, and the liberties thereof, used for workshops, or drying places for tanners, fellmongers, glue-makers, size-makers, calico-printers, whitsters, whiting-makers, curriers, leather-dressers, buckram-stiffeners, oil-cloth painters, wool staplers, throw sters, parchment-makers and paper-makers, so long and at such times, as they are used for some or one of those purposes, and no longer, shall be deemed to be of the seventh rate, and may be built of any dimensions, and with any materials whatever; but they are not to be covered with pitch or tar, or any other inflammable material, nor ever to be converted to any other use than as abovementioned.

N.B. the act makes an exception to the materials of the crane-houses, and expressly says, that the whole, or any addition thereto, shall be built of stone, brick, slate, tyle, oak, elm, steel, iron, or brass.

It may be necessary here to observe, that the act provides against any doubts which may arise concerning offices that belong to any building of the first, second, third, or fourth rate, and therefore says, that every such office, if detached from the building to which belong s, and connected therewith only by a fence or fence-wall, or covered passage open on one or both sides, shall be deemed to be of the rate such building would be of, as if the same was not any ways connected or belonged to any such buildings.

What particularly concerns the bricklayer in this act.

There are only the first, second, third and fourth rates of building, whose thickness of external and party-walls are described in the act.

The act directs, that every master-workman, or owner, shall give 24 hours notice to the surveyor, in whose district any building, from the first to the seventh rate, is to be altered or erected.

As buildings in general are oftener began by the bricklayer than by the carpenter, it naturally follows, that it will be the bricklayer's business to give such notice, except where a foundation is to be piled or planked; and then it becomes the business of the carpenter.

EXTERNAL WALLS.

The Act of 14 George III. Calls every front, side or end wall, &c. (not being party-wall) an external wall.

The footings to the walls are to be with equal projection on each side, but where any adjoining building will not admit of such projections to be made on the side next adjoining to such building, the act allows it to be done as near as the case will admit, and this to each of the four rates.

The timbers in each rate may be supposed as girders, beams, or trimming joists, &c. which might be illustrated with and engraving, the shew their bearing on the wall, which in all cases, and in all the above four rates, may be as much as the nature of the wall will admit, provided there is less 4 inches between the ends of such timber and the external surface of the wall.

The joints of the brick-work might also be shewn, and might answer to the express number of bricks of which such wall is to be composed.

It may now be necessary here to say something further, relative to external walls.

EXTERNAL WALLS, and other external inclosures to the first, second, third, fourth and also the fifth rate of building, when built hereafter, must be of brick, stone, artificial stone, lead copper, tin, slate, tile or iron; or of brick, stone, and such artificial stone, lead, copper, tin, slate, tile and iron together, except the planking, piling, &c. for the foundation, which may be of wood of any sort.

In any part to an external wall of the first and second rate, is built wholly of stone, it is not to be less in thickness than as follows.

First rate, 14 inches below the ground floor; 9 inches above the ground floor.

Second rate, 9 inches above the ground floor.

Where a recess is meant to be made in any external wall, is must be arched over, and in such manner, as that the arch, and the back of such recess shall respectively be on the thickness of one brick thick, it cannot have any recess.

No external wall of the first, second, third, and fourth rate, is ever become a party-wall, unless the same shall be of height and thickness above the footing, as is required for each party-wall to its respective rate.

OF PARTY-WALLS.

Buildings of the first, second, third, and fourth rate, which are not designed by the owner thereof to have separate and distinct sidewalls, on such parts as may be contiguous to other buildings, must have party-walls; and they are to be placed half and half, on the ground of each owner, or of each building respectively, and may be built thereon, without any notice being given to the owner of the other part, that is to say, the first builder has a right so to do, where he is building against vacant ground.

Party-walls, chimneys, and chimney-shafts hereafter to be built, must be of good sound of bricks, or stone, or of sound bricks and stone together, and must be coped with stone, tile or brick.

Party-walls, or additions thereto, must be carried up 18 inches above the roof, measuring at right angles with the back of the rafter, and 12 inches above the gutter of the highest building, which gables against it; but where the height of a party-wall so carried up, exceeds the height of the blocking-course, or parapet, it may be made less than one foot above the gutter, for the distance of 2 feet 6 inches from the front of the blocking course, or parapet.

Where dormers or other erections are fixed in any flat or roof, within 4 feet of any party-wall, such party-wall is to be carried up against such dormer, and must extent at least 2 feet wider, and to the full height of every such dormer or erection.

No recess is to hereafter made in any party-wall of the first, second, third and fourth rate, except for chimney-flues, girders, &c. and for the ends of walls or piers, so as to reduce such wall in any part of it, to a less thickness than is required by the act, for the highest rate of building to which such wall belongs.

No opening is to be hereafter made in any party-wall, except for communication from one stack of ware-houses to another, and from one stable building to another, all which communications must have wrought iron doors; and the panels thereof are not to be less than one quarter of an inch thick, and to be fixed in a stone door-cases and sills. But there may be openings for passages or ways on the ground, for foot passengers, cattle or carriages, and must be arched over throughout with brick and half stone , or brick and stone together, of the thickness of a brick and half at the least, to the first and second rate, and one brick, to the third and fourth rate. And if there is any cellar or vacuity under such passage, it is to be arched over throughout in the same manner as the passage over it.

No party-wall or party-arch, or shaft of chimney, new or old, must be cut into, other than for the purposes as follow.

If the fronts of buildings are in a line with each other, a break may be cut, both in the fore and back front of such building, (as may be already erected), for the purpose of inserting the end of such other external wall which is to adjoin thereto; which break must not be more than 9 inches deep, from the outward faces of such external walls,, and not to be cut beyond the centre of the party-wall thereto belonging.

And further, for the use of inserting bressummers and story posts, that are to be fixed on the ground floor, either in the front or back wall, which recess may be cut from the foundations, of such new wall, to the top of such bressummer 14 inches deep from the outward face of such wall, and 4 inches wide in the cellar story, and 2 inches wide on the ground story.

And further, for the purpose of tailing-in stone steps, or stone landings, or of bearer to wood stairs, or for laying-in stone corbels for the support of chimney jaumbs, girders, beams, purloins, biding or trimming joists, or other principal timbers.

Perpendicular recesses may also be cut in any party wall whose thickness is not less than 13 inches, for the purpose of inserting walls, and piers therein, but they must not be made wider than 15 inches, or more than 4 inches deep, and no such recess is to be nearer than 10 feet to any other recess.

All such cuttings and recesses must be immediately made good, and effectually pinned up, with brick, stone, slate, tile, shell. Or iron, bedded in mortar.

No party-wall to be cut for any of the above purposes, if the same will injure, displace, or endanger, the timbers, chimneys, flues or internal finishings of the adjoining buildings.

The act also allows the footing to be cut off on the side of any party-wall, where an independent side-wall is intended to be built against such party-wall.

When any buildings (the inns of court excepted) that are erected over gateways, or public passages, or have different rooms and floors, the property of different owners, come to be rebuilt, they must have a party-wall, with a party-arch or arches, of the thickness of a brick and a half at the least, to the first and second rate, and of one brick to the third and fourth rate, between building and building, or between the different rooms and floors that are the property of different owners.

All inns of court are excepted from the regulation as above, and are only necessitated to have party-walls, where any room or chamber communicates to each separate, and distinct stair-case, and which are also subject to the same regulations as respect of other party-walls.

If a building of a lower rate, is situated adjoining to a building of a higher rate, and any addition is intended to be made thereto, the party-wall must be built in such manner, as is required for the rate of such higher rate of building so adjoining.

When a party-wall is raised, it is to be made the same thickness, as the wall is of, in the story next below the roof of the highest building adjoining, but it must not be raised at all, unless it can be done with safety to such wall, and the building adjoining thereto.

Every dwelling-house to be built which contains four stories in height from the foundations, exclusive of rooms in the roof, must have its party-wall built according to the third rate, although such dwelling-house may be of the fourth rate.

And every dwelling-house to be built in future which exceeds four stories in height, from the foundation, exclusive of the rooms in the roof, must have its party-wall built according to the first rate, although such house may not be of the first rate.

CHIMNEYS, &C.

No chimney is to be erected on timber except on the piling , planking, &c. of the foundations of the building.

Chimneys may be built back, in party-walls; but in that case they must not be less in thickness from the centre of such party-wall than as follow.

First rate, or adjoining thereto, must be one brick thick in the cellar, story; and half a brick in all the upper stories.

Second, third and fourth rate, or adjoining thereto, must be three-fourths of a brick thick in the cellar story, and half a brick in all the upper stories.

Such chimneys in party-walls as to not stand back to back may be built in any of the four rates as follow:

From the external face of the party-wall to the inward face of the back of the chimney in the cellar story, one brick and a half thick, and in the upper stories, one brick thick, from the hearth to 12 inches above the mantle.

Those back of chimneys which are not in party-walls, to the first rate, must not be less than a brick and a half thick in the cellar story, and one brick thick in every other story, and to be from the hearth, to 12 inches above the mantle.

If such chimney is built against any other wall, the back may be half a brick thinner than that which is above described.

Those backs of chimneys which are not in party-walls of the second, third and fourth rate, must be in every story one brick thick, at least, from the hearth, to 12 inches above the mantle.

These backs may be also half a brick thinner, id such chimney is built against any other wall.

All breast of chimneys, whether they are in party-walls or not, are not to be less than one brick thick in the cellar story, and half a brick thick in every other story.

All withs between flues must not be less than half a brick thick.

Flues may be built opposite to each other in party-walls, but they must not approach to the centre of such wall nearer than 2 inches.

All chimney breast, next the rooms, and chimney back also, and all flues are to be rendered or pargetted.

Backs of chimneys and flues in party-wall against vacant ground must be lime whited, ot marked in some durable manner, but must rendered or pargetted as soon as any other building is erected to such wall.

No timber must be over the opening of any chimney for supporting the breast thereof, but must have a brick, or stone arch, or iron bar or bars.

All chimneys must have slabs, or foot paces of stone, marble, tile or iron at least 18 inches broad, and at least one foot longer than the opening of the chimney when finished, and such slabs or foot paces must be laid on brick or stone trimmers at least 18 inchhes broad from the face of the chimney breast, except where there is no room or vacuity beneath, and then they may be bedded on the ground.

Brick funnels must not be made on the outside of any building of the first, second, third or fourth rate, next to any street, square, court, or way, to the first, second, third or fourth rate, and no such pipe is to be fixed on the inside of any building nearer than 14 inches to any timber, or other combustible material whatever.

CARPENTER.

Those timber partitions between building and building that were erected, or begun to be erected before the passing of the act, may remain till one of the adjoining houses is rebuilt, or till one of the fronts, or two-thirds of such fronts, which abut on such timber partition, is taken down to the bressummer or one pair of stairs floor, and rebuilt.

No timber must hereafter be laid into any party arch, other than for bond the same. Nor into any party-wall other than for bond, &c. and the ends of the principal timbers to the floors and roof.

No timber bearer to wood stairs, where an old party-wall has been cut into for that purpose, must be laid nearer than eight inches and an half to any chimney or flue, or nearer than four inches to the internal finishing of the building adjoining.

No timber must be laid in any oven, cooper, stove, still, boiler or furnace, nor within 2 feet of the inside thereof.

No timber must be laid nearer than nine inches to the opening of any chimney.

No timber must be laid nearer than five inches to any flue of a chimney, oven, stove, copper, still, boiler,, or furnace. Or nearer than nine inches, if such timber is placed nearer than five feet of the mouth of the same respectively.

No timber is to be laid under any hearth to a chimney, nearer, than 18 inches to the upper surface of such hearth.

No timber must be laid nearer than 18 inches to any doors of communication through party-walls between warehouses or stables.

All wood-work in general against any breasts, back or flue, of any chimney, must be fixed by iron nails or hold-fasts, and not drove more than three inches into the wall, or nearer than four inches to the inside of the opening of any chimney.

Bressummers, story posts, and plates thereto, are only permitted in the ground story, and may stand fair with the outside face of the wall, but must go no deeper than two inches into a party-wall, nor nearer than seven inches to the centre of the party-wall where it is two bricks thick, not nearer than four inches and an half, if such party wall does not exceed one brick and an half in thickness.

Window-frames, and door frames to the first, second, third and fourth rate, are to be recessed in four inch reveals at least.

Door-cases, and doors, to ware-houses only, as are of the first, second, third or fourth rate, may stand fair with the outward face of the wall.

Every corner story post, fixed for the support of two fronts, must be of oak or stone, at least 12 inches square.

No external decoration is to be of wood, except as follows: cornices, or dressings to shop windows, frontispieces to door-ways, of the second, third and fourth rate; covered ways, or porticos to a building, but not to project before the original line of the houses in any street, or way; such covered-ways or porticos, to be covered with stone, lead, copper, slate, tile or tin.

No such covered-ways,, or the cornice to any shop-window, not the roof of an portico, must be higher than the under side of the fill to the windows of the one pair of stairs floor.

Every other kind of external decorations to the first, second, third and fourth rate is to be of stone, brick, artificial stone, stucco, lead or iron.

Every flat, gutter and roof and every turret, dormer, and lanthorn light, or other erection, placed on the flat, or roof of any building of the first, second, third, fourth and fifth rate, must be covered wither with glass, copper, lead, tin, slate, tile or artificial stone.

No dripping eaves must be made next any public way, to any roof of the first, second, third or fourth rate, except from the roofs of porticos or other entrances.

Wood trunks must not be higher from the ground than to the top of the windows of the ground story, the pipes from thence upwards, must be of lead, copper, tin, or iron, and may discharge the water into channel stones, on or below the surface of the ground. Or the wood trunks may be continued down below the surface of the ground into drains, &c. or into bricks or stone funnels, but such funnels, must in every part there of be below the surface of the foot pavement.

OWNERS

Those persons who are owners of warehouses and stables are restricted by the act, from making any warehouse or stable whatever, to contain more than a certain number of squares on the ground plan thereof, which restriction is as follows: that no stack of warehouses is to contain more than 35 squares of building of the ground plan, including all the external and internal walls, and so much of the party-walls as may belong to such stack of warehouses. Nor must any enlargement be made to any stack of warehouses already built or begun, so as to increase the same beyond the said 35 squares; but if any stack of warehouses is required to be larger than above specified, there must be a party-wall or walls, which must be built in every respect conformable to the rate to which such warehouses belong; and the communications therein to be by stone door-cases and iron doors.

If a stable building, it must not contain above 25 squares, and in every other respect is subject to the same rules and regulations as above described, to be observed in warehouses.

All buildings of the first, second, third and fourth rate, (except those in the inns of court, or chancery, the royal exchange companies halls, and except warehouses and dwelling houses let at a rack rent for not more than 25l. a year) if hereafter converted into two or more dwelling-houses, work-shops, stables or other buildings and made into distinct tenures on the ground floor thereof, then each of such tenements is to be considered as a separate buildings, and must have a party-wall or walls accordingly.

The proprietors of any stack of warehouse or stables are excepted by the act from the above regulation, and may divide their warehouses and stables, for the purpose of letting them to under tenants, without having any such party-wall, if each division does not exceed the number of squares before specified.

Owners of buildings thinking themselves aggrieved by the ascertainment of the rate of their buildings, made by any surveyor appointed under the act, may apply to any two justices of the peace within whose jurisdiction such building is situated, and if not satisfied with their determination, may appeal to the general quarter sessions, whose determination is final.

If disputes or difficulties arise between owners concerning the rebuilding of houses or other buildings, in separate occupations, or from their property being any ways intermixed, by being over public gateways or otherwise the person who is first desirous of rebuilding, may upon giving notice in writing to the other party concerned, of their intention to apply for the judgment and determination of the general or quarter session, (to be next holden in the city, county, &c. where the same may happen) after 14 days from the delivery of such notice, proceed accordingly, and obtain verdict by jury.

The case must be particularly stated in the notice, and such notice is to be left at the last or usual place of abode of the party to whom the notice is addressed. If they are under any legal disability, or cannot be found, or if their building adjoining such intermixed property is uninhabited, it is sufficient if the notice is wrote in a legible hand, and fixed to the door, or some other conspicuous place or such house or building so uninhabited.

Such owners may, after 14 days from the obtain such judgment or determination, proceed to the pulling down their own building, and may in the preference of a peace officer, enter the ground of the other owner, in order to rebuild such parts, or the whole party-wall or walls, or party-arch or arches, and in such manner as determined by jury, and may remove to some other part of the premises, any furniture, or other obstructions to the carrying on the work, and themselves and workmen to have free access during the time of working hours, till such party-wall or walls, or party-arch or arches are completed.

And if such owner or occupier, or any other person or persons, shall hinder such workmen so employed for the purposes before said, or willfully damage the said works; they are to forseit 10l. to be levied, recovered, and applied, in the same manner as the penalty on church wardens.

Within 10 days after such party-wall or walls, or party-arch or arches, are rebuilt, the person who built the same, must leave with the owner adjoining, an account of the experienced incurred, to his, her, or their share, by building so much of such party-wall or walls, or party-arch or arches, as by the verdict so determined to be built; and unless payment is made within

21 days after demand has been made, it may recovered by action of debt, bill, plaint, or information, in any of his majesty's courts of record at Westminster, with double cost of suit.

Tenants or occupiers may pay the money, and deduct it out of the next payment of their rent.

When any old party-wall to the first, second or third rate is not more in thickness than one brick and an half from the foundation to the ground floor, and not more than one brick thick from thence upwards to the top thereof, the owner of either of the buildings adjoining, being desirous of pulling down their own building, in order to rebuild, and to have a party-walls agreeable to the regulation of the act, must give three months notice in writing to the Owner or occupier of the building so adjoining, of his, her or their intention, in three months from the date thereof, to pull down such old party wall, and erect in its stead a party-wall agreeable to the act, and the expiration of which time, he may enter such adjoining premises, and exercise the like authority, as has been expressed in the case of intermix property.

The same in every other respect may be done, where there is wood partitions between buildings, and the owner of one part is desirous of having a wall.

The owner who builds a party-wall, is to be reimbursed a part of the expence, in proportion as the case may be, for example, if his building is on equal o inferior rate to that of the owner's adjoining, he is to receive an equal moiety, or at least to be paid for as much as the other owner makes use of: but if his building is of a superior rate to that of the other owner, he is only to receive such as sum as arises from valuing it according to the thickness of wall is required to such a rate of building.

Party-walls, or party arches are to be valued at 7l 15s. per rod for new brick-work; and 1l 8s per rod is to be allowed for the old brick-work of such party-wall or arch, as it contained before it was pulled down, and also to allow two-pence per foot cube for old timber.

Until the payment of the money, the property of such wall, and the whole ground on which stands, is vested intirely in the person at whose expence the same was built.

The money is to be paid, as soon as such party-wall is made use of by the adjoining owner, where there was no building adjoining before such party-wall was built; or if there was a building adjoining thereto, then it is to be paid as soon as they party-wall is built and finished.

Within ten days after being so finished, or as soon as conveniently may be, the owner at whose expence it was built, is to leave with the owner or occupier of the adjoining building, and account in writing, of the number of rods contained in such part of the wall as the other owner so adjoining is liable to pay; making therein the deduction (if any) of the value of the old materials according as it may happen, and also account of such other expences as may have been incurred, in shoring up the other owner's building, or clearing away wainscot &c. necessary for the purpose of building such party-wall ; and the tenant or occupier, with whom such notice is left, may pay the money, and deduct it out of the next payment of the rent.

The party-wall is to be pulled down at the first builder's expence, which expence is not to be included in the above account, it being supposed the old materials are worth 28 s, a rod, and 2 d, per foot cube, more than the labour of pulling down.

If the money is not paid within 21 days after it has been demanded, it may be recovered with full costs of suit from the owner on whom it has been incurred, by action of debt, or on the case, in any of his majesty's courts of record at Westminster, wherein no effoign, protection, or wager of law, or more than one imparlance shall be allowed.

If the plaintiff gives three calendar months notice to the other owner, of his intention of bringing such action before the commencement thereof, specifying in such notice the sum for which it is to be brought, and also annexes to such notice a bill of the particulars with which such intended defendant is to be charged, then if such plaintiff recovers the full sum specified in such notice, he shall also receiver double cost of suit.

When party walls and party-arches, or party fence-walls are decayed, and the owner of one part, thinks it necessary to repair or rebuilt the same, or any part thereof, and the owner of the other part is not agreeable thereto, or is under any legal disability or otherwise; the owner so desirous of rebuilding must give three months notice in writing to the owner of the other part, or the occupier thereof, or if the adjoining building or ground is uninhabited, then ot fix it on the door, and which notice is to be in form, or to the effect, following.

"apprehending the party-wall, party-arch, or party-fence-wall, or some part thereof (as the case shall be) between the house, or building, or ground (as the case shall be) thereto adjoining, situate inhabited , or ocuupied by and my house, or building, or ground (as the case shall be) adjoining thereto, to be so far out of repair, as to render it necessary to repair, or pull down, and rebuild the same, or some part thereof: take notice, that I intend to have the said party-wall, party-arch, or party-fence-wall, (as the case shall be) surveyed pursuant to an act of parliament, made in the 14th year of the reign of king George III. And that I have appointed of and of my surveyors, to meet at in (being at some place within the limit of the act) on my behalf, on the day of next at of the clock, in the Day of (being between the hours of six in the morning, and six in the afternoon). And I do hereby require and call upon you to appoint two other surveyors, or able workmen, on your part, to meet them at the time and place aforesaid, to view the said party-wall, party-arch, or party-fence-wall (as the case shall be) an to certify the state and condition thereof, and whether the same or any part thereof ought to be repaired or pulled down and rebuilt.

Dated this day of.

The person to whom such notice has given, is to appoint two surveyors, or able workmen, to meet at the time and place in such notice mentioned, and they together with the other surveyors (named and appointed by the owner giving such notice) may view such party wall, party-arch, or party-fence-wall, and certify their opinion thereon.

If the owner, or occupier, to whom such notice was given, refuses or neglects to provide two surveyors, or able workmen, against the time appointed in such notice, then the owner may, within six days after such time appointed, provide two other surveyors, or able workmen, and they together with those before-named, may proceed accordingly to the viewing such party-wall, &c.

The surveyors are to give a certificate under their hands to the court of aldermen, or the next general or quarter sessions, (as it may happen) the state of such wall, &c. and whether it is to be rebuilt or otherwise. And if not done by the major part of them within one month after such appointment, the owner may apply to one or more justices of the peace, who may appoint one other able surveyor, or workman, to be added to the others, and they may meet upon six days notice, to view such wall, &c.

Such certificate is to be immediately filed with the clerk of the peace, for which he is to receive one shilling, and a copy of such certificate within three days after being made, is to be delivered to the owner, or left at the house adjoining, or fixed on the door, if uninhabited.

The person against whom such certificate has been obtained, if not satisfied therewith, may appeal to the general or quarter sessions to be next holden in the city, county, liberty, &c. whose determination is final.

If the parties make no such appeal, or if they do appeal, and there is no order made to the contrary, then the owner who first gave the notice (of his intention, of rebuilding otherwise) may, after fourteen days from the leaving the copy of such certificate with the owner, or at the house adjoining, proceed to the pulling down, or to the repairing such party-wall, &c. as has been so determined, and enter the house or ground in the presence of peace officer, and exercise the authority as is given to owners in the case of intermixed property.

Party-walls and chimney shafts may be raised by owners on one side to any height, and if the owner on the other side makes use of them in any other manner that for flues therein, he or they is to pay for as much of the same so made use of accordingly, and to be levied and recovered as in the case of the first building party wall.

Party-fence-walls, (if sound) may be raised by owners on one side, but are not to be used as party-walls, unless they are of the materials, height, and thickness, required by the act to the rate of which they belong.

The owner of party-fence-walls or fences of wood, may take them down on one side at his own expence, and he may build a new party-wall instead thereof, but must not set more than seven inches on the adjoining ground; and the owner of such adjoining ground must not make use of it otherwise than for a party-fence-wall; if he does, he must pay a proportionable part the expence in erecting it.

Notwithstanding, the owner who builds such party-wall, may have set it more on his own ground, than the seven inches on the ground adjoining, yet he is not to lose his right of soil, but the line of his property is to continue as before.

If any new party-wall is intended to be built by an owner of one part, and the owner of the other part is desirious of having chimney breasts, jaumbs and flues left therein, or to have such other recesses left, as are by the act allowed, he must give notice in writing before the wall is begun to be built, to the builder thereof; specifying in what manner such recesses as are required; and, as soon as completed, the owner who gave such notice is deemed to have made use of such party wall, and from thenceforth is liable to pay the whole of the expence of erecting such work as was desired, as well as a proportionable part of the expence in erecting the party-wall, to be recovered by the other owner, in case of non-payment, with full cost of suit, in the same manner as the proportionable part of any party-wall is made recoverable to the first builder thereof.

Such party-walls as were built, or begun to be built before the passing of the act, if sound may remain, though perhaps they are not built according to the thickness now required; and it may happen that the house adjoining will be rebuilt with a side-wall, without making use of such old party-wall; in that case, when the other house adjoining is rebuilt, or the party-wall is taken down, the owner of such house so adjoining, is not to be intitled to more than one half the ground whereon it stood, without having agreed, and made satisfaction for the other half of the owner who built such distinct side-wall; and if the parties cannot agree, the price and the matters in difference to be settle by a jury.

If the house or building so adjoining to such distinct side-wall, as above alluded to, shall be of the first, second or third rate, or be four stories high from the foundation thereof, exclusive of rooms in the roof, and such old party-wall, not being of the thickness of two bricks in length, from the foundations to the ground floor, and from thence upwards to the top thereof of one and an half bricks in length; then such old party-wall, when either of the buildings adjoining is rebuilt, is to be considered as if the sane had been condemned as ruinous.

If such old party-wall shall have any timber of any adjoining building laying through the same, and if when either of the houses or buildings is rebuilt, and the owner whose house is not rebuilding, will not permit so much of such timber to be cut off, as shall leave full six inches of clear brick-work beyond the end of every such timber, then such wall is to be considered, as if the same had been condemned as ruinous, and the same is to be taken down and rebuilt in such manner as has been described, in the case of decayed party-walls.

Bow-windows or other projections to be hereafter built, or added to any building of the first, second, third, or fourth rate next to any public street, square, court, or way, must not extend beyond the general line of the fronts of the houses therein, except for projection of copings, cornices, facias, doors, and window-designs, or for open porticos, steps, or iron palisades; and also, except windows to shops on the ground story. And the stall boards to such windows, must not in any street or way less than 30 feet wide, project above 5 inches, from the upright line of the building to which such stall-board belongs.

No cornice or covering to such shop-window, in any street or way 30 feet wide or more, must project above 18 inches, nor in any street or way less than 30 feet wide, project above 13 inches, from the upright line of the building to which such window belongs.

No bow-window or other projection built before the 24th of June, 1774, is ever to be rebuilt, (except such projections as are before-mentioned allowed to be) unless such bow-window or projection, was built originally with the house or building to which it belongs; or unless such bow, or other projection be within the original line of the street, square, court, place, or way, wherein the same is situated; in which case it must be built, together with the columns (if any) that support the same, with the same materials, as is directed for external walls.

N.B. the power of the commissioners of the paving, or of sewers for the city of London, in regard to the above matters, remain as before the passing of the act.

Where the fore front and back front of any building now built, is taken down as low as the bressummer or one pair of stairs floor, within the space of five years from each other, it is to be deemed a rebuilding, and the party-walls thereof are to be subjected in all respects to the several regulations in this act.

The act however allows all external walls or external inclosures that are now built, (except roofs, flats, gutters, dormers, turrets, and lanthorn lights, or other erection on the same) to be repaired with the same sort of materials, of which they are now erected, but if taken down to the bressummer or one pair of stairs floor, then they are to be built of the same materials, and not less in their dimensions than has been all along explained, in regard to external walls hereafter to be built.

All internal inclosures or additions thereto, hereafter to be made for separating any building of the first, second, third or fourth rate, from any other building where such buildings shall be in separate occupations, must be of brick, or stone, or artificial stone, or stucco.

CONCERNING TO THE SURVEYOR

The surveyors are (for the City) appointed by the mayor and Aldermen during their pleasure;, and (for each county, liberty, &c.) by his Majesty's Justices of the peace, at their respective quarter sessions during their pleasure also.

The method of valuing the several dwelling-houses of the first, second, third, and fourth rate, or for ascertaining the number of squares they contain, by which their respective rates are to be determined, becomes the busiest of the surveyor in whose district the same is situated; and the act directs him in two ways as follows:

If by valuation, it must be done as near as the case will admit, and notwithstanding any decay that may be in the building, it is to be estimated the same as if it was found, and the materials thereof entirely new, and at the common current prices of materials and workmanship at the time such valuation is made, but the ground whereon such building is erected, the fence, or fence-walls, any vaults under the ground, either before, or behind the building, or any lead covering or pavement over the same, or that part of the party-wall, which does not belong to such building, is not to be included in such valuation.

But iron railing and steps to areas, before or behind the house, are to be included.

When the rate is to be determinate by the squares on the plan, the admeasurement is to be taken on a level at the principal entrance, and to take in no more of the party-wall than belongs to such house, so to be admeasured.

The surveyor is not require by the act to attend within the twenty-four hours notice given him from the owner, or master-workman, of his or their intention to build; the notice is noly given, that he may know where any building is erecting within his district, but by his oath he must afterwards attend, from time to time, in order to see the rules and regulations in the act duly performed, and upon discovery of any breach therein, he is to give information of the same, as soon as conveniently may be, to the Lord Mayor of London, or two or more justices of the peace, within whose jurisdiction the same is situated.

The surveyor upon receiving notice of a building, or of any addition to a building, being covered in, or the cutting into a party-wall is made good, and completed, must attend and survey the same, and if he finds the work has be done to the best of his judgments and belief agreeable to the act, he is (within fourteen days afterwards) to make oath thereof in writing, before some justice of the peace, within whose jurisdiction the said building or wall is situated.

The satisfaction to be made to the surveyor for his trouble in seeing the regulations of the act duly performed, is at the discretion of two or more justices of the peace, in the city, county, &c. (as the case may be) and under their hand they may be empowered to receive such sum, or sums, not exceeding the following.

		£	s	d
For any new building of the	Ist rate	3	10	0
	II	3	3	0
	III	2	10	0
	IV	2	2	0
	V	1	10	0
	VI	1	1	0
	VII	0	10	6
		£	S	D
For any addition, or alteration made to a building of the	Ist rate	1	15	0
	II	1	10	0
	III	1	5	0
	IV	1	1	0
	V	0	15	0
	VI	0	10	6
	VII	0	5	0

Such sum so ordered is to be paid by the master-workman, or the person who caused the work to be erected, and in default of payment thereof, it is by warrant of one or mere justices, to be levied by distress and sale of the goods and chattels of such master-workman, or other person (as the case may be) together with the reasonable costs and charges attending it.

Surveyors are liable to be discharged from their office, upon any complaint of their willfully neglecting their duty, or behaving negligently and unfaithfully in the discharge thereof; and the same being made appear to the court, by whom they were appointed, it is in their power to discharge him; and for ever afterwards he is to be deemed incapable of being again appointed a surveyor under the act.

Each surveyor must from time to time leave notice in writing with the clerk of the peace, for the city, county, &c. wherein his district is situated, of the place of his usual abode.

COURT OF ALDERMEN AND SESSIONS

All the powers and authorities by the act vested in the court of amyor and aldermen of the city of London, may be by then transacted in the outer chamber of Guidhall, according to the custom in the city.

On every application to the general quarter sessions for the county of Surry, concerning any matter to be such sessions determined, the jury is to be impannelled, and all parties required to attend such quarter sessions at some general or special adjournment, within six weeks next after such application, which adjournment is to be held in some convenient place in the borough of Southwark; and that from time to time every further meeting touching all matters to be done upon such application is to be appointed by the justices within three weeks from the meeting last held.

The court of mayor and aldermen or the court of sessions respectively are impowered by the act to impose fines on the sheriff, or his deputy, for making default in the premises; and on any person summoned and returned on the jury that does not appear at the time and place in such summons specified, or appearing, shall refuse to be sworn on such jury, or to give his verdict, or in any manner willfully neglect his duty therein; and on any person having notice to attend touching the premises, who does not attend, or attending, refuses to be sworn, examined, and give evidence; and in default of payment thereof on demand to levy such fines, and in such manner, as other fines set by the same court respectively have been usually levied, but no fine to exceed 10 l. on any one person for any one offence; and such fines so levied and recovered are to be applied to the use of the person making application in the suit, and to no other purpose whatever: and if any person having had notice to attend as evidence does not attend and give evidence accordingly, having had ten days notice in writing thereof, under the hand of the party on whose behalf they are wanted and his guardian, trustee, committee, attorney, or agent, having been tendered his reasonable charge and expences for attendance, such person so neglecting or refusing to give evidence, is liable to an action on the case, to be brought by the party on whose behalf they were wanted, and in which the plaintiff may recover his damage, occasioned by such non-attendance with full cost of suit, and no other excuse is to be allowed for non-attendance, other than the law allows for witnesses legally summoned to attend; and other than the law allows for witnesses legally summoned to attend; and it is in the power of the court to order such further sum (according to their discretion) to be paid to any witness in proportion to the time such witness shall attend, and such witness not to be compelled to give evidence before such sum so ordered shall be paid.

The court of mayor and aldermen, or court of sessions respectively, upon receiving applications from any party, for their judgment and determination in the case of intermixed property where such party is desirous of rebuilding, the said courts are respectively empowered to issue forth their precept to the sheriffs respectively; requiring him or them to impanel and return a competent number of substantial persons, qualified to serve on juries, not less than twenty-four, nor more than thirty-six; and out of such number so returned, a jury of twelve persons is to be drawn, in the same manners as juries are directed to be drawn for the trial of issues joined in his majesty's court at Westminster, and such jury so impannellled is required to attend the sais court; and all parties concerned may have their lawful challenges against any of the said jury, but not too be at liberty to challenge the array; and the said court of major and aldermen, or the court of sessions respectively, are also impowered to summon all such persons to attend as may appear to them as necessary evidence in the matter in dispute, to be upon oath examined thereon; and either of the said courts may order the jury to view the place in question, in such manner as they shall direct; and to command such jury and witnesses, unto all such affairs for which they are summoned shall be concluded.

Such jury is to enquire, and try, and determine by their verdict, whether the premises in dispute ought to be rebuilt or not, and if to be rebuilt are also to determine the scite of a party-wall, or party-walls, and also what party-arches may be necessary over or under any rooms of such house or houses, or other buildings so intended to be rebuilt; or are to ascertain the quantity or soil of ground, or other parts of the premises, (if any) necessary to be taken from the person so desirous of rebuilding, permitting such person to erect a party-wall or walls, or party-arch or arches; and are to ascertain and award what compensation (if any) ought to be paid by either of the parties to each other, so in difference, and also to ascertain what proportion of expence is to be repaid by the parties in difference to the person so rebuilding as before said.

The court before whom the matter is brought, is to give judgment according to such verdict, and may also award to either of the parties such costs as shall seem reasonable; and which verdict, and the judgment, order, or determination is to be binding and conclusive against all persons whatsoever, claiming any state, right, tittle, trust, use, or interest therein.

All such verdicts, orders, determinations, and proceeding of the said court, id to be filed on record by the town-clerk of the city of London, or by the clerk of peace , or other proper officer, if in the county, liberty, &c. and such clerk or other officer for the filing thereof, and for a copy of the order of the court, it to be paid after the rate of twelve pence for every hundred words, and no more, by the person applying for the same; and after being so paid, he is empowered to deliver to any person requiring the same, an exemplification under his hand and feal, and such exemplification may be read as evidence in any court of law or equity.

If any presentment is hereafter made by an inquest or grand jury in London, or by any annoyance jury within the city and liberty of Westiminster, or by the jury sworn at the court leet, held by the sheriff in his turn for any hundred or place, or by other inwquest or juro sworn within any other part of the limits of the act, that any house of building, or any part thereof is in a ruinous condition, the court of mayor and aldermen, (when such house od building is situated in the city of London, or the Liberties thereof) or the church-wardens or overseers for the time being for such parish , precinct or place, in which such house or building is situated (not being in the city of London, or the liberties thereof) may upon notice of any such presentment being made, and a copy thereof laid before him or them respectively, cause a sufficient hoard to be put for the safety of all passengers passing by, and to cause notice in writing to be given to the owner interested therein, if he, she, or they can be found; or if not, then to cause such notice to be fixed on the door, or on some other conspicuous part of such ruinous building, requiring the owner thereof to repair or pull down the same, (as the case may require) within fourteen days after such notice.

Oath being made before said mayor, or some justice of the peace for the city of London, or county, &c. (as the case may be) or such notice having been given, or assixed, and the owner thereof has not paid observance thereto, the court of mayor and aldermen out of the cash in seer, by and out of the monies in his hands, are authorized and required by the act to cause with all convenient speed, the whole or a part of such ruinous building (as may appear necessary) to be taken down and secured from time to time, as shall be needful for the safety of passengers; and may fell the material, in order to reimburse themselves the several charges they have been at, but to be accountable for the overplus (if any) to the owner of such ruinous building, upon personal demand thereof made by such owner; and if such demand is not made to such church-warden, or overseer, before any other or others are appointed, then the overplus is to be added to the monies of the poor's rate, and to be accounted for as such.

Andy such owner, or their executor or administrators, is at any time or times within six years then afterwards, entitled to receive such overplus from the church-wardens, or overseers for the time being, within ten days after demand thereof personally made by such owner, or his executor or administrator, and such church-wardens or overseer, is required to pay the same out of the poor's rate, and is to be allowed the payment thereof in any account to be by him made to the vestry or inhabitants.

If the monies arising from such sale are not sufficient to repay the charges incurred by pulling down such ruinous building, &c. such deficiency is to be paid by the owner of such ruinous building, if he, she, or they, can be met with; and if such owner refuses or neglects to pay the same, then such deficiency is to be levied by warrant, under the hand and seal of the said mayor of London for the time being, or any other justice of the peace for the said city, or under the hands and seals of two more justice of the peace for the county, liberty, &c. (as the case shall be) by distress and sale of the goods and chattels of such owner, and if no such owner can be found, or there is no sufficient distress to be met with on the goods and chattels of such owner, then the person, or persons, who next after occupies the said building or ground, where the same stood, is required by the act to pay such deficiency of charges, and in default thereof is in the same manner liable to the distress and sale of his, her, or their goods and chattels, together with the costs of such distress and sale; but the act also acquits and indemnifies such occupiers who shall have paid such deficiencies, by allowing such payment to be deducted out of the rent, and the discharge of the persons to whom the money was paid, is equally the same as if it had been actually paid to the owner, to whom such rent was due.

All monies so recoverable in respect of any such ruinous building within the city of London or the Liberties thereof, is to be paid to the chamberlain, and to be by him placed to the credit of the cash of the said city: and if such ruinous building is situated without the city of London and the liberties thereof, then to be paid to the church-wardens, such building is situated, and to be placed to the account of the same, or a like rate or fund, out of which the charges so recovered were the originally disbursed.

The court of mayor and aldermen, or court of quarter sessions respectively have a power, (upon application under the hand of three or more surveyors appointed under the act) to order all irregular erections whatever, built since the passing of the act the 12th of George III to be made in every respect conformable to the present act, except where prosecutions may be depending in any other court.

Such order shall be made at the discretion of the court of mayor and aldermen, or quarter sessions respectively, as near as the case will admit, and in such manner as will come nearest to the purpose and meaning of the present act, and to be filed upon record by the town-clerk, or clerk of peace, (as it may happen) of the court where such order was made, and for the filing thereof, and for every copy thereof applied for by any person, he is to be paid after the rate of one shilling for every hundred words. The order is to be delivered to the person applying for the same, or left at his usual place of abode, or with the tenant in possession of such irregular building, or to be affixed to the door, or some conspicuous part thereof.

Within nine months next afterwards the person named in such order, is to cause such building or irregularity to be altered agreeable to such order, and in default thereof must forseit 50 l. and so on for every nine months such building or irregularity remains unaltered.

The penalty is to be recovered and applied in the same manner as that on distilling turpentine.

The defendants in all cases of information for the recovery of penalties incurred under the act of the 12th of George III that are now depending before the lord mayor of justices out of session, or at their respective quarter sessions, are by the act discharged and indemnified there-from.

Any order made by the lord mayor, or by any justice of the peace by virtue of, or under the present act, or any other proceeding touching the conviction of any offender against the present act, is not to be removable by Certiorari, or by any other writ or process whatever, into any of his majesty's courts of record at Westminster.

Any person or persons thinking themselves aggrieved by any such order, they may appeal to the general quarter sessions of the peace for the city, county, liberty, &c. (as the case may be) to be next holden after such order is made, who are to hear an determine the matter, and their determination is to be final.

But the person or persons so intending to appeal, must immediately upon the conviction, commitment, distress, order, or judgment, or within two days afterwards, enter into a recognizance to the party appealed against, before such justice or justices with two sufficient securities conditioned to try such appeal, and to abide the order of the determination at the quarter sessions.

Parishioners and inhabitants may be witnesses in any action of bill, plaint, or information, touching offences committed against the present act, either in any of the courts of record at Westminster, or upon the hearing and determination of any informations before the mayor of London, or other justice of the peace, although they may be parishioners, or inhabitants of the parish or place where the offence was commited.

PARISH.

The church-wardens of every parish within the limits of the act, and the overseers of the poor for any precinct or place, having no church-warden within the said limits, are required by the act from time to time for ever to make and six, and keep in repair, (at the charge of such parish, precinct or place) upon the pipes belonging to any water-work whatever, within the limits of the act, such and so many stop-blocks of wood with a wood plug, or such and so many fire-cocks to go into each pipe, and to be placed at such distances, and in such and every street or place, as they the church-wardens, or overseers, for the time being, shall direct, and the top of such stop-block, or pipe, must be even with the pavement of the street or place wherein the same is fixed, in order to prevent loss of time in digging down the pipes.

Such church-wardens, or overseers, are also required and empowered to fix any mark or writing on the front of the house neared to such stop-block, or fire-cook, in order to point out where they are to be found.

They are also empowered to keep the instrument or key, (by which such stop-block or fire-cook is to be opened) at the house where such mark is fixed against, and also a pipe for the water to come out of the main as occasion may require; the plugs to such stop-block, or fire-cooks, are to be kept in repair by the owners of such main or pipe, wherein the same is fixed.

If such owners shall remove, change, or alter such mains or pipes, the stop-blocks, or fire-cocks, or others like them, are to be again refixed at the expence and cost of such owners respectively; and to be placed in such manner as the church-wardens, or overseers shall direct, and the key, mark , and pipe thereof, to be removed to some other house accordingly.

Every parish within the limits of this act, is to have and keep in good order, and repair, and within some known and public place in the parish, one large engine, and one hand engine; and also one leather-pipe,, with a socket of the same size as the plug or fire-cock; and also a standing-cock or suction-pipe, and also to keep in some known and public place within the parish three or more proper ladders, of one, two, and three story high, for he purpose of assisting persons to escape from houses on fire.

The respective church-wardens, or overseers, in default of any or either the above premises, upon being convicted thereof before two of his majesty's justices the peace for the city of London, county, liberty, &c, where the same shall happen (as the case may be) are to forfeit the sum of 10 l. one moiety to the informer, and the other moiety to the surveyor, in whose district the parish so making default shall be situated, and to be levied and recovered by distress and sale of the goods and chattels of such church-wardens or overseers resoectively so convicted.

The rewards to be paid by church-wardens, or overseers of any parish, &c. to turncocks and engine-keepers, where any fire happens, are to be in any sum at their discretion, not exceeding the following.

To the turncock of any water-work, whose water shall be first found, where any plug is opened, 10 shillings.

To the engine-keeper who first brings a parish or other large engine, in good order and repair, complete with socket, hose, leather-pipe, stand cock, and suction-pipe, 30 shillings.

To the next third parish, or other large engine, complete as before said, 10 shillings.

None of the above rewards however are to be paid without the approbation of the aldermen or his deputy, or of two common-councilmen, of the ward wherein such parish is situated, where such fire may have happened, or without the approbation of one or more justices of the peace for the county, liberty, &c. where the same may happen (as the case may be) or if there is no justice, residing in such parish, precinct, &c. then by the approbation of such justice nearest residing thereto.

In default of payment of any of the above rewards so ordered by an alderman, or justice, the church-wardens,, or overseers respectively, in whose parish, &c. such fire may have happened, are liable to the distress and sale of their goods and chattels in the same manner, as the forseit of 10 l. is directed recovered.

When a fire begins in any chimney, and spreads itself to other parts, or if the chimney only was on fire, and the above rewards have been paid in consequence thereof, the church-wardens or overseers respectively, have a power to make complaint to the lord mayor, or to some other justice for the county, liberty, &c. (as the case may happen) and who also have a power to call forth upon notice, and to examine upon oath the parties complained against, together with all witnesses touching the same, and to order and award such reimbursement to be made, as they shall think proper, which reimbursement is to be paid within fourteen days after the demand thereof, by the tenant, or occupier of the house, or by the lodger, in whose apartment such chimney took fire; and in default thereof, they are respectively liable to the distress and sale of their goods and chattels, to be levied under the hand and seal of such justice.

United parishes are to be deemed as one parish, as far as respects the purposes of the act.

But if any of the vestries of such united parishes, or of any other parish, within the limits of the act, at any time conceive it necessary for the said parish in respect of the largeness thereof to have more than one great engine or hand engine, they may have two or more great engines, or hand engines, and are to be under the same regulations and encouragements, as the act makes and provides for, in any other parish.

The fund from whence the money is to be paid, in order to defray the charges of the several purposes of the act, is either to be out of the poor's rate, or by any especial rate to be made by the major part of the church-wardens, or overseers respectively, together with the consents of the majority of the inhabitants, lawfully assembled at any vestry or public meeting of such parish, precinct, &c. and that if so raised, the church-wardens or overseers are liable to the same pains and commitments, and the like distress and penalties for not accounting for, or paying the monies by them so raised and collected as overseers of the poor, by all or any of the laws of this land are liable.

Constables and beadles are required by this act to repair to any fire on notice thereof, with their staves and other badges of authority, in order to be aiding and assisting, as well in the extinguishing such fire, as in preventing goods being stolen, and also give their utmost assistance to help the inhabitants to remove their goods.

Church-wardens and overseers are empowered by this act to cause ruinous buildings to be taken down.

OF NUISANCES.

Those buildings which are of the fifth or sixth rate, must not be divided into distinct tenures, unless such distinct tenure is at the distance required , otherwise they are by the act deemed nuisances, and must be taken down as such.

Buildings, or additions to buildings that are or may be erected since the present act of the parliament took place, must be built according to the several regulations therein contained, otherwise the person who causes such building or addition to be erected contrary thereto, on being convicted upon oath thereof, by two or more credible witnesses before the mayor, or two or more justices of the peace for the city of London, or county, liberty, &c. (as the case may happen) wherein the same is situated, is to be declared a common nuisance.

The builder or owner, either or both of them, as the mayor of justices may require, must enter into a recognizance in such sum, as they shall think proper, that the building shall be altered or demolished within such time, as the said justice may respectively appoint, and in default of entering into such recognizance, the person so making default, shall be committed to the common goal of the city, county, or liberty, &c. (as the case may happen) and there to remain without bail, till such demolished, by order of the mayor, or justices respectively, and which order they are impowered to make, provided conviction was had within three months after such building was finished.

They justices of the peace so making such order have a power to fell the materials, and defray therewith the expences of pulling down such building, and to account for the overplus to the owner thereof; but if the money arising from the sale be insufficient to defray such expence, then the owner must make good the deficiency, which may be levied in like manner, as for taking down ruinous houses and putting up hoards, &c.

OF PENALTIES.

By this act it is enacted, that before any building, or any wall, on new or old foundations, or on foundations partly new, and partly old, is hereafter begun to be built, or if a party wall is to be cut into, the master-workman, or other person causing the same respectively so to be done, shall give twenty-four hours notice to the surveyor in whose district such building or wall is situated, and shall allow such surveyor (within reasonable hours) free access from time to time to view the same, and in default for each offence, must pay to such surveyor treble the satisfaction he would have been entitled to receive in case such notice had been given, and also forfeit the sum of 20l, to be recovered by any action, bill, plaint or information, in any of his majesty's courts of record at Westminster, by any person suing for the same, and the house or other work (as the case may happen), if not built agreeable to this act of parliament, is to be demolished, by order of the lord mayor, or justice as before said, in cases of irregular erections.

Master-workmen, or other persons causing any building to be erected, or any addition to be made, or cutting into any party-wall, must within fourteen days after such building is covered in, or the cutting into the party-wall is made good, also give the like notice again to the surveyor, and he is to survey the same, and make oath accordingly. If the surveyor of the district wherein the building is situated, cannot, refuses, or neglects to survey the same, then such building is to be surveyed by any other surveyor appointed under the act, and the affidavit is to be filled with the clerk of the peace, for the city, county, liberty, &c. within ten days after the making thereof, for which is to be paid one shilling. And all master-workmen, or other persons by whose order such work was executed, neglecting to cause such survey to be made, or such affidavit to be filed, must forfeit the sum of 10l. and if such affidavit is not made and filed, within one month from the recovery of such penalty, then to pay a further sum of 10l. and so on for every month till such affidavit is made and filed, which penalties are recovered and applied in the same manner, as the penalty on distilling turpentine.

No person or persons shall distil or boil turpentine, or draw off any oil of turpentine and rosin, by distilling turpentine, or boil any oil and turpentine together, above the quantity of ten gallons at one time, in any work-shop or place (within the limits of the act) contiguous to any other building, or nearer than 50 feet at the least, on pain of forfeiting 100l. for every such offence; which forfeitures may be recovered with treble cost of suit, by action of debt, bill, plaint or information, in any of his majesty's courts of record at Westminster, wherein no effoing, protection, or wager of law, or mare than one imparlance shall be allowed; one moiety whereof is to the poor of the parish, wherein the offence was commited, and the other moiety to the person suing for the same.

Shipwrights, barge builders, boat builders, or mast makers, or others concerned in building or repairing vessels, boats, &c. near the river Thames,a re allowed to boil their several materials, for the purpose of paying ships, &c. and consequently are by this act exempted from the above penalty.

Every workman or every servant to any workman, who wilfully or negligently, and without the privity or consent of his master, shall cause any building, or any thing to be done to any building contrary to the regulations of the present act, upon conviction thereof before the mayor, or some other justices of the peace for the city of London, or other justices for the county, liberty, &c, (as the case may happen) upon oath of one or more credible witnesses, or upon his own confession, shall forfeit the sum of 50 shillings, one moiety thereof to the poor of the parish where the offence was committed, and the other moiety to the informer; and if the penalty is not paid upon conviction, such offender, by warrant, under the hand and seal of such mayor or other justice, may be committed to the house of correction, there to remain without bail, for any time not exceeding three months, or less than one month, unless the said penalty is sooner paid.

If any menial or other servant, by careless or negligence, cause any building whatever to take fire within the kingdom of Great Britain, and being convicted thereof upon oath by one or more credible witnesses before any two or more justices of the peace, must forfeit the sum of 100l. to be paid church-wardens, or oversees of the parish where such fire shall happen, and to be by them distributed amongst the sufferers by such fire, in such proportion as the may think just, and in case such offender refuses, or in default of paying the same immediately. Upon conviction, is (by warrant under the hand and seal of two or more justice of the peace) to be committed to the common goal, or house of correction, (as the justices shall think fit) for the space of 18 months to be kept to hard labour.

No action is to lie against any person in whose house, chamber, stable, barn, or other building, or on whose estate any fire begins by accident, but if any such action be brought, and the plaintiff becomes non suited, or discontinues his action, the defendant is to recover treble costs, provided no contract or agreement between landlord and tenant, is by the act defeated or made void.

OF DISTRESS (aflicción, angustia, peligro)

In any distress is made for any sum of money to be recovered by virtue of this act, the distress itself is not to be deemed unlawful, on account of any irregular proceeding therein, nor the party making such distress to be deemed a trespasser (*ab initio*), but the person so aggrieved by such irregularity may recover full satisfaction for the special damage only, by action on the case.

N.B. the plaintiff cannot recover if tender of sufficient amends be made before such action is brought, or if no such tender was made, the defendant may with leave of the court (before issue joined) pay money into the court, and obtain order or judgment in like manner, as in other cases where defendants are allowed to pay money into court.

INSURANCE OFFICE.

The governors or directors of the several insurance offices, for insuring houses or other buildings against loss by fire, are empowered by this act of parliament to lay out such insurance money, for the reinstating such buildings so burnt down, unless the party for claiming such insurance money, shall, within 60 days next after his, her, or their claim is adjusted, give a sufficient security, that the same insurance money shall be expended in reinstating their property, so burnt down or damaged, or unless such insurance money is disposed of within that time to the other contending parties; and this is done in order to prevent persons claiming their insurance money under false pretences.

No waterman belonging to any insurance office, where their numbers does not exceed 30 for each office, is to be impressed into his majesty's service, either by sea or land, their names and places of abode being registered at the admirately-office.

PROSECUTIONS DEPENDING UNDER THE ACT OF 12 GEORGE III.

In all actions , Bills, Plaint-suits, or information now depending, or that shall hereafter depend, in any of his majesty's courts of record at Westminster, against any owner, builder, or workman, or person or persons, for the recovery of any penalty incurred, or supposed to be incurred, by erecting any building contrary to the act of the 12th of George III. Such respective court may, upon application of the defendant, make a rule for the plaintiff to deliver the defendant, or his or her attorney in the cause, an account in writing under the hand of the plaintiff of his attorney, of the particular defect or irregularity so committed in any such building, and to make an order for the staying of the proceedings in such action, until such account in writing is so delivered, and then the defendant is at liberty to chuse whether or no he will defend such action, the same as if the present act had not been made; and if the defendant does not chuse to defend such action, then he is to enter into a rule of the court for altering such building, and to make it in every part agreeable to the regulations of the present act, and in such manner and time, as such two or more surveyors, that are appointed for the city, county, liberty, &c. wherein such building is situated, shall, by any writing under their hand direct and appoint.

And upon such rule being entered into, and payment of the costs incurred by the suit to be taxed by the proper officer of the court, being made to the plaintiff (demandante), the court is to make an order for staying all further proceedings till the time is expired, appointed by the surveyors for altering such building in the manner they have directed; and at the end of which time the defendant (acusado/demandado) may make an application to the court, and if it appears upon oath to the court, that such building is so altered, and made conformable to the order and direction of the surveyors, then such defendant is to be for ever indemnified, from paying any forfeiture or penalties for not having originally built such building, according to the said act of the 12^{th} of George III.

But if such application of the defendant is not made before the end of the next term, after the expiration of the time appointed by the surveyors, or if upon such application the proof does not appear satisfactory to the court, then the plaintiff is at liberty to proceed in the suit, the same as if the present act had not been made.

And it is also declared in the act, that where such rule has been entered into, and not complied with, it is to be looked upon as a contempt of the court, and such court has a power to proceed accordingly against the party so offending.

There is an express clause in the act, which says, that nothing therein contained shall extend to indemnify any person against whom final judgment was give before the 24^{th} of June 1774, respecting any such above suit.

Limitation of Actions under the present Act.

No action or prosecution is to be brought against any person, for any penalty, unless the same is commenced within fix calendar months next after such penalty has been incurred.

No actions or suits is to be commenced against any person, for anything done in pursuance of the act, until twenty-one days after notice in writing has been given to the person against whom such action or suit is intended to be brought, nor after the expiration of three calendar months next after the fact committed; and in every such action, or suit, whereof the cause arises within the city of London, or the liberties thereof, is to be there laid and tried, and not elsewhere. And if the cause arises without the city, or the liberties thereof, then to be laid and tried in the county of Middlesex, and not elsewhere. And the defendant, in every such action may plead the general issue, and given the especial matter of the act in evidence. And if it appears the matter or thing so done was in pursuance of the act, or that the action was brought before the end of the twenty-one days as before said, or that sufficient satisfaction was made or tendered before such action was brought, or that the suit was not commenced within the time of three months as before said, the jury is to find for the defendant, and from a verdict so found, such defendant is to have judgment to recover treble costs on suit, under the same remedy as in other cases of recovering costs at law.

AUTOR	Society of Architects.	
TÍTULO	THE BUILDERS MAGAZINE: OR A UNIVERSAL DICTIONARY FOR ARCHITECTS, CARPENTERS, MASONS, BRICKLAYERS&C. AS WELL AS FOR EVERY GENTLEMAN WHO WOULD WISH TO BE A COMPETNED JUDGE OF THE ELEGANT AND NECESSARY ART OF BUILDING. Consisting of designs in architecture, in every stile and taste, from the most magnificent and superb structures , down to the most simple and unadorned; together with the plans and sections, serving as an unerring assistant in the construction of any building, from a palace to a cottage. In which will be introduced grand and elegant designs for Chimney-pieces, ceilings, doors, windows, &c. proper for halls, saloons, vestibules, state rooms, dining rooms, parlours, drawing rooms, anti rooms, dressing rooms, bed rooms, &c. Together with designs for churches, hospitals and other public buildings. Also, plans, elevations, and sections, in greek, and gothic taste, calculate to embellish parks, gardens, forests, woods, canals mounts, vistos, islands, extensive views, &c. The whole forming a complete system of architecture, in all its branches and so disposed as to render the surveyor, carpenter, mason, &c, equally capable to erect a cathedral, a mansion, a temple, or a rural cot.	
AÑO PUBLICACIÓN	London 1779 (2nd edition)	
HABLA DE_		
Dedicatoria	no	no
A quien va dirigido/Prefacio	When we consider the variety of channels through which literary Improvements are diffused to the Public it appears a matter of attonishment that, while the Professors of Literature have mostly increased their intellectual treasures, the Architect, Surveyors, Carpenters, and Masons, have been unnoticed, and passed by as unworthy of the instruction of assistance of those who are eminent in their respective professions. Whence this omission could proceed, it is not easy to investigate; but as it is time that this tribute should be paid, a set of Gentlemen have formed themselves into a Society to promote the improvement of Architecture. (…) Architects, in general, have in their publications considered the magnificent of buildings rather than its use; it shall be our talk to unite both; for architecture cannot be more grand that it is useful, nor is its dignity more to be considered than its convenience. Though it is our intention to take the pupil by the hand, and lead him through every branch of Architecture (…)	Historia de la arquitectura: 1.- Porque construimos,- para resguardarnos de los elementos. 2.- De las cabañas a las paredes de piedra 3.- Caín el primero que construyó una ciudad. 4.- Los Griegos: Muy buenos pero no hay escritos. 5.- Romanos: lo pidieron prestado. 6.- Últimos 2 siglos: Arquitectos Italianos, Ingleses y Franceses: belleza de la simplicidad de la antigua arquitectura.
NOTAS SOBRE EL LIBRO		Empieza con el prefacio, sigue con un diccionario de la construcción que llega hasta la hoja 300 del libro. A continuación te da las normativas que estaban vigentes en aquel momento (que entroncan directamente con el punto casa IKEA) Diferentes tipos de casa según la manera egipcia, la de los antiguos griegos, y la de los antiguos romanos Al final hay una serie de explicaciones de las 185 láminas que van a continuación (láminas preciosas y competas).
Casa Ikea		Ver notas a parte el libro es demasiado completo.
COMENTARIOS	Es un volumen grande, y grueso, pesa. Es muy completo y habla directamente de arquitectura, importante porque en esta segunda mitad del siglo XVIII no es tan habitual encontrar este tipo de bibliografía.	

<table>
<tr><td>AUTOR</td><td colspan="2">Peter Nicholson, esq Architect &c &c</td></tr>
<tr><td>TÍTULO</td><td colspan="2">MECHANICAL EXERCISES; OR, THE ELEMENTS AND PRACTICE OF CARPENTRY, JOINERY, BRCKLAYING, MASONRY, SLATING, PLASTERING, PAINTING, SMITHING AND TURNING. CONTAINING A FULL DESCRIPTION OF THE TOOLS BELONGING TO EACH BRANCH OF BUSINESS; ANS COPIOUS DIRECTIONS FOR THEIR USE. WITH AN EXPLANATION OF THE TERMS USED IN EACH ART; AND AN INTRODUCTION TO PRACTICAL GEOMETRY. ILLUSTRATED BY THIRTY-NINE COPPER PLATES.</td></tr>
<tr><td>AÑO PUBLICACIÓN</td><td colspan="2">Londres 1812</td></tr>
<tr><td colspan="3">HABLA DE_</td></tr>
<tr><td>Dedicatoria</td><td></td><td></td></tr>
<tr><td>A quien va dirigido/Prefacio</td><td>The arts treated of are: carpentry, joinery, bricklaying, masonry, slating, plastering, painting, smithing, and turning, the whole preceded by a slight introduction to practical geometry, and illustrated by thirty-nine copper-plates.</td><td>Entra diciendo que hace más de un siglo del Mechanical exercises de Moxon, y que aunque era un libro excelente y popular por la de veces que se reeditó, es cierto, que en la actualidad se ha quedado algo desfasado.
El escritor, decide que seguirá el mismo esquema de Moxon, primero describir las herramientas de cada oficio, luego los ejercicios de cada oficio, y finalmente un índice y un glosario de términos usados en los diferentes oficios.
Los oficios (artes) serán los siguientes: carpintería, carpintería estructural, albañilería, masonería,</td></tr>
<tr><td>NOTAS SOBRE EL LIBRO</td><td>Contents
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➢ Problems (with plates)
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➢ 33 of foundations and timbers in joisting and walling(1).
➢ 34 stud work and plaster buildings</td><td></td></tr>
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71. Definitions
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Casa Ikea	(1)(p55 -58) the foundations being excavated to the intended depth, the ground must be examined, by trying whether it is sufficiently firm in all places, so as to support the weight of the intended building. There are several means of security in foundations without piling, should any artificial means be required; but as our present subject is carpentry, and as these do not come under the carpenter's profession, we will first suppose that the intended building is to be brick or stone, and that the foundation is infirm, piles must then be prepared, such, that their thickness may be about a twelfth part of their length. The distances which these piles will require to be disposed, and the momentum required to drive them, will depend on the weight of the building; for the weight of the ram used in driving them, ought not to be more than what would be sufficient for the purpose, as a greater number of men, or power, would need to be employed, which would occasion an unnecessary expense. We will now suppose the piling to be completed, so as to be sufficient for supporting the intended building; some people lay a level row of cross bearers, called sleepers, and plank above; but then observe, before the planking is laid, that all the interstices should be leveled up to the top of sleepers, with bricks &c. The planking, however, will not be necessary, provided that the pilling be sufficiently attended to, and thus the expence of the foundation will be materially lessened. All timber whatever, of which the thickness stands vertical in the building, being liable to shrink, will also make the building liable to crack, or split, at the junctions with the return parts. In cases where the ground is not very soft, a balk is sometimes slit in halves, and these either laid immediately at the bottom, or at the height of two or three courses, and this will frequently prevent settlements, which are occasioned by an unequal pressure of the piers, and the intermediate brick-work or masonry, under apertures. Suppose the foundation to be brought up to its height, or to the level of the under sides of the ground joists; the ground plates must be laid, and sleepers, at eight or ten feet distance where the floors are intended to be boarded, these sleepers are supported upon small pillars or piles of brick, or by stones, at five, six, or eight feet distance, according to the substance of timber used for the sleepers, and their ends supported by the walls. The next thing is to lay the ground joist. When the bricklayer has got to the top of the first window, the carpenter may lintel the window; but if the joisting of the next floor is laid upon the lintels, the wall-plate and the lintels will form one continued length of timber, which will be much stronger than lintels, having only nine or ten inches bearing upon the walls. Suppose now the wall-plates laid round the exterior walls, and returned in flank or partywalls, except the flues, and likewise laid in crosswalls of brick or stone; or if a timber partition is required, and joisting to be supported by this partition, the partition is seldom carried up, the joisting is first laid and leveled; instead of the partition, a plank or other piece of timber is laid under the joisting at the place, and this supported by uprights, which are forced up with wedges, so as to bring the top of the joists to a level; before the joisting is to put down, the trimmers of stairs and chimnies must be framed in. If a double floor is to be	

	laid with girders, be sure to lay templets, or short pieces of timber, under the girders, as this will distribute the pressure over a greater surface, and thereby prevent settlements. The naked flooring being laid, in carrying up the second story, bond timbers must be introduced opposite to all, horizontal mouldings, as bases and surfaces. It is also customary to put a row of bond timber in the middle of the story, of greater strength than those for the bases and surbaces. The work being so far advanced, we will suppose the building roofed in and completed; as there will be immediate occasion for resuming the subject in the description of a wooden building. 31. Stud-work, and Plaster Buildings. (p 58-60) The foundation being made secure and the several scantlings for ground-plates, principal posts, posts, bressummers, girders, trimmers, joists, &c. being prepared and framed, agreeable to their several. Timbers laid in the foundation, or next to the ground, are generally of oak, as ground-plates, which should be about eight inches abroad, and six inches, vertically. The front and rear plates are to be framed by mortice and tenon; the front and rear plates being morticed, and the flank pieces consequently tenoned. Sometimes the flank pieces are morticed to receive joists. The ground plates are to be bored with an inch and half auger, and pinned together with oak pins, made taper towards the point, and so strong as to withstand the blows of the mallet, when driven tight into the hole. As the wood which carpenters work upon is generally heavy timbers, a block is laid under the corner too bear the plate off the foundation, so as to allow room for driving of the hook pins; when the wooden pins are driven, remove to the blocks, and let the plates bed firmly on the foundations. But before the pins are driven, if there be any girders, it must be fitted in, and all the joisting and trimmers, for they cannot be got afterwards. We shall suppose that everything is got its birth, and the work pinned together. Four corner post, eight inches by six, viz. of the same scantling as the ground plates, are erected, presenting their narrow sides to the front, and extending the whole height of the buildings, till they meet the wallplates. These corner posts are called principal posts, and are morticed and tenoned into the ground-plates, and also for the purpose of being inserted into the rising plates. At the height of the principal story, two mortices must be cut in each principal post; which being set up, enter the tenons of the next bressummers into the mortices, and stay at the principal posts, by means of temporary braces, fixed to the framed work of the floor. Set up the several intermediate story posts, or those which are framed into the interties, and tenon the ends of these posts into the bressummers or interties, as it may happen whether there are interties between the bressummers or not. Proceed in like manner with the bressummers, girder, and joists, of the next story. It does not always happen that there is a girder, but if one side of it should prove to be wainy, that side must be turned upwards, and the shoulders of the joists must be scribed upon the wains. We shall now suppose, the principal posts, story posts, or other intermediate posts, bressummers, girders, floor joists, trimmers, and trimming joists, all completely fitted together, and put on the raising plates, which are let down upon the tenons of the principal posts, and then complete the roof; you may then begin to put up the truss partitions, if there be such, and fill in the larger interstices in the outside framing, and in these partitions with quarters.	Luego hay una serie de diseños de las herramientas de carpintería y una planta de cómo van colocadas las vigas

	JOINERY (p 91) Joinery is a branch of Civil Architecture, and consists of the art of framing or joining together wood for internal and external finishing of houses; as the coverings and linings of rough walls, or the coverings of rough timbers, and the construction of doors, windows and stairs. Hence joinery requires much more accurate and nice workmanship than carpentry. Smoothing of the wood is called planning, and the tools used for the purpose planes. The wood, used is called stuff and previously formed into rectangular prisms by the saw; these prisms are denominated battens, boards, or planks, according to their dimension in breadth or thickness. For the convenience of planning, and other operations a rectangular platform is raised upon four legs, called bench. 82. Boarding Floors (p 173-176) Boarded floors are those covered with boards. The operation of boarding floors should commence as soon as the windows are in, and the plaster dry. The preparation of the boards for this purpose is as follows They should first be planed on their best face, and set out to season till the natural sap is quite exhausted, they may then be planed smooth, shot and squared upon on the edge; the opposite edges are brought to a breadth, by drawing a line on the face parallel to the other edge, with a flooring gauge, they are then gauged to a thickness with a common gauge, and rebated down on the back to the lines drawn by the gauge. The next thing to be done is to try the joists, whether they be level or not: if they are found be depressed in the middle, they must be furred up, and if found to be protuberand, must be reduced by the adze. The former is more generally the case. The boards employed in flooring are either battens or deals of greater breadth, The quality of battens are divided into three kinds. With regards to the joints of flooring boards, they are either quite square, plowed and tongued, rebated or dowelled: in fixing them they are nailed either upon on or both edges, they are always necessarily nailed on both edges, when the joints are plain or square without dowels. In laying boarded floors, the boards are sometimes laid one after another, or otherwise, one is first laid, then fourth leaving and interval somewhat less than the breadth of the second and third together. The two intermediate boards are next laid in their places, with one edge upon the edge of the first board, and the other upon that of the fourth board; the two middle edges resting upon each other, and forming a ridge at the joint; to force down these joints, two or more workmen jump upon the ridge till they have brought the under sides of the boards close to the joints, then they are fixed in their places with brads. In this last method the boards are said to be folded. Thought two boards are here mentioned, the most common way is to fold four at a time, this mode is only taken when the boards are not sufficiently seasoned, or suspected to be so. In order to make close work, it is obvious that the two edges forming the joint of the second and third boards, must form angles with the faces each less than a right angle. The seventh board is fixed as the fourth, and the fifth and sixth inserted as the second and third, and so on till completion. (...)	totalmente explicada, otra lámina con ensambles. Otra sobre la estructura de madera que hay en el interior de las paredes y la cubierta. Diccionario de los términos usados en carpintería

When floors are doweled, it is better to place dowels over the middle of the interjoist, than over the joists, in order to prevent the edge of one board from passing that of the other.

84. Hangings of Doors. (p. 177)

Doors should be hung so as to rise above the carpet, for this purpose, the knuckle of the bottom hinge should be made to project the whole pin beyond the surface of the door, while the centre of the upper pin comes rather within the surface. To render this still more effectual, the floor is sometimes raised immediately under the door. A door wider at the bottom than at the top in a trapezoidal form will also have the effect of clearing the floor: most of the ancient doors were of this figure.

86. DOORS.(p.178)

Doors ought to be made of clean good stuff, firmly put together, the mitres or scribings brought together with the greatest exactness, and the whole of their surfaces perfectly smooth, particularly those made for the best apartments of good houses.

(…)

If doors are double margin, that is, representing a pair of folding doors, the staff stile which imitates the meeting stiles, must be centred to the top and bottom of the door, as well as the hanging; and lock stiles by forking the ends into notches, cut in the top and bottom rail.

STAIRS(87) (p 179-181)

Stairs are one of the most important things to be considerate in a building, not only with regard to the situation, but as to the design and execution: the convenience of the building depends on the situation, and the elegance on the design and execution of the workmanship. A stair-case ought to be sufficiently lighted, and the head-way uninterrupted. The half paces and quarter paces ought to be judiciously distributed. The breadth of the steps ought never to be more than 15 inches, nor less than 10 inches, the height not more than 7 nor less than 5; there are cases however, which are exceptions to all rule. When you have the height of the story given in feet, and the height of the step in inches, you may throw the feet into inches, and divide the height of the story in inches by the height of the step; if there be no remainder, or if the remainder be less than the half of the divisor the quotient will shew the number of steps: but if the remainder be greater than the half of the divisor, you must take one step more than the number shewn by the quotient; in the two latter cases you must divide the height of the story by the number of steps, and the quotient will give the exact height of a step; in the first case you have the height of the steps at once, and this is the case whatever description the stairs are of. In that people may pass freely, the length of the step ought never to be less than 4 feet, though in town houses, for want of room the going of the stair is frequently reduced to 2 ½ feet.

Stairs have several varieties of structure, which depends principally on the situation and destination of the building.

Geometrical stairs are those which are supported by one end being fixed in the wall, and every step in the assent having and auxiliary support from that immediately below it, and the lowest step consequently, from the floor.

Bracket stairs are those that have an opening or well, with strings and newels, and are supported by landings and carriages, the brackets mitering to the ends of each riser, and fixed to the string board, which is moulded below like an architrave.

Dog leged stairs are those which have no opening or well hole, the rail and balusters of both the progressive and returning flights fall in the same vertical planes, the steps being fixed to strings, newels and carriages, and the ends

	of the steps of the inferior kind, terminating only upon the side of the string, without any housing. OF DOG-LEGED STAIRS (88) (p 181- 186) The first thing is to take the dimensions of the stair and height of the story, and lay down s plan and section upon a floor to the full size, representing all the newels, strings and steps: by this the situation of string boards, pitching pieces, rough strings, long bearers, cross bearers, and trimmers will become manifest; the quantity of room allowed for the stairs, the situation of apertures and passages will determine whether there are to be quarter paces, half paces, one quarter or two quarter winders. In this description, in order to give all the variety possible, we shall suppose the flight to consist of two quarter winders. The strings, rails, and newels being framed together, the y must then be fixed, first with temporary supports, the string board will shew the situation of the pitching pieces which must be put up next in order, wedging the one end firmly into the wall, and fixing the other end to the string board; this be done, pitch up the rough strings, and thus finish the carriage part of the flyers. In dog-leg stair-cases, as the steps and risers are seldom glued up, except in cases of returning nosings: we shall therefore suppose them to be separate pieces, and proceed to put up the steps: place the first riser to its situation, having fitted it down so as to be close to the floor, the top being brought to a level at its proper height, and at the same time, the face in its right position, fix it with flat headed nails, driving them obliquely through the bottom part of the riser with the first tread, observing to notch out the father bottom angle opposite the rough strings, so as to make it to fit closely down to a level on the top side, while the under side beds firmly upon the rough strings at the back edge, and to the riser towards the front edge: nail down the tread to the rough strings, driving the nails from the seat or place on which the next rise stands, through that edge of the riser into the rough strings, and then nailing the end to the string board; begin with the second riser, having brought it to a breadth, and fitted it close to the top side of the treat, so that the back edge of the tread below it may entirely lap over to the back of the riser, while the front side is in its regular vertical position; nail the head to this riser, from the under side, taking care that the nails do not go through the face of the riser, for this would spoil the beauty of the work.	
	OF BRICKLAYING. (p 205) Is an art by which bricks are joined and cemented, so as to adhere as one body. (…) The materials are used are mortar, bricks, tiles, laths, nails and tile pins; bricks and tiles are of several kinds, which, as well as other descriptions of work are treated of under their respective heads, viz. 1st the tools, 2nd of cements, 3d of brick making, and the various sorts of bricks, 4th the several kinds of Tiles and Laths, 5th the different methods of treating foundations according to the quality of the soil, whether of an uniform or mixed texture, 6th walling, 7th description of the plates, and lastly and explanation of such terms as have not been defined in the course of the work. (…)	DICCIONARIO DE TÉRMINOS RELACIONADOS CON LA CARPINTERÍA DE PUERTAS, VENTANAS Y ESCALERAS. Descripción de todas las herramientas que se usan en el trabajo de albañilería.
	(32) Of cements. (p. 214- 222) Calcaious cements may be classed according to the three following divisions: namely, simple cacarious cement, water cement, mastichs, or maltha. 1st simple calcarious cements includes those kinds of mortar which are employed in land building, and consists	

	of lime, sand and fresh water. Calcariuous earths are converted into quick lime by burning, which being wetted with water falls into an impalpable powder, with great extracation heat: and if in this state it is beat with sand and water, the mass will concrete and become a stony substance, which will be more or less perfect according to its treatment, or to the quality and quantities of ingredients. When carbonated lime has been thoroughly burnt, it is deprived of its water, and all or nearly all of its carbonic acid. Much of the water during the process of calcinations, being carried off in the form of steam. Lime stone loses about 4/9 of its weight, by burning, and when fully burnt, it falls freely, and will produce something more hand double of the quantity of powder or slacked lime in measure, that the burnt lime stone consisted of. Quick lime, by being exposed to the air absorbs carbonic acid with grater or less rapidity, as its texture is less or more hard, and this by continued exposure, becomes unfit for the composition of mortar; and hence it is that quick lime made of chalk, cannot be kept for the same length of the time between the burning and slacking, as that made from stone. Marble, chalk and lime stone, with respect to their se in cements, may be divided into two kind, simple limes stone, or pure carbonate of lime or argillo.ferugenous lime. (…) It was the opinion of the ancients, and is still received among our modern builders, that the hardest lime stone furnishes the best lime for mortar, but the experiments of Dr. Higgins, and Mr Smeaton have proved this to be a mistake, and that the softest chalk lime, if thoroughly burnt, is equally durable with the hardest stone lime, or even marble: but though stone and chalk lime are equally good under this condition, there is a very important practical difference between them, as the chalk lime absorbs carbonic acid with much greater avidity: and if it is only partially calcined on the application of water, it will fall into a coarse powder, which stone lime will not do. For making mortar, the lime should be immediately used from the kiln, and in slacking it, no more water should be allowed than what is just sufficient: and for this purpose Dr. Higgins recommends lime water. The sand made use of should be perfectly clean; if there is any mixture of clay or mud, it should be divested, of either or both, by washing it in running water.	
		La arena debe ser limpia y no tener restos de sal, si los tiene porque es arena que procede de cerca del mar, se ha de limpiar.
	The best proportions of lime and sand in the composition of a mortar is yet a desideratum	
		No se ponen muy de acuerdo en las proporciones de Limo y arena, remiten a Vitrubio y a Plinio, que dicen cosas diferentes.
	The general proportion in London builders is 1 ½ hundred weight, or 37 bushels of lime and 2 ½ loads of sand, but if proper caution were taken in the burning lime, the quality of the sand, and in tempering the materials, a much greater quantity of sand might be admitted (…)	
		Habla de los diferentes experimentos realizado por Mr. Sematon y el Dr. Higgins en relación a las propiedades del mortero en función de las diferentes proporciones, incluso llegaron a experimentar con aditivos.
	Grout is mortar containing a larger proportion of water than is employed in common mortar, so as to make it sufficiently fluid to penetrate the narrow irregular interstices of rough stone walls. Grout should be made of	

	mortar that hast been long kept and thoroughly beat, as it will then concrete in the space of a day: whereas if this precaution is neglected, it will be long time before it set, and may even never set.	Utilización del mortero puro en acueductos. Hace una reflexión sobre que en Londres, en la actualidad se usan unos materiales, no del todo correctos ya que el “lime” es malo y la arena también, cosa que no les pasaba a los romanos que usaban “lime” en perfecto estado y arenas puras, por eso los edificios duraban más. También comenta el añadido de Puzolana.
	(33) description of bricks. (p 222- 227) Bricks are a kind of factitious stone, composed of argillaceous earth, and frequently a certain portion of sand and cinders of sea-coal tempered together with water, dried in the sun, and burnt in a kilo or in a heap or stack called a clamp. Bricks are first formed from the clay into rectangular prisms, in a mould of 10 inches in length, and 5 in breath, and when burnt, usually measures 9 inches long, 4 ½ broad and 2 ½ thick: so that a brick generally shrinks 1 inch in 10; but the degree of shrinking is not always the same, it depends upon the purity and tempering of the clay, and also upon the burning. For brick making, the earth should be of the purest kind, dug in autumn, and exposed during the winter’s frost; this allows the air to penetrate, and divide the earthly particles, and facilitates the subsequent operations of mixing and tempering.	Descripción de cómo se hacen los ladrillos, y como se podría mejorar la calidad. A partir de ahí describe los tipos de ladrillos según su calidad.
	Marls are every way superior to stock bricks, nos onlu in colour, which is a pleasant pale yellow, but also in point of smoothness and durability. Hence the gray stocks are an inferior kind. The place bricks, or as they are otherwise called peckings, and sometimes sandal or semel bricks, are those that are left of the clamp after taking away the rubbers and marls, their inferior quality is occasioned by not being sufficiently and uniformly burnt: they also differ from stock bricks, sometimes two or three are quite vitrified and run together. There are also red stocks, these are made in the country, and burnt in kilns, the best kind are used as cutting bricks, and are called red rubbers. Fine bricks are made at Hedgerly, a village near Windsor, and therefore are called Windsor Bricks. These are very hard, of a red colour, and will stand the utmost fury of the fire; their length and breadth are the same as stock bricks, but their thickness is only about 1 ½ inch. (…) As building material, bricks have several advantatges over stone, being lighter, and from their porus structure the unite better with the mortar, and are not so liable t attract damp. Bricks for paving floors, also called paving tiles, are of several magnitudes, and are made of stronger clay. (medidas) The chief covering for roofs in and about London is slate; however, in the interior of the country, tiles are almost uniformly used for the roofs of houses, and in some instances of barns; tiles for roofs are of several kinds, as pan tiles, plain tiles, ridge tiles, and hip tiles. Pan tiles are about 13 inches long, 8 inches broad, and about ½ inch thick; their transverse section is a figure of contrary curvature, the form of the tile being two portions of cylindric surfaces on both sides.	

(34) Foundations (p 227- 231)

Having dug the trenches for the foundations, the ground must be tried with an iron crow , or with a rammer, and if found to shake It must be pierced with a borer, such as is used by well diggers: then if the ground proves to be generally firm, the loose or soft parts, if not very deep, must be excaved until a solid bed appears; but observe in building up these parts that the bottom of the excavation must widen upwards in gradual slope, in the direction of the trenchers in form of a series of steps which will admit of a firmer bed for stones, so that they will have no tendency to slide, as would be the case if built upon inclined planes: and thus in wet seasons, the moisture in the foundations would induce the inclined parts to slide, and descend by their gravity towards the lowest parts, and in all probability would fracture the walls, and endanger the whole fabric.

If the ground proves soft in several places to a great depth under apertures, and firm upon the sides on which the piers between the windows of the superstructure are to be erected, the better way is to turn inverted arches under the apertures (see plate 4) and indeed at all times where there is sufficient height of wall below the apertures to admit of them, it is necessary precaution. For the small base of the piers will more easily penetrate the ground than one continued base: and as the piers are permitted to descend in a certain degree, and so long as they can be kept from spreading, will carry the arch along with them, and compress the ground, which will therefore re-act against the under sides of the inverted arch, which, if closely jointed will not yield, but act with the abutting piers as one solid body. On the contrary, if no inverted arches were used, the low piece of walling under the apertures not having a sufficient vertical dimension would give way from the resistance of the ground upon its base and thereby, not only fracture the spaces of brick work which lies vertically between the aperture, but breaks the cills of the windows. Where the precaution of inverted arches is omitted, and the building is weighty, the probability of the event of fracturing the walls is almost certain; the author, who has had great practice in conducting buildings never experienced any instance to the contrary, in the numerous buildings in which he has been concerned. It is therefore of the utmost consequence to throw these arches with the greatest care; they ought not to be less in height than half their width, and as a parabolic curve is very easily described, it would be still more effectual in resisting the reaction of the ground than one of uniform curvature, as the arch of a circle, it is only capable of resisting an uniform pressure upon all points directed to the centre, and thus cylindric vessel surrounded by water is a proper form of a hollow body to be constructed of the least quantity of materials, or at the least expence.

The bed of the piers ought to be uniform as possible, for though all the parts of the bottomof the trenches may be very firm, if there be any difference, as they will be all sink, the quantity which they will give will be according to the softness of the ground, therefore the piers erected upon the softer will descend more than those on the firmer ground, and occasion a vertical fracture in the building.

If the hard parts of the foundation are only to be found under apertures, then build piers in these places, and instead of inverted arches suspend archers between the piers. In the construction of the arches some attention must be paid to the breadth of the insisting pier, whether it will cover the arch or not: for suppose the middle of the piers to rest over the middle of the summit of the arches, then the narrower the piers, the more curvature the supporting arch ought to have at the apex. When arches of suspension are used, the intrados ought to be clear, so that the arch may have the full effect; but as observed before, it will also be requisite here, that the ground be uniformly hard on which the piers are erected, for the reason already given; but it might be farther observed, that even where the ground is not very hard under the piers, if it is but uniform, the parts will descend equally, and the building will remain uninjured.

If the foundations be not very insufficient, it may be made good by ramming large stones closely laid with a heavy rammer, of breadth at the bottom proportioned to the insisting weight, and this breadth in ordinary cases may project a foot on each side of the wall, then another course may be laid upon this so as to bring the upper bed of stones upon a general level with the trenches, and to project about 8 inches on each side of the wall, or to recede 4 inches on each side within the lower course. In laying of these courses, care should be taken to chop or hammerdress the stones, so as to have as little taper as possible, and to make the joints of the stones in the adjoining course as possible, and this principle must be strictly adhered to in all walling whatever, and thought there are various modes of disposing stones or bricks, the end is to obtain the greatest uniform lap upon each other, throughout the whole.

If the foundation is very bad, the whole must be piled, aas already described in the department of carpentry.

(35) Walls. (p. 231- 236)

We shall now suppose that the ground is either naturally sufficient for building upon, or is prepared for the purpose by means similar to what have already been described: and the different parts, as are sufficient for the end proposed; thus, in places exposed to have the weather, more durable materials must be employed than to those which are covered; but in this, some regard must also be had to the importance of the fabric, or whether long duration may be required or not.

When you slack the lime, wet it only with so much water as is sufficient to reduce it to a powder, and only about a bushel at a time, covering it over with a layer of sand, in order to prevent the gas which is the virtue of the lime form escaping. The best proportion of the ingredients of lime and sand for mortar has been fully specified, but in ordinary cases, where time will not permit to prepare the material to the best advantatge, or where the end proposed would not be a compensation for the expence, about 2 or 2 ½ measures of sand to 1 of lime may be used; but even this proportion will not always hold, for som lime will require more and some less sand; this being understood, slack the same quantity of lime alternately, until the whole is made up: this is a better mode than to slack the whole at once, as the exposure is less in the former, than in the latter case.

Beat your mortar with the beater three or four times over before it is used, so as to incorporate the lime and sand, and to break the knots that pass through the sieve; this will not only render the texture uniform, but will make the mortar much stronger by permitting the air to enter the pores: and observe here also, as we have before stated, to use as little water in the beating as possible. Should the mortar stand any time after beating it should be beat again, immediately before it is used, so as to give tenacity and to prevent labour to the bricklayer. In summer dry hot weather use your mortar pretty soft, but in winter rather stiff.

If you lay your bricks in dry weather, and if you require firm work, you must use mortar prepared in the best way, and before using the bricks they must be wetted or dipped in water as they are laid on the wall, but in moist weather this will be unnecessary. The wetting of the bricks causes them to adhere to the mortar, whereas, if laid dry and covered with sand or dust, they will never stick, but may be taken off without the adhesion of a single particle of mortar.

In winter as soon as the frost or stormy season begins to set in, the walls must be covered , for this purpose straw is usually employed, and sometimes in particular buildings a capping of weather boarding, in form of a stone coping, for throwing the water equally to both sides is used; but even in this case, it would be better to have straw under the wood, which would be still a farther proof against frost, if exposed, for the rain makes way through the pores into the heart of the stone and mortar, and when the freezing comes on, the water is converted into ice, which expands beyond the original bulk with such power, that no known force of compression is capable of preventing it from expansion, Inconsequence of this, the heaviest stones and even the largest rocks have been burst. Through this is the cause why buildings decay in lapse of time, yet the vertical surfaces exposed to the weather suffer but in an incomparably small degree to horizontal surfaces thus exposed.

In working up the wall it would be proper not to work more than 4 or 5 feet at time, for as all walls immediately after building shrink, the part which is first brought up will remain stationary, and when the adjacent part is also brought up, it will shrink in altitude by itself, and consequently will separate from the other which has already become fixed. In carrying up any particular part, the ends should be regularly sloped off so as to receive the bond of the adjoining parts on the right and left. There is nothing that will justify one part of a wall being carried higher than one scaffold, except it be to forward the carpenter in some particular part or the like.

In brick work there are two kinds of bond, one in which a row of bricks laid lengthways in the length of the wall, is crossed by another row laid with their breadth in the said length, and thus proceeding to work up the courses in alternate rows, which is called English bound. The courses in which the length of the bricks are disposed in the length of the wall are called stretching courses, and the bricks themselves are called stretchers. The courses in which the length of the bricks run in the thickness of the wall are called heading courses, and the brick thus disposed are called headers. The other kind of brickworks is the placing of header and stretcher alternately in the same course; this disposition of the bricks is called Flemish bond. This latter mode, though esteemed the most beautiful is attended with great inconveniences in the execution, and in most cases is incapable of uniting the parts of a wall with the same degree of firmness as the English bond.

To enter into the particular merits of these two species of bond would carry this department beyond its allowed limits; the reader who wishes farther satisfaction will consult the explanation of the plates and an ingenious tract on Brick Bond, by Mr. G. Saunders, where the defects of Flemish bond, and the superiority of Old English bond, are pointed out in the most satisfactory manner.

(36) vaulting and Groining. Definitions. (p. 236-239)

A simple vault is and interior concavity extended over two parallel opposite walls, or over all diametrical opposite sides of on circular wall.

The concavity or interior surface of the vault is called the intrados.

The intrados of a simple vault is generally formed of the portion of the surface of a cylinder, cylidroid, or sphere, never greater that that of half solid, and the springing lines which terminate the walls that that the vault rises from, are generally straight lines, parallel to the axis of the

	cylinder or cylindroids. When the vault is spherical, the circular wall terminates in a level plane at top from which the vault springs, and forms either a complete hemisphere, or a portion of the sphere less than the hemisphere…	A partir de ahí sigue con definiciones varias, después las láminas sobre el tema que incluyen herramientas, aparejos de cómo se unen las paredes en el sistema Inglés, el "Flemish" y como hacer arcos y bovedas
COMENTARIOS		

NOTES PETER NICHOLSON

External Walls. (p 254-262)

And other external inclosures to the first, second, third, fourth and fifth rate of building, must be of brick, stone, artificial stone, lead, copper, tin, slate, tile, or iron; or of brick, stone, artificial stone, lead copper, tin slate, tile and iron together, except the planking, pilling, &c. for the foundations, which may be of wood of any sort.

If any part to an external wall of the first and second rate, is build wholly of stone, it is not to be less in thickness than as follows:

First rate, 14 inches below the ground floor, 9 inches above the ground floor, second rate 9 inches above the ground floor.

Where a recess is meant to be made in an external wall, it must be arched over, and in such a manner, as that arch and the back of such recess shall respectively be of the thickness of one brick in length: it is therefore plain, that where a wall is not more than one brick thick, it cannot have any recess.

No external wall to the first, second, third, and fourth rate, is ever become a party wall, unless the same shall be of the height and thickness above the footing, as is required for each party-wall to its respective rate.

Party walls.

Buildings of the first, second, third, and fourth rate, which are not yet designed by the owner thereof to have separate and distinct side walls, on such parts as may be contiguous to other buildings, must have party walls; and they are to be placed half and half on the ground of each owner, or of each building respectively, and may be built thereon, without any notice being given to the owner of the other part, that is to say, the first has a right so to do, where he is building against vacant ground.

Party-walls, chimneys, and chimney shafts hereafter to be built, must be good sound brick or stone, or of sound bricks and stone together, and must be coped with stone, tile or brick.

Party-walls, or additions thereto, must be carried up 13 inches above the roof, measuring at right angles with the back of the rafter, and 12 inches above the gutter of the highest building, which gables against it; but where the height of the blocking course or parapet, it may be made les than 1 foot above the gutter, for the distance of 2 feet 6 inches from the front of the blocking course or parapet.

Where dormers or other erections are fixed in any flat or roof, within 4 feet of any party wall, such party wall is to be carried up against such dormer, and must extend at lest 2 foot wider, and to the full height of every such dormer or erection.

No recess is to be hereafter made in any party wall of the first, second, third, and fourth rate, except for chimney-flues, girders, &c. and for the ends of walls or piers , so as to reduce such wall in any part of it to a less thickness than is required by the act, for the highest rate of building to which such wall belongs.

No opening is to be made in any party wall, except for communication from one stack of warehouses to another, and from on stable building to another, all which communications must have wrought iron doors, and the panels thereof are no to be less than ¼ of an inch thick, and to be fixed in stone door cases and cills. But there may be openings for passages or ways on the ground, for foot passengers, cattle or carriages, which must be arched over throughout with brick or stone, or brick and stone together, of the thickness of a brick and a half at the least, to the first and second rate, and I brick to the third and fourth rate. And if there is any cellar or vacuity under such passage, it is to be arched over throughout in the same manner as the passage over it.

No party wall or party arch, or shaft of any chimney, new or old, must be cut into, other than for the purposes as follows:

If the fronts of buildings are in a lin with each other, a recess may be cut, both in the fore and back front of such buildings, (as may be already erected) for the purpose of inserting the end of such other external wall, which is to than 9 inches deep from the outward faces of such external walls, and not to be cut beyond the centre of the party wall thereto belonging.

And further, for the use of inserting bressummers and story posts, that are to be fixed on the ground floor, either in the front or back wall, the recess may be cut from the foundation of such new wall to the top of such bressummer, 14 inches deep from the outward face of such wall, and 4 inches wide in the cellar story, and 2 inches wide on the ground story.

And further, tor the purpose of tailing-in stone steps, or stone landings, as for bearers to wood stairs, or for laying-in stone corbels for the support of chimney jaumbs, girders, beams, purling, biding, or trimming joists, or other principal timbers.

Perpendicular recesses may also be cut in any party wall, whose thickness is not less than 13 inches, for the purpose of inserting walls and piers therein, but they must not be wider than 15 inches, or more than 4 inches deep, and no such recess is to be nearer than 10 feet any other recess.

All such cuttings and recesses must be immediately made good, and effectually pinned up, with brick, stone, slate, tile, shell or iron, bedded in mortar.

No party wall to be cut for any of the above purposes, if the same will injure, displace, or endanger the timbers, chimneys, flues or internal finishings of the adjoining buildings.

The act also allows the footing to be cut off on the side of any party-wall, where and independent side wall is intended to be built against such party wall.

When any buildings (inns of courts excepted) that are erected over gate-ways, or public passages, or have different rooms and floors, the property of different owners, come to rebuilt they must have a party-wall, with a party arch or arches of the thickness of a brick and half at least, to the first and second rate, between building and building, or between the different rooms and floors, that are the property of different owners.

All inns of court are excepted from the regulation above, and are only necessitated to have party-walls, where any room or chamber communicates to each separate and distinct stair-cas, and which are also subject to the same regulations as respect other party walls.

If a building o a lower rate is situated adjoining to a building o a higher rate and any addition ir intended to be made thereto, the party wall must be built in such a manner, as is required for the rate of such higher rate of building as adjoining.

When a party wall is raised, it is to be made the same thickness as the wall is of, in the story next below the roof of the highest building adjoining, but it must not be raised at all, unless it can be done with safety to such wall, and the building adjoining thereto.

Every dwelling house to be built in future which exceeds four stories in height from the foundation, exclusive of rooms in the roof, must have its party wall built according to the third rate, although such dwelling-house may be of the fourth rate.

And every dwelling house to be built in future which exceeds four stories in height, from the foundations, exclusive of the rooms in the roof, must have its party wall built according to the first rate, although such house may not be of first rate.

Chimneys &c.

No chimney is to be erected on timber, except on the piling, planking, &c. on the foundations of building.

Chimneys must be built back to back in party walls: but in that case the must not be less thickness from the centre of such party wall than as follows:

First rate, or adjoining thereto, must be 1 brick thick in the cellar story, and ½ a brick in all the upper stories.

Second, third and fourth rate or adjoining thereto, must be ¾ of a brick thick in the cellar story; and ½ a brick in all the upper stories.

Such chimneys in party walls as do not stand back to back may be built in any of the four rates follows:

From external face of the party wall to the inward face of the back of the chimney in the cellar story, 1 brick and ½ thick, and in the upper stories, 1 brick thick form the hearth to 12 inches above the mantle.

Those backs of chimneys which are no in party-walls to the first rate, must not be less than a brick and ½ thick in the cellar story, and 1 brick thick in every other story, and to be from the hearth to 12 inches above the mantle.

If such chimney is built against any other wall, the back may be ½ a brick thinner than that which is above described.

Those backs of chimneys which are not in party walls of the second, third, and forth rate, must be in every story 1 brick thick at least, from the hearth 12 inches above the mantle.

These backs may be also ½ brick thinner, if such chimney is built against any other wall.

All breast of chimneys, whether they are in party walls or not, are not to be less than 1 brick thick in the cellar story, and ½ brick thick in every other story.

All withs between flues must not be less than ½ brick thick.

Flues may be built opposite to each other in party walls, but they must not approach to the centre of such wall nearer than 2 inches.

All chimney breast next to the rooms, and chimney backs also, and all flues are to be rendered or pargetted.

Backs of chimneys and flues in party walls against vacant ground must be lime whited, or marked in some durable manner, but must be rendered or pargetted as soon as any other building is erected to such wall.

No timber must be over the opening of any chimney for supporting the breast thereof, but must have a brick or stone arch, or iron bar or bars.

All chimneys must have slabs or foot paces of stone, marble, tile, or iron at least 18 inches broad, and at least 1 foot longer than the opening of the chimney when finished, and such slabs or foot paces must be laid on brick or stone trimmers at least 18 inches broad from the face of the chimney breast, except there is no room or vacuity beneath, then they may be bedded on the ground.

Brick funnels must not be made on the outside of the first, second, third or forth rate, next to any street, square, court, road, or way, so as to extend beyond the general line of the building therein.

No funnel of tin, copper, iron, or other pipe for conveying smoak or steam, must hereafter be fixed near any public street, square, court, or way, to the first, second, third, or fourth rate and no such pipe is to be fixed on the inside of any building nearer then 14 inches to any timber, or other combustible material whatever.

OF MASONRY (269-285)

1. Masonry

Masonry is the art of preparing and combining stones by such a disposition as to tooth or indent them into each other, and form regular surfaces for shelter , convenience, and defence, as the habitation of men, animals goods, fortifications, bridges, separation of property, &c. and may be said to consist either of walling or arching.

2. Masons’ Tools

Habla de las diferentes herramientas que son distintas en función del país y del ipo de piedra utilizado.

3. Of marbles and stones.

Marble is a polish by being first rubbed with grit Stone, afterwards with pomice stone, and lastly with emery or calcined tin. Marbles with regard to their contexture and variegation of colour are almost infinite: some are black, some white, and some of a dove colour; the best kind of white marble is called statuary (…) habla de los diferentes tipos de mámoles y piedras usados en Inglaterra (St Pauls cathedral y Westminster Bridge son the Portland stone)

Mortar is used by masons in cementing their works. This has already been fully handled under the Bricklaying department, which the reader may consult. In setting marble or fine work, they use plaster of Paris, and in water works, tarras is employed.

Tarras is a coarse mortar, durable in water, and in most situations. Dutch tarras is made of soft rock stone found near Cologne on the Rhine. It is burnt like lime, and reduced to powder by mills, from the thence carried to Holland, whence it has acquired the name of Dutch tarras. It is very dear, on account of the great demand there is for it aquatic works.

An artificial tarras is formed of two parts of lime and one of plaster of Paris: another sort consists of one part of lime, and two parts of well sifted coal ashes.

4. Stone walls.

Are those built of stone, with or without cement in the joints, the beading joints have most commonly a horizontal position in the face of the work, and this ought always to be the case when the top of the wall terminates in a horizontal plane or line: in bridge buildings, and in the masonry of fenced walls upon inclined surfaces, the beading joints on the face sometimes follow the direction of the top or terminating surface.

The footings of stone walls ought to be constructed of large stones, which if not naturally nearly square from the quarry, should be reduced by the hammer to that form, and to an equal thickness in the same course, for it beds of the stones of the foundation taper, the superstructure will be apt to give way, by resting upon the mere angles or points, or upon inclined surfaces: the courses of the footing ought to be well beded upon each other with mortar, and all the upright joints of an upper course should break joint, that is, they should fall upon the solid part of the stones in lower course, and not upon the joints.

The following are methods practiced in laying the footings of a stone foundations; when the walls are thin, and stones can be got conveniently, that their length may reach across each course from one side of the wall to the other, the setting of each course with whole stones in the thickness of the wall, is to be preferred. But when the walls are thicker, and bond stones in part can only be conveniently procured, then every other interval may consist of two stones in the breadth, that is, placing the header and stretcher alternately, like Flemish bond in 9 inch brick work. But when bond stones cannot be had conveniently every alternate stone should be length 2/3 of the breadth of the footing upon the same side of the wall, then upon the other side of the wall a stone of 1/3 of the breadth of the footing, should be placed opposite to one of 2/3, and one of 2/3 opposite to one of 1/3: so that the stones may be placed in the same manner as those of the other side.

In broad foundations where the stones cannot be procured for a length equal to 2/3 of the foundations, the built them alternately, with the joints on the upper bed of each footing, so that the joint of every two stones may fall as nearly as possible in the middle of the length of one or of each adjoining stone, observing to dispose the stones alike on each side of every footing.

A wall which is built of unhewn stone laid with or without mortar, is called Rubble wall, they are of two kinds, coursed and uncoursed; the most kind of Rubble is the uncoursed, of which the greater part of the stone are crude as they came out of the quarry, and a little hammer dressed. This kind of walling is very inconvenient for the building of bond timbers, but if they are to be preserved to plugging, the backing must be leveled at every height in which the bond timbers are disposed.

The best kind of Rubble is the coursed, the coursed are all of accidental thickness, adjusted by a sizing rule, the stones are either hammer dressed or axed: this kind of work is favourable for the disposition of bond timbers, but as all buildings constructed either in whole or in part of timber are liable to be burnt, strong well built walls should never be bonded with timber, but should rather be plugged, for if such accident take place, the walls will be less liable to warp.

Walls faced with squared stones, hewn or rubbed and backed with rubble, stone, or brick, are called ashlar: the medium size of each ashlar measures horizontally in the face of the wall about 28 or 30 inches, in the altitude 12 inches, and in the thickness 8or 9 inches. The best figure of stones for an ashlar facing are formed like truncated wedges, that is to say, they are thinner at one end than at the other in the thickness of the wall, though level on the beds, so that when the stones of one course or part of a course are shaped in this manner, and alike situated to each other, the backs of the course will be form an indentation, like the teeth of a joiner's saw, but more shallow in proportion to the length of a tooth: the next course has its indentations, found the same way, and the stones so selected that the upright joints break upon the solid of the stones below. By these means the facing and backing are toothed together, and unquestionably stronger than if the back of each ashlar had been parallel to the front surface of the wall; as the stones are mostly raised in the quarries of various thicknesses, in an ashlar facing it would contribute greatly to the strength of the work, to select the stones in each course, so that every alternate ashlar placed in each alternate interval.

In ever course of ashlar facing, bond stones should be introduced, and their number should be proportional to the length of the course; (…)

(sigue explicando la ejecución de las pareces de piedra)

5. Stairs.

When stairs are supported by a wall at both ends, nothing difficult can occur in the construction, in this inner ends of the step may either terminate in a solid newel, or to be tailed into a wall surrounding an open newel; where elegance ir not required, and where the newel does not exceed 2 feet 6 inches. The ends of the step may be conveniently supported by a solid pillar, but when the newel is thicker, a thin wall surrounding the newel would be cheaper.

In stairs of a basement story, where there are Geometrical stairs above, the steps next to the newel are generally supported upon a dwarf wall.

6. Geometrical stairs.

Have the outer end fixed in the wall, and one of the edges of every step supported by the edges of the step below, and constructed by joggled joints, so that they cannot descend in the inclined direction of the plane, nor yet in a vertical direction, the sally of every joint forms an exterior obtuse angle, on the lower part of the upper step, called a back rebate, and that on the upper part of the lower step of course an interior one, and the joint formed of these sallies in called a joggle, which may be level from the face of the risers, to about 1 inch within the joint. Thus is the plane of the tread of each step continued 1 inch within the surface of each riser, the lowest part of the joint is a narrow surface, perpendicular to the inclined direction or soffit of the stair at the next to the newel.

(...)

Geometrical stairs executed in stone depend upon the following principle: that every body must at least be supported by three points placed out of a straight line, and consequently, if two edges of a body in different directions be secured to another body, the two bodies will be immoveable in respect to each other. This last id the case in Geometrical stair, one end od a stair stone is always tailed into the wall, and one edge either rests on the ground itself, or on the edge of the preceding stair stone, whether the stair stone be a plat or step. The stones forming a platform are generally of the same thickness as those forming the steps.

7. A short Account of the origin of the arch and authors who may be consulted.

(...)

The theory of equilibrium of arches depends on the deepest principles of mathematical science. Those who are desirous of obtaining the fundamental part of the art of building arches, will do well to consult the 5th article of Emerson's Miscellanies, and Hutton's and Gwilt's Principles of Arches, and for a knowledge of the practice, it will be well to peruse a work in French by Perronet, which has gained him great reputation, as containing the whole result of his experience in the practice of building bridges and arches: also a work by semple, containing many excellent practical remarks; there are other authors, but those here spoken of, have acquired the most celebrity.

OF SLATING (301)

1.- Slating is the operation of covering the top or other inclined parts of a building with slate.

2. Slater's Tools. Are a scantle, a Trowel, a hammer, a Zax, a small hand Pick, a Hod and Board for mortar.

Explanation terms.

OF PLASTERING (304-305)

1.- Plastering is the art of covering walls or ceiling with one, two, or three layers of any plastic or tenacious paste, so as to admit of a smooth and hard surface when the material is dry, and also of ornamenting walls and ceilings either by being run or cast into moulds.

2.- Tools used by the plasterer, are Plastering Trowels of several descriptions, Joint Trowels, and Jointing Rules, a Hawke, a Hand Float, a Quirk Float, and a Derby. A Scratcher and wooden Skreeds for running mouldings.

3.- Materials. Generally employed are Lime, Hair, Sand, Plaster of Paris, and these various compounded, as the following alphabetical arrangement of Terms will show, which also explains the tools and their uses.

Walls consisting of brick, or stone in the best houses are always lathed by the plasterer, previous to the operation of plastering, particularly interior walls, and it is more requisite to lath walls constructed of stone, than those constructed of brick, which is a dry substance, and not liable to attract damps.

Ceilings are generally plastered upon laths, particularly in London. In some parts of the country reeds are employed in their stead: the reeds are spread out on the ceiling, so as to form a regular surface, and are confined to their situation by nailing laths to the joists, the reeds running transversely between them and the joists. The reeds are cheaper than the laths, but require more material of plaster and labour: so that when finished the difference of cost is very trifling. Other matters in plastering will be seen in the following explanation of Terms.

OF PAINTING IN OIL (314-320)

Painting is the art of covering the surfaces of wood, iron &c with a mucilaginous substance, which shall acquire hardness on the surface and thereby protect from the weather, and produce any colour proposed. It is intended here to treat only of common painting in oil, preserving and ornamenting stuccoed walls and wood work of houses: also iron and wooden rails, &c.

Tools.

The process of painting on new wood work.

The process of painting on old work

Useful colours for House Painting:

Black (lamp black); *white* (white lead); *yellow* (ochers, also patent yellow); *Blue* (Prussian blue, and blue black); *red* (red lead, vermilion and purple brown, or India red, crimson, lakes, to which add vermilion or white according to the tone); *green* (grass, verdigrise, invisible, dark ocher, blue and a little black, a good, patent yellow and Prussian blue, pea, mineral green); *chocolate* (india red and black); *lead colour* (black and white); *brown* (umber raw and burnt, mix black, red, and dark ocher); *purple* (mix lake, blue and white).

Yellow and red lead, make an *orange* colour.

Red and blue make a *purple and violet* colour.

Blue and yellow make a *green* colour.

Black, blue, white, and a little India red make a *pearl* colour.

Light ocher, Prussian blue, and a little black make an *olive* colour.

India red and white, make a *flesh* colour.

White and umber, make a *stone* colour.

OF SMITHING. (p 321)

Smithing is the art of uniting several lumps of iron into one mass, and of forming any lump or mass of iron into any intended shape.

1. Description of the forge.

The tools.

2. The anvil
3. The tongs
4. Hammers
5. The vice
6. The hand Vice
7. The plyers
8. Drills
9. Screw plates
10. Shears
11. Saws
12. Of forging
13. Of heats
14. To punch a Hole
15. Filing and Polishing
16. To cut thick Iron plate to any required figure
17. Rivetting
18. To rivet a Pin to a Plate or Piece of Iron
19. To make small screw bolts and nuts
20. Of Iron

(336) Iron is a metal of a blueish white colour, of considerable hardness, but easily formed into any shape and it is susceptible of a very fine polish. It is the most elastic of all the metals, and next to platina, is the most difficult of fusion. Its hardness in some states is superior to that of any other metal, and it has the additional advantage of suffering this hardness to be increased or diminished at pleasure, by certain chemical processes, without altering its form.

(...)

(341) Steel is made of the purest malleable iron by an operation called cementation, by which it acquires a small addition to its weight, amounting to about the hundred and fiftieth or two hundredth part. In this state it is much more brittle and fusible than before. It may be welded like bar iron, if it has not been fused or over cemented; but its most useful and advantageus property is, that becoming extremely hard when heated and plunged into cold water; the hardness which it thus acquires is greater, as the steel is hotter and the water colder.

OF TURNING (355)

Turning in general is the art of reducing any material to a certain required form, by revolving the material according to a given law, in a machine called a lathe, and cutting away the superfluous substance with a gouge or chisel, which is held steady upon a rest, until the surface be sufficiently reduced: sometimes pressing the cutting edge gently forwards, and sometimes side ways according to the design, until it has obtained the figure and dimensions required.

(history)

(356) The materials employed in turning are wood, ivory, brass, iron, stone &c.

Turning is also of different kinds, as Circular Turning, Elliptic turning and Swash Turning.

ANEXO B

Notes Shute.

WHAT THE OFFICE AND DUETIS IS OF HIM THAT WILL BE A PERFECTE ARCHITECTE OR MAYSTER OF BUILDINGS. (Cap 2, 3 hojas)

(…)

But now consequently followeth the cause why he should have sight in Phisicks, which through the knowledge of Astronomie, perfectly doth declare the moving of the heavens, and where unto by they naturall inclinations they be disposed, as also the understanding of the plages os coastes of the world, which the greeks call climate, to thyntent that he may shew what ground plottes stande in the most holsom ayer to build upon. And which also be the sswet and holsome waters; the most fertill and frutefull places, as namely for those plottes that stand contrary to this order are not met or necessary to build upon. This holsome ground so found whereon I shall built, yemust furst have knowlaige how too cast your ground plotte, wherein you must divide all your several places of offices apartaying to the furniture of your house, your principall chambers of rest and libraries, and such other like must receive their lightes from the east, for that the stone by natural heate at his rising draweth to him all corrupte humors and will vapors of the earth and quickness the spirits of man and beast, and if ye will cast therein baynes or hot houses, with winter Chambers and parlors, they shall receive light from the west. For that side is defended from the south windes which are greuous and contagious and also great wasters of all kinds of buildings, as may will be parceuyd by old Edifices. Your study places, were you would write, draw or devine, or the places where your Sellers should be cast, ought to receive their light from the north, by cause in that part are the lights, which are stedfast. As for lights other ways appointed I referre to the builders of those works. But Vitruvius , maketh no further mention thereof. Now also it belongeth to an Architect, to have the knowledge of Astronomie, whereby ha should directly know the foure principal places, which are East, west, north and south, with that, which they call Equinoctium, and Solstictium and the morning star, for without this knowledge none can attaine unto the making of horologes, quadrantes, Clock es dialles, in the sonne necessary to be set in goodly Edifices.

(sigue, pero es sobre los conocimientos filosóficos que ha de tener el arquitecto, luego se pregunta si es posible que una persona sola pueda acaparar tanto saber, te pone ejemplos de gente que no ha podido, pero también de gente que si, el arquitecto ha de seguir el ejemplo de los últimos).

Luego entra en las columnas y los órdenes, las láminas, de lo mejorcito que he visto, con las proporciones totalmente claras, y además con explicaciones de porque la base es así o asá. No me sirve mucho pero es muy didáctico, y además es el primer tratado de construcción escrito en lengua inglesa… tiene su mérito.

AUTOR	John Shute, Paynter and Architect	
TÍTULO	FIRST AND CHIEF GROUNDES OF ARCHITECTURE USED IN ALL THE AUNCIENT AND FAMOUS MONYMENTS WITH A FARTHER & MORE AMPLE DIS COURSE UPPON THE SAME, THAT HITHERTO HATH BEEN SET OUT BY ANY OTHER.	
AÑO PUBLICACIÓN	Londres 1563	
HABLA DE_		
Dedicatoria	Princes Elizabeth by the grace of God Queene Of England, France, & Ireland, defendor of the faith, &c.	Es sirviente del duque de Nothumberland 1550 y está destinado en Italia, donde puede observar de primera mano los edificios. Por eso se decide a escribir para ayudar a los nuevos arquitectos con el permiso de su majestad, y teniendo en cuenta que el rey Edward, hermano de la reina era muy afín a ese tipo de cultura.
A quien va dirigido/Prefacio	Understanding in the neither paynters, masons, goldsmithes, enbroderers, carvers, joynars, glasseries, gravers, in all manner of metalles and divers others moe can obtain any	Entra con la arquitectura de los antiguos, sin nombrar arquitectos, pasa a los filósofos (platón, Aristóteles, Plinio) los reyes (Marco Antonio; Julio César, Vespasiano, Adriano). Después describe que es necesario crear inmortalidad de alguna manera. Por otro lado habla de los oficios:
NOTAS SOBRE EL LIBRO	THE CONTENTES OF THIS BOOKE. ➢ The discourse from time to time how this science of Architecture had increased. ➢ What the office and duetie is, of him that will be a perfect architect or maister of Buildings. ➢ The first piller that that was found out by the Iorians, upon the simetrie of a strong man, being 6 times the length of his foote in height, was renewed again by the Tuscanes, and of them taken his name to be called Tuscana. ➢ The sendo piller called DORICA builded to his perfection in Greece by Dorus, and of him taken his name whose height is 7 times his thickness which thickness is called the did matter. ➢ The third pillar called Ionica was set in the temple of Apollo, and Diana, finished and builded by the Ionians, whose height is 8 times his thickness. ➢ The fourth pillar called Corinthia, found in	Un poco de historia de la arquitectura, hablando de los dioses griegos y romanos sin olvidar Babilonia y los Hebreos. Un arquitecto ha de ser agudo en entendimiento y ha de ser al mismo tiempo rápido y apto para concebir el trazo a partir de las instrucciones que han sido escritas sobre el tema. Ha de ser bueno en geometría, en óptica y en todas las ciencias que aumenten su percepción. Bueno en música, aritmética y física. Ha de tener nociones de astronomía, y ser un buen filósofo. Habla de Serlio, que en su primer libro habla de la importancia de la óptica y en el segundo de la necesidad de la Aritmética, que ayuda a plantear simetrías. (vuelve a la historia, a partir de la guerra entre Griegos y Persas, nace la ciudad de Caria: la cariátides). (nota)

	the city of Corinthe by Calimachus the excellent Architect, whose height is 9 diameters. ➢ The fifth pillar named COmposita or Itaca made to his perfection in the time of Valpasian by the auncient Romaynes, whose height is 10 diameters. ➢ Of another auncient pillar, necesarye to be before named pillers found out to his perfection by the atheniens called Atticurga or Atica. ➢ The placing of the five orders, namely, AREOSTYLOS, DIASTYLOS, EUSTILOS, SISTILOS, AND PICNOSTILOS. ➢ A rule of Vitruvius given for the three pillars, Dorica, Ionica, Corinthia, for the placing or displacing of them one above another. ➢ A rule for the disminishing of the pillar under the capital. ➢ An exemple to be observed for the increase of the height of Epistilium.	
Casa Ikea	(…) But now consequently followeth the cause why he should have sight in Phisicks, which through the knowledge of Astronomie, perfectly doth declare the moving of the heavens, and where unto by they naturall inclinations they be disposed, as also the understanding of the plages os coastes of the world, which the greeks call climate, to thyntent that he may shew what ground plottes stande in the most holsom ayer to build upon. And which also be the swet and holsome waters; the most fertill and frutefull places, as namely for those plottes that stand contrary to this order are not met or necessary to build upon. This holsome ground so found whereon I shall built, yemust furst have knowlaige how too cast your ground plotte, wherein you must divide all your several places of offices apartaying to the furniture of your house, your principall chambers of rest and libraries, and such other like must receive their lightes from the east, for that the stone by natural heate at his rising draweth to him all corrupte humors and will vapors of the earth and quickness the spirits of man and beast, and if ye will cast therein baynes or hot houses, with winter Chambers and parlors, they shall receive light from the west. For that side is defended from the south windes which are greuous and contagious and also great wasters of all kinds of buildings, as may will be parceuyd by old Edifices. Your study places, were you would write, draw or devine, or the places where your Sellers should be cast, ought to receive their light from the north, by cause in that part are the lights, which are stedfast. As for lights other ways appointed I referre to the builders of those works. But Vitruvius , maketh no further mention thereof. Now also it belongeth to an Architect, to have the knowledge of Astronomie, whereby ha should directly know the foure principal places, which are East, west, north and south, with that, which they call Equinoctium, and Solstictium and the morning star, for without this knowledge none can attaine unto the making of horologes, quadrantes, Clock es dialles, in the sonne necessary to be set in goodly Edifices.	(sigue, pero es sobre los conocimientos filosóficos que ha de tener el arquitecto, luego se pregunta si es posible que una persona sola pueda acaparar tanto saber, te pone ejemplos de gente que no ha podido, pero también de gente que si, el

		arquitecto ha de seguir el ejemplo de los últimos). Luego entra en las columnas y los órdenes, las láminas, de lo mejorcito que he visto, con las proporciones totalmente claras, y además con explicaciones de por qué la base es así o asá. No me sirve mucho pero es muy didáctico, y además es el primer tratado de construcción escrito en lengua inglesa… tiene su mérito.
COMENTARIOS	Es un poco más de un doble moleskino (A5), muy fino, las hojas parecen de papel de fumar. Apenas usa signos de puntuación, (bueno si, pero de forma extraña) todo es un continuo de palabras, sin respirar y en inglés muy antiguo, con alguna palabra en italiano. Aunque ha sido complicado a la hora de leerlo, por el vocabulario, todo en inglés antiguo y demás, los contenidos son sencillos, y las láminas son bastante claras y están explicadas, en general me gusta, y creo que es el espíritu que siguen los tratados inmediatos a éste.	

AUTOR	Thomas Wilsford	
TÍTULO	ARCHITECTONICE. THE ART OF BUILDIGN OR AN INTRODUCTION TO ALL YOUG SURVEYORS IN COMMON STRUCTURES. COMPENDIOUS AND GENERALL OBSERVATIONS, IN ERECTING NEW EDIFICES, IN MAKING ESTIMATES, VALUATIONS AND CONTRACTS, EITHER FOR DAY, OR TASK-WORK. WITH THE RATES, RULES, TERMS AND PROPORTIONS OF DIVERS MATERIALS IN SUNDRY SPECIES, AND SEVERAL OCCUPATIONS IN MANUFACTURES	
AÑO PUBLICACIÓN	London 1659	
HABLA DE_		
Dedicatoria	NO HAY (TÍTULO???)	
A quien va dirigido/Prefacio	NO HAY,	Parece que falta la primera parte del libro porque arriba a la derecha indica, parte 4 libro II, de lo que se deduce que probablemente había un libro I y las 3 primeras partes que podrían ser la dedicatoria, y a quien va dirigido el libro
NOTAS SOBRE EL LIBRO	Part 4 (P1) ESTIMATES, VALUATIONS AND CONSTRATS WITH THE GENERAL RATES, RULES AND PROPORTIOSN, MOST FREQUENTLY USED BY BRICK-LAYERS IN PLAINE-WORK. Brick-layers do build the yard containing 9 square feet, or by the square of 10 , that is 100, but most usually by the rod pole square, each pearch containing in length 16 ½ feet, whose quadrat is 272 ¼ feet; all these are to be understood superficiall measure. Bricks are their materials, commonly made of a teddish earth, which should be digged before winter, and made not until spring season, whose moulds (according to statute) ought to be within side length 9 inches, in breadth 4 ½ and in thickness 2 ¼ inches; the earth well tempered dried and burnt, the will be less and lighter, yet shrink in thickness but little, in breadth less, and in their length not discerneable; their weight uncertain, the ponderosity of earth being various, yet usually one will weigh about 5 lb, containing in solid dimensions 90 cubical inches, and from some moulds 100, and laid in morter (one with another well jointed) allow 125 cubical inches, or 133, whereof 13 bricks will make a quine, a peer, or a pedistall of afoot cube, or equal to it in solid measure. The goodness of brick-earth is various, and the well ordering of it uncertain; in brick-kels, or clamps, those next the fire are best burnt, and such as have naturally much nitter, or salt peter in them, with the violence of heat will run, as if glazed over for perpetuity: these some call clinkers, the next to them are best for generall uses, the outermost in the clamp are worst, where the salt-peter is not digested, for want of called samel or sandal bricks; besides observe, while the bricks are burning, that side of the clamp next the wind are worst of all, the heat being driven from thence. The general rates for making bricks is from 4d to 6 the 1000 for the moulder onely, and their common task 9000 in a day, a dexterous workman may make 6000 in 5 hours. For buildings that are not more than 2 stories with the ground room, and not exceeding 20 feet to the Rayson-plate and upon a good foundation, the length of two bricks or 18 inches (for the heading course) will be sufficient for the ground work of any common structure, and 6 or 7 courses above the earth to a water-table, where the thickness of the walls are abated, or taken in on	

	either side the thickness of the walls are abated, or taken in om either side the thickness of a brick, viz 2 ½ inches; but as for large and high buildings of 3, 4 or 5 stories with the garrets; the walls of such edifices would be from the foundation to the first water-table 3 heading course of bricks, or 28 inches at the least, and at every story water-table, or taken in within side, for the summers and joyce to lie upon, laid into the middle, or ¾ of the wall for the better bond; as for the partition walls, brick and half is sufficient, and the upper stories a 9 inches wall is usual. (Measurements and prices notas) ESTIMATES, VALUATIONS AND CONTRACTS, WITH THE GENERAL RATES, RULES, AND PROPORTIONS COMMONLY OBSERVED BY *CARPENTERS* (PAG 11) Carpenters do commonly frame and erect their work by the quadrat of 10 feet, that is 100 square according to the standard; and in ordinary and plain structures near these rates, the framing, goodness and strength of the timber to be considered; as for example, in clear stories and running buildings, their chief timbers are these, groundsels, principal posts, and spur-bases, in length as pleases the builder, in their squares 5 and 6, 6 and 7, 7 and 8, and sometimes 7 and 9 inches for the 2 first; the spur-braces, as the studs, 3 and 4, or 3 and 5 at pleasure, spaced from 18 to 24 inches, the sides of such an house framed, will be valuated according to the timbers goodness and the place, as from 13S to 1L, or 1L 10 sh and more specially if it be a girt story and to every square (in good edifices) allow 20 cubical feet or rough timber. As for floores, the summers would lie (in brick buildings) 9 or 10 inches at least, within the walls at either end they are in their squares, according to their lengths, or largeness of the room, for which they are made, & usually from 9 to 14 they would be either heweel springing. Or a cars on the upper side will cast the, the joice in their squares 3 & 5 in is usual, but with the summers depth is better, and 1 ½ or two inches thick, and but 12 or 13 inches spaced. (…) Proportions and dimensions of a roof. A roof (if not a very flight or small building) hath first on the raison plate principal spares or rafters; the space betwixt them uncertain from 10 feet to 20. The feet of them usually tenanted into a crosse beam, and those let on to the rayson with a dove-taile, to keep the building tight from flying out; these principals are made according to the true pitch of the building tight from flying out; these principals are made according to the true pitch of the building intended; about the middle (in common structures) each of them hath a collar-beam, and extraordinary roofs (as 30, 40, 50, or 60 feet by the beam betwixt the raysons) the principals are made of several paces let in to one another with a mortise, and at every joint a collar-beam, fastened at their heads with a pin onely; these last by some called the arch couples; the bignesse of these vary according to the greatness and proportion fo the building, viz. 4 inches and 5, or 5 and 6, and sometimes 6 or 7 and more. (… notas)	En realidad en el original pone "*brick-layers*" pero está corregido por "*Carpenters*".
Casa Ikea		
COMENTARIOS	Libro moleskino, es anterior al incendio, pero da parámetros similares al resto, en el capítulo tejados (dentro de carpintería) se explaya por lo que se pasa a notas.	

NOTES WILLSFORD

A wall brick and half, with the joint, will be in thickness 14 inches, or very near; and in this proportion 150 or 160 bricks will lay a yard square, measured upon the face of the building; and to the quadrat of 10 (that is 100 square feet) allow 1700 or 1800 bricks, 4600 or 5000 bricks, will completely lay or erect a rod, pearch or pole square containing 16 ½ feet, whose quadrat is 272 ¼ feet, or 272-36 inches superficial measure, that is 30 ¼ yards. Herein I have delivered you 2 number to each quadrat or quantity, by reason there is no exactness in this required, nor can be discovered, and for several causes (although from one mould clamp) as morter and bricklayers hand, many bricks are warped in the burning, some miscarrie in every load or 500; the tally or number not true, which proves often less (if not look after) for they seldom deliver those materials in with that care and circumspection as they receive their money: besides all this, when bricks are deare, and lime is cheap, the workman by the great will use more morter, and make the ampler joints, which is much worse for the building. When all materials are ready a workman and his labourer will lay in whole work of a solid plane 1000 bricks in one day and some men 1500.

The value of task-work is various, according to the place and charge of the materials, the rates being uncertain every year; but in new work is commonly 5L, or 5L 10S the rod square, or every 272 feet superficiall measure on the face of the wall, or 2L 10S the pearch, and bricks laid in at the builders charge, or to erect new structures by razind old walls, it is worth 3L, or 3L 10S the rod square, by reason in taking down the walls, and clearing of the bricks besides the spend more time and morter in laying again. Walls according to this rates are supposed to be 14 inches, and what a building shall exceed in brick and a half, a proportionable allowance is to be given; as 3 bricks in length in a heading course, or 6 in strengthening course, is double work and charges: 2 ½ bricks in thickness of the walls is in proportion as 3 to 5 so for every 3 feet square allow 5. If 2 bricks thick in a heading course, the excess is ¼ to be added: in case the building be thinner then is common proportion, as in 9 inch wall, 1/3 is to be deduted from the measure; and if but ½ that, as bricks breadth in thicknesse substract 2/3 , or multiply the quantity of square feet found (as whole measure, brick and ½) by 2, and divide the producte by 3, and take the quotient from the whole; for measures of that kind are usefully taken by the food square with the parts, which are afterwards reduced to the greater measures; all doors, lights and window-cases are commonly last measured, and abated from the totall, as in the following, bill of measure shall appear.

The dimensions of masons structures are measured from the foundations of the walls to the raison plates, the gable ends by themselves, their lengths with out-side, their breadths within, or the contrary, but all exactly surveyed to a inch.

The common allowance for lime is one quarter, or 8 bushels (heaped measure) to every 1000 of bricks laid in, or 1 ½ hundred to a rod square. 100 of lime is 25 bushels in many places (valued from 8 to 12S) to which the usual allowance for morter is 2 load of sand, and that at 1S, or 1S 6D the load bringing in, and for digging a cubical yard 4D or 6D.

A particular survey of building raised by I.L. for A.B. the walls in thickness (according to contract) brick and ½ erected by the great at 3L the rod for workman-ship and mortar; the dimensions taken June the 8 day. An. 1658. by me T.W.

The true commensuration taken in		**feet**
The length of one side the structure	1	40 ½
From the foundations to the rayson		16
The house in breadth at one end	2	17 1/6
The height to the upper crosse beam		16 ½

A partition wall within side	3	17 1/6
The height up to the first floor		10 ½
The length at the other side	4	39 1/3
From an old wall to the rayson		7
The breadth of the other end	5	17
From the floor to the crosse beam		4 5/6
Particulars to be added		**feet**
The water-table 30 F. reduced to	6	7 ½
From the foundation to the table		3 1/6
For a setting off on the other side the house	7	16 1/6
A gable end next the street	8	66
The totall of these dimensions	9	1575
A particular survey of parts to be deducted from the whole buildind, or the total summe		**feet**
The height of one door-case	1	9 5/12
The breadth of the door-case		8 2/3
The height of the other door-case	2	7 5/12
The breadth of this door-case		4 1/3
A third door-case in height	3	5 1/6
The breadth of this door-case		4 1/3
The window-cases of the first story, or ground-roome		**Feet**
The first window-case in length	4	4 ½
The depth of this window-case		4 3/2
The second window-case in length	5	4 3/2
The depth of this window-case		4 ½
The total to be deduted is	6	177
The remainder due to the bricklayer in whole work is	7	1398
Which reduce into perches is Or 5 pole and 4 yards	8	5 49/363 P

How to measure a gable en that's bonded by the barge courses, or proportioned to the roof on an house.

Let the triangle AD represent the gable en, whose dimension is required; part of which head wall from E to B is brick and ½ according to agreement, and from B to A each course is but a brick in length, or 9 inch wall in thickness; first take the perpendiculars, as AB 8 ¼ feet, and also AE 10 F. which multiplied by ED 8 ¾ produceth 87 ½ feet for the whole triangle AD, then AB 8 ½ F increased by BC 7 ½ F, will produce 63 ¾ F for the triangle AC, which is defective (in thickness) 4 ½ inches, or the breadth of one brick, that is 1/3 part of brick and ½ neglect now the fractions in either, and take the 1/3 part defective, that is 21; which substracted from the triangle AD 87, and the remainder will be 66 feet, or 7 ½ yards, the true superficial content of the gable end, as reduced to the agreement of brick and a half; the question solved was required.

In measuring all such kinds of work a 10 foot rule is best, yet one of 2 foot is very convenient in taking the parts and inches. This done, as you shall find the dimensions, enter them in a paper ready ruled for each length and breadth, inserted as multiplicand and multiplier; the column before them is for order only , and to avoid confusion, because that measures in one building may often times prove alike, and upon any doubt or mistake, a review of that part will be more easily made: in the same manner inscribe all abatements: fractions in the totals may be conveniently rejected, as in the summe before, viz. 1574 1/1 ½ feet, and likewise in the abatement 176 23/36 which fractions I make an unite in each total; the remainder divided by 272 or 272 ¼ , if the survey be in feet; but if the dimensions were taken in yards, then divide the totally by 30, or by 30 ¼ , as you please, the fractions not being considerably except in very great structures, freezes, cornishes, crests, or cornices, mouldings, &c. all such works extraordinary are valued by themselves, or allowed in the whole charges: coping of walls are usually measured to the height, as if not gathered in, by reason of the trouble, which here I will passé over, and proceed to the bill of measure, with the form of it contracted to heads in necessary particulars. I choose this for an example, being more difficult to measure then a new erection.

A bill of measure and charges of the aforesaid edifice in masons work, erected by I.L. for A.B. according to the indentures and articles od agreement made between them, bearing date the first of May 1658. Whose dimensions you will find in the survey taken June 8. An. 1658, by me T.W.

	feet		
Imprimis. From the foundation to the feet water-table, the wall is in thickness two bricks in length, from thence to the floore brick and ½ according to agreement, containing superficial measure	739		
Item, one partition wall brick and ½	180		
Item, from the floor to the rayson-plate also brick and half	590		
Item, one gable end, part of which is but a 9 inch wall, containing	66		
The total in square measure	1575		
The doors and window-cases to be deducted, whose dimensions are	177		
Remaining due unto the bricklayer in whole work	1398		
The superficial content in square yards is 155 1/3			
The former measures reduced into square pearches are 5 rod and 4 yards, or 36 feet.			
	L	S	D
The totally summe of money due unto the brick-layer, according to contract is	15	9	8

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The length of these principals are the models of the roof, and proportioned to the wideness or breadth of the house, taken from the outside of either rayson plate, that is the length of the crosse beams, and that according to the custome of the country, viz. The length of a spar of rafter to the structures breadth, ¾, 4/5 or 5/6, as for example, admit the building be 20 feet by the beam, and the proportion as 3 to 4, according to the first, the rafter must be 15 feet long, and by the second rule 16F and by the third way 16 F. 8 inches.

The first of these is most usual, the second carries of water best, but more opposed to the fury of the wind, the last proportion viz. As 5 to 6, is commonly for thatched houses; yet in some provinces where they build the walls with stone, the rural architects do make the rafters length equal to the building breadth within side; betwixt the principal rafters (on either side of the roof) there ought to be girts or purling-beams, tenanted into the principal at either end (neer the collar-beams) to strengthen the lesser sparrs or rafters, the lower ends having footing upon the raysons, and those nailed or pinned down besides; on to these are lapt sparre or rafter-feet, which make the eaves to beare off the raine, and secure the walls, of the building, the extremes of them have eaves-boards, usually for plain tyling, in breadth 6 inches, and inch thick upon the one side, and off to nothing on the other, the length to spar-feet from 10 to 30 inches.

Now again to survey the roof; from one purling to the other (on the contrary side) there are usually strut-beams, or stretchers, to keep the roof from sliding in, and every little spar above these have wind-beams in many buildings, especially such as are open to the top, but in houses with garrets, and those feeled, the feeling joyce makes good the other two: between every bay there would be braces nailed within-side the rafters, from the collar-beams obliquely down to the rayson; these are to keep the roof from running an end; as for gable ends, or dormer windows in the roof, they must have sloopers, or sleepers (vulgarly called) which are made of plank, or very good board, in breadth usually 7 or 8 inches, the one end of them down to the rauson, the other extreams put togetherupon spar with a miter-joynt, proportioned according to the roof of those gable ends, with the same pitch of the building.

Besides the timbers; particular provinces do use many others as ridge-trees, the whole length of the roof, to which the head of all spars are fixed; and in many old buildings you may finde lion-pieces, braced 4 wayes; but these and diverse are now grown quite out of use, except in some large country barns.

As for an estimate roofs, they are usually worth more than plain floor by 4 or 5 sh the square of 10, and are valued from 25sh to 40 sh the square, that is 100F the spar-feet and eaves-board are in common building measured into the whole roof, and in some places at 2d or 3d the foot running measure: (...)

The covering of an house, with the materials valuations and proportions allowed off by architectors. (p 15-)

The most common covering of good and comely buildings is with tyles, whereof there be two sorts, both made usually of red earth, as brick are, though not the same, but better, something like the potters earth; of these two kinds the one are called plain, the other crocked, or pan-tyles, differing in quantity and quality; the first being cheaper and lighter (as in respect of number) yet dearer and heavier upon a roof, which seems paradox, and therefore shall be explained.

Plain tyles are usually in length 10 ½ inches, in breadth 6, and in thickness 5/8 or ¾ of an inch, containing in superficial measure 63 inches, in solid content 39 3/8, or 47 ¾ inches, about half the weight of a statute brick, 1000 tyles allowed to a load, about 22C or 23C tb gross weight, for making 2sh, or 2sh and 6d a 1000.

Laths for tyling ought to be hearth of oak, fold by the bunch or bundle, whereof statute approves of 2 sorts, the one 5 feet in length, the other 4, not differing in price and quality, but number and quantity; the longer sort have but 5 score to the bunch or hundred, the shorter 120; to the longest 500 lath-nailes is the common allowance, and the other 6 hundred that is 720 nails to each bundle of laths, 6 score to the hundred, and 10 thousand nails to a summe, in number 12000. One bunch of the longest laths extended makes 500 feet, the other 480. Either of these laths ought to be in breadth 1 ½ inch, in thickness ½ , But are usually less, and never exact in all their lengths and number of sale lath. Both these sorts are necessary because all spars or rafters are not spaced alike, not yet the proportions strictly observed in everyone and the same roof or building. Of these there are 3 kinds, viz. Heart of oak, sap and deal lath, from 12D to 2sh 6D the 100, the 2 last used for feelings. The proportions for the tylers lathing are various, as in some places 3 ½ inches, and others 4. Betwixt every rafter there ought to be a counter-lath: to every 1000 tyles some do lay in a peck of tile-pins, their price uncertain, id of oak, from 2sh to 4sh the bushel, 4 bushels of lime, and 6 or 8 bushels of sand makes morter for 1000 tyles, whereof 60 will lay one yard square, at 7 inches gage; but the more usuall tyling in task-work is by the 10 feet square, which 100 feet will be covered by 660, or 666 tyles, and one bunch of lath; according to this proportion, 12 feet square (that is 144F) requires959 or 1000 tyles very near, the square of 10 feet is the common proportion, yet none of them quite to be rejected: the first shews the number of tyles, with the best allowance for those which miscarrie; the second for lath and nailes, and the third proportioning the quantity of lime and sand; many tyles that beak will prove useful, as half tyles at the eaves, straights for closures at the gable ends; in gutters, valleys, &c. to cover a square of 10 that is 100 feet, is commonly accounted a dayes work; yet some nimble tylers will lay 1000, if the materials be all ready, the roof plain without valleys, and assisted with a diligent labourer.

Besides these there are other tyles made properly for gutters in cross buildings, valleys of gables and gathered ends, &c. and formed by them in manner of triangles equilateral; circular at their base, about 10 inches deep for the most part, the one called corner, the other gutter-tyles; this last mmore flat than the other, and rounded off at the upper angle, to lie the better and closer on the sleeper; the corner tyles have their upper angles acute, with pin-holes in them; their price usually 1 ½ d or 2 d a tyle, or from 10sh to 15sh the 100.

The batge courses of gable ends ought to be struck over with hair and lime-morter, to keep the wind from ripping up the tyles, and by that advantage to storm the rooms within: in divers places (where lime is dearer) I have seen tyles laid with most onely, which way keeps out snow and driving rains exceedingly well, but with greater inconveniences which follow, for in few years it will rot and decay the tyles, by reason of the wet it gathers: in all these coverings there must e roof, or ridgetyles, whereof in some places 5, 6, or 7 of them are allowed into every 1000 of plain tyles, and if bought by themselves are usually worth 25sh or 20sh the 100 at least, their forms are like to a panel, 13 or 14 inches long, and in breadth betwixt the points 8 ½ or 9 inches. I will insist here no longer, nor ride upon the ridge, but briefly shew you an estimate of divers other coverings for houses.

Crooked, pan, or Flemish tyles; the first name is from the form, the second from the matter of which they are made, as earthen pans be; the third is from the place from whence the first were brought, now common England, and used in covering of shades, lean-too’s, and all kinds of flat buildings, and but seldom laid on roofes that have the just and full pitch of plain-tyled houses, an for the most part are laid dry without any mortar, yet sometimes pointed within-side, and is held the best way in fencing of the weather. As for their size, they are usually in length 14 ½ inches, in breadth 10 ½ inches; their laths are in length 10 or 12 feet, in breadth 1 ½ inch, and one inch in thickness, valued in money at 2d or 3d a lath, or mark 100. The least I have known in great quantities, the gage (in nailing on these with-four-penny nails) is the breadth of a tyle, that is 10 ½ inches; their breadth when laid 8 inches, one lath serves fot a yard square of tyling, and 15 tyles, and 10 laths 100 feet of tyling, and the square of 10 requires 160 or 165 tyles, and 144 feet of a roof will be covered by 250 pan-tyles, that is ¼ part, or less by ¾ parts of the tyles; a great cover of these spends but little morter, if pointed, and but little time in laying; their prices are in most places 7sh or 8sh the 100. 1 hundreds (and less) of four-penny nails serves 10 laths, or square of tyling.

Slate is a neat covering, especially the blew, cut in long squares, or in scallops, as it is usual for summer, or banqueting-houses in gardens; but as they are pleasant, the charge is great, for such roofs must be boarded over, the slate or shingles hanged upon tacks, and if laid with morter, valued in by some from 3 to 6 sh the yard square, and more or by the 10 F. Square at 1L 13sh 2L 2sh or 3L and more in some places; but when rudely cut and carefully laid (in respect of form) as nature hath produced and left them to humane industry, it is then accounted a cheaper covering the artificial tyles are in those countries, where the prengnant earth afforded plenty; their proportions in covering houses are uncertain, so i cannot assign a certain number, unless the builders shall prescribe a true proportion for the slate.

Shingles, called also slate or shides of wood, are quartered oaken boards sawn a certain scantling, but usually rift about an inch thick at one end; made like wedges, 4 or 5 inches in breadth, and 8 or 9 inches long: this kind of covering is changeable, and not usual but for churches, whose new erections are now adayes rare, their reparations but little seen, and their dilapidations common; yet to satisfie the reader in part of an estimate in covering the roof of a church, or a pyramidal steeple; first they must be well boarded over, whose dimensions you may find in the second book; that done the shingles are fastned to those boards with four-penny or six-penny nails, ranked in even courses at certain prescribed gage, as admit 4 inches from under one another; which multiplied by their breadths producen the number of inches that each of them covers upon a roof as suppose the shingle 4 inches in breadth, and which divide 1296 (the number of inches in a yard square) the quotient will be 81, the number of shides, and likewise nails, allowed to every yard square, provided the shingles be made and laid according to the proportion delivered here: in this manner you may give an stimate of slate, it cut alike, although in scallops, but measured like long squres.

Lead is the most magnificent covering, and had been used for churches, before abused by time of reformation, making those exactlted edifices stand bare to them, whose state and pride will never bid them covered. It is also a common covering for princes palaces, castles of defence, and great mens houses, and generally laid almost flat to walk upon, allowing th water a little fall to the pipes; this material is often used for gutters in ordinary tilled buildings, to conduct the water from the house unto some convenient place to fall into sheets for this last service are always tun the thinnest, being more pyable for the plumber. Every square foot of such lead is valued to weight 6 or 7 tb, if old 8 or 9 lb a foot, if new, and if it hath lain long it will run much to waste. But as for the others sheets, each square foot of those (though old) is commonly estimated at 8, 9, 10 or 11 tb weight, or 100 tb the yard square, and 10, 11 or 12 tb for every foot of new; and if very good, at 112 tb, or 1C gross for every yard square measure; the worth of it in pigs is uncertain, as from 10 sh to 20 sh the C gross, that is from 10L unto 20L the tun; but in exchanging old lead for sheets new run; or never laid, there is commonly 3sh allowed in every hundred weight for wast and workman-ship. This covering laid flat upon a house is much lighter then square tyles would be upon the same building, the roof having a full pitch; for 100 square feetof lead (according to the best proportion) will weight not above 12C weight at most, besides the plank on board it is laid upon, neer equal to the morter in so much tyling, which 600 will not cover at a common gage, besides the roofing for plain tiles in the least proportion (as 3 to 4) contains in the depth on both sides the breadth of the building 1 1/2 , so that if a house be 20 feet wide, one pair of spars or rafter extended, or laid in a straight line, will be 30 feet, besides their eaves: yet lead is much the dearer being commonly valued at 13, 14, or 15 shillings the yard, or betwixt 7 and 8 L the square of 10 feet, besides soder at 9 d or 10 d the lb, as it is allayed with lead, and sealed. Tinne is 10d, 11d, or 12d the lb.

Leaving this dull material and the city, something I will say of the rural thatching with reed or straw, no to be contemned, thought the last and meanest, yet it pleads the greatest antiquity, and never to forgot, since it pleaseth the worlds sole Monarch to be born under no better a roof, and his first church that was built in this Island, or in the world (as id is delivered us by reverend antiquity) was that of Glastenbury in Somerset-shire, framed and erected with ofiers, covered with reeds and consecrated to his blessed Mother the most sacred Virgin.

But to return unto my vulgar affairs in rural architects, the spars of rafters length this later age hath proportioned then unto the buildings breadth, as 5 to 6 so that if the frame or walls of the building, from the outside of one raison to the other should be designed or measured 18 feet 6 inches, which multiplied by 5, and divided by 6 (the proportion given) the quotient will by 15 feet 5 inches, that is 18 ½. For 37/2 multiplied by 5 produced 185/2, which divided by 6, the quotient will be 15 feet 5 inches, as before. In this kind of covering there are not any spar-feet, or eaves-board used, nor no lath, but splint onely, commonly every thatched roof will be deeper from the ridge to the eaves then the rafters are by 3 or 4 feet, caused partly by the thickness of the cover, and for an allowance at the eaves to be cut, and so likewise for the gable ends.

A shock of corn in many places contains 15 sheas, in some places less; the bigness of them various, according to the year and custome of the place: the straw of 15 shock some count to be a load, and others from thence to 20: a fized load of wheat-straw will cover upon a roof 18, 19 or 20 square yards, which to lay on and bind well will be about 2 dayes work for the thatcher, yelver and sherver, whereof some make better work then others do, and lay on more with less loss, and as thin a coat to the fight.

To give an estimate for the covering of any building in general, without finding the length of a spar or rafter, do thus: multiply the length of the whole house by the breadth without-side, set down the product by itself; then take the proportion allowed for the rafter, viz. ¾, 4/5, 5/6, or any other; the roof having 2 equal sides the proportional breadth must be either 6/4, 8/5, 10/6, reduced are 3/2, 8/5 and 5/3, the former product: multiplied by the numerator, and divide by its denominator, gives the area of the whole in such parts as the length and breadth were taken in, without an allowance for the eaves and barge-courses: as for example there is and house to be erected that is 14 feet wide, and 59 feet in length: now to allow for the eaves and barge-courses, I make the tow numbers 15 and 60 feet, whose product is 900, which multiplied by 3 and divided by 2, the quotient is 1350F or multiplied by 8 and divided by 5, will be 1440 square F; or multiplied by 5 and divided by 3, you will discover 1500 F that is 15 square, and of squares yards 166 2/3. Thus you may give in an estimate for covering the roofs of houses at easy and pleasure, with expedition too, whether it be with tyles, shingles, reed or straw, a common covering for churches and houses of quality in Fenny Countreys.

To proportion a building for any quantity of corn or hay, allow to cubical yards to a load of either: the body of any building you may make and measure by the problems of the fifth part of this book; but to proportion it according to the number of acres laid to it; or to make a binne for clean corn, allow 21 1/2 , or 22 bushels Winchester measure for a concave vessel containing a cubical yard; all such like demands I refer the reader to my enigmatical questions in country affairs, composed by the way of dialogue betwixt rural swains, the scene or title arcadia.

According to the rural proverb, there is skill in dawbing, whereof whole work is something cheaper then single walls struck within-side, for this to find splint and workmanship in binding the splint to the cross bars (if single walls) or in nailing them on in whole work, tempering and working the clay well, it is usually worth 4d 5d or 6d the yard square.

The house being closed, boarding of the rooms is next, the estimate is uncertain, according to the workmanship and goodness of the materials, as from 12sh to 20sh the square 10 the plaining, jointing, and laying of boards, is commonly performed from 3sh to 5sh the square, besides mails, for which the common allowance is 1 ½ or 2C to each square, and 6 score to the hundred, whereof single tens, 8 penny nails,, or 6d the hundred are the least used in this kind of work, and these (in divers places) bought at 6 pence the lb.

Next, for doors, if inch board, or whole deals, good and well jointed, at 2d, 3d, or 4d the foot square, if rebated, as for boards, ledges, nailes, workmanship and all; double doors are near a double price; if the fore-side be made wainscotfashion, or battoned, it may be three times the price of the former, according to the work and the materials.

As for smiths work, dogs in iron bars, bolts, staples, great hooks and hinges, &c. are commonly made at 3 ½ d or 4 d the lb. The upper hooks for weighty leaves of great doors or gates, have commonly fore-locks and keyed, as the most secure, strongest, and best to take up, if they go fag or sink with wearing, besides clinches may break, or the hooks, then are the shanks difficult to drawn. In stone, or brick-work the hooks are made with broad shoulders, the other ends like half millrings let into a stone with melted lead, one such a hook for common work will weight 8, 9 or 10 lb. Crosse garner hinges are usually not so strong, for all the weight hangs but upon nails or rivets, but usually neater work, as from 4d to 8d the lb.

Casements are not usually made by the pound, but valued according to their bignesse, largeness, strength and goodness of their locks, as I have seen from 3sh to 20sh the casement, in all buildings where the munnions are made of brick or stone, such lights must have double casements, if any, and all window-cases of wood single.

Stock and plate locks are as you fancy, from 1sh to 20sh lock and key. Now to close my work in the temper and qualities of this metal, Spanish iron is the dearest, very brittle when it is hot, and apt to flaw in the working, yet very tough when cold. Iron of Prusia, vulgarly called spruce iron, is held next to this in goodness; that which is really brittle. All iron may be melted again, and made to run, and then convert iself to a soft substance like lead, of little use, but as mixt with other metals for letter-founders, that work to printers.

Pargeting, or plaistering upon bare walls, 3d or 4d the yard square; upon bare lath from 8s to 14d the yard, and so likewise for plain feelings; rendering at 2d and 3d the yard; rough-cast upon hearth-lath, with workmanship and all materials found, from 1sh to 3sh the yard square; plaistering upon brick-work, with finishing morter (called by some stone morter) in imitation of stone-work, valued from 12d to 18d, and 2sh the yard and more, and upon hearth-lath estimated at 18d, 2shillings, and 3 shillings the yard square; in all these works the scaffolding is to be considered, the quantity of lime and fine sand for finishing morter is equal.

Now to have some colour for may work, painting of doors, window-cases, crests, cornices, architraves, frises, and all timber exposed to the weather is usually laid in oyle; but common colours are red, oaker, umber, red and white lead, &c. at 3d the yard square for every time painting over, thrice is sufficient for such work: the priming spends most colour (if the wood be dry) but is usually the worst; window-cases are commonly painted by the light, at 3d, 4d or 6 pence the light (thrice coloured over) according to their greatness, or as they can agree, for the bars, unions, &c. but rated by the light is most general; some work by the square, painters do measure with a string all moulded works, as joiners do their wainscot, over styles, mountons, and rails.

Lastly, let us see the transparent glasiers work; first the glass when run, are called tables, those in England of an equal size, containing about 5 square feet, 45 of those tables are called a case of glasse, in weight 2C lb, or thereabouts, the price uncertain, as from 30 shillings to 40 shillings the case, and worth 6 or 7 shillings the cutting into quarries diamond fashion, with long and short halses, whose proportion is various, the best and most general form is a quarry 6 inches in length measured from the acute angles, and 4 inches in breadth from the obtuse angles, each quarry containing 12 square inches, and consequently 12 of them in a foot square, but 10 ½ or 11 quarries in a foot of glasing. Of French or Normandy glasse there are but 25 tables in case; this is much thinner, clearer, and more transparent then is the English glasse, and much dearer, as quantity for quantity; this kind of glasse is often cut in long squares, and sometimes the other too, but the dearer way; it is evident in any glass, because in panes of glass (composed in diamond cut) snips and all little pieces may be of use.

To fix the glass in panes, the glasier hath a mould to cast the lead in, a foot in length, which he draws through a vice, as some mend their words through the nose, extending them wonderfully 4 times as long, and more; these are called canes of lead, per adventure from cannel, representing the form of gutters on either side, 4 ½ od them weights 1lb. And about 8 ounces lead in a foot of glasing; as the quarries lie in their lead they are called ranges, foddered at every joint on either side. This done, each pane should be cemented with linseed oyle and Spanish white, or common ashes. Bends must be put on, the panes set up, and the glasier paid 5d or 6d the foot square for common work, and 3d a foot if glasse be found: casements (if any)must be measured in the work, also all round and oval windows are measured according to the square of their diameters, because they spend more time glasing then square panes do. And so much for this brittle commodity.

To make a causey to your house, set out first the ground with a convenient breadth, which sink a spit or 12 inches deep, fill it half up again with rubble or rubbish lay chalk or lime upon that; and lastly a coat of fine gravel, which is worth to dig, according to the place, from 3d to 6d each cubical yard, and ½ so much more to screen; a good load will cover well 9 or 10 square yards; this often rolled will be good way. Admit this causey were 54 feet in length, and 10 feet in breadth, the product 540 square feet, which divided by 9, the quotient will be 60 yards, and allowing 8, 9, or 10 yards to a load, it will require 1 ½ tun, 6 2/3 tun, or 6 sized load.

Paving with rough or rag-stone is the cheapest valued from 12d to 15 pence the yard; paving with pebble- stones from 15 to 18 pence the yard square; 6 good load will pave so much as the gravel laid, and 3 load of gravel for the paver, unless the soyle does afford him help, but more lesse according to the work.

Some use common brick made according to the statute, whereof 30 will lay a yard square, and 1800 will pave it; there is a sort of Flemish bricks 6 ¼ inches long, 3 ½ inches broad, and 1 ¾ thick; if you allow ¼ of an inch for the joint, 72 of these will pave a yard square, and 4320 will doe the work; but if set edge-wayes, 100 will do a yard, and it will require 6000 to pave the causey: these must be laid in sand, and are commonly worth 2sh the hundred, and 4d or 6d the yard for the pavers work.

Pavements, or paving tyles, are made in moulds as the bricks, but 4 square, and of several sizes, viz. 6 inches broad, 8, 10, and 12, valued in price from 6sh to 20 shillings the hundred; to finde what number of these will perform the work, divide 1296 (the number of inches in a square yard) by 36, 64, 100 or 144, the quotient will shew how many of them one yard requires, cast by the fraction if anything remains, and multiply them again by the number of yards to be paved, the product is your desire: here I allowed in the joints, for the pavements which by accident shall miscarry; to all these pavements they make halfs, to close the work at the sides and ends.

Next to these is the paving with broad stone, taken out of quarries of several lengths and breadths, but in thickness (for this use) commonly cut to 2 or 3 inches, and at London, with the workmanship in fitting and laying 6d or 8d the foot, that is 4 ½ shillings or 6 shillings the yard square; some there be cut perfect 4 square, as brick pavements be; but as the neater, so they are dearer then the others, some of them worth 12 pence the foot, that is, 9 shillings the yard square, or more, if good stone and well polished. Marble is both black, white and grey, some laid of one form and others mixt, cut square, and laid checquer-wise, valued from 2 shillings to 3 shillings the food square, and better according to the brightness and polishing of it to make it the more splendid.

On either side the causey there would be rails and ballasters, about 3 or 4 inches square, turned or carved as the owners please, and may be worth materials and all workmanship found; every length of raile must have a post with a turned or carved head, the rails tenanted into them, the lowes about 6 inches above ground, and those underpinned, the posts rammed with clay, set fast with spurs, cut lie Roman SS, or carved with antick heads, as your fancy shall invent, and your judgement direct.

As for clear story, bay-window, balconies, pitgillums, and sundry other things in architecture, I will present you withal hereafter, if these be well accepted off. In the mean time I will here inscribe the 5 order of pillars, against a farther erection and so conclude this part.

The five orders and proportions of pillars, pedestals, with their bases and chapters, or capitals, according to the ancient architects, are briefly these.

<table>
<tr><td>AUTOR</td><td colspan="2">William Leybourn (Philomath)</td></tr>
<tr><td>TÍTULO</td><td colspan="2">A PLATFORM GUIDE MATE FOR PURCHASERS, BUILDERS MEASURERS. IN THREE BOOKS.
i. Tables of simple and compound interes, resolving all questions that concerns the purchase of land, or leases of the houses: or the rebate of discount of money, pensions or annuities for borns &c.
ii.</td></tr>
<tr><td>AÑO PUBLICACIÓN</td><td colspan="2">London 1668</td></tr>
<tr><td colspan="3">HABLA DE_</td></tr>
<tr><td>Dedicatoria</td><td>To the Right Workshipfull Sir John Lawrence Kt and Alderman of the city of London</td><td>Se lo dedica por su preocupación hacia la ciudad, y su dedicación por reconstruirla a partir del incendio de 1666.</td></tr>
<tr><td>A quien va dirigido/Prefacio</td><td>(…)
But late as it is, it will supply thee with something thou hast not yet met with, and will justly administer both to buyers and sellers, landlords and tenants, lessors and lisses, builders and workmen in their respective concernments, the several points and purposes ensuing.
To give thee in brief scope of the design here is offered to three for the use and benefit: <u>first</u>, five useful and necessary tables of anatomize, or compound interest, calculated to the rate of 6l per centum per anum, for any number of years under 31. (…)
<u>In the second book</u> I have in a plain and familiar way given you names, rates, qualities and quantities of several materials belonging to building, and what quantity of each will be require for the erecting of any fabric, great or small; with a near estimate of the prizes of the said materials, and of the works of several artificers employed in a building; not as tax master, but at such moderate Rates and Prizes, as (I thing, nay) I know formerly they would have freely accepted. And by these helps estimates, valuations, and contracts may be made without any great damage either to Builder and Workmen. (…)
In the third book, I have tables ready calculated for the measurement of the principal materials belonging to building, as board, timbers, stone &c. And also measurements of the works of the several artificers therein employed, as the carpenters, bricklayers, masons, plaisterers, glaziers, joiners, painters, paviers, &c whether their work be measured by the foot, tard, square or rod, the dimensions being taken in feet and inches.
(…) I have added the manner how to collect and cast up a bill of measures, and to take the true draught or ground-plate of any house or ruinous foundations, how irregular so ever it be.</td><td>Empieza disculpándose ya que el tratado en realidad estaba terminado en julio de 1667, pero como se puso enfermo no se ha podido publicar hasta 1668, se disculpa por el retraso.

Hace una advertencia, sobre que no es un libro de aritmética, es para lo que se ha descrito y ya, si quieren otros conocimientos, o quedan personalmente con él, o bien compran otros volúmenes en la librería (te indica donde)</td></tr>
<tr><td>NOTAS SOBRE EL LIBRO</td><td>A PLATFORM FOR PURCHASERS (THE FIRST BOOK)
Ditissimus
Inquilinus Interlocutors
Rationarius
<u>First table:</u> declaring but any sum of money, being for-born any number of days, weeks, months, or years, under 31 will be augmented unto accounting interest upon interest at 6 per cent per anum.
(description and examples)
A table of reductions, shewing the fraction parts of a shilling in decimal numbers.</td><td></td></tr>
</table>

	Second table: declaring what any sum of money, being for-born any number of days, weeks, months, or years under 31 is worth in ready money, rebating or discounting yearly after the rate of 6 per cent anum, compound interest. (*Description and examples*) The Third Table: shewing what an annuity rent, or pension, to be paid yearly, will amount unto , the same being for-born any number of years under 31 at 6 per cent per anum compound interest. (*Description and examples*) The Fourth Table: shewing what annuity, rent, or pension, being for-born any number of years under 31, rebating or discounting yearly after the rate of 6 per cent. Compound Interest, is worth in ready money. (*Description and examples*) The Fifth Table: sheweth what annuity, rent or pension, payable yearly, any sum of money will purchase for any number of years under 31, accounting interest upon interest at 6 per cent. Per anum. (*Description and examples*) A large table of multiplication, calculated and explained for the easy performing of the Arithmetical Work. And more tables (…) THE BUILDERS GUIDE: THE SECOND BOOK. Comprehending such general rules, and necessary observations, as anywise appertain to the erection of houses, or other edifices great or small. AND, declaring the names, natures, qualities and quantities of the several materials belonging to building, with the usual rates of them; and also of the works of all artificers therein employed. Whereby estimates valuations and contracts, may be made without any greater damage either to builder or workman. (notas a parte) A MATE FOR MEASURERS: THE THIRD BOOK Containing tables ready calculated for the mensuration of all such materials, as any wise appertain to building, as board, timber, stone &c. also the mensuration of the works of several artificiers employed in building as the carpenters, brick-layers, masons, plaisteres, glaisers, joiners, painters, paviers, &c. Whether their work be measured by foot, yard square or rod. The dimensions being taken, only by feet and inches.	Básicamente plantea los problemas que a nivel de inquilino, arrendatario, ha provocado el incendio de Londres y a través de una serie de tablas, intenta equilibrar la balanza para que ninguno de los 2 pierda, y además se evite acabar en los tribunales, que parece ser que en ese momento los juzgados estaban hasta los topes de demandas de este tipo y la justicia iba muy lenta en resolver este tipo de asuntos. (ver notas, se ha transcrito prácticamente todo el libro incluidos esquemas de cubiertas, porque son muy didácticos.)
Casa Ikea		
	Los diferentes libros en lo que va explicando sus teorías y tablas, los presenta a través de situaciones reales, como obras de teatro en que los personajes plantean dudas desde los diferentes puntos de vista. La estructura es sencilla introducción a la materia que se va a tratar y a los personajes, mostrando un problema real a partir de las dudas de los personajes va introduciendo las tablas y como usarlas. MUY DIDÁCTICO	
COMENTARIOS	Libro tamaño Moleskino, pequeñín, con muchas tablas explicadas	

Notes Leybourn (2) Card.

The builders guide (book two)

The argument.

Whereas by means of a most dreadful and lamentable fire happening in London on the second day of September, in the year of our Lord 1666, by reason of which, the most part of that renowned and honourable city, was within the compass of a few days burnt down and destroyed, and now lies buried in its ruins. For the speedy restoration whereof, and for the Re-edifying of the same, the Kings Majesty, together with the assent and consent of the Lords and Commons in Parliament assembled, have (by act of Parliament, bearing anno 19 Caroli Regis) prescribed rules and orders for the rebuilding thereof both in manner and form, and for that end, have published to the world these their intentions and desires, with strict penalties upon the neglect or breach of what they have there prescribed and enacted.

In order whereunto, and to give some light and insight into the art of building, unto such as are ignorant thereof, I have collected, and from the experience I have gained by conversing with workmen, delivered such general rules thereunto appertaining, that any person concerned may reap some benefit thereby, and be able (in some measure) to give a reasonable estimate of his charge in the erecting of such or such a fabric. An a shall begin first with the materials, their quality and dimensions.

Catechizeta

Precator INTERLOCUTORS

P.- what are those which you call the materials belonging to building?

C.- Brick, tile, timber, iron, lead, laths, nails, lime, sand, &c.

P.- Of what are bricks made?

C.- Bricks are made of reddish earth, which ought to be digged up in the winter, but not made into brick till the Spring season, in which the goodness of the bricks in buildings is a main thing to be looked into, both for their quality and quantity.

P.- How shall I choose a good brick?

C.- In every clampe or brick-keele (besides the goodness or badness of earth, and the well or ill ordering of the clay) there are three degrees of bricks in goodness.

P.- Which they?

C.- The first and best sort are those, which in burning, lie next the fire in the keele, which if they have much of salt-peter in them, they will run, and be as it were glazed all over; and these for lasting, exceed all the rest in that keele, although the earth and making the same.

The second and most generally sort for building, are those which lie next in the keele, to those before mentioned.

The third and worse sort, are those that lie on the outside of the keele, where the fire hath not so much power as it hat over those nearer; and of these (outside bricks) those that lie on the wind-side of the clampe or keele in the time of burning, are the worst of all for they will molder and turn to dust.

P.- Of what bigness ought every brick to be; is there only one, or are there different sizes?

C.- There are several sizes, but the statute allows but one; neither doth the law take cognisance of any other.

P.- And what are the scantlings of a brick by the statute?

C. The molds in which bricks are made, ought to be in length in the inside 9 inches, in breadth 4 inches and half, and in depth or thickness 2 inches and a quarter, of which size the brick ought to be; but you shall seldom find them to hold out so, for the drying and burning will abate something in the thickness, but little in the breadth, and in the length inconsiderable.

P.- How are bricks rated and sold?

C.- By the thousand; but for their price it is uncertain, in respect of work-mens wages, the convenience of carriage, and the price of fuel to burn them with. In London I have known them at several rates, as from 9 s to 18 s the thousand, But for the making, the molder (besides his attendants) hath between 4d and 6d a 1000, and about 9000, is accounted a reasonable days work.

P.- What quantity of bricks can one bricklayer lay in a day?

C.- A bricklayer with a diligent labourer, in sound and new work, (all materials being ready) may lay 1000 bricks and upwards in a day; and 4500 bricks will make one rod of wall, or of the side of a building, at one brick and half thick, the rod, pole, or perch, containing 16 foot and a half of superficiall measure, of which I shall have occasion farther to speak anon.

P.- In what are the brick laid?

C.- In mortar.

P.- What is mortar made of.

C.- Lime and sand

P.- what quantity of lime and sand will make mortar sufficient to lay 4500 of bricks, which you say will make a rod of wall?

C.- To every 4500 bricks, one hundred and a quarter of lime, and two load and a half of sand.

P.- What rates do they usually give for lime and sand?

C.- The price of both are various, and the measure of Lime in many places different, a quarter of lime (in some places,) being eight heaped bushels; but about London, lime is usually 10S. the hundred (but not always), and sand about 3s the load.

P.- By what you have said, I shall be able, I hope, to make choice of good bricks, and see that they be of a true gage; and by knowing what quantity of bricks will serve for any piece of work, I shall be able to make provision of lime and sand answerable thereunto. But concerning tiles, how are they made, and of what size ought they to be?

C.- Tiles are made of earth much better than bricks, inclining to the which potters use for their ware. And of tiles there are divers kinds, but for building principally two sorts, thoso are plain tiles, and ridge tiles. The length of a plain tile is usuall 10 inches and a half, its breadth 6 inches, and its thickness near three quarters of an inch.

P.- How are tiles rated and sold?

C.- As bricks are by the thousand, about 22 or 23 hundred weight gross, they account a Load, one tile weighing about 2 pound and an half, so that about 1000 tiles will make a load.

P.- How are tyles hanged on the roof of a house?

C.- Upon laths, with tyle-pins, and laid in mortar.

P.- how do they measure or rate their tyling?

C.- By the square, which is ten foot every way.

P.- What quantity of mortar will be required to every square tyling?

C.- About a quarter-part of what is allowed for a rod of brickwork, but it ought to be dryer, and better wrought.

P.- Of what wood, and of what scantling ought laths to be?

C.- there are principally two sorts of laths allowed by statute, the one of 5 foot long, the other 4 foot; those of 5 foot, have five score or 100 in the bundle; the other of 4 foot, have six score or 120 in the bundle: but either sort ought to contain in breadth, one inch and an half, and in thickness half an inch. And of either of these lengths, there are three sorts; first, heart of oak; secondly, sap laths; and thirdly, deal laths.

P.- At what rates do they fell laths?

C.- The price must needs be various, for that there is so great a disparity in the commodity; but the prizes are generally between a shilling and half a crown the bundle; but the generall rate for heart laths, is about 20 d, the bundle.

P.- What is the reason of these different lengths, and goodness of stuffe of which they are made?

C.- The reason of these different lengths is, because all rafters upon which the laths are nailed, are not spaced at a like distance. And for the goodness of the stuffe, those of hearth of oak, being the best, are most necessary for tyling: the second sort of sap laths, are for plaistered walls, and those deal for seelings.

P.- At what distance are laths laid upon the roof, a house one from another?

C.- The distance is various, differing more in some places than in others parts; but 3 inches and an half, and 4 inches, are usual distances, with a counter-lath between rafter and rafter, or two, if the rafters stand at a very large distance.

P.- What quantity of nails will be expended in laying of bundle of laths?

C.- To the to the laths of 5 foot long 500 nails, and to the other of 4 foot long 600 nails, six score to the hundred.

P.- How many laths and tyles will cover a yard of three foot every way?

C.- Threescore tyles laid at a 7 inch ganged, will cover yard; but tyling, as I said before, is measured by the square, that is 10 foot everywhere, in all 100 foot, which will require 665 tyles, or thereabouts, and one bundle of laths; and one tyler in a day, will cover such a square.

P.- but if the tyles be broken much, then there are must needs be loffe?

C.- This is true, there is losse and trouble for the workman; but these broken tyles, and half tyles, will prove useful at the eves, at straits, in valleys, at gable ends, &c. and here note, that the barge courses in any building must be struck with lime and hair mortar, and also rendered, to prevent the winds from ripping off the tyling.

P.- You mentioned another sort of tyle even now, which you called ridge tyles, to what use serves they?

C.- they serve to cover the ridge or top of the building, and for every 1000 of plain tyles, you have ten ridge tyles. To these I might have added a third sort, which is, a triangular tyle, broad the bottom, and growing narrow towards the top, and are commonly called corner tyles. And they are rate is between 10 s and 15 s the hundred.

P.- I am very well satisfied concerning bricks and tyles, and the appurtenances belonging to the use of them in building, as lime, sand, laths, nails, &c. Now sir, would you please to give me the like insight into Timber.

C.- Some generals I will give you; but know, that timber is of divers kinds, and dearer or cheaper, according as the place where it is so scarcity or the commodity which can have no statute law set upon the growth of it; yet the law hath made such provision (I wish it were better put in execution) for the planting in this Kingdome; wherefore only take notice in this place, that 50 foot of rough timber is counted a load, and for squared timber, fit for building, these following are proportioned both for depth and thickness, or rather the sides of the square at the end of the piece, thus;

Summer or girders from	foot	of	foot	In length must be in their square	inch	&	inch
	14		16		11		8
	16		20		13		9
	20		23		14		10
	23		26		16		12
	26		28		17		14

Joist of	feet	In length must be in their square	inch	&	inch
	11 ½		8		3
	10 ½		7		3
			6		3

Binding & trimming joist from	foot	of	foot	In length must be in their square	inch	&	inch
					6		5
	7		11 ½		7		5
					8		5

Wall plates and beams, of any length from 15 foot may have in their squares	inch	&	inch
	7		5
	10		6
	8		6

Purlynes from	foot	to	foot	In length must be in their square	inch	&	inch
	15 ½		18 ½		9		8
	18 ½		21 ½		12		9

Principal rafters cut taper from	foot	to	foot	In length must have in their square on one side	in	to	in	The other side	in
	12 ½		14 ½		8		5		6
	14 ½		18 ½		9		7		7
	18 ½		21 ½		10		8		8
	21 ½		24 ½		12		9		8
	24 ½		26 ½		16		9		9

Single rafters in length from 6 ½ to 9 ½	feet	Must have in their square	inch	&	inch
	6 ½		4		3 ½
	9 ½		5		4

Principal discharges of any length from	feet	Must have in their square	inch	&	inch
	10		13		12
	upward		15		13

And these are the principal timber belonging to the direction or any ordinary edifice, either great or small; but carpenter usually work by the square of 10 foot: of which more in due place.

P.- you have well satisfied me in all the forementioned materials, and I think you mentioned lead among the rest.

C.- I did so, and it is a material one, and chiefly used for the covering of churches, halls, and other publique places; but in common buildings, it is chiefly used for gutters, and pipes, to convey the water, and carry it cleer off the house into some convenient place; for which use; the thinnest is most used, as being most plyable. One foot of this lead (if new) weigheth 8 or 9 pound; but if old, lesse, as 6 or 7 and the longer it hath layen, the more it will run to wast in the melting.

P.- What allowance is given for such wast.

C.- There is commonly allowed about 3s in every hundred weight for wast and workmanship; and in covering a house with lead (which is lighter than tyles) although 100 weight will cover a yard square, yet it will be much dearer than tyling; for that soder is at 9d 10d nay sometimes at 12d per pound, as it is allayed with lead.

P.- Methinks that iron is a very considerable material in the erecting of a house; for besides Nails, there are divers other things appertaining to a house.

C.- There are so; as dogs of iron, bolts, staples, hinges, hooks, window barrs. &c. all which are commonly made at 3 d half penny, or 4d a pound.

P.- But will they make all other iron work belonging to a house, at that rate?

C.- No; for casements are not valued by the weight, but according as they are large, strong, and good, the workmanship in their locks and hinges, so are these commodities valued, as from 3s, to 20s, a casement. As casements about 2 foot and an half in length, about 4s. or 4s 6d. a piece. Folding casements of the like bigness, with bolts, hinges, &c. about 12s or 13s a pair. Plain casements of 4 foot, or thereabout at 5s 6d the pair; and large folding casements according to that bigness, and sometimes larger, at 16, 18, or 20s the pair.

P.- A very considerable difference.

C.- The like for locks and keys; they are all to be rated according to their largeness and goodness of the work.

P.- Concerning glass, I would be satisfyed in that also, both in the quality and quantity.

C.- the glass which we use here in England is that which made at New-castle and Woolledge; the size of those tables into which they make them, do contain about 5 foot; 45 of these tables do go to a case, the price uncertain, for when coals are plenty, glass is cheap, and when there is a scarcity of coals in London, then glass is dear, not that they want coals at New-castle, but, because they have no other conveyance for their glass from New-Castle hither, but by the coal-ships; so that sometimes it is at 25s and sometimes at 40s the case.

P.- If the glass be worth so much whole, it must needs be dearer when it is cut into squares or quarries.

C.- To cut a case into quarries diamond fashion (with halves, quarters, and three quarters of quarries, as the glass falls out) it is worth about 6 or 7s and this form improves the glass best, for that there is little loss. Of these quarries there are several forms, some bigger and some lesser; but the most general size is six inches from angle to angle one way, and 4 inches the other.

P.- How many of these paints of glass do go to a foot?

C.- Every quarry of this size contains 12 inches, and consequently there should be 12 quarries in a foot, but between 10 and 11 (counting halves and quarters) do usually make a foot, the lead supplying the remainder. And a foot of this glass being banded and set up, 5d or 6d a foot is usuall rate; but in measuring casements must be measured to be length and breadth of the iron and oval windows (if any) they must be measured as if they were square windows of such a length and breadth, for that there is more trouble in them, than in plain work. There is another sort of glass used here in England, which is called Normandy Glass; of this glass, 25 tables make a case; it is thinner and clearer, and more transparent than the other, and is much dearer, and is commonly cut in long squares.

P.- I had almost forgot the plaisterer; how do they work by measure, and what rates?

C.- they do work by the yard square, and their prizes are various according to their several works: as plaistering upon the bare walls is usually 3d or 4d the yard square, upon bare laths, from 9d to 1s 2d and the like for plain seilings. Rendering the inside of walls, they value at about 3d the yard. Roughcast upon hearth-lath, workmanship, and all materials found, is reckoned from 1s to 3s the yard. Plaistering upon brick-work, in imitation of stone, with finishing mortar, from 12d to 1s 6d the yard; and the work upon hearth-lath, at 2s and 3s the yard; in all which works, the scaffolding is to be considered.

P.- I have troubled you sufficiently at this time; but yet the painter is wanting.

C.- For Doors, windows, architraves, friezes, cornices, and all other timbers belongings to a house exposed to the weather, they are usually laid in Oyl, after the rate of 3d or 3d halfpenny the yard square, so often as they shall lay them; three times is sufficient, of which the first time spends as much oyl as both the other, besides stoping. For lights or window-cases, they are usually not measured, but valued by light, as at 3d 4d or 6d the light, according as they are in greatnesse. In the measuring of their work, they run a string over all where brush goes; but sometimes in rails, and banisters, they will measure it as if it were flat measure. I have seen the experiment tryed, and the difference would not countervalue the trouble of girting.

P.- For paving, how do men deal for that?

C.- the paving within doors, are principally of two kinds, the one with square tyles, the other with free-stone; and these kinds of pavings, are chiefly for publique places in and about house, as Court-yards, halls, kitchens, wash-houses, and the like. The paving with square tyles, is valued by the square, and the dearer the smaller the tyles are; for these kind of tyles are of several sizes, some of 6, some of 8, others of 10, and some of 12 inches square; their price is from 6s to 20s the hundred, they are laid in mortar as bricks, and other plain tyles are.

For paving with free-stone, as it is taken out if the quarry, the usual rate is 7d or 8d a foot square for stone and workmanship; but if the stones be squared to a size, and ruled smooth, it is then dearer, as 12d or 14 d a foot.

Paving with marble, of which there are commonly for pavement used three sorts, viz. White, black, and grey; they are most commonly used for the paving of chimney-hearths, and laid lazange ways, one of white, another of black, laid angle to angle; and this kind of paving, for stone and workmanship, they value at 2s 6d or 3s the foot, the dearer as the stones are cleaner and well polished.

P.- In the ornaments, in the inside of a house, a joiners and carvers works are considerable.

C.- The works of either of these in ordinary buildings at their first erection, is not very material, rails and ballisters, for stare-cases, heads, pendants, balls, bandilirers carved, &c. which particulars are sold or wrought by the dozen, or particularly, according to their dimensions. As ballisters are rated at one penny the inch upon diameter (or over) 3s the dozen is usuall, 4 inches 4s and 6 inches 6s the dozen. The like for heads and pedants; if 5 inches over, 5d apiece; if 6, then 6d &c. for large balls of about 12 inches diameter, 2s 6d or 3s a piece. And for carving of bandilirers with flowers, and other works, of about 7 or 8 inches, 5s or 5s 6d more or less, according to the curiosity or slightness of the work.

And thus have I given you a general account of the nature, quality and goodness of every or most of the materials appertaining to building, with a moderate estimate of their prizes, and what wages is usually given for the workmanship in disposing of them. It resteth now, that I say ssay something more particularly of the bricklayers and carpenters work, and hot they usually valued.

P.- In their two works and materials, rests the stresse and charge of a building.

C.- It doth so; and know therefore, of 16 foot and half square, for whole building, and walls; in which works, 4500 or 5000 bricks, will compleatly lay a rod, pole or perch, measured upon the surface of the building; or along wall.

P.- I partly understand you, but in buildings of houses (and so likewise in walls) the wall at the foundations is thickest, at the next story somewhat less, and the higher you go, the thinner it is.

C.- It is very true, wherefore, in the measuring of the bricklayers work, you must note to what height, how far of the building the wall is 3 bricks thicks, how far 2 and a half thick, how high two brick thick , how much one brick and half thick, and how much one single brick thick, and so reduce the several thicknesses of the wall all to that of one brick and half in thickness,, and it is of such a thickness, that I say, 4500 or 5000 bricks, will lay compleat rod or pole of 16 foot and a half square, measured upon the superficies or outside of the wall or building.

P.- So then if a wall be 3 bricks thick, half pole, that is, 8 foot and a quarter (hall make a rod square)

C.- It will so, provided the wall be 16 foot and an half high, otherwise not; for if a wall be a brick and a half thick, and 8 foot and quarter (which is half a rod) high, then there must go two rod in length (which is 33 foot) to make a rod square.

P.- Then I understand you; what is want in heighth, is must have in length, and if it exceed a rod in height, it must be less than a rod in length to make a rod square.

C.- you are in the right; and this course is to be observed in walls chiefly, or in houses if you girt them, or in a front of many houses together; but for a single house or two, a lesser measure than the rod is best, as the foot or yard, which may be afterwards reduced to the greater measure of the rod. And here again observe, that if a wall exceed a brick and a half, there must be a proportionable allowance; as a wall 3 bricks in length is double work , double stuffe, and consequently double charges every way. A wall 2 bricks and half thick, it is in proportion to wall of a brick and a half, as 3 is to 5, wherefore, for every 3 foot thereof, five foot must be allowed, so likewise in the square of 10 foot, or in the rod of 16 foot and an half; so a wall of two bricks thick, exceeds one of a brick and a half by one quarter, and must be allowed. On the contrary, when a wall is less than a brick and half of a single brick, (called 9 inch wall) one third part is to be added to equalize a brick and a half.

P.- I apprehend what you say very well; but for windows, doors, &c. which fall amongst the brick work, what must be done with them?

C.- You must measure the whole fabric, as if there were no such things, and when you have done measure all those particulars severally, and add them together, and subtract their sum from the general measure; so shall the true measure of the brickwork remain. And farther note, that in measuring any house, if you take the breadth thereof on the outside of the wall, you must take the length thereof within, or the length without and the breadth within , which is all one. Also all Peeres, Butteresses, &c. are measured by themselves, and the copings of walls must go to the height, for the labour in laying, countervalues the bricks saved.

P.- I understand now how they measure, but as what rates do bricklayers do this work?

C.- Variously, according to the dearness of cheapness of the materials, which often rise and fall; but usual rates are 5 l. And 5 l. 10 s. the rod square of new work; and if bricks be laid in at the builders charge, then 50s is a usual price; but if the workman be to reare new walls, by making good of old ones, then he may deserve 3l, or 3l. 10s the rod square.

P.- But is all new work alike, that you make no distinction?

C.- No for walls which are low, small store of scaffolding will serve the turn; and in houses 3 or 4 stories high, there is much more scaffolding; besides, the bricks on the front of any house which lies near the street or high road, are ribbed and made smooth, and at every story an architrave, and over the windows and doors, the bricks are laid arching, which is not only ornamental, but (if they be well laid) a strengthening to the building also; and if there be much of this front work, he may deserve 6l a rod, which if you agree with the brick-layer by a great, he may well afford to do, though bricks be at 16s. the thousand.

P.- you have given me good satisfaction in all particulars I desired concerning the bricklayers; but for the tyling, how they rate that, and measure that?

C.- they measured their tyling by the square of 10 foot, and in measuring, when they come to valleys, they are allowed them according to the length at the top ridge; but that is sometimes too much , and sometimes too little, the trouble being sometimes far more than the tyles, laths, and nails are worth but discretion in that case must be moderator; the like in plain tyling at 7 inches gage, will be covered with between 660 and 670 tyles. And they do value new work, finding tyles, mortar, laths, and nails, and stricking of the barge-courses, at 30 or 32 s the square; and for ripping of old work, and new covering, and making good the old, they account 12 or 14 s the square, according as they find the old Tyling.

P.- I think that we have deal with all now but the carpenters, and how do they agree and measure they work?

C.- the carpenters do commonly work by the square of 10 foot, in erecting their carcass, that is, the framing and setting up with their partitions, floors, rafters, and such like. The proportions of several scantlings for several buildings small and great, you have given you in the table foregoing, and their work is to be valued according to the goodness of the timber, and the quantity, and the place, (as was before intimated) and thus in running buildings they account 15 or 20 s the square, and some may deserve 30s or more; and to square of a good carcass, 20 foot of good timber rough may be allowed. For flooring, the timbers of the scantlings before, serve in most cases, and these well wrought and laid well into the brickwork, as the summers 10 or 11 inches into the brickwork at either end: these floors are valued as the carcass was, according to the quantity and goodness of the timber, and place, and there are several rates, as from 20s to 40s the square. In framing the roof, there is far more trouble than in the rest of the building, and therefore is commonly reckoned 4 or 5 s in the square more.

P.- Do they add the boarding of the rooms into this rate?

C.- No, that is a work by itself, and is various as the other, for they are valued by the square of 10 foot, according to the goodness of the stuffe, as from 12s to 20s the square; but if the boards be found by the builder, then they allow commonly for plaining, jointing, and laying on boards, 4 or 5 s a square, besides nails, of which 200 is a competent allowance for one square of flooring.

P.-there is one thing yet remaining, in which id you satisfie me, I think I shall cease farther to trouble you at this time.

C.- What is that?

P.- Concerning doors, shop windows, window-frames, stairs, chimneys and the like.

C.- Of these I shall give you particular account, and first of doors.

1. Doors made o plain whole deal, are valued commonly at 3d or 4d the foot, if rebated for stuffe, nails, workmanship, &c. but double doors battoned, and made wanscote fashion, ther

are about 7d the foot; and in there you may rise and fall your price as you please, as you may in all the rest.

2. Shop-windows, these for carpenters work are to be valued as the doors were, and at the same rater; the iron work at the prizes of ordinary bolts, hinges, &.

3. window frames, for these they usually agree by lights; so that if a window of oak have 4 lights in it, and be double rabited (as the carpenters call it) they usually reckon 3s a light for materials and workmanship. But if the builder find timber and saving, then 1s a light is fair.

4. Stairs and Stair-cases, an ordinary pair of stairs of about 6 and 4 foot, with flyers and winders, made of elme boards, are accounted to be worth 2s 6d or 2s 8d a step, the workman finding all materials, as boards, nails, &c. but if the materials be found at the owners charge, then the 9d or 10 d a step for workmanship is a good allowance; but for stair-cases which have a well light coming from the top of the bottome, with a landing every 6th or 8th step, the stairs being about 3 foot all the way, these stairs with the rails, ballasters, posts, balls, pendants, and other ornaments, may very well worth 4s 4d or 4s 6d the step.

5. Chimneys, the brick-layer values them by the rod, and at the same rate as other work but then in measuring he girts them, which (if he find materials) gives sometimes one third part of bricks more than is used; but for that, (in respect there is very great difficulty in the true measuring of chimney-work) they generally agree for so much and hearth, and the workman taking the whole stack together, from top to bottome of the building, he finding all materials, and plaistering of the insides, between 40s and 50s a chimney is a fair rate; but if the owner find materials, then about 15s is an indifferent price for workmanship. In cellars, vaults, and for many other purposes, archwork in brick is not only convenient, but necessary for many possessions and trades. This work the bricklayer performs by the rod also; but fot that there is trouble in making the frames for to lay the arch upon, and more art in laying of the bricks, he may well deserve 10 or 12 s a rod more for this, than for ordinary work. And now I hope I have fully satisfyed you.

P.- You have given me very ample satisfaction in every particular; and remembering what you have told me, I shall be the better prepared to deal with my workmen, than I was before, and shall not (I am sure) run into those grand errors, which too many unadvised builders dayly do.

<u>A SUPLEMENT TO THE SECOND BOOK, CONTAINING NECESSARY RULES AND OBSERVATIONS, DEDUCED FROM WHAT HATH BEEN DELIVERED IN THE FOREGOING DIALOGUE CONCERNING BUILDING.</u>

1. *In valuation*
   In the preceding discourse, you have the names, natures, qualities and prizes, both of materials which concern buildings, and of workman wages, promiscuously inserted, according as the discourse did give occasion. Now, forasmuch as the chief use of building (for the present) will be in the City of London, here the late fire made so generall a consummation; the king and the parliament have prescribed and enacted a form and method for the re-building of the same, I will here (the foregoing rules being general) particularly set rates upon the several materials, and also upon the works of

several artificers appertaining to building, near unto what they now are; and from those rates, deduce a near estimate of what houses of several dimensions, both in high and principall streets, as also in streets and lanes of note, will cost the new erecting, they being built with such materials, and in the same manner and form as the act enjoyns. Supposing therefore,

	l	s	d
Bricks, the thousand	00	16	00
Tyles, the thousand	01	05	00
Lime, the hundred	00	10	00
Sind, the load	00	03	00
Oak, timber, the load	02	15	00
Firr, timber, the load	02	15	00
Deal-boards, the hundred	07	10	00
Laths, the bundle	00	01	08

Then for plaisterers work.

	l	s	d
Lathing, plaistering, rendring and washing with size, the yard	00	01	02
Lathing and plaisterin the yard	00	00	10
Plaistering and sizeing, the yard	00	00	06

For Smiths work.

	l	s	d
For iron balconies, the pound	00	00	5 ½
Folding casements, the pair	00	16	00
Ordinary casements	00	04	06

For,

	l	s	d
Window frames, the light	00	03	00
Glasing ordinary, the foot	00	00	06
Wrought lead, the hund gross	00	18	00

For painting

	l	s	d
Window light	00	00	06
Shop Windows, doors, pails, &c the yard	00	01	00

From these rates of materials for buildings, and for workmanship.

A house in a high and principal street, built according to the statute of car.2

	foot		foot		l.		l.
Containing in breadth	20	And in depth	44	Will cost building about	450	And in a street of lane of note about	360
	18		40		380		300
	24		25		330		250
	18		26		260		230
	14		28		240		185
	10		18		150		100

Now forasmuch as the buildings in London joyn the one upon another, and almost every several house hath a distinct proprietor, the parliament have decreed, that the wall dividing each proprietors ground, shall be built at the equal charge of both the owners; it will be impertinent to shew how these party walls are to be valued.

As I said before, all brick work, whether it be of one, two, or three, four or any other number of bricks lengths in thickness, they are all to be reduced to the thickness of one brick and half.

By what hath been before delivered, you find that 4500 of bricks, one hundred and a quarter of lime, two load and a half of sand, will compleatly raise one rod of brickwork of a brick and half thicknes.

Now,

	l	s	d
4500 of bricks, at 16s the 1000 is	03	12	00
A hundred 6 a quarter of lime at 10 s	00	12	06
Two load and half of sand, at 3s	00	07	06
In all	04	12	00

And thus much will the materials of a rod od a party-wall reduced a brick and half thick, amount unto at the former supposed rates. To which may be added for,

	l	s	d
Workmanship	01	08	00
The sum is	06	00	00

So that for every rod that is in a Party-wall, between proprietor and proprietor, they are to allow 3l a piece for every rod of party-wall. So that if a party wall being measured, and the measure reduced to a brick and half, should be found to contain 16 rod, that 16 being multiplied by 3l. Giveth 48 l and so much is the one proprietor to allow the other.

But note by the way, that although this rule here delivered be generall, yet the price of the party-wall will be more or less according as materials rise or fall.

2. *In mensuration.*

Whereas throughout this discourse, there are is continual mention made of measuring, it may be expected that I should say something thereof this place; but I shall desist, for that I have long since sufficiently treated of surveying or measured of land in may treatise, entituled, the compleat surveyor. And for the mensuration of all manner of superficies and solids, I have (in a small treatise by itself, lately published Entituled The Line od Proportion made Easie) taught how to measure timber, stone, board, glass, pavements, and the like, by a new, ease and most exactly way. And therefore I shall in this place say nothing thereof, only I will give you and account of survey of a building, by which you may see the manner and form of measuring; wich take as followeth.

A survey of building erected by M.G. for R.S. the thickness of the walls (as by agreement) brick and half, at 3l the rod for workmanship and mortar, the dimensions taken as followeth.

		foot	parts		
1	The length of one side	40	50		

	From the foundations to the raising	16		648	5
2	The breadth at one end	17	16		
	The height to the crosse beam	16	5	285	14
3	A partition wall within	17	16		
	Height to the first story	10	5	180	18
4	The length of the other side	39	33		
	From an old wall to the rasing	7		275	31
5	The breadth at the other end	17			
	From the floor to the crosse beam	4	83	82	11

Particulars to be added.

		foot	parts		
6	A water table 30 foot, reduced to	7	5		
	From the foundations to the table	3	16	23	70
7	A setting of on the other side of the house	16	83	16	83
8	A cable end	66		66	
	The total area or content of these dimensions			1575	77

Particulars to be deduced

			foot	parts		
1	One door case	Broad	9	42		
		High	8	66	81	58
2	Another door case	Broad	7	42		
		High	4	33	32	13
3	A third door case	Broad	5	16		
		High	4	33	22	34
4	A window case	Broad	4	5		
		Deep	4	5	20	25
5	Another window case	Broad	4	5		
		Deep	4	5	20	25
				The total of these deductions	176	55
				Taken from the total	1575	77
				Rest due to the bricklayer	1399	22

Which reduced into square rods, is 5 rod 13 parts, which is compleat Rod, and something above half a quarter of a rod.

And so according to the contract, there will be

Due to the bricklayer	15 l	10s	1d

3. *Of the timber members belonging to any building, their names and manner of framing.*

In the foregoing discourse, there is often mention of rafter, girders, and other members appertaining to the timber-frame, or (as before call it) the carcass of a house, I have there by several designs delineated the same, marking each particular member with a several letter of the alphabet *(see the figure at the end of this second book)*, by which they may be known, and properly termed. And

I. *Of the floors.*

If the building be of brick; then

A. Represents the thickness of the wall, and lintale or wall-plate. But in timber-work is called Bressummer.
B. The summer
C. The girders framed into the summer
D. The joist
E. The distance between joist and joist
F. The trimmers for the stare-case, or well-hole for the stairs.

II. *Of the roof.*

AB represents de half breadth of the house with cantaliers, cornice, and eves.

AC the length of the rafters and furrings, which in buildings from 20 to 30 foot wide, or thereabouts, must be three quarters of the breadth of the house, so that if the house be 28 foot broad, the length of the rafters must be 21 foot.
I janmes, or door posts.
K king-piece, or joggle-piece.
L struts.
M Collar-beam, strut-beam, window-beam, or top-beam.
N the door-head
O principal rafters
P Furring or shreadings.
Q ends of the lintels and pieces.
R Bedding mouldings of the cornice over the windows, and the space between.
S knees of the principal rafters.
T purling mortices.

III. *Of the timbers in the upright walls.*

A. Represents the ground-plate.
B. Girders, binding, interduces, or bressummers.
C. Beam to the roof, or girder to the garret story.
D. Principal post when the building is all timber, or upright brick-wall, when of brick.
E. Braces
F. Quarters
G. Interduces
H. Prick-posts, or window-posts

IV. *Of cable end*.

A. The summer or beam
B. The king-piece, crown post, or joggle post.
C. Braces or struts
D. Principal rafters.
E. The sleeper
F. The purline of the dormer
G. The principal rafter of the dormer
H. Single rafters of the dormer, which stand on the sleeper and purline
I. The point of the sleeper.
KL the thickness of the wall and lintels, or wall-plates.

V. *Of a hip roof.*

AA half the breadth of the roof 12 foot or inches.
AB the length of the Hip or Sleeper, 22 foot 6 inches, which you may find by help of the table of the square of unequal sided timber, in the third book following: or by the gunters-line upon your ruler thus:
Upon your line take always the distance between 10 and 9, then seeting one foot on the compasses in the breadth of your house, the other foot will reach downward to the length of your hip or sleeper. Thus the house being 25 foot bread, the compasses opened from 10 to 9, will reach from 25 (the breadth of the house) to 22 foot and half, the length of the hip or sleeper.

ED the perpendicular heighth of the roof which is found by extending the compasses from A to C, and drawing the arch line CGF, cutting the lintel in the point F. So is the line.

FC the perpendicular height of the roof

VI. *Of the flat roofs*

A. The camber beam
B. The principal joggled into the camber-beams at C.
C. The puncheons or braces
D. The drips to walk on.
E. The battlements.

And thus much at present shall suffice concerning roofs, and the former general rules will serve if the building be square; but if the roof be bevel, then the bevel line shall be the line by which the back and hip rafter shall be made.

THE END OF THE SECOND BOOK.

A MATE FOR MEASURERS (THE THIRD BOOK)

To the reader.

Considering of what absolute necessity the art of measuring is in the work of building, as in the buying of the materials thereunto belonging, as board, timber, stone, &c. And also in the measuring of the works of several artificers employed therein, as carpenter, bricklayer, mason, plaisterer, glasier, joiner, painter, and pavier. All which, measure their respective works either by the foot, yard, square of 10 foot, rod, or the like. And also taking notice how sew (of the great number of) artificers are capable of measuring of their own works, although there is scarce one of them but hath upon his two-foot rule, a line (which he calls gunters line) by which all kind of measures both, superficial and solid, may be both speedily and exactly performed; the uses of which line, I have lately published at large. Yet not withstanding these helps, I finding (by experience) the deficiency of many artificiers, in this particular, to be such, that they can in no wise be made capable of understandingthe same without a tutor. And again, considering the great benefit which will redound to such gentlemen, citizens, and others that have occasion to buy materials for, and also to compute the charge of, their building themselves in every particular, I have here again taken the pains to calculate tables, by which any person (who knows but figures, and can but add two numbers together) may be able to measure board, timber or stone, as also all carpenters, bricklayers, plaisterers, glasiers, joiners, painters, or paviers work, either by the foot, yard, square rod, or the like, with wonderfull case and exactness; measuring only the length and breadth of the work (what ever it be) by a two foot rule divide into inches and parts; which tables, with the uses of them, exemplified in all the fore mentioned particulars, are here presented unto thee (for they use and benefit) by,

Will Leybourn.

A MATE FOR MEASURES.

Of measures in general

Measures are of three kinds: lineal, superficial and solid.

1. Lineal measures, is the measuring of anything that hath only length, without sensible breadth or thickness; as the length of a line, chain, pole, or the like.
2. Superficial measure is the measuring of any substance that hath length and breadth only, without any sensible thickness, as land, board, glasse, pavement, plaistering, painting, wainscoting of rooms, &c.

3. Solid measure, is the measuring of any substance that hath length, breadth, and thickness, as timber, stone &c.

Now the measures confirmed by statute, and now principally used in England are these,

1. A foot.
2. A yard
3. A rod, pole or perch

And these measures have their original from a Barley corn, for it is confirmed by the statute of E.3 that,

- 3 Barley corns in length should make an Inch.
- 12 inches a foot.
- 3 foot, a yard
- 16 foot and a half, a rod, pole, or perch.

Frome hence it follows, that:

- One foot in length contains only 12 inches; but,
- A foot superficial, or length and breadth, contains 12 times 12 inches, that is 144 inches, and by this measure, is board, glasse, and paveing with free stone, measured, and
- A foot solid, consisting of length, breadth, and thickness, contains 12 superficial feet, that is 12 times 144 inches, which is 1728 inches. And by this measures is timber, stone and such like, measured, again
- A yard in length only contains 3 foot; but a yard in length and breath contains 3 times 3 foot, that is 9 foot. And by this measure do plaisterers, painters, joiners, and paviers, measure their work. Likewise:
- A pole, rod or perch, contains in length only 16 foot and a half, but a rod in length; but a rod in length and breadth, contains 16 times and an half, 16 foot and an half, that is 272 foot and a quarter. And by this kind of measure, land , and brick-layers work, is chiefly measured.

There is another kind of measure used mucho building, but principally in the carpenters and the brick-layers works; and they call it the square of 10, that is, 100 foot, in length and 10 foot in breadth, that is, 10 times 10 foot, in all 100 foot. And by this measure carpenters measure their flooring, and bricklayers their tyling.

Thus much for the explanation; I will now shew you the use of several tables.

Appendix: how to take the true dimensions, of the old foundation of any house or houses, and to draw a perfect draught or plat thereof upon paper.

AUTOR	Johannes Kipp & Edward Knyff	
TÍTULO	BRITANNIA ILUSTRATA OR VIEWS OF SERVERAL OF THE QUEENS PALACES AS ALSO OF THE PRINCIPAL SEATS OF THE NOBILITY AND GENTRY OF GREAT BRITAIN CURIOUSLY ENGRAVEN ON 80 COPPER PLATES.	
AÑO PUBLICACIÓN	Londres 1707	
REFERENCIAS EN		
Hanno-Walter Kruft		
Dora Wiebenson		
David T. Yeomans		
Eileen Harris		
NOTAS SOBRE EL LIBRO	Es una serie de láminas que permitirían ilustrar cualquier estudio de localidades en Gran Bretaña.	
COMENTARIOS	Es un volumen muy bonito, pero no aporta conocimiento constructivo, sólo diseño de las casas.	

AUTOR	Robert Castell	
TÍTULO	THE VILLES OF ANCIENTS ILLUSTRATED.	
AÑO PUBLICACIÓN	Londres 1728	
REFERENCIAS EN		
Hanno-Walter Kruft		
Dora Wiebenson		
David T. Yeomans		
Eileen Harris		
NOTAS SOBRE EL LIBRO	Es un libro muy grande. Está dedicado a honorable Richard "Earld of Burlington" Empieza con una carta muy inspirada. Laurentium: villa seventeen miles from Rome, it has two ways for arrive. Consiste en la descripción de dicha villa , de la que se puede destacar que hay buenas carreteras o un conveniente rio Navegable para poder llevar las mercancías; tierra fértil; agua de algún modo y aire saludable. Casa saludable = bien ventilada. Las fachadas de la casa han de estar orientadas según el clima. - En países fríos las fachadas han de ir orientadas al sur - En países con mucho sol, la fachada principal ha de dar a norte. En el mismo libro en el capítulo 9 hay un comentario de cómo se orientan las ciudades. (es una traducción del libro de Vitrubio,) las inclemencias del sol y del viento (están excluidas en la ciudad) Villas of varro, Columella – Tuscum.	
COMENTARIOS	Es un volumen interesante porque a partir de la descripción de una casa antigua te da la orientación más adecuada para la casa moderna.	

AUTOR	Batty Langley	
TÍTULO	A SURE GUIDE TO BUILDERS: OR THE PRINCIPLES AND PRACTICE OD ARCHITECTURE GEOMETRICAL DEMONSTRATE, AND MADE EASY, FOR THE USE OF WORKMEN IN GENERAL. Wherein such geometrical definitions, theorems, problems, &c. as are the basis of architecture, are rendered easy and intelligible to every capacity. As also their various uses, ullustrated in the construction of decimal and diagonal scales, measuring and drawing geometrical plans and uprights of buildings; describing all the moldings used in architecture; diminishing, fluting cabling, and wreating the shafts of columns and pilasters; describing in the ionick volute, divisions and proportion of the rustics; delineating the five orders of columns according to any proportions assigned, and to determine the pitch of pediments &c. Together with the proportions of pedestals, columns, entablatures, imposts, &c. and their various dispositions or intercolumnations in porticos's, columnades, arches, doors, windows, &c.	
AÑO PUBLICACIÓN	London 1729	
HABLA DE_		
Dedicatoria	To Thomas Scawen Esq;	Por lo visto construyó una casa y eso lo hace patrón y promotor de las ciencias y las artes
A quien va dirigido/Prefacio	To workmen, to be first read by them before the proceed to the following work.	Lenguaje llano. Geometría muy básica. También se ha escrito para jóvenes estudiantes. La idea de este libro es que los 3 primeros capítulos son sobre geometría para "novatos" y luego se ha añadido el resto para gente más versada (los 3 primeros capítulos para comprenderlos correctamente se necesitan unos 3 meses de estudio)
NOTAS SOBRE EL LIBRO	THE CONTENTS. Chapter I (from 1 to 21) Geometrical definitions: of a point, of lines, of an angle, of superficies, of superficial figures, of a circle and its parts, of angles and his kinds, of several kinds of triangles, of the several kinds of four-sided figures, of regular polygons, of circumscribed and inscribed figures; of the power of a line, demonstrating the reason of multiplications, &c.; of solid bodies, of the altitude of figures. Chapter II (From 21 to 36) Geometrical theorems; demonstrating the reasons of the mensuration of superficial figures, as triangles, circles, polygons, parallelograms, &c. Chapter III (from 37 to 54) Geometrical problems. 1.- to raise a perpendicular by seven different methods. 2.- to let fall perpendicular lines. 3.- to divide right lines and angles by perpendiculars 4.- to draw parallel lines 5.- to measure the quantity of angles by the lines of chords, protractor, &c. 6.- to describe ellipsis or ovals by various methods. 7.- to describe equilateral triangle. 8.- to describe isósceles triangle.	El libro empieza con una tabla de "principal matters", que consiste en un glosario de términos, por orden alfabético, y en que página o páginas del libro se definen o hablan de ellos. Sigue con el título (s) que casi te cuenta el libro entero. Dedicatoria Prefacio. Contenidos (cuadro aquí al lado) e Introducción (antes de los contenidos)

	9.- to describe scalenum triangle. 10.- to describe a geometrical square. 11.- to describe a parallelogram. 12.- to describe a rhombus. 13.- to describe a rhomboid 14.- to describe any regular polygon, as pentagon, hexagon, septagon, octagon, nonagon, and decagon, having a side given. 15.- to perform the preceding, having the diameter given. CHAPTER IV (from 56 to 104) Wherein the preceding problems are applied to practice, in measuring and drawing the geometrical plants and elevations of buildings, columns, pilaster, &c. CHAPTER V (from 106 to 129) Of general proportions of the five orders of columns in architecture, according to the proportions of Vitruvius, Palladio, Scamozzi, Vignola, Serlio, Perault, Bosse and M. Angelo. CHAPTER VI (from 130 to 137) Of pedestals and their ornaments. A table exhibiting the different heights of pedestals, as practiced by antient architects. A table exhibiting the proportions of the principal parts of pedestals, viz. their bases, dies, and capitals , as practiced by the Antients. A table exhibiting the projectures of the bases and cornices of pedestals, as practiced by antient and modern architects. CHAPTER VII (from 138 to 143) Of columns and ornaments. CHAPTER VIII (From 145 to 147) Of entablatures, and their ornaments. CHAPTER IX (148) Of pilasters and their flutings. CHAPTER X (Of divers errors committed by some architects in their manner of placing columns and pilasters at the angles or quoins of buildings &c. CHAPTER XI (153) Of pediments. CHAPTER XII (155) Of the proportions of halls, antichambers, chambers, galleries, gates, doors, windows, &c. CHAPTER XIII (157) Of floors, ceilings, pavements, chimneys, stair-cases, &c. INTRODUCTION: "(…) *and the builders Dictionary (the most surprising , undigested mess od medley that yet was ever put together) consists of nothing more that hear-says, reports of God know who, and what, without any real matters of fact , that either workman or master can depend on*(…)"	Vale, empieza la introducción diciendo que la geometría es muy importante para llevar a cabo la arquitectura, sigue con una crítica feroz a los tratados existentes. Para continuar explicando que él 2 años antes ya había escrito el "The builder's Chestbook" que era una introducción a los órdenes. Y acaba recomendando las herramientas para poder seguir los ejercicios, tres pares de compases, escala plana, el transportador de ángulos, un sector (¿??), un bolígrafo, un paralex, y papel, lápices, y tinta.
Casa Ikea	Chap XII. Halls should have such proportions, that their lengths should not be less than twice their breadth, nor more than three times. That their heights with flat ceilings be not less than two thirds of their breadth, nor more than three fourths. That their heights with arched or coved ceilings be not les than five sixths, nor more than eleven twelfths of their breadth. 2 antichambers	

	3 chambers 4 galleries 5 gates 6 doors (draws at the end) 7 window should be proportioned to the rooms they are to illuminate, not only in magnitude, but number also. Windows of the first or ground storie, should have their heights equal to the Diagonal square, whose side is equal to the breadth of the window. (…)	
COMENTARIOS	La parte de inicio del libro no tiene nada de particular, no necesario para la tesis, es a partir del capítulo XII que se pone interesante. Pero lo más interesante es el apéndice final en que el autor transcribe las leyes imperantes (Acts of parliament) sobre construcción que se han ido promulgando desde finales del XVII, y las comenta siguiendo un orden lógico. Lástima que se quede en la longitud de vigas, travesaños, parece que falta el final del libro, no se si podré encontrar una edición que lo tenga completo, porque los comentarios sobre las leyes, sobretodo en el tema de los ladrillos no tiene desperdicio.	

Notes B. Langley

Chap XIII

1 Floors are of divers kinds, as earthen, stone, brick, and boarded, which last being the warmest, is therefore, mostly used in this kingdom.

The chief things to be observed herein, are, first, that they be level throughout every story, without going up and down stairs out of one room into another: that the height of the first ground floor be never less than 1 foot, nor more than 4 feet, above the surface: that ground joist be of oak, of such lengths and scantlings as exhibited in the act of 19 car. II.

That the manner of finishing be either with folding joints, straight joints, &c. be sure that they are perfectly dry, and the sap clean lifted out, before they are nailed down; that being fully shrinked, they may be laid close together, without having large crevices, between them, which always happen when laid green.

2 Pavements are of divers kinds as first purbeck stone, most proper for kitchens, cellars, &c. Secondly, of Portland stone, proper for halls, vestibules, &c. and thirdly, of marble, which is as often used with Portland paving, as by itself alone.

The most beautiful pavements of marble that I ever saw are that admirable floor of the grotto of the Honorable Mr. *Scawen* at *Carhalton* in *Surrey*, and that of the Cold Bath of the Honorable *John Roberts* at *Twickenham* in *Middlesex*, which with other ornaments of absolute use to workmen, I shall speedily communicate in a second part.

These pavements are each composed of three different kinds of marble, as white, black and dove-coloured, which are so disposed of, that in the dusk of and evening, they both appear as if they consisted of a number of long cubes, lying with their angles upwards, forming of ridges like the roofs of houses, that appear dangerous to walk upon, and therefore strangers are naturally apt to forbear going thereon, left they fall by the seeming unevenness thereof.

3 Chimneys are of divers kinds, as first, Kitchen chimneys, which should be light and spacious, and their depth not less than 2 feet, and a half, or 3 feet. Hall chimneys should have the same depth; their breadths between jaumb and jaumb not less than 6 feet, not more than 8; and their heights from the floor to the under part of the mantle tree from 4 feet and a half to 5 feet.

Chamber chimneys may have their breadths from 4 feet to 7 feet, and their heights 4 feet and a half. Chimneys in studies may be in breadth from 18 inches to 4 feet, and their heights the same as those chambers of the same story.

Great care should be taken to give the breast of every chimney a sufficient breadth; for when they are choaked in that part, they never fail of smoaking the rooms whereunto they belong; nor is there any cure for such chimneys, but pulling them down, and rebuilding them again larger.

The funnels must be proportioned to the chimneys, so as not to be too narrow for the smoak to pass freely, nor too large for the winds to drive it down into the room.

When the funnels of chimneys are not carried above the level of the roof, the reflex winds will oftentimes drive down the smoke with great force; therefore due care must be taken to carry them above the height of such reflecting powers.

That no timber be laid within the funnel of any chimney, on penalty as the act of 22 Car. II cap II.

4 Stair-cases should be so contrived and situated ,as to be spacious, easy in ascent, and with good light: their breadth should not be less than 3 feet and a half, nor more than 10 feet or 12 feet in the most magnificent buildings: the height of steps should not be less than 4 inches, nor more than 6 inches, or 7 at the most; and their Breadths not less than 10, nor more than 18 inches.

5 Lastly, the **kitchen** should be spacious and light, and as far remote from the parlour as possible; and indeed, this, as well as other offices, are best when situated underground, where springs lie deep enough to allow thereof.

An Appendix. Wherein the several acts of parliament, now in force, relating to builders, building, and materials are explained, for the service of surveyors, master builders, workmen, and proprietors of houses &c.

1st with respect to foundations

Stat. 22 Car. II Cap II

No builder shall lay foundations, until that proper surveyors (appointed by the lord Mayor, Aldermen, and Common Council) have viewed the same, and seen the party walls and peers equally set out. But before such surveys is taken, the builders shall go to the Chamberlain and enter their names, and the places where their buildings are to be erected, and at the saem time pay six shillings and eight pence, taking and acquittance for the same; and upon the builders exhibiting the said receipt unto the proper surveyors, or any of them, they shall survey and set out the foundation within three days after such Request: and in default of payment, the chamberlain may sue for it before the mayor and aldermen.

N.B. It is very convenient to add one brick in thickness to the foundation if every party-wall, more than is appointed by the following acts, to be set off in three courses, equally on both sides.

2dly, with respect a party-walls.

19 Car. II

The better to prevent fire from having a free passage from house to house, this enacted, that between every two houses there shall be one party-wall of brick or stone, and of such thickness, as delivered in page 163.

And to prevent disputes between Landlord and Landlord, in respect to the expences thereof, it is hereby enacted, that there shall be party-walls and party-peers set out equally on each builder's ground, and whoever first builds his house, shall be obliged to leave a convenient toothing in the extreams of his front and rear walls, that when his neighbor or neighbors is, or are disposed to build up his or their house or houses, the walls thereof may be incorporated, and firmly bound together.

OBSERVATION

But this to be observed, that if the first house be built any considerable time before the second, and is wholly settled in its courses, I can't see how the other buildings, afterwards built into the toothings of the first, can be incorporated and firm; for since that every building of brick doth settle very much as the work becomes dries, the settling of the last building must cause a fracture at the toothings of the first, which being then settled, resists the settlement of the last, and therefore cannot be firm and sound. Hence this much the best way to build all together, if time and conveniency permits.

To return. Not shall the second person build against the said party-walls, or on their own contiguous grounds, until they have paid the first builder the Moiety of the charge of such party-walls, with interest at 6 per cent, from beginning of the first building: and provided that any differences arise concerning the value of such walls, they shall be referred to the Alderman of the ward and his deputy; and where one of them is party , or where they cannot compose such difference, the lord mayor and court Aldermen shall.

But by an act made in the 7th year of late *Majesty Queen Anne*, entitled, *An Act for the better preventing of Mischief that happen by Fires*, it is Enacted, that the first builder shall be paid by the owner of the next house after the rate of 5l, per rod, as soon as he shall have built the said party-wall.

And in consideration that divers new houses have been and may be erected singly on new foundations, within the limits of the cities of London and Westminster, or other parishes or places comprised within the bills of morality, there was an Act made in the 11th year of his late Majesty King George, intitled, an *Act for the better regulating of Buildings*, which strictly forbids all second builder or builders whomsoever, to make use of, or take the benefit of such party-wall and fence-wall, so first built at the expence of the first builder; nor shall any such second builder or builders, his, her, or their executors, administrators, or assigns on any account whatsoever, lay in wood or timber, or cut any hole for cupboards, presses, &c. in such party-walls, under the penalty of forfeiting the sum of fifty pounds.

The thickness of party-walls by 19 Car. II were appointed to consist of one brick and half in cellars, and stories above ground, the garrets excepted, which were to be of one brick or nine inches in thickness only.

But by the aforesaid acts made in the 6th and 7th of her late majesty is enacted, that from and after the 1st of May 1708, all and every house and houses that shall be built or erected upon any foundations, either new or old, with the above Limits, shall have party-walls between house and house wholly of stone or brick, and of the thickness of two bricks length at the least in the cellar and ground stories, and one brick and half or thirteen inches thick upwards, from thence quite through all the remaining stories, unto eighteen inches above the roof.

And to prevent the ill consequences that may arise from wood or timber laid in party-walls, which may communicate fire from one house into the next, it is enacted by the aforesaid act of the 11th of his late majesty, fol. 479. That it shall not be lawful to make, or have in any party-wall of any house, which after the 24th of June 1725, shall be erected or built within the preceding boundaries or Limits, any doorcase, window, lentil, breast-summer, or story posts or plates whatsoever, unless where two or more houses are joined or laid together, and so used as one single house; and that to be no longer than during the time of such usage, upon plain or penalty that the owner of every such house, for every such offence, shall forfeit the sum of fifty pounds.

And in consideration that party-walls built upon the foundations may decay, and become dangerous and needful to rebuilt; and whereas differences have, and may again arise, between the two landlords, concerning the expences of taking down the same shoring up the floors, and rebuilding them again, it is therefore by the aforesaid act, enacted, that from and after the 24th day of June 1725, all and every person and persons inhabiting in any place or places comprised within the weekly bills of morality, or within the Parish of St. Mary Le Bone and Paddington, or within the Parishes of Chelsea and St. Pancras, who shall build or cause to be built, any house or houses upon any foundation, old or new, and who shall find it absolutely necessary to take down and decayed party-wall between such house and the next adjoining house, shall give notice thereof in writing months before such party-wall shall be begun to be pulled down, to the intent that the same may be viewed by four able workmen, within the space of one month next after the service of such notice: which four workmen are to be equally appointed by both parties; that is, each person to appoint two thereof, or more required, when they both do agree thereto. But in case that the Landlord or occupier of the next adjoining house, will not agree to the rebuilding of such party-wall or walls, or is incapable of paying the immediate moiety thereto, and shall neglect to nominate and appoint, within three weeks, (next after the service of notice as aforesaid) such workmen, that then the other of the said parties shall nominate and appoint for or more able workmen, who shall view the party-wall required to be taken down and rebuilt; which workmen, or the major part thereof, shall certify in writing under their hands to the justice of the peace, in the next general or quarter sessions of the peace to be holden for the city or country, where such party-wall is ruinous, and needful of being rebuilt, &c.

And provided that any person or persons whomsoever shall think him her, or themselves injured by such certificate, the said justice shall summon before them one or more of the said workmen, or other person or persons, whom they shall think fit, and shall examine the matter upon oath; and their determination shall be final and conclusive to all parties, without any appeal from the same.

But this to be observed, that a Copy of the Workmen Certificate must be delivered to the occupier or owner of such next adjoining house, or left there, within three days after such certificate shall be no appeal from the same within three months after, in every such case, if such landlord or occupier shall refuse or neglect to shore up and support his, her, or their houses, within six days after the expiration of the said three months notice, that then the first builder or builders, with his or their workmen, (giving notice aforesaid) may lawfully enter into such house or houses (at all reasonable times) with workmen and materials, and therewith shore up and support the same; the expence whereof shall be paid by the landlord or occupier, as also the half expence of the party-wall built by the first builder, after the rate of 5 l per rod, for every rod of work contained therein.

And when the first builder shall have built the said party-wall, he shall leave at such next house, with the landlord or occupier, a true mensurement of the Quantity of Brickwork contained therein, within ten days after such party-wall shall be so built and completed, of which, one half Moiety, at the rate aforesaid as also the expence of shoting and supporting, shall be paid by the landlord or landlords thereof, or their tenants or occupiers, who are hereby empowered to pay and deduct the same out of the next rent that shall become due. And provide that neglect or refusal of the said money, so due, be made, and remain unpaid for the space of twenty-one days, after demand thereof, then it shall and may be lawful to and for such first builder or builders, his, her, or their executors and administrators, to sue such landlord or landlords for such sums, so proportionably due, by action of debt, or on the case, bill, plaint, or information, in any court of record at Westminster, &c.

And here note, that the law here delivered, relating to the rebuilding of decayed party-walls of either brick of either brick or stone, the same is to be understood and observed in old houses, where, instead of having one party-wall between them, as this act directs, have two timber walls or partitions, one belongings to each house, and separate from one another; therefore be understood on all sides, that whosoever, for the safety of his or their houses, will pull down his own wooden walls or partitions, and instead thereof, built a party-wall of brick or stone, he or they are also impowered to pull down the next wooden wall or partition, of the next adjoining house or houses, (if the Landlord will not agree thereto) and proceed in every step, as before delivered for the rebuilding of decayed party-walls of brick or stone; which new build wall must be placed equally on both premises; that is to say, half the thickness of the foundation on one Landlord's Land, and the other half on the others; and that all settings off in the foundation be equally the same on both sides, as directed in the beginning thereof.

3dly, with respect to front and rear walls.

By 19 Car. II

Houses of the first rate of Building shall have their cellar walls in front of a rear of two bricks in thickness, the first and second stories of one brick and a half, and the Garrets of one brick only.

Houses of the second rate of building, shall have their cellar walls in front and rear two bricks and a half in thickness, the first and second stories two bricks, the third story one brick and a half and the garrets one brick only.

Houses in the third rate of building, shall have their cellar walls in front and rear three bricks thick, in the first story two bricks and a half in the second, third and fourth stories one brick and a half, and in the garrets one brick only.

Houses of the fourth rate of building, being chiefly for noblemen, &c. have their thickness left to the discretion of the architect.

By the 7 Anna before-mentioned, no modillion or cornice of wood or timber should thereafter be made, or suffered to be fixed under the eaves of any house, or against any front or rear wall or walls thereof; but that all front and rear walls of every house and houses shall be built entirely of brick or stone, (the windows and doors excepted) to be carried two foot and a half high above the garret floor, and coped or covered with stone or brick.

4thly, with respect to windows.

7, Anne, Fol. 263

Whereas it has been the practice of workmen to place window-frames and door cases very near, and quite ranging with the outside face of the wall, whereby they are not only fully exposed to weather, and thereby decay sooner than those which are sheltered by being placed at a moderate distance within the walls, but in time of fire are more liable to be fired, whereby many houses may be destroyed: for prevention of such practice it is enacted, that after the 1st day of June 1709, no doors frame or window frame o wood, to be fixed in any house or building within the cities of London and Westminster, or their Liberties, shall be nearer to the outside face of the wall than four inches; nor shall any brickwork, excepting upon plank and piles where foundations are bad, on pain of three Months Imprisonment without Bail or Mainprize.

But by the 11th of his late Majesty, it is made lawful to place Brick-work upon or over door-cases and windows, (provided that the weight thereof is discharged by arches turned over them) or on lentils, breast-summers, story posts or plates, where required for the convenience of a shop or shops only.

5thly, with the respect to the conveyance of water from the tops of houses and balconies.

It is enacted by the aforesaid of his late majesty, that the water falling from the top of houses to be built after the 24th of June 1725, within the aforesaid Limits, or from the balconies, penthouses, &c. shall be conveyed into the channels by party pipes, fixed on the sides or fronts of the said houses, on forfeiture of ten pounds for every offence.

6thly, with respect to chimneys.

By the 7th Anne

It is enacted, that all jaumbs and backs of chimneys which shall or may be built, shall consist one brick in thickness at the least, from the cellars to the roof; that all the insides of such chimneys shall be four inches and a half in breadth.

That all funnels shall be plaistered or pargetted within from the bottom to the top; that all chimneys be turned or arched with a trimmer under the hearths with brick, the ground floor excepted, and that no timber shall lie nearer than five inches to any chimney, funnel or fire-place; that all mantles between the jaumbs be arched with brick or stone, and no wood or wainscot shall be placed or affixed to the front of any jaumb or mantle tree of any chimney, nearer than five inches from inside thereof.

That all stoves, boilers, coppers, and ovens, shall not be nearer than nine inches at the least to the adjoining house; and no timber or wood to lie nearer than five inches to any fire-place or flew.

But by stat. 22 Car. II. Cap. II. Is enacted, that no timber be laid within twelve inches of the foresaid of Chimney jaumbs, and that all joists on the back of every chimney, be laid with a trimmer of six inches distance there from; and that no timber be laid within the funnel of any chimney, on penalty to the workman for every default 10 shillings, and 10 shillings more every week it remains unreformed.

7thly, with respect to lights and water-courses.

By 19 Car II

All differences arising concerning lights and water-courses, are to be determined by the lord Mayor and Court of Aldermen in the City of London, and by the Commissioners of sewers elsewhere.

8tly, with respect to the several rater of building, after which the City of London has been rebuilt since the fire.

The several rates or kinds of buildings appointed to be built after the dreadful fire in 1660, where four; as first, those of Alleys, By-lanes, &c. were termed buildings of the first rate, and were ordained to consist but of two stories, exclusive of the window and garrets, whose respective heights were settled as follows, viz. the height of the cellar six feet and a half, the height of the first and second stories each nine feet, and the height of the garrets at pleasure.

The scantlings appointed for the timber of these buildings are as follow:

Summers or girders, whose lengths are not to exceed 15 feet, must consist of 12 inches in breadth, and 8 inches in depth or thickness, and wall plates 7 inches by 5 inches.

Principal rafters under 15 feet, to be 8 inches by 6 inches at their feet, and 5 inches by 6 inches at their top; single rafters to be 4 inches by 3 inches; and joists, whose lengths are more than 10 feet, must be 7 inches deep, and 3 inches in deep, excepting those for the garret floor, which must be 3 inches by 6 inches.

And here observe, stat 22. Car II that no joist or rafters be laid at greater distances from one to another than 12 inches, and no quarters at greater distances than 14 inches.

Secondly, buildings of the second rate, are such as front streets, lanes of note, consisting of three stories in height, exclusive the cellars and garrets.

The height of the cellars must be 6 feet and a half, (if springs will allowit) the height of the first and second stories 10 feet each, and the height of the third story 9 feet, and the height of the garrets at pleasure.

The scantlings appointed for the timber of these buildings, are as follow:

First for the floors.

Summer or girders in length, from	10	to	15	feet	Must have in their depths	11	Inches and breadth	8	inches
	15		18			13		9	
	18		21			14		10	
	21		24			16		12	
	24		26			17		14	

Joist which bear in thickness depths		Feet inches	Must have and in	6	inches	Where the depth of the girder is	8	inches
				7			9	
	10			7			10	
	13			7			12	
				7			14	

Binding joists, with their trimming joists, 5 inches in breadth, and their depth equal to their own floors.

Wall plates, or raising pieces and beams	10	Inches, and	6	inches
	8		6	
	7		5	

Lintels of oak in the	First, second and third	story	8	and	6	inches
			5		4	

Secondly, for the ROOF.

Principal rafters, whose lengths are from	15	to	18	Feet must be at	Foot 9	Inches	7 inches thick
					Top 7	and	
	18		21		Foot 10	Inches	8 inches
					Top 8	and	
	21		24		Foot 12	Inches	8 inches ½
					Top 9	and	
	24		26		Foot 13	Inches	9 inches
					Top 9	and	

Purlins, whose lengths are from	15	to	18	Feet, must have in their squares	9	Inches by	8	inches
	18		21		12		9	

Single rafters, whose lengths do not exceed	9	Feet, must have in their squares	5	Inches by	4	inches
	6		4		3 ½	

Thirdly, buildings of the third rate, are such as front the most principal streets of trade, as Cheapside, Fleet street, Strand, &c. consisting of four stories in height, exclusive od the cellars and garrets. The height of the cellars are as in the last preceding, the height of the first story 10 feet, the second 10 feet and a half, the third 9 feet, the fourth 8 feet and a half, and the garrets at pleasure.

The Scantlings of timber appointed for this third rate of building, are the same as those of the second rate.

The fourth rate of buildings being such as are appointed for persons of extraordinary quality, situate in magnificent squares, &c. may have the heights of their stories and scantlings of their timbers a pleasure; but they must not exceed four stories in height, exclusive on the cellars and garrets.

And here note, that the height of the first floor, over the cellars, in houses of the second and third rates, shall not be more than 18 inches above the pavement of streets, not less than 6 inches, with a circular step without the building.

Scantlings of stone appointed for the first, second and third rates of building.

First rate

<table>
<tr><td></td><td>inch</td><td rowspan="5">by</td><td>Inch</td></tr>
<tr><td>Corner peers</td><td>18</td><td>18</td></tr>
<tr><td>Middle or single peers</td><td>14</td><td>12</td></tr>
<tr><td>Double peers between house and house</td><td>14</td><td>18</td></tr>
<tr><td>Door jaumbs and heads</td><td>12</td><td>18</td></tr>
</table>

Second and third rates

<table>
<tr><td></td><td>Feet</td><td rowspan="5">by</td><td>Inch</td></tr>
<tr><td>Corner peers</td><td>2</td><td>6</td></tr>
<tr><td>Middle or single peers</td><td>1</td><td>6</td></tr>
<tr><td>Double peers between house and house</td><td>2</td><td>18</td></tr>
<tr><td>Door jaumbs and heads</td><td>14 inch</td><td>10</td></tr>
</table>

9thly, with respect to materials, and

First, of QUARTERING

<table>
<tr><td>Single</td><td rowspan="2">Quarters, whose lengths are</td><td>8</td><td rowspan="2">Feet must have</td><td>3 ½</td><td rowspan="2">In breadth and</td><td>1 ¾</td><td rowspan="2">Inches in thickness</td></tr>
<tr><td>Double</td><td>8</td><td>4</td><td>3 ½</td></tr>
</table>

Secondly, of LATHS

<table>
<tr><td rowspan="2">Laths, whose lengths are</td><td>5</td><td rowspan="2">Feet, must have one inch in breadth, and</td><td>¼</td><td rowspan="2">Inches in thickness</td></tr>
<tr><td>4</td><td>½</td></tr>
</table>

Thirdly, of BRICKS.

Whereas her late Majesty Queen Elizabeth, by her letters Patent or Charter, under the great seal of England, dated the 3rd day of August, in the 10th year of her Reign, did, for herself and successors, grant unto divers persons therein named, and all other freemen of the mystery of art of tillers and bricklayers, and by that name to have perpetual succession; giving them the said company the search, correction and government of persons using the said mystery or art, and of all materials thereunto belonging, as well within the said cities of London and Westminster, as within all and every place or places contained within 15 miles thereof.

And whereas the said Company of Tilers and Bricklayers did exhibit to the Parliament held in 1725, that the earth and clay digged for the making of tile and brick, were digged at unreasonable times in year, and that there with bricks made were unfound; that their dimensions were unsizeable; that in making thereof, they mixed great quantities of sea-coal ashes, called Spanish; that the makers thereof they used breeze (that is, cinders) instead of coals; that they commonly burnt the grey stock bricks in the middle of the clamp, and the place bricks without side; whereby they represented, that great part of the bricks then usually made were so hollow and unsound, as scarcely able to sustain their own weight: and whereas at that time there was no provision made by any law for the dimensions of bricks or pantiles, they did therefore, in the 12th year of his late Majesty King George the first, obtain and Act to prevent abuses in the making of bricks and tiles, and to ascertain the dimensions thereof, &c. and thereby it is enacted, that after the 29th day of September 1726, all brick makers that dig brick earth for the making of bricks for sale, shall dig the said earth at any time between the 1st day of November and the 1st day of February every year; that the said earth shall be turned at least once within the aforesaid time; that no part of the said earth so dug and turned, shall be made into bricks before the 1st day of march next ensuing nor after the 29th day of September following; that no Spanish, at any time or times, shall be by any person mixed with any brick earth or clay, for making bricks for sale; that no breeze shall be used in the burning of any bricks for sale; that place bricks shall be burnt in distinct clamps by themselves, and the like of stock bricks, and not both together in one clamp, as aforesaid; that the dimensions of place bricks for sale when burnt, be not less than 9 inches in length, and not less than 2 inches and a half thick, and less than 4 inches and a half in breadth; that the dimensions of all stock bricks made for sale, shall, when burnt be one eighth part of an inch thicker than the place bricks, but length and breadth the same; and whosoever offends against this act, shall forfeit and pay the sum of twenty shillings for every thousand of bricks, as shall be made for sale contrary too the true intent and meaning hereof.

And forasmuch as the said company did represent unto the said Parliament, that it was highly necessary that they should inspect into the due execution thereof, it was therefore enacted, that they the said master and wardens of the said Company, or any two of them, or any four or more honest men of the said art and society, by the said Master and Wardens of the said Company for the time being to be appointed, twice every year, or oftner, if they think fit, to enter and go into and upon any Lands, Grounds, Out-houses, Sheds, &c. to inspect into the goodness of the earth, manner of making, burning, &c. within fifteen miles of the said city, and to fine offenders, and recover fines, &c. but the said company having permitted and encouraged divers persons to make bricks contrary to the directions of this act, they, by an act made in the 2nd year of our sovereign Lord King George the second, are therefore divested of the aforesaid powers so given them by 12 George I. and in their stead three or more Searchers are from time to time appointed by the quarter sessions to inspect therein, as before by the said company.

And whereas the said company (for reasons unknown to themselves) did ignorantly represent the use of Spanish as most pernicious and destructive to the making of sound bricks; to fully prevent the use of any quantity thereof in any wise whatsoever, it is therefore Enacted, that from and after the 29th day of September 1729, when any land shall be dug for making bricks for sale, within the compass of 15 miles about London, the proprietor or proprietors thereof are obliged to uncallow, and remove away all the surface thereof, until they come down unto the real and pure brick earth; and in case that by neglect or willfulness they mix, or suffer to be mixed any of the said surface, which is not pure and real brick earth, or mix is suffer to be mixed any compost, mould, soil, mud, or dirt of any kind or nature, under any pretence whatsoever, therewith, and bricks made therewith, the proprietor or proprietors thereof shall forfeit and pay the sum of twenty shillings per thousand of every thousand of bricks so made, too be recovered by action or debt, bill, &c. in any court of record at Westminster, by any person or persons who will sue for the same, one half thereof shall go to the use of the person or persons who shall sue for the same, and the other half to the use of the poor where the offence shall be committed; but the prosecution shall be brought within the space of one year next after the offence committed, or otherwise to be void and of no effect.

OBSERVATIONS.

1.- it is allowed, that between the 1st of November ant 1st of February is a good season for the digging and working of brick earth, not only with respect to men Labour, which is best performed in cold weather, but to earth also, which then by frosts and drying winds hats its crudities exhaled away in great plenty, and thereby rendered more pure, compact, and consequently fitter for making of sound bricks: and since that the oftner earths are removed by turning, the greater quantities of the crudities are evaporated, I must admire why that corporate body did not recommend the 1st day of October, instead of the 1st day of November, to beggin the digging thereof, and to have turned the same at least twice before the 1st of February ensuing, that thereby its rancid vapours might in great part, or in the whole, be exhausted, and its parts more firmly adhered together, which unquestionably would make much sounder bricks, than when such crudities are contained therein.

I must here beg leave to inform the company of tillers and bricklayers, that for want of a due Regard being had to this very point, (which they seem wholly ignorant of) there has been greater quantities of bad bricks produced, than ever yet has been by the mixture of spanich in the Earth, which if moderately mixed therewith, and the earth well worked, is and excellent ingredient therein, and is a great help to Nature, as will appear hereafter.

The injury that bricks receive from the confined humid crudities are imperceptible before they are burnt, being then in very small spherical bodies, too diminutive for the naked eye, and perhaps unequally distributed; but in bricks burnt they are visible enough, when one is broken in two pieces, for then appears many very large cavities or hollow spaces, made by the expansion of those crude humid particles, as they are rarefied by the heat applied for their burning; and the greater quantity of those particles any earths abound with, the greater is the imperfections of the bricks made therewith; for the strongest bricks are those which are made of the most compact earth, being well burnt.

2.- I observe that the second complaint is, of the mixing seacoal ashes, (called Spanish) which those gentlemen looked upon as pernicious to the making of a sound brick, and therefore the use thereof is strictly forbidden in bricks made for sale, whereby this the humble opinion of good judges of the affair, that the publick is rather injured than served thereby, as I shall endeavour to demonstrate.

But before I can proceed thereto, I am obliged to take some notice od the different qualities of brick earths, and their compounds, whereby we may be the better able to determine the good or bad effects of Spanish when mixed therein; and I do hearthly with, that the corporate Body of Tilers and Bricklayers had been better acquainted therewith than they seem to set forth, and that they had fully informed themselves therein, instead of imagining the certain facts, in which they have in great measure been very much mistaken.

First the, it appears by many experiments which I have made, (and which any other person may take) that all soils whatsoever were originally pure sand, which being mixed with various juices, appointed by nature for that purpose, do thereby differ in their colous, texture, smell, &c.

This is most easily illustrated.

Take of any kind of dry sand divers quantities, separate from one to another, and mixing them severally with different liquids, as water, milk, oil, wine, &c. you will instantly behold the sand, which, when dry, was of one colour, will be then changed to several colours, according to the differences of the liquids; and if you so mix and work the said several parcels od sand into solid lumps, and place them in the sun to dry those mixed with the water, milk, and wine, will fall down into heaps of dry and loose sand again, as at first, whilst that mixed with oil will become a compact solid hard body, and of a clay texture.

From this experiment we may reasonably believe, that all clays are no other than sands incorporated with oily juices, which so much resist the penetration of watery particles therein; and it is from this very principle that clay bricks, which will not permit the penetration of water in the interior parts of the clay, are the most compact and sounded bricks that are made; for since that their oily particles will not permit humid particles within by raresaction, as I have observed and explained before: and since that there is much sulphur contained in oil, it is therefore that clay bricks are so thoroughly burnt, without the help of Spanish mixed therein.

To enumerate the many kinds of brick earths, would be an endless and useless task, since they differ according to the more or less quantity of sandy particles mixed with the oily, or rather the Clay particles, which, to make the case more intelligible, I will substitute as a pure earth by itself, as sand is.

Hence this evident, that the greater quantity of sand is mixed with clay, the less quantity of oily particles will be contained in the whole, and therefore the body will be less compact, and easier penetrated by water: and since that the oily particles are thus lessened, the quantity of sulphur is also lessened proportionably, and consequently bricks made therewith, cannot be so perfectly burnt within, as when the oily particles were in greater abundance, and therefore this impossible that such bricks can be thoroughly burnt as they ought to be; for since that the power of the sulphurous particles within are made less than is necessary, it therefore follows that if the outsides of bricks are burnt but enough, their interior parts will be as much wanting thereof, as the quantity of sulphur abated by the extraordinary mixture of sand with clay; and on the contrary, when the heat applied is so great, as to burn the interior parts of the brick as much as a sound brick requires, at the same time the exterior parts will be over-burnt, and become what workmen call Clinkers; that is, by the too great heat they are in some degree melted, whereby they run into various irregular forms, caused by their own gravity, and are thereby rendered unfit for outside use.

Now from these proofs I am apt to think, that the use od Spanish, which burns within the brick, is absolutely necessary, provided that this used with discretion, according to the nature od the Brick Earth; for a strong earth has less occasion for such help than a light earth, as having a greater quantity of oily and sulphuruos particles therein; and until Spanish is allowed to be used in such manner, I must questioned that we shall see such good bricks made again, as I am a witness have been made therewith; but a too great quantity thereof will, when used to exceeds, destroy the spirit and strength of the earth; as wine or brandy will, immoderate drank, the constitution of making.

3.- whether or no the complaint of burning bricks with Breeze (which is cinders of sea-coals) is injurious,, I will not take upon me to determine, since I'm not a stoker, as many of them were, if my information is right; but this I can justly say, that I have known many clamps of brick very thoroughly burnt therewith in my own parish of Twickenham; and I have always observed, that such fires were ever more free and penetrating, than those made with fresh sea-coal only, which at the first is rather too violent.

4.- I cannot but join with the Company, in the Complaint of place bricks being burnt in the exterior parts of the same clamp with the stock bricks, which undoubtedly renders the place bricks least burnt, and particularly in windy weather, which very much affects their burning.

And in consideration that place bricks are chiefly used in foundations, which support the entire weight of buildings, it is highly necessary that they sound be perfectly burnt and sound, left, by submitting to the pressure laid on them, the building is injured thereby.

5.- as to the alteration of the dimensions of bricks, I think it to be a very great injury to the public: as first, by their extraordinary size, they are rendered the more incapable of being thoroughly burnt without the help of Spanish, and consequently cannot be perfectly sound. Secondly, to burn these augmented bricks in as good manner as is possible, there is much greater quantities of coals required, and the labour much greater in making , whereby their prices are now raised from 11 and 12 s per thousand unto 18 and 20 s per thousand, and the increase of their solid quantity nothing comparable with the increase of their price. Thirdly, by heir increase of magnitude, they are thereby rendered so very unhandy to workmen, that they cannot perform so much work in a day as before; wherefore I humbly conceive, that when the whole is judiciously considered, it will appear to be a direct injury done to the public, and which our wife legislators will undoubtedly redress upon due application made.

Fourthly, of TILES.

By and act made in the 17th of Edw. IV it is enacted, that the dimension of the tiles be as follow.

A plain tile to be in length 10 inches and a half, in breadth 6 inches and a quarter, and in thickness 5 8ths od and inch at the least.

A roof or cross tile in length 13 inches, depth as convenient, and thickness as the preceding.

A gutter and corne tile, in length 1o inches, with convenient breadth, depth or thickness. And

By the preceding act of the 11th of geo. I. Pantiles, when burnt, shall not be less than 13 inches and a half in length, and not less than 9 inches and a half in wide, and not less than half an inch in thickness.

Fiftly, with respect to the lengths od joists, rafters, &c. 22 Car II

Is enacted, that no joist bear at longer length than 10 feet, and no single rafters at more than 9 feet.

That roofs, window frames, and cellar floors be made of oak.

That (…) falta parte del libro.

AUTOR	Edward Oakley, Architect, MM	
TÍTULO	MAGAZINE OF ARCHITECTURE, PERSPECTIVE & SCULPTURE IN FIVE PARTS. Part the first. GEOMETRICAL, practical and useful problems; for the describing of circles, ovals, arches groyns (regular or rampant) & polygons and mouldings made use of in Architecture: the handrail to stair-cases; and wreathed columns; ionic capital antient and modern volutes; and to flute columns and pilasters. Part the second, plain and easy directions for the construction of the five orders of architecture, with their impost & arches, plans, elevations and profiles (accurately described by feet, inches & parts; likewise by the customary measure of modules and minutes frontispieces and windows: ornaments for mouldings, capitals and freezes; freets and flowers; enriched pedestals for statues: compartiments for domes, soffites of arches & pavements: of the proportion and ceiling of rooms; and designs of obelisks. Part third: on the disposition and regularity of Stair-cases; with several necessary improvements, wherein the symmetry required is preserved in the steps & halfpaces &c. also in the rangeing ballisters & ornaments. Part the fourth: a most easy & expeditous method to delineate in perspective; all designs relating to architecture after a new manner, wholly free from the confusion of occult lines. Part the fifth, the parts of human-body, described with the nature od motion reduced to the geometrical rules; to which is added a collection of the most beautiful antique statues, with their parts described as measured from the originals. Engraven on 96 copper-plates by Benjamin Cole. To which annexed and alphabetical explanation of the terms made use in Architecture. Collected from the most approved authors, antient and modern; particularly Palladio, Scamozzi & Vignola, & made a work of general use for gentlemen. Architects, sculptors, painters, workmen & all personso concerned in building	
AÑO PUBLICACIÓN	Westminster 1730	
HABLA DE_		
Dedicatoria	To the right honourable Sir Robert Walpole, first lord commissioner of the Treasury, Chancellor of the Exchequer, one of his majesties most honourable privy council, & knight of the most noble Order of the Garter. I humbly beg leave to lay the following sheets under your protection, which I have presumed, without previously requesting of you the favour of permitting me to do, and making known my utmost ambition of prefixing your great name to this my performance, as fearing that your modesty, and constant declension of everything that looks like panegerick, or publication od your virues, might deprive me of that honour (…) That you may long enjoy perfect health and felicity, and see all your endeavours for our interest and tranquility crowned with success, shall ever be the sincere wishes of him who humbly begs leave to be, with the greatest submission and respect Sir, Your most obedient, Most dutiful, and Most humble servant, EDWARD OAKLEY	
A quien va dirigido/Prefacio	The following sheets are collected and designed for the assistant and instruction of such persons who delight in, or are willing to proceed after a regular manner in the science of architecture. There is no occasion to make any oration in praise of this noble art; the estimation is bears, with the most judicious part of mankind, being sufficient known; and that it has been, and Is encouraged , studied, and practiced, by the most dignified and renowned. We ought in a particular manner to celebrate the memory of that great restorer of ancient architecture (in this our isle) Inigo Jones, and the most worthy, valuable and indefatigable genius of Sir Christopher Wren; these have embellished the kingdom, which with continued labours	

	and industry of the noble and truly professors of this DIVINE SCIENCE, the right honourable the Earl of Burlington, the honourable Lords Herbert, and Bingley, &c. will leave to posterity most glorious examples of the beauty and harmony of proportion and decoration. But as the ingenious artist and practitioner was obliged to have recourse to many volumes, to find out the different parts of the same science; I have, for their advantage, extracted the most material precepts form our best authors, and reduced them to the easiest practice. I hope the acknowledgement I make, by naming the authors, from whom I have elected, will sufficiently clear me of the imputation of a plagiary; seeing especially, that I return to the publick what I borrowed of them, viz. For the four first parts I am beholden to Palladio, Scamozzi, Vignola, Freart, Perrault, Bosse, Le Clerc, Pozzo, and Sir Henry Wottom; and for the last part to Alberti, Da Vinci, Lomatius, and Audran: and as may collecting from these great men, is no more than what themselves have done from each other, for the benefit of the public; I wish the present and future industrious practicioners, and the curious and impartial readers, may receive a general satisfaction and benefit from these my endeavours for their advantage.	
NOTAS SOBRE EL LIBRO	The contents. PART I. PRACTICAL GEOMETRY ➢ SECT 1.- to describe polygons ➢ SECT 2.- to describe arches, ovals, &c. by the intersection of right lines. ➢ SECT 3.- to describe circles, ovals, rampant arches &c. by the intersection of parallel lines &c. ➢ SECT 4.- of groins, and the formation of niches, &c. ➢ SECT 5.- of the formation of twisted rails, &c. ➢ SECT 6.- to descrive cavetto's, cima, scotia, eggs, anchors, &c. ➢ SECT 7.- To describe circular and oval volute, for ionic capitals. ➢ Sect 8.- to describe wreathed columns. PART II. "The elements of architecture" Sir H. Wotton. "A judgment in general, upon all the authors (cited in the Parallel)" by Roland Freart, Sr. de Chambray "A practical treatise of the five orders of Architecture" on PART III. A treatise on stair-cases, and the several methods of erecting them. (CASA IKEA) PART IV. PRACTICAL PERSPECTIVE PART V. OF THE PROPORTIONS OD HUMANE BODY Leon Baptista Alberti "Of Statues" Jo Paul Lomatius "Of Statues" Monsr Girard Audran "Of the proportions of Humane Body: measured from the most beautiful Antique Statues" An explanation of terms , made use of, in Books of Architecture. Abacus Acanthus Acroterions Alcove Amphiteatre Antique Aqueduct Architrave Areostylos Astragal	

	Attick Apophyges Ante Amphiprostyle. Balustrade Baluster Band Basilic. Capital Cima, recta Column Cavetto Cartouche Caryatides Colossus Cincture Console Contour Cornice Corona Denticles Diastyle Die Diptere Echinus Egg Entablature Entablement Eustyle Entresole Façade Facia Festoon Fillet Fluteings Freeze Frontispiece Fust Gothick Helix Hippodrome Hypethre Impost Intercolumnation Leaves List Metops Minute Module Modern Modillions Mouldings Naked Obelisk Ogee Ordonance Order Ornament Periptere Parapet Pedestal Pilaster Parastate Pillar Pyramid Plat-band Plinth Portail Portico Profile	

	Projecture Proportion Pediment Peer Pseudo-diptere Pycnostyle. Quarter-round Rose Rotunda Rustic Scotia Symmetry Socle Salon Soffit Solive Statue Systole Theatre Torus Trabeation Trigliph Trunk Vestibule Volute Vault Urn Xystos zocolo	
Casa Ikea	PART III. A treatise on stair-cases, and the several methods of erecting them. In placing of stair-cases the utmost care ought to be taken, it being not a little difficult to find a place convenient for them, that will not at the same time prejudice the rest of the building. We must therefore assign them a proper situation, to the end that they may not interfere with the other parts of the house, nor receive the least inconveniency from them. Stair-cases must have three openings, the first whereof is the door by which we go up to them, which the less it is hid from those who enter into the house, the more graceful it will appear; and I very much approve the placing of it in such a manner, as, before out coming at it, may give us a sight od the best part of the house; for then the building thought little itself, will appear very large; wherefore it must be obvious, and easy to be found. The second opening is the windows, necessary to light the stair-case; these must be situated in the middle and be made high, whereby they will diffuse the light equally. The third opening is the landing place, through which we enter into the apartments od the first story; and must lead into handsome spacious, and well furnished parts of the house. Stair-cases to be complete, must be light, large, and easy to ascend; which will invite, as it were, people to go up to them. To make them lightsome, they must receivea strong light, which, as was observed before, must be equally diffused upon all parts of them. They will be spacious enough, provided they be not made too narrowin proportion to the largeness and quality of the fabric; but they must never be narrower than four foot, to the end that when two persons meet upon them, there may be room enough for them to pass; and if they are wide, and of an easy ascent, it will be more convenient to those who go up and down. Steps, ought not to be more than six inches, nor less than four inches steep or in height. The breadth of steps ought not to exceed sixteen inches, nor be less than twelve inches. The ancients,, in the steps of their stair-cases. Always made the number odd; in order of having begun to ascent with the right	

	foot, the might end with the same, however eleven or thirteen steps are most will be sufficient to a flight, and if when we are got so far, we must still go higher, then a landing-place must be made, as well for the ease od such persons who may be either weary or tired; as in case anything should happen to fall from above, thereby to stop it, and prevent its rolling any lower. Plate 57, 58, 59 <Description>	
COMENTARIOS	Es un libro bastante grande pesado con alguna sorpresa. La tabla de contenidos que plantea al principio, no sé hasta qué punto es útil teniendo en cuenta las anotaciones posteriores. En el prefacio el autor te dice que no hay muchas cosas suyas, pero es que literalmente copia los libros de otros (el de Sir H. Wotton, totalmente comprobado por las notas que del mismo libro tengo) los demás deduzco que también. Creo que es original suyo es la parte de las escaleras, que es lo que he introducido en el apartado “casa ikea” El vocabulario, casi por completo es a partir de elementos de los órdenes, y sobre elementos decorativos de materiales de construcción habla nada y de distribución de las casas, nada, sólo en la parte de las escaleras. Bueno, si habla si tenemos en cuenta que copia el “The elements of Architecture” de Wotton, que allí si se habla de las partes de la casa y de los materiales…	

AUTOR	William Salmon
TÍTULO	PALLADIO LONDINENSIS: OR THE LONDON ART OF BULDING.
AÑO PUBLICACIÓN	Londres 1734
NOTAS SOBRE EL LIBRO	PAGINA PPAL. In three parts: Part I.- Geometrical problems. The most proved methods for the mensuration of superficies and solids and these applied to the measuring of all sorts of artifices Works relating to Building. Bricklayers, masons, Carpenters, Joiners, Smiths, Plasterers, Plumbers, Glaziers, Painters, Pavers. The prices of all sorts of Iron work viz. ➢ Nails and exact Weight they ought to be. ➢ Locks, Bolts, Hinges, Latches… ➢ Axes, Hammers, Scions, Chizzels, Augars … With directions for making an estimate of th Charge of any fabric great or small. Part II.- The Orders. Part III.- Contains a description of the several kinds of Stair-cases; the various forms of their twisted rails,… Also the best rules for framing and truffing all manner of roofs, whether square or bevel. Likewise the ground rules necessary to observed in architecture and build in general. The whore exemplified on thirty seven Copper Plates. To which annexed, the builders Dictionary: containing an alphabetical explanation of the terms used in Architecture.
	The Preface: Introducir a los jóvenes en el arte de la proporción, que ha sido dejada de lado en los tratados de Vitrubio, Palladio, Scamozzi, Serlio, Vignola y otros célebres arquitectos => obsesión por el tema: ➢ NO: anteriores más le Clerk y Evelyn. ➢ SI: Halfpenny y Langley. The Contents: Part the first: Cap I, II, III, IV, V, => Geometrie, pag 3 – 44. Chap Vi: The measure of several Artificers works concernen in Building and the prices of their works and materials (pag 45-78) Part the second: Chap I- XXII.- Orders (p 79 – 109) Part the third: ➢ Chap I.- Of Stair-cases (p.110) ➢ Chap II.- Plate XXXII.- Of the several sort of Stair-cases (p.111) ➢ Chap III.- Plate XXXII.- To form the Raking Mould for all sort of twisted rails, with the manner of squaring the rails (p.114) ➢ Chap IV: Plate XXXIII.- To find the different pitches or slopes for roofs, with the manner of framing Truss Roofs (pag 117, 118). ➢ Chap V: Plate XXXIV.- Fig I.- To find the lenght and back of the Hip Rafter with the several skirts in ledgment to any pitch (p. 119) ➢ Chap VI: Plate XXXIV.- fig II.- To find the length and back of the hip to a Besel Roof (p.121). ➢ Chap VII: Plate XXXV.- To find the length and back of the hips to a roof broather at one end that the other and bevel at both ends (p122) ➢ Chap VIII: Of architectonical axions and analogies Seat. ○ Of doors (p123) ○ Of windows (p123) ○ Of gates (p124) ○ Of Halls (p124) ○ Of galleries (p124) ○ Of Antichambers (p124) ○ Of Chambers (p125) ○ Of floors (p125) ○ Of chimneys (125): Hall Chimneys, chamber chimneys, Of chimneys in Studies ○ Of the Funnels of chimneys ○ Of Joists, Rafters and Girders ○ Of staircases (127) ○ Of Materials (127) Part I=> pg 45 Sect I.- Of Carpenters work. Te da las medidas exactas (como mediciones de cada una de las partes que

	realizan: Of Roofs, Of Floors, Of Boarding, Of fencing. Te da una lista de los diferentes trabajos y lo que cuestan=> para realizar un presupuesto. Sect II.- Of Wainscoating, or Joiners Work. "(…) Thus, they girt down every moulding (with a estring) contained between the ceiling and Floor, wich they take for the height of the room and the Circumference of the Room they take for the length, deducting the doors, windows and chimney, the seats of windows, cheecks, sophetas, linings etc. are all to be taken by themselves, also doors and windows-shutters of whole-deal are all allowed work and half work, or double work if two Inch stuff, in regard to their being worked on both sides (…) Sigue una lista de los precios dependiendo del tipo de madera. Sect III.- Of Bricklayers work: "the principal work in Buillding performed by a brick layer are walling and tyling, and what is to be observed therein is: 1.- That the measure by which Brick-work is measured, is square rod, or 10 and ½ feet square, equal to 272 Feet 3 inches. 2.- That the manner of measuring Brick-work hath no sort of difference from any other superficial measure; if the thickness be but equal to the standard thickness; one brick and a half 3.- To reduce a Brick-work of any thickness to the standard thickness of one brick and a half. RULE: contar y medir EEMM. Sect IV.- Of Plaisterers work => Lo mismo (reducción de Ventanas/Puertas/Chimeneas).- EEMM Sect V.- Of Masons Work => IDEM Sect VI.- Of Glassiers Work. Sect VII.- Of Painters = plaisters => of colours used in House-Painting es raro por ello a veces Mandan a sus propios criados para realizarlo; además no necesita "assistance" como si sería de esperar en otros trabajos de construcción. Precios de los colores. Sect VIII.- Plumbers Work Sect IX.- Of Paviors Work. Sect X.- Of Blacksmith Work. TABLAS DE MEDICIONES GENERALES. Part III: 1. (…) To every stair case are required three openings. First, the door-leading to there. Secondly, the window or windows that give light to them, and thirdly their landing. First: the door leading to the stair-case, should be so placed, that most of the B, may be seen before you come at the stairs, and it such a manner, that it may be easy for any person to find out. Secondly: for the windows, if there be but one; it must be placed in the middle of the stair case, that thereby the whole may be inlightned. Thirdly: the landing of stairs should be large and spacious, for the convenient entering to the rooms; in a word, stair-cases should be spacious, for the convenient light and easily ascend: the height of steps must never be less than 6 inches, nor more than 7 inches and half. The breath stesp should never be less than 10 inches, nor more than 15 inches, in making of stair-cases. This rule should be observed, that the number of steps at every landing be odd, and not even, for thereby, when you begin to ascend with your right foot first (as all persons generally do) you will end with the same foot also. 2. Of several sorts of stair-cases : there are rules laid down in the chapter foregoing, for the height and dressing
COMENTARIOS	Tamaño doble moleskino.

AUTOR	Robert Morris of Twickenham
TÍTULO	LECTURES ON ARCHITECTURE CONSISTING OF RULES FOUNDED UPON HARMONIC AND ARITHMETICAL PROPORTIONS IN BUILDINGS, DESIGNED AS AND AGREABLE ENTERTAINMENT FOR GENTLEMENT: AND MORE PARTICULARLY USEFUL TO ALL WHO MAKE ARCHITECTURE, OR THE POLITE ARTS, THEIR STUDY
AÑO PUBLICACIÓN	Londres 1734, (la edición consultada es la de 1759)
NOTAS SOBRE EL LIBRO	Prefacio: critica el diseño de una fachada en Grosvenor Square "le Beau Ideal" Lectures on architecture. Lecture I.- Men from caverns => Society => useful and convenient buildings (laws=buildings) Da varios argumentos favorables a los edificios y su justificación "Biológica". Lecture II.- Naturaleza del hombre está aprender la matemática y la mecánica. La arquitectura no es sólo una ciencia, es algo que se nutre de la imaginación. Arquitecto ha de ser matemático, músico, óptico, historia, y filosofía; de la naturaleza de los materiales y de los 5 órdenes. Lecture III.- History of the Architecture (pasando por los Godos y el Renacimiento Italiano) Lecture IV.- Inigo Jones y Christopher Wren. Análisis del Gótico, de Palladio, de los Órdenes y de sant Paul, construida pr Christopher Wren. Lecture V.- (64) situation, proper designed, foundations in proper soil. Complexion of Inhabitants; the choice of water => Alberti. Lecture VI.- Proporciones de las habitaciones, fachadas, pisos, para enoblecer el edificio. (91) R.I. To find the height of the opening of the Chimney from any given magnitud of a Room, and the length and height of the room together, and extract the square rout of the next sum, and half that root will be the height of the Chimney. RII.- To find the Breadth of a Chimney from any given magnitude of a Room, add the length, breadth and height of the room together, and extract the square root will be the height of your Chimney. Rule III.- To find the depth of a Chimney from any given Magnitud, including the Breadth and the Height of the Chimney together, take one fourth of that sum, and it is the depth of the Chimney. Rule IV.- To find the side of the square of the funnel proportion to clear the smoke, from any given depth of the chimney, take three fourths of the given depth, and that sum is the side of the square of the funnel. - Observe only that in Cube Rooms the height is equal to the breadth, and foregoing rules are universal. - CUADRO. Lecture VII.- La iluminación de las habitaciones depende de las proporciones de la habitación y de la situación- hay una necesidad frío-calor. Stair-cases: so placeded and well illuminated, continuous to the center of the Building, or else more than one in Number and so placed, that each room may be near them, and have an easy acces to them, with out incomoding any of the rests of the rooms: their going should be large, the tread broad, and the rise easy for principal stairs; for back stairs, less of each is required being more servile Uses than Grandeur; and they should be so placed as to be more remote from the eye, and the more common apartments of the Building, either as they lead to servants lodgins-rooms, or are Access to the useful Apartments in the lower offices of the Building. Their form is various, as Rooms are, but one Observation in necessary, which is, that the flights be not too long, and to have no winders in principal stair-cases: the first give an un easiness, and soon we are the ascender , for want of the half-paces to rest on, and the latter is very incommodious, if by Chance two Persons meet on Stair-Case with winders, and the going is not more than ordinarily large, their passage is incommoded, and often proves ill convenient. Buildings in town require contrivance more for convenience than grandeur; the rooms cannot be so spacious as those in the Country, but however Regularity is not to be observed, the chambers or Lodgings-rooms, require to be as far from noise and tumult of the street as conveniently can be placed, and so near a Stair-case, that if any accident by fire (which to frequently happened, an easy access muss be had to it; for which purpose all back-stairs in Town-Houses, as they generally are carried from the lower offices to the roof, should be of stones, and the walls of them stucco, that no Danger might prevent the safety of getting down them, to avoid the fury of the Flames; and such which are placed about the middle of the building and illuminated by a sky-light, are by far the most convenient.

As in Town Houses, so in the Country the Kitchen should be remote from the house, the steams arising from thence are offensive, and the extream heat of it often renders the apartment over it very irksome to bear: the servile offices are best always to be some distance from the main building, the house will be less troubled with noise, and less incumbered with such things which are required to serve the purposes of a family.
(…)
When we consider the Dress of a Fabrick, either in the internal or external part, it is the Architect is to knew no skill; he is to adapt that to the magnitude, or situation of the building, always rather below Profuseness, than to attempt it. Dress is the most expensive part, either within side or without; but wherever Enrichments are applied, they should be few, and more particularly without side. If carving is to be introduced to Ornaments, it should be in such places as are defended from the weather, as in cornices &c, for where Snow or Rain can lodge in it, they are of a decaying Principla, and Time will soon waste away those tender parts, the beauty of it will fade soon; for the parts where the rain lodges will receive Dust, and when it overflows, that will stain and fully it, which Inconvenients would be prevented were the members entirely plain.
Stone will endure long but among those we have, Portland is the most beautiful as well durable; and if a front is not wolly of stone, the dress to windows, Strings, Fascia's, Cornices, etc, will be very agreeable; but of all things stucco, or finishing, to external uses, are to be avoided; a few years destroys it, and its colour soon fades; if it be painted, it will prove a continued expence, and the incidents of the seasons will ever destroy it in a little time.
In buildings of brickwork, a Plinth of stone is requisite, though no dress is applied to the other parts. Stone is not only more durable, but as they are in large pieces for the Foundations, they will be better Tie, and not so easily crushed by the Weight above, to occasion a Settlement. The Rains which fall near Foundation from a Cornice, etc often penetrates into the join of Brick work, and by the means weaken it, and if it required to be cleaned can not be so well done as Stone, but then it may be observed, that wher-ever it be used, it will be an enlargement of Expence.
Arquitecto: inteligente para los materiales y la gente que los trabaja, discerner cuales serán más útiles, adaptando materiales y formas; parte de su juicio lo ha de usar en el Orden, la regularidad y la conveniencia de la fábrica, si consigue un "atractivo" diseño con la fábrica puede ser tan bueno como hecho con el Mármol y proporcionar el mismo placer.
Lectura8 (p119) Ornaments and Proportions.
Exactas proporciones para distribuir los pisos y las habitaciones/escalera de la casa. Te marca una ventana veneciana en la escalera para iluminarla.
(p125) (…) It may be further observed, that each room has a communication to the Stairs, and to each other, without incomodating any, and renders them private as well as regularly proportioned.
(…) The Stairs like wise I would have of stone for the safety of the inhabitants in case of Fire. The walls of the principal floor should be wainscoted with Deal, and the Cornices plaistered and enrichted in proportion to the external dress of the design; boarding the Floors with the best fort of deal, and enriching the ceilings, especially in the room marked B in which the Chimney piece, the Dress and ornaments to the doors and Windows, => elegant.
Compara arquitectura (ornamentos/fachadas) Inglesas/Italianas.

LIBRO II.- ha leído más y quiere explicarlo.
SITUATION=> se refiere al 4º acto del "Rey Lear" de Shakespeare, se siente inquieto, ha llamado libro a algo que no lo es.
Lecture IX.- (pag 136) (…) The Orders of architecture are only the dress and garnish of Building; proportion is the principal basis; and tha appliying those proportions to proper situation is the most noble, the most extensive, and difficult branch of the Art.
Circunscribe las partes del edificio en cubos y círculos.
Sitúa el diseño tanto en el camino principal, si tiene o n río cerca (preferible) los bosques, las vistas…
(…) The distance from any town I would have at least a mile, and, fi posible, oen Vista to it from the Venetian Window in the Room marked N, making that the chief Reception for company; and by having your window, to the south and east Fronts, you would cender that room less cold in the Winter. The kitchen I would place at the east end of the House, and to be built low, in the fose. The access to the house, for common uses should be level of the Ground, and by the Stair-cases marked L; so the groud floor of the house would be no way incommoded by servants, but wholly appropriated to the uses of the master or Principal of the Family.
If the situation would admit, I should choose some Verdmurt hill to the North Front, at about a Mile Distance, to Shelter the grosse on that side, the house lying as it where on third of a circle round, that would render the residence there in winter more tolerable; the south Front being all open, and the Prospect no way interrupted, joined with the little walks and avenues out through the woods, would always be agreeable.
TOTALMENTE CALCULADO.
(…) The two stair-cases marked L, are designed to be of Stone, and to be continued from the lower offices to the attic Story. That marked I, to be of wood and to go no higher than the chambers over the Rooms marked C, and G, in the thickness of the walls at the Passage M, which may be had under the Stairs adjoining to those leading to the loner offices.
(acabados interiors)
Lecture X: Villa=> describe el lugar perfecto.
Building in cities (p161)

	(…) I would propose the public or common Access under the room marked D, which should lead by a Passage to stairs at the west end of the Building. These lower Offices I would propose for the use of the House, should be placed between the stables and House at the west end, hot joining to Either. The Offices under Ground should be paved with Stone. Lecture XIth: compara las diversas bellezas mundiales con diseños del arquitecto. Lecture XIIth: otro edificio => descrito hasta el detalle. Lect XIII// Lect XVIth describe diseños de casas.
COMENTARIOS	Es un volumen pequeño (doble moleskino). Muy bueno.

AUTOR	Abraham Swan
TÍTULO	THE BRITISH ARCHITECT: OR THE BUILDER'S TREASURY OF STAIRCASES … / THE WHOLE BEING ILLUSTRATED WITH UPWARDS OF ONE HUNDRED DESIGNS AND EXAMPLES, CURIOUSLY ENGRAVED BY THE BEST HANDS ON SIXTY FOLIO COPPER PLATES.
AÑO PUBLICACIÓN	Londres 1750
NOTAS SOBRE EL LIBRO	**I:** El más sencillo inteligible y expeditivo método para dibujar los 5 órdenes, que nunca ha sido publicado, en la escala de doce, igual partes, libre de esas problemáticas divisiones llamadas partes alícuotas. Enseñando sólo como llevar a cabo columnas y capiteles. **II:** Así como cajas de escalera (esas útiles, ornamentales y necesarias partes de un edificio, nunca suficientemente descritas en un libro, antiguo o moderno) enseñando la mejor manera, con una gran variedad de curiosos ornamentos, donde un caballero puede fijar cual le gusta más, hay ejemplos de todo tipo; y las directrices necesarias para que cada persona sea capaz de llevarlo a cabo. **III:** El diseño de los arcos, puertas, y ventanas. IV: Gran variedad de nuevas y curiosas piezas para chimeneas con el gusto más moderno y elegante. **V:** Curvaturas, despieces y otro tipo de decoraciones. **VI:** Algunas útiles y necesarias reglas de carpintería, con la manera de hacer cerchas para cubiertas y la naturaleza de un cerramiento circular, tanto la pared de forma recta y como circular, nunca antes publicada. Junto con la descripción de la formación de aleros, cornisas aristas y ángulos. Entra hablando de los órdenes: TOSCANO, DÓRICO, JÓNICO, CORINTIO, COMPUESTO. ➢ De los arcos de los órdenes. ➢ Algunos diseños de Palladio de arcos y sobrearcos. ➢ El diferente diseño de puertas. ➢ Algunos diseños de puertas y ventanas. ➢ La esquina de una puerta y una ventana o la chimenea. ➢ Dos diseños de cornisas de puertas y ventanas. ➢ La manera de proporcionar un pedestal de escalera. ➢ Otra clase de pedestal de escalera. ➢ Diferentes clases de barandillas y pasamanos. ➢ Otra clase de pedestal de escalera. ➢ La sección de una barandilla. ➢ Un alzado del lateral de las escaleras.

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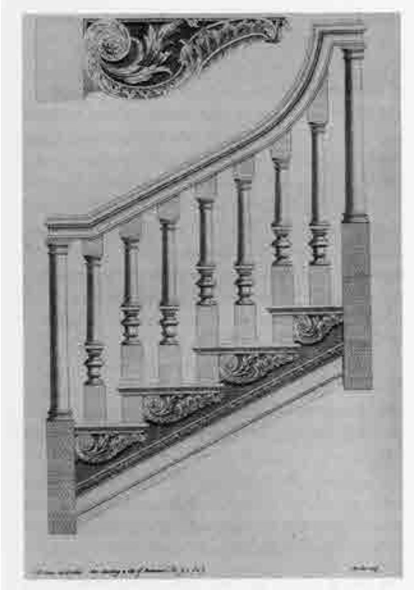
A. Swan, The British Architect (1745), plate XXXIII.

Una escalera de dos alturas (tramos).
Una escalera con tres alturas (tramos).
La forma de encuadrar uniones de los pasamanos.
Caja de escalera “dog-leg”.
Cornisa para chimenea.
Diferentes cornisas y arquitrabes.
Algunas diferentes molduras para marcos.
Una pieza de chimenea con un marco por encima, para una pintura decorativa.

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<td>COMENTARIOS</td>
<td>Es un libro más grande que los demás, pero es muy curioso porque son ilustraciones comentadas.

La verdad es que resulta útil y entretenido, sólo que se limita a dar diseños, no habla de materiales de construcción ni de la manera de hacer un cimiento.</td>
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AUTOR	Alexander Carmichael and John Brownlie, Masons	
TÍTULO	EDINBURGH SMOKE DOCTOR. Containing: Part I: An exact Method of carrying up Vents in new Buildings, to prevent Smoke, with observations upon the Errors of the vents in Old Buildings, by way introduction. Part II: The causes of smoke in Old and New Buildings, especially in and about Edinburgh. Part III: A Description of several machines for the tops of Chimneys, to prevent Smoke. The whole illustrated and explaines with copper-plate cuts	
AÑO PUBLICACIÓN	Edinburgh: Printed by Hamilton, Balfour, &Neill 1757	
HABLA DE_		
Dedicatoria	To the honourable GEORGE DRUMMOND Esq: One of his majesty's Commissioners of Excise at Edinburgh. The Royal Infirmary, and the Royal Exchange, together with the other great schemes you have contrived for beautifiying and improving this capitol, are such monuments and proofs of your public spirit, and Zeal for the Good, of your country, as justify the Choize this city hath so often made of you're their Chief magistrate; likewise encourage every citizen to hope, that he shall have your patronage in every thing he attempts for the Public Good. 'This thus we are encouraged to dedicate this little performance of ours to you. The Design of wich is to improve Branch of masonry, which tho' of great importance, has been much neglected. We would fain hope, that what have said on this subject will be of some use. And we humbly intreat, that your Honour, who was lately at the head of the honourable and antient Fraternity of Free masons, will indulge two Brethren in their Desire to have your Name prefixed in their work. We beg to assure you, that we join heartily with all lovers of Masonry and their country, in praying that your useful Life may be lengthened out, so as that you may live to see these Public Works, for adorning this city, to which you have already given such happy Beginning, carried into Execution. We are, Honoured Sir, With all due Respect, Your most obedient And obliged humble servants, Alex. Carmichael John Brownlie (Grand Master of Scotland in the year 1753)	
A quien va dirigido/Prefacio	As smoke is a great grievance to the eyes of the ladies and Gentlemen, and likewise spoils and abuses the furniture in any Room, but much more especially the fine Linens, Lawns, or Cambricks, as well as Silks, which ladies do wear: So our Authors being to use their utmost Skill and endeavour to cure Smoke, they hope that they will not be carped at by Critisc, for the Want of a nice and fluent Style of language; such fluency of Discourse, and Elegance of Style, cannot reasonably be expected from them, as they are Machanics, and intend to observe Plainness in their Delivery of the following Directions to prevent Smoke. Yet, after all, if any shall be found to critical	Como el humo es un gran agravio

	(notwithstanding our Authors their ingenious confession) to carp at their Way of Delivery, and show their spleen threby, le such remember, that tho' they cannot cure them of that spleen so raised (which they do not undertake to perform) yet, perhaps, they may cure them of a far more dangerous Spleen, occasioned by the effects of, and Provocation given by smoke (which they di undertake to perform) As for Gentlemen and Ladies of Worth and Merit, upon whose Goodness our Authors rely, and are well assured, that the Cure of Smoke being performed by them, they shall have their Approbation. Mechanics, who shall have occasion to follow the design to their Employers, as well as their own satisfaction. There are a great many of our Brethren who understand the Cures of Smoky Vents; but, as none of them have thought proper to publish Directions thereanent, this has induced us, amongst other reasons, to exhibit this Treatise to the Public. Amongst those of our brethren mechanics, who undertake the Cure of Smoky Vents, there are some who being Strangers in this City, cannot possibly form any Right Notion of our Vents here in this City, and to more frequently mistake than cure, whatever Pretensions they may make. Those then of our Brethren, and those only, who having long been employed in and about this City of Edinburgh, are the surest Doctors of smoky Vents; the situation of Edinburgh with its lofty buildings being so precarious, that he who understands the Cures in Vents andy where else. As we have made it our endeavour to observe Plainness, so as much as possible we have studied brevity: Intending thereby, that as Gentlemen should not be made impatient to know the meaning of any machine herein described, or other Directions herein given, by the Tediousness or obscurity of the descriptions thereof; so likewise that Gentlemen's time of Bussiness might not be interrupted by the perusal hereof, but rather that they might read it in a few leisure hours, at their own proper convenieny. Farewell. A.C. J.B Advertisement A C and J B continue to carry on their Employment of curing smoky Vents, as usual, to the general Satisfaction of Gentlemen and ladies, who have employed them, both town and Country.	
Casa Ikea		
NOTAS SOBRE EL LIBRO	The Edinburgh Smoke Doctor. Part I.- *An Exact method of carrying up Vents in new Buildings to prevent Smoke, with Observations upon the errors of the Vents in old Buildings, by way of Introduction.* As our intention in this treatise is chiefly to cure Smoky Vents, we hope it will not be improper, by way of introduction, to give a general scheme of building and carrying up Vents; which when wrong performed, occasion smoke, and are, as errors in the first concoction, not easy cured. As there are different degrees of Vents, we shall distinguish them the usual names of Kitchen-vent, Bed-chamber Vent, and large Dining-room or Gallery Vent. The right founding of all which we have to the option of the Mason or Architect employed therein; and shall here begin from the top of the Chimney-piece. First then, as to the Kitchen-Vent. Bring on your outcoming side from the top of your jambs, where-ever you are designed to land next story, with a little rounding above the jamb; likeways the flying side must be brought forward rounding all the way to meet the oncoming side about a yard above the lintel, the proper distance being 15 inches square. Then fall back with your flying side till recover your oncoming	

side with a gradual turn, not too sudden, and from that place where you recover to the level of your side-walls; the proper distance is 13 inches square. Next, from the level of your side-walls to the heigh or top of your Vent one foot or 11 inches square is the proper distance, always remembering to carry on your Vent gradually from the larger distance towards the lesser, as above directed.

SECONDLY, the Bed-room or chamber Vent. Two feet above the lintel you must make your oncoming side and flying side meet within 12 inches square, rounding all the way from the level of the jambs, and from thence upwards about 10. Confine it gradually to 11 or 10 inches square: from thence carry it to the level of your side-walls, if you go 6, or 7, or perhaps fewer stories high; thence to the top of your Vent bring it gradually in to 8 inches square, with your turns always gradual if possible, and your backs always plumb if not falling back.

N.B. it is many times very difficult for the Master Mason to observe these proportions in this city; because, whyle the building is going on to according to the first plan, the Master Builder or Emplyer (some new notion or other coming in his mind, such as window, or press-room, or some other convenientcy) causeth an alteration of the first plan , and harms or mars the mason very much in his scheme or design: likeways the Master Builder or Employer is apt to reflect upon the Mason afterwards, whereas he himself is to blame. Our advice therefore is, either not to alter the first plan, or else take the advice of the Mason anent the alteration; but it is better not to alter it at all.

Thirdly, large dining room or Gallery Vents. You must bring on the oncoming side and flying side about a yard above the lintel to 14 inches square, rounding from the top of the jambs to the above mentioned height; from that height carry it up 9 feet gradually, confining the above distance to 12 inches square: and from thence to whatever height you go to the top of your Vent. Finish it at 9 inches square, always observing to carry the back of your Vent plumb (if not falling back) and your turns as gradual as possible.

Lastly, Garret Vents or upper stories. Their proportions are much the ssame with Bed chambers Vents; only we must observe, that they are commonly build or carried up to straight or perpendicular, and in old Buildings especially, where the Vents are generally to wide at the top, so as the daylight shines down upon the grate below, which makes them the worst going Vents in the whole land or building. One advice therefore in that case is, that in a new Buildings you keep back your other Vents on each side of the side-wall or gavel to give room on any side to carry up your Vents in a curved line till you cover the whole of your Chimney-piece below; at least so far as to hinder, the day-light from shining down the Vent; For when a gradual turn is made, it gives the smoke more strength to go forward. Whereas when the Vent is carried straight upwards or perpendicular, the shortness of the draught causeth always a flan of wind on the top.

PART II.

The causes of Smoke in Old and new Buildings specially in and about Edinburgh.

In old buildings, as we are many times employed to slop and contract the Vents to the forementioned proportions, which oftentimes causeth trouble and expence, so we judge it our duty to inform the public, as well as young Mechanics in town or country, how to prevent the like for the future.

First, the vents in old buildings occasion Smoke when they are too wide built, which they commonly are; and we having our rooms generally pretty closs, the suction below has not sufficient force to drive up the smoke, especially if there be the smallest flan of wind in the top; whereas when the Vents are carried up according to the foregoing proportions, or contracted and brought in to the same proportions , the suction below becomes stronger, and drives the smoke up with force notwithstanding of a fland of wind on the top.

Secondly, in common Vents where the sides are parallel, which is commonly the case in old buildings, the Smoke easily spreads into the corners, and the least agitation throws it into the room.

1st, Because when it is in these corners it is less pushed upwards, as being no longer over the fire, or directly above the fire.

2nd, Because the air from the room striking with more force upon the middle of the chimney where the heat is, it becomes more extended by rarefaction, and puching the smoke still against the corners of the Chimney makes it recoil and go back into the room.

3rd, if the air be driven forcibly into the Chimney, as it happens when window or door is open, that air driving the smoke violently against the back of the Chimney, it will whirl about the corners, especially if a wind at the same time blows down the Vent.

Thereof parabolical hanches or sides, and a Vent carried up whose wings are bent in curved lines, will take off these last mentioned inconveniences: for first, you take off the corners where the Smoke used to stagnate, and then come back into the chamber: Next, this confines all the Smoke over the fire, which drives it upwards with force, and so it has more power to resist the air at the top of the vent; lastly, the air of the room presses against the smoke, whilst it is over the fire, and so drives it all once up the Vent.

Thirdly, Air hinders Smoke from comin out. The external air above the Vent hinders the smoke from coming out at the top.

1st, when it is too thick for the Smoke to break thro'it.

2nd, when the Chimney is commanded, tho' the weather be very calm, and the air clear.

Fourhtly, the winds not only hinder the Smoke from coming out, but beats it beck into the top of the Vent, where they also blow down sometimes with such violence as to drive the ashes and coals about the room.

1st, wind hinders the smoke from coming out, when Chimneys are commanded on andy side; as when they are near any great building, near a steeple, a tower, an higher house, or the side of a mountain; or perhaps in the country, near to woods,, &c, they are apt to smoke, tho' the winds is scarce sensible; especially when it comes from the side opposite to that which commends them, because the many stops that it meets with make it rest at the top of the Vent, and even drive into it by its increased spring,

naturally going towards that place where it is least opposed.
2ndly, when the winds are violent, this inconveniency greater; because such winds not only hinder the smoke from going out, but make it go whatever wind blows, is always more rarified than the outward air; likewise, when the wind blows very fast, and has a great degree of velocity, if its horizontal direction makes it slide over the top of a vent, it is because it meets with nothing in its way; but, if it meet with a rub, or any obstruction beyond the Chimney, the rarefaction of the air in the Chimney under it, lessens or takes off from the push upwards against the smoke; and by consequence gives it a pressure downwards.
3rdly, when a Chimney is near enough to the place that commands it, and the wind is strong, it may be apt to smoke, tho' the wind blows from that part where it is commanded; because the opposition that the wind meets with, increases the spring of the air, and, making it to be condensed in that place, as soon as it is passed over the obstacle, it pushes downward into the Chimney, where it meets with least resistance.
4thly, Tho' a Vent is not commanded, the wind may blow into it, especially if its hole be parallelogram, and the wind runs along its longest sides; and indeed, in any position of the hole, a north wind, which commonly blows downward, may beat into it.
Fifthly, too wide a hole at the top of the Vent causeth smoke.
1st, because the wind may easily blown into it then, being too wide and disproportioned to the distance or wideness below.
2nd, Because, as the parts of the air move every way, the resistance that they meet with on any one side, diminishes the spaces between them, and so both condenses the air, and increases its spring; then, as in the former case, the Smoke cannot so easily divide the air to get up tro'it.
PART III
Description of several machines for the tops of Chimneys, to prevent Smoke.
Before we entered upon this description, it is proper we should give some reasons for the necessity and usefulness of such machines, in cases where the Smoke cannot be cured int the ordinary way, either in old or new buildings.
Having formerly shown, that the structure of old Vents, as they are generally built, causeth Smoke, and that the best method to prevent smoke is by the new structure, or by contracting the old Vents to the proportions of the new structure: we have likewise given some hints of the causes of smoke in general, even where Vents are most exactly carried up according to this new method. Here we would observe, more particularly, the situation of this city, with is lofty buildings, is so precarious and irregular, with respect to the free passage of Smoke, that some Vents will smoke, be they ever so exactly built: for which many reasons may be give; especially those mentioned in Part II. When this is the case, they cannot be cured without machines on the top, suited to the different causes of the smoke, or situation of the Vent.
Even the very Castle of this city, tho' it stands high, some vents in it do smoke to such a degree, that they are obliged to use machines on the tops of some of the highest of them: tho' indeed our opinion of these Vents in the Castle is, that they either are not built agreeable to just proportions, or else they are stifling vents; for we cannot comprehend what should make them smoke, as their situation is so clear, and free of every obstacle, that we think no flan could affect them, unless it comes from some neighbouring hill, which we will not account for.
As to the City, the case is very different; for, besides the tops of some high buildings commanding the Vents of lower buildings, the southerly winds, viz. the winds that blow from the south-east and south-west quarters of the Compass, do most affect the Vents on the South of the City; and the Northerly winds, viz. the winds blowing from the North-east and Noth-west quarters,, do most aspect the Vents on the North side of this City. Likewise in Summer, as the fun is high in his course, so the winds are generally high, and do not occasion such smart flans as in the Winter; when, as the sun is low, so are the winds low also, and much more violent than in Summer, which is the cause that Vents are more troubled with flans in Winter than in Summer.
MACHINE I. PLATE 1 FIG 1
The Descriptions.
This machine is made of white or black iron; the main body of it is made round, the wideness of it is proportioned to the wideness of the Vent, as the main body of all machines are, with this difference, that it the main body be square, it must be exactly the wideness of the Vent whereon it is fixed; but, if the main body be round, you must allow it to be 2 or 3 inches more diameter than the wideness of the Vent where it is placed, whether it be kitchen, dining-room, or bed-chamber.
Make the square-piece that goes down the vent 9 or 10 inches deep.
The main body of this machine being round, make it 2 or 3 inches more diameter than the Vent, as above mentioned; because the machine being round, unless you allow the circumference thereof somewhat wider than the Vent it is fixed upon, when there is much Smoke, and the Kitchen or room below closs, it causeth a stifling; which is many times an error of the smith's, who makes these machines too narrow.
Let the main body be 3 or 4 feet high, as the situation of the vent requires: there are two axletrees, the lowermost must be fixed within the body of the machine half a foot down, and as small as possible; the uppermost axletree must be fixed upon two supporters, 4 inches above the top of the main body of the machine, with in a hole exactly in the middle of each axletree, to set the spindle into, with an iron wedge thro' the spindle, immediately above the upper axletree, to tallow the top-piece of the Machine to be taken off, when the Vent is to be swept; the spindle must be e24 inches high above the top of the main body, and the thean must be about 8 inches by 10.
The top-piece is formed with two wings, archways, and the middle almost a semicircle; it must hang over the main body about 6 or 7 inches below the top thereof, and 12 or 14 inches above the main body.
This machine is very useful to prevent flans of windd making impression on smoke, especially where it is

not interrupted with closs buildings, and, if right made, scarce ever fails to have the desired effect; but, where it meets with eddie-winds, it makes it take a swift turns, which sometimes occasions a small flan, but is preferently over.

EXPLANATION. PLATEII FIG 1

Draw the two parallel lines AB and CD, representing the main body of this machine; then BC is the top of the body; the prickt line ef shows the lowermost axletree, 6 inches between the main body; and the line gh shews the uppermost the two lines Bg and Ch, are the supporters of the upper axletree, 4 inches high from the top of the main body: MN represents the spindle of headpiece; and the figure T represents the thean; the arches OP represents the body of the head-piece, or back or middle of the head piece; and the two arches QR and SV represent its wings on each side; the two prickt lines Ap and Dq, shew the square-piece of this machine, that goes down the vent to fix it with, being commonly 9 or 10 inches deep.

MACHINE II PLATE I FIG 2

The Description.

This machine may be made of white iron, wood, or in brick-work; if you make it in brick-work, raise it about 3 or 4 feet high, the main body above the cope of the Vent; then place 4 pan-tyles on end, upon each angle of the Vent, as plumb as possible, and make up our port betwixt them about 3 or 4 inches; only notice the port towards that point of the compass from whence the flan comes, that causeth the Vent to smoke, make it up to the top of the tyles.

Likewise you must make two squinted holes opposite to each other in the main body, about a foot below your tyles, to give force to drive off the flan; make these holes about 6 inches square in wideness, and the same in length. The main body of this machine must always be square; and, whether you make it of wood or iron, observe the same directions: As to its wideness, it is proportioned to the Vent whereon it is built, if in brickwork, and whereon it is placed, if in wood or iron, allowing a square piece to go down the Vent 9 or 10 inches, to six it withal.

EXPLANATION. PLATE II FIG.2

Draw the two lines AB and CD, representing the main body of the machine; the line BC shews the top of the main body; the curved lines Bg and Ch, represent the two pan tyles on two corners of the top of the main body; and the figure Bg hC represents the other two pan-tyles on the other two corners; MN and LK represent the two squinted holes.

The two prickt lines Ap and Dq, shew the square-piece of the machine,, that goes down the Vent to fix it.

MACHINE III, PLATE I FIG 3

The Description

The main body of this machine is made of wood or white iron, either round or square, and its wideness proportioned to the wideness of the Vent it is to be fixed upon; make the main body 4 or 5 feet high above the cope of the vent.

Make the box round the top of the main body always square, one foot above the top of the main body; make this box closs all round, and on the top, with a square hole in the middle of the top, and lid or cover for the hole, with iron bands to lift up the lid, when the Chimney is to be swept; this box must be made of wood; likewise you must make this box or head-piece half foot on each side wider than the vent (if neighbouring Vents will allow it) that the smoke may have room to come out downwards round the sides of the main body, as it cannot get upwards and cure the flan. As to the deepness of the box, make it 2 feet and a half, viz. 1 foot above the main body, and 1 foot and ah half below the top the main body; likewise you must make two squinted holes, about 6 or 7 inches square, and the same in length, about 2 feet below the top of the main body.

EXPLANATION. PLATE II FIG 3

Draw the lines AB and CD, representing the main body of the machine; the prickt line BC shews the top of the main body within the box or head-piece; the lines fg and hi are the depth of the outsides of the head-piece; and the line gP&h is the top of the head-piece; and the figure P& shews the lid that opens to swep the Vent;, MN and LK represent the squinted holes opposite each to other in the main body.

MACHINE IV. PLATE 1 FIG 4.

The Description.

This machine is made of wood or white iron; the wideness of the Vent is the rule for the wideness of the main body, which must alwise be square, and about 3 or 4 feet high, besides what is fixed within the Vent viz. 9 or 10 inches; the head-piece must be square also, and the same wideness with the main body, and three times the wideness of the main body in length; that is, one third immediately above the main body. This head-piece is closs above, with a hole in the middle having a lid with iron bands to lift, when the Chimney is to be swept; likewise the ends of the head-piece must be open, with squinted broads on the mouths of the two ports; also you must make two squinted holes in the main body, about six inches square in wideness, and 18 inches below the head-piece: this machine must be placed with its broad side towards that quarter from whence the flan comes; and likewise upon Vents where the head-piece will not incommode the neighbouring Vents, with its projecting ends hanging over the mouths of these Vents.

EXPLANATION. PLATE II FIG 4.

Draw the lines AB and CD, representing the main body; the parallel lines gBCd and qp, shew the cross head-piece; and the lines gb and qh shew the squinted broads on one end of the head-piece; the lines dh and ph shew the squinted broads on the other end of the head-piece. The figure L shews the lid to lift open the top of the head-piece; and MN and LK shew the squinted holes at each side of the main body.

MACHINE V. PLATE I. FIG 5

The description.

This machine is generally made of white iron, and is always round. The main body must be 2 oe 3 inches diameter wider than the mouth or top of the Vent upon which it is placed, and abour 3 or 4 feet high:

Likewise allow a square piece about 9 inches deep to fix it within the Vent. You must make 4 squinted holes in the main body parallel to one another, and about 6 or 7 inches below the head-piece, and 6 inches square in wideness. The undermost part of the head-piece must be 9 inches below the top of the main body, projecting downward, and 4 inches diameter wider than the main body, with its upper hole 6 inches diameter; and 3 supporters from the main body, and within the head-piece, which supporters are also fixed to the upper part of the head-piece. Likeways the lower end of the upper part of the head-piece must be 9 inches diameter, hanging 2 inches over the under part of the head-piece, and 7 inches high, with its upper hole 4 inches diameter quite open. This head-piece resembles 2 milk sytes overturned, and the one a-top of the other.

EXPLANATION.PLATE II FIG 5.

Draw the lines AB and cd representing the main body of this machine; the prick line BC is the top of the main body; LK and nm shew the squinted holes; the two arches f and e shew the under part of the head-piece; the three prickt lines pq, st, and ro, shew the supporters fixed on the top of the main body and bearing up the head-piece, and R shews the hole at the top.

MACHINE VI. PLATE III. FIG.1

The description.

This machine is done in brick-work with flags or flat stones on the top. Carry up your building with bricks 4 or 5 feet high, especially if it be upon and old Vent, and the Vent wider than the proportions described in Part I of this book. Bring it gradually narrow to the top; then place two flat stones on edge with their broad sides towards those quarters from whence the flans come which cause the Vent to smoke. Lay them closs togetherat the top, allowing a little hole in the middle to sweep the Vent. Let the stones be about 14 inches high and 18 or 20 inches long, but the one no longer than the other, to prevent the flan from having an opportunity to take the port, and beat back the Smoke. Also you must make 4 squinted holes for air to drive up the Smoke; each of them about 6 inches square in wideness, and the same length. Two of these holes must be placed one foot below the uppermost.

EXPLANATION PLATE IV. FIG 1

Draw the lines AB and CD representing the main body; BC is the top of the main body; the figures k and k, and p and p shew the squinted holes on each side of the main body; also BF and FC represented the two flags on the top.

MACHINE VII. PLATE III FIG 2

The description.

This machine is made of white iron or in brick-work. If you make it of white-iron, the main body is round; is you brick-work, the main body is square. And if you place it upon an upper story or garret Vent, where the draught is short, raise 6 or 7 feet high with bricks; or if in white iron, make it about 3 or 4 feet high: and if the vent be wide whereon you perform it with bricks, you must contract it gradually narrower towards the top to the proportions described in Part I before you place your top-piece. Likewise, if in white iron, you must make the machine gradually narrower towards the top, if the Vent be too wide. As for the head-piece, take 4 pan-tyles (if the main body be done in brick-work); place them on end with the round side inwards toward the Vents plumb as possible; then take tow thin flags and lay over the tops of each two of the tyles, 6 inches broad the flags, and no longer than cover your tyles: then above these place other two thin flags on edge, laying them closs together at the top. If you make the main body of white iron, observe the same directions as in Machine II, and the same as to the cutting the plates of white iron for the head-piece, always placing the highest made up port towards that quarter from whence the flan comes that causeth smoke.

EXPLANATION. PLATE IV FIG 2

Draw the lines AB and CD representing the main body; BC is the top of the main body; the curved lines BD and ce describe the pan-tyles on the other opposite corners; the lines df and ge shew the flags that cover the tyles; and the lines fh and hg represent the flags on edge above the other flags.

MACHINE VIII. PLATE III FIG 3

The description.

The body of this machine is commonly done in brick-work, raised about 3 or 4 feet high to the bring Vent to a right proportion; and the head-piece must be made of wood or white iron.

This machine is chiefly designed for Vents where two gavels are so near to other as 18 inches, the distance ordered by act of Parliament for and easing drop, and the one gavel a great deal higher than the other.

You must so fix your head-piece as to ly towards the other highest gavel, as in the figure, and make it closs in three sides next to the gavel , and under side half a foot free of the wall to catch the flan, and receive the Smoke, and prevent it from returning back to the vent. You must make and hole in the under side about 6 or 7 inches square, to help to throw out the body at the distance of the gavels or side-walls, with a square hole and a lid with iron bands to lift up above the hole in the under side, to allow the Vent to be swept.

EXPLANATION. PLATE IV, FIG 3

Draw the lines AB and CD representing the main body of this machine; BC is the top of the main body; ef shews the lid to lift up on the top of the head-piece or upper part of it; and gh shews the open hole in the under part of the head-piece; the figure BefkmghC represents the whole head-piece, of which k and m are the extremities.

MACHINE IX. PLATE III FIG 4

The Description.

This machine may be made altogether of white iron or wood, or the main body of wood with and hear-piece of white iron. Likewise you may make the main body in brick-work with an head-piece of white iron or wood, or an earthen pot or cann cast into the proper dimensions. If you make it of white iron, the body may be round; but if in brick-work or wood, the body must be square.

To perform in bricks you must raise your main body 3 or 4 feet high with two holes six inches square squinted downwards, at 8 inches distance below your head-piece; observing to place your holes on the sides where your vent is least touched with any flans of wind. The head-piece must be 2 feet high and 6 inches diameter at the top; and the under part of the head-piece or top of the main body 8 inches square, this machine being fittest for small or narrow Vents, such as bed-chambers or garret-rooms, &c.

EXPLANATION. PLATE IV FIG 4

Draw the lines AB and CD representing the main body; f and g represent the squinted holes in each side of the main body; and the figure BkkC represents the head piece or earthen pot or cann.

MACHINE X. PLATE III. FIG 5

The Description.

This machine is performed by placing two thin flags on edge one foot high on the top of any cope or Vent head; then cover them with another thin flag with an hole in the top about 4 inches diameter, and two open ports. When this is performed make up one of the ports quite closs,leaving only one port open, and the hole at the top to throw out the smoke, which is sufficient if there be no stifling in the Vent, but a flan on the top; observing always to place the broad side of the flags to the flan. This machine is very easily performed, and is chiefly intended for Vents that are carried up to right proportions which do not cause stifling, tho' perhaps the situation of the building may make it liable to be troubled with a flan of wind on the top sometimes troubled with a flan on the top, to make trial of this before thay put themselves to any further changes; as this may be done at an easy rate, and generally proves an effectual cure.

EXPLANATION. PLATE IV. FIG 5

Draw the line AB representing the cope or head of the Vent; the lines Ac and BD shew the two flags set on edge; and the line CefD shews the flag that covers the other two flags;a n def shews the hole in the top always open.

MACHINE XI. PLATE V. FIG 1

The description.

This machine must be made of white iron, and the main body round; make the main body about 5 feet high before you place your head-piece, and the wideness of the main body proportioned to your Vent where you fix it, and 1 foot square to go down the vent. The shape of the main body, as shewn in the figure, has two curves; one of them turning aside from the mouth of the Vent, and the other returning back and going upwards. Make the top-piece 18 inches above the main body to its top-cover; and the top-cover 6 inches high, and as wide as the main body: the rounding of the top-piece on each side to come down below the top of the main body 9 or 10 inches, and at 6 inches distance off from the main body with 3 upright supporters from the main body, and fixed within the head-piece to bear it up. Likeways you must make an hole 4 inches square in the square cover at the top of the head-piece, always open to sweep the vent. This Machine is best placed at either end of a chimney head, or where there is a distance between the bridges to allow room to turn the machine on each side, and is of great service where the draught within the Vent is short.

EXPLANATION. PLATE VI FIG 1

Draw the tow curved lines AB and CD parallel to each other, and representing the main body; the prickt line BC is the top of the main body; the twoo arches ef and gh represent the outward sides of the head-piece; and the line eh shews the under part of the head piece below the top of the main body; the three prickt lines pq, st, and ro shew the three supporters; the figure fmopng shews the square cover on the top of the head-piece; and op shews the hole in the top of the square cover always open.

MACHINE XII. PLATE V. FIG 2

The description.

This machine may be placed where the Vent is carried up the side of a turnpike or the front of any gentleman's building, or where the Vent is carried up by the gavel of side-wall so as to carry the Smoke away round the turnpike or gavel, &c without being observed in the outer court or closs. Likeways this machine adds a good draught to the Vent, as is performed by us at his Majesty's Exchequer in the Parliamen-closs in Edinburgh, upon the south west corner on the east side of the turnpike or gavel be the back of the vent, and its cope or tope of the Vent no higher than the level of the ballustrade, and the Vent not going right; place this Machine with a squa<re piece to go down the Vent 9 or 10 inches long: the wideness must be proportioned to the Vent you fix it on.

The main body is always round, and made of white or black iron. From the cope of the Vent, where you fix it, as shown in the figure, make it turn round all the way; the main body being an inch less diameter than where you fix it. And when you have it off from the view of the court, turn it up with a gradual turn before you place your head-piece. And likeways make an air-pipe to blow, as shown in the figure, 2 feet and an half or 3 feet in length, and as wide as the main body; fixing it at 4 feet above the cope of the vent, and hanging down by the side of the main body to receive the Smoke that it may not return into the room again. Likeways, if the main body of this machine goes any great length, observe to place an air-pipe at every 4 or 5 feet distance the main body contains in its length; making each air-pipe so placed 2 feet and half or 3 feet in length, and near as wide as the main body. Whether you make this machine of white iron or black iron, you must have holes cut in the plates at convenient places for sweeping the Vents; which holes must have lids or covers with iron bands and snecks to shut closs and allow no air to come in.

The head-piece is the same as in Machine III which may be either of wood or white iron; only this head-piece hath but 3 sides, the turnpike or gavel, &c. being fourth; whereas Machine III is head-piece hath 4 sides. As to the height of the box, make 3 feet, viz one foot above the main body and two feet below the top of the main body. Likeways make it 8 inches on every side wider than the main body is at the top, that it may receive the Smoke to go downwards, because this box must be quite closs above to prevent the flan, and open on every side below. This machine must be fixed with iron batts to the turnpike or gavel, &c.

EXPLANATION. PLATE VI FIG 2

Draw the two circular lines AEFB and CD representing the screwed part of the main body; from A draw the perpendicular line AM; and from D draw the perpendicular line DN parallel to AM, representing the piece of the main body fixed at the cope; the prickt lines Mr and Ns shew the square-piece sunk into the cope or mouth of the Vent 9 or 20 inches down. The figure eEFf describes the air-pipe, supposing there is only one air-pipe, but, if there be more, make them according to the foregoing Description, an at their proper distances; the figure LGHK describes the box closs at the top; and the prickt line BC shews the top of the main body within the box. The numerical figures 1,2,3 and 4, shew the holes, with lids and snecks to open for sweeping the vents.

MACHINE XIII. PLATE V FIG 3

The description.

The main body of this machine is made of wood or white iron, or in brick-work, and its head-piece wood or white iron; the main body is commonly square, make 3 or 4 feet high, or more as occasion requires.

This Machine must be fixed on a vent, where its broad side is towards the suspected flan; make the wideness of the main body in proportion to the Vent upon which it is placed ; the cross-piece of the head-piece must lie a-cross betwixt back and bosom of the Vent; and make it equal in wideness with the main body. The spouts on each side must have their outside at the same distance from the main body, that the main body is in wideness; and their inside must be 3or 4 inches from the main body; that is to say, the two perpendicular spouts must be 3 or 4 inches narrower than the main body, having their outer side as far from the main body as it is wideness. The upper and the under ends of each spout must be 18 inches in length above and below the cross-piece is quite closs, with an hole in the middle, having a lid an iron bands to open for sweeping the vent; also you must make two squinted holes, at least as far down in the main body as the under ends of the spouts reach, and about 4 inches in wideness, and de same in length.

EXPLANATION. PLATE VI FIG 3

Draw the lines AB and CD, representing the main body; the line BC is the top of the main body; and the figures e and f shew the squinted holes in the main body; the lines SN and IK shew the length of the spouts; rq and gh shew the under part of the spouts, and op and Lm shew the upper part of the spouts. The figure T shews the lid on the top of the cross piece.

MACHINE XIV. PLATE V FIG 4

The description.

This machine is performed in brick-work, on the top of an upper story or garret of the Kitchen-vent; which supposing it 12 inches square at the cope, where you begin your brick-work, and the Vent carried up perpendicular, which is many times the case with upper stories, and occasions them to be very much touched with flans; this Machine is and approved method for giving a quick draught to prevent the flan.

As to the wideness of this machine, whatever wideness you find your vent, supposing it, as above, to be 12 inches at your founding your bricks, see that you have as much room on either of the two sides or back, as allow you to fly the breadth of your Vent, to the proportions directed in Part I anent Kitchen-vents; before you fix your head piece, always observe that the back of your Vent be either plumb or falling back, many having fallen into errors by not observing this.

As to its height, make it up 4 or 5 feet, or perhaps more, till you get a gradual turn, as shown in the figure, the prickt lines representing the plumb of the bricks on the corners. As to the head-piece, set three pan-tyles on end; and on the side where the flancomes from the open port; then make up a bridge of bricks opposite to the open port, and 8 inches high, at 6 inches distance from the open port, as shewn in the figure; then cover it with a flate or thin flag, which will make two holes 6 inches wide, and 8 inches high, at each end of the open port, to allow the Smoke to get out.

Next you must place 2 or 3 bricks on the top of the flag or flate, to make it up to the level of the pan-tyle; then cover the tops of the pan-tyles with a thin flag, making small hole in the middle of the flag, to allow the Vent to be swept: Observe likewise to leave the other two ports of the pan-tylles pretty open, to allow the smoke to get out; likewise you must make two squinted holes on each side of the main body, about 6 inches square in wideness; the upper two squinted holes must be 1 foot below the tyles, and the undemost two squinted holes must be 1 foot below the upper ones.

EXPLANATION. PLATE VI FIG 4

Draw the two prick lines AB and CD, representing the plumb of the bricks; draw the two lines ab and cd, representing the body of the Vent, then bc is the top of the Vent, and ef shew the squinted holes in the body of the vent; the figure bhTkc shews the two pan-tyles opposite to each other; and kkc shews the hole in the middle of the flag, that covers the pan-tyles, to allow the vent to be sweept; no is the bridge of bricks 8 inches high; and op is the slate that covers the bridge, 6 inches length: likewise the figure nopb shews the two holes, one at each end of the open port, and opposite too one another, 8 inches high, and 6 inches wide.

MACHINE XV. PLATE V FIG 5

The description.

This machine is done in brick-work, and is the same as to its design as Machine XIV; it differs only in places where there is room to place two open ports with two pan-tyles only, set on edge opposite to each other, and open holes at each side of each open port, as shown in the figure; or upon a small Vent, where its boundings to turn it does not require so much room; therefore we refer you to Machine XIV for the description. But you must observe, that this machine, as well as the foregoing, will not answer upon any vent, unless you have room on the top of the Vent to work upon, or curvel out your building, if the owner will allow it. The body of this machine may be carried up to 4 or 5 feet high, or more perhaps, if need require, till you get a gradual turn away from the old Vent, which,, in this case, is supposed to be too perpendicular or straight built up.

EXPLANATION PLATE VI FIG 5

The explanation of this machine is the same with the foregoing, only there are but two pan-tyles set opposite each to other, and two open ports, with an hole at each side of each of the two open ports, which holes are made by the bridges of bricks opposite to each open port, and the flag cever above each brdge, as shown in the figure, and demonstrated in the Explanation of Machine XIV.

MACHINE XVI. PLATE VII, FIG 1

The description

This machine is round, and made of white iron; the main body must be 3 or 4 feet high, and its wideness proportioned to the Vent whereon it is fixed. You must make two holes 9 inches below the top of the main body, 4 or 5 inches diameter, and 6 inches in length, standing out from the main body, to rest the head-piece upon; and the head-piece must be 3 inches on every side, or 6 inches diameter wider than the main body, to give the smoke room to come downwards, when one foot and a half high from the props whereon it stands, of a round form, as in the figure, with an hole in the top 5 or 6 inches diameter, always open to sweep the Vent.

EXPLANATION., PLATE VIII FIG 1

Draw the two parallel lines AB and CD, representing the main body; the figures e and f shew the squinted holes; and the prckt line BC shews the top of the main body within the head-piece; g and h are the under ends of the head-piece, resting on the squinted holes; and ik is the hole in the top, open to sweep the Vent.

MACHINE XVII. PLATE VII, FIG 2

The Description.

This machine is square, and made of wood or white iron; the wideness of the main body is proportioned to the Vent whereon it is placed; make the main body about 3 or 4 feet high; likewise make the head-piece one foot above the main body, and the length of its sides one foot and 9 inches, with two upright supporters from the main body, and two curved holes on two of the sides where the flan is least suspected: likewise make a small hole in the top, 4 inches diameter, always open ot sweep the vent.

Make the sides of the head-piece stand out 6 or 7 inches from the main body, as shown in the figure. This machine is beneficial to cure a flan, where the Vent has a good draught of itself, but touched sometimes with the flan in high windows.

EXPLANATION. PLATE VIII. FIG 2

Draw the two lines AB and CD, representing the main body, BC is the top of the main body; the figure giTkh represents the head-piece; gi and kh are the two sides of the head-piece; and T is the hole left open to swept the Vent; Br and SC shew the two upright supporters within the head-piece; and the figure H shews the two curved holes opposite to each other.

MACHINE XVIII. PLATE VII. FIG 3

The description.

This Machine is made square in brick-work. Make the main body 3 or 4 feet high, or more, according as the mechanic fees proper, to bring the Vent to a right proportion, before he place the head-piece upon it. And, if there be room on any side to fly backward, on either of the two haunches, or the back of the vent, but not the bosom, if it be upon the garret or upper stories, it will give smarter draught.

As to the head-piece, in placing the bricks, you must lay them squint ways on each corner of the Vent, 3 or 4 bricks high, or more, as occasion serves, with a flag cover on the top, and a holes in the middle of the flag 3 inches square, always open to sweep the Vent.

EXPLANATION PLATE VIII. FIG. 3

Draw the two lines AB and CD, representing the main body of the machine; BC is the top of the main body; the figures dB, eC, fg, hi, km, and no, shew the bricks placed squinted ways on the corners of the Vent. The line pTq shews the flag cover on the tops of the bricks; and T shews the open hole in the middle of the flag.

MACHINE XIX. PLATE VII. FIG 4

Th description.

This machine is made square, and of wood or white iron. The main body is 3 or 4 feet high, and proportioned in wideness to the Vent whereon it is fixed. The head-piece is in height 2 feet 9 inches in whole, viz. one foot below the top of the main body, the height of the cross part of the head-piece, one above the top of the main body, and the squinted broads, 9 inches high, and open on two sides. The distance or wideness of the head-piece from the main body is 9 inches on each side. Likewise the head piece is closs above the cross-part of the head-piece, betwixt the two squinted broads, having an hole with a lid iron bands to lift up, to allow the Vent to be swept.

EXPLANATION. PLATE VIII FIG 4

Draw the tow parallel lines AB and CD, representing the main body; then BC is the top of the amin body, within the head piece. The lines eg and fh represent the height of the head-piece; the distances BI and Ck, shew the height of the cross-part of the head-piece above the top of the main body. The lines Ig and kf represent the squinted broads; the line iLk shews the top ot the cross-piende; and the figure L shews the lid that opens.

MACHINE XX. PLATE VII. FIG 5

The description.

	This machine is square, and made of wood or white iron; the wideness of it main body is proportioned to the Vent it is placed upon. Make the main body 3 or 4 feet high. Make the head-pece 2 feet and an half high, viz. one foot above the main body , with two stroups hanging downward by the side of the main body, one foot and and half in length , and each division or stroup 9 inches wide. This head-piece is quite closs above, having a squarehole in the top of the main body, with a lid an iron bands, to open wwhen the vent is to be swept, always taking care to place the stroups on the opposite side to that where the flan touches most. This machine will not answer, where the mounths od the stroups hang over the neighbouring vents; because the smoke in the neighbouring Vents is hurtful, even when there is no fire in the Chimney below the vent whereon this machine is placed. EXPLANATIONS. PLATE VIII. FIG 5 sDraw the lines AB and CD, representing the main body of this machine; then BC is the top of the main body. BF shewa the height of the head-piece above the top of the main body; FG shews the wideness of the head-piece; and T shews the lid to lift up with iron bands for sweeping the Vent; GH shews the height or depthof the two stroups that hang down by the side of the main body; and LI and IH shew the wideness of these stroups. MACHINE XXI. PLATE VII. FIG 6 The description. This machine may be performed either in white iron or wire, and is made either round or square, having no head-piece, but quite open at th top: the wideness of this machine is proportioned to the wideness of the Vent you fix it upon. You may make this machine 2 feet or 2 feet and an half high or more, if upon upper stories or garret vents. If you make this machine of wire, you must plait or twist twoo wires together, and place them in rows, allowing always the thickness or breadth of one wire open betwixt each row, continuing so to do till you make your machine the height you desire. Likeways you must fix your wire upon a frame of wood to go down the Vent the deepness of the cope. If you make it of white iron, let your white iron bridges be twice as broad as the distance or wideness of the opens or vacancies; that is, if your bridges be one inch deep, let the open or vacancy betwixt two bridges be half and inch wide, always leaving as much of the plate whole at the under part of the Machine as fix it in the cope of the Vent. EXPLANATION. PLATE VIII FIG 6 Draw the parallel lines AB abd CD representing the main body of this machine. The lines a cross the body, and parallel to BC the top of the body, and also parallel to AD the basis or cope of the Vents, shew the rows of wires or bridges of white iron. CONCLUSION Now having shewn you various kinds of machines for preventing or curing smoke; and as the causes of smoke are various and differing from one another according to the different situation of buildings in this city, and the various….
COMENTARIOS	Libro peque interesante de principio a fin

AUTOR	Abraham Swan	
TÍTULO	A COLLECTION OF DESIGNS IN ARCHITECTURE: CONTAINING NEW PLANS AND ELEVATIONS OF HOUSES, FOR GENERAL USE. WITH A GREAT VARIETY OF SETIONS OF ROOMS, TO THE MOST GRAND AND MAGNIFICENT. THEIR DECORATIONS, viz. BASES, SUBBASES, ARCHITRAVES, FREEZES, AND CORNICES, PROPERLY INRICHED WITH FOLIAGES, FRETS AND FLOWERS, IN A NEW GRAND TASTE. WITH MARGINS AND MOULDINGS FOR THE PANELLING. ALL LARGE ENOUGH FOR PRACTICE. TO WHICH ARE ADDED, CURIOUS DESIGNS OF STONE AND TIMBER BRIDGES, EXTENDING FROM TWENTY FEET TO TWO HUNDRED AND TWENTY, IN ONE ARCH. LIKEWISE SOME SCREENS AND PAVILLIONS. IN TWO VOLUMES. EACH CONTAINING SIXTY PLATES, CURIOSLY ENGRAVED ON COPPER	
AÑO PUBLICACIÓN	Londres 1757	
HABLA DE_		
Dedicatoria		
A quien va dirigido/Prefacio		(VOL 1) Va dirigido a todos aquellos que quieran construir, que ha observado que todos los libros de este estilo son demasiado lujosos, y sólo permiten hacer casa para gente adinerada y que mediante éste volumen se dan directrices para hacer casas para gente con menos posibles, pero que quieren una casa digna. (VOL 2) Aquí se mete con que la arquitectura es la representación de un país
NOTAS SOBRE EL LIBRO		Volumen I: 1. Decripción de todas las “plates” : de la 1 a las 23 son descripciones de casa más o menos lujosas 2. De la 24-43.- bases y subbases 3. De la 44-55.- cornisas Trufs y arquitrabes y frisos Volumen II: (vuelve a tener prefacio) 1. De la 1-20.- casas 2. De la 21- 24.- decoraciones de una habitación. 3. De la 25 a las 32.- decoraciones de varias partes de la casa. 4. 33.- un error de diseño. 5. De la 34 a las 42.- decoraciones varias 6. De la 43 a la 50.- puentes. 7. De la 51 a la 52 .- marcos 8. De la 53 a la 55 cornisas
Casa Ikea	Plate I: is a design for a house of four romos upon a Floor, with two Stair-cases. The best Stairs are carried up in the center of the Back front; the back Stairs go up in the passage by which servants enter the house. In the following plans you will be find the stair-cases placed in every part of the house, in order to render these designs more generally useful; since different spots of ground, on which houses are built, may require that Stair-cases should be different placed, on account of prospects and for divers other conveniences. Plate II: A design for a house of four rooms on a floor with but one stair case. The best room is 22 feet by 18. The Hall in the back front 26 feet by 14. All the room in this house are private, that is there is a way into each of them without passing through any other room; which is a circumstance that should always be attended to in lasting out and disposing the rooms of a house. I have put but one window in each wing of this house,	Los planos son planta y alzado, tienen las medidas y las distribuciones. En el volune 2 las descripciones no añade valores.

	for the sake of variety, and the better to suit every taste; but another window may easily be added by those who like better. And if the same dressings are continued, no material alteration will be thereby made in the design, and perhaps the little that will be made may be for the better. (…) Plate XVI: a design for a House of five rooms upon a floor with two stair cases. The hall is 20 feet square. The saloon is 30 feet by 24. In the front of this house is a Doric portico, with two columns brought out from the wall. There might be two more upon the two first pedestals, and also two more before them, at such a distance as that a Coach may drive between them; so that person might light out of the coach and go into the house, without being exposed to the Weather. (…) Plate XXIII: a design for a House of seven rooms upon a floor with two stair-cases. The back stair-case goes down into the basement story. The portico has four columns in front of the Corinthian order; from hence you enter into a hall 28 feet by 21. The saloon is 28 feet square, from which you pass into a room, or gallery, of 50 feet by 20. The space; betwixt the window should be as near the proportion expressed in this plan as the Rooms will admit , viz. as 3 to 2, that is, suppose the window are four feet wide, the space betwixt them should be six feet at least; for they had better be more than less, except where the window are not dressed; for then it will not be disagreeable if they are somewhat narrower	
COMENTARIOS	Libro grande, poco manejable y pesado, como todos pretende ser didáctico, están muy bien algunas descripciones esa voluntad de dar las descripciones que dan con la casa perfectamente proporcionada…	

AUTOR	William Chambers, member of the imperial academy of arts in Florence, and architect to their royal highness the Prince of Wales and Princess Dowager of Wales.	
TÍTULO	A TREATISE ON CIVIL ARCHITECTURE, IN WHICH THE PRINCIPLES OF THAT ART ARE LAID DOWN.	
AÑO PUBLICACIÓN	Londres 1759 // E.b.47 (En Edimburgo edición de 1768)	
HABLA DE_		
Dedicatoria	Right honorable John earl of Bute, groom of the stole to the prince	
A quien va dirigido/Prefacio	Commerce brings wealth, and wealth introduces luxury. Pride and pleasure give birth to a thousand refinements; the greater part of which cannot subsists without the assistance of Architecture. Palaces, stately Dwelling-houses, magnificent Temples, public Squares, mausoleums, triumphal Arches, and number of similar inventions are all neither instruments of pleasure. (…) Converting materials of small value into the most stately productions of human skills. With all possible reverence for the memory of those illustrious Artists, it must be granted, that they have been guilty of many omissions, and taught many errors. Their designs are, generally speaking incorrectly drawn, and extremely ell engraved, and the want of method and precision in treating their subject renders the study of it, in their works, perplexing and disagreeable. But later writers have in a great measure supplied their omissions, and rectified their faults: no subject hat been more amply treated of than Architecture, nor any by persons more capable; insomuch that few things remain either to be discovered or improved, every branch of the art having been maturely considered, and brought very near the utmost degree of certain of which it is capable	La arquitectura es la precursora de la modernidad, ayuda a mejorar la calidad de vida y así la gente quiere avanzar/evolucionar. El resto de las artes dependen de la arquitectura, cuando ésta avanza el resto también. Los materiales y la arquitectura van de la mano, no se puede una cosa sin la otra. Divide la arquitectura en Naval, militar y civil, y dice que este tratado es de la última.
NOTAS SOBRE EL LIBRO	1. Of the origin of Buildings.. 1.1. Of the parts that compose an Order of architecture 1.2. Of the orders in architecture in general 1.3. Of the Tuscan Order 1.4. Of the Doric 1.5. Of the ionic. 1.6. Of the Composite Order 1.7. Of the Corinthian Order 1.8. Of Pilasters 1.9. Of Persians and Caryatides. 1.10. Of Pedestals 1.11. Of application of orders of	Dedicatoria; suscriptores. prefacio La historia de la arquitectura desde las cabañas hasta que llegaron a la piedra: los órdenes. Habla de los antiguos, de las molduras y sus tipos, ornamentos frisos… De los cinco órdenes (dibujo de las columnas tipo); hay referencias a los diferentes autores, críticas o preferencias; Vitruvio, Mr Auzoult,

	architecture. 1.12. Of intercolumnations 1.13. Of Arches 1.14. Of Orders above Orders. 2. Of basements and attics 3. Of Pediments. 4. Of Balustrades 5. Of Gates, Doors and Piers 6. Of Windows 7. Of Niches And Statues 8. Of Chimney-pieces. 9. Of profiles for Doors, Windows, Niches, Chimney-pieces. 10. Of the Proportions of Rooms. 11. Of Ceilings 12. Designs for Casines, Temples Gates &c.	Como decorarlos, según los italianos y los franceses, pero no critica como era el caso de Ware, ya que las condiciones climáticas no son las mismas. Habla de proporciones y de lo decoradas que han de estar pero no de cómo afectan al muro, si han de estar cerca de la esquina… Es la primera vez que critica a italianos y franceses (ellos no las necesitan) y considera que el primero en hacer buenos diseños de Chimeneas es Ínigo Jones. No tiene ni idea, sólo habla del diseño, los posibles materiales y la proporción pero no de la construcción. Diferentes plantas y alzados.
Casa Ikea		NADA REMARCABLE
COMENTARIOS	Va a ser un libro muy grande. Es un libro muy crítico, pero en el fondo lo único que hace es contar más de lo mismo, no aporta nada nuevo, conoce los clásicos, pero después de haber leído a Ware, el cual, los respeta pero es consciente de que lo que se construye en Francia y en Italia no siempre se puede poner en práctica en Inglaterra, éste se limita a nombrarlo, como posible ejemplo de construcción, pero… ¿y si no se adapta a la climatología??? Va de sobrado, no me gusta nada, a pesar de que los dibujos son buenos, y alguno muy didáctico, como el del triángulo de Thales, para subdividir una columna…	

P 70 OF WINDOWS

The first consideration, with regard to Windows, is their size; which depends on the climate, and the extend of the rooms they are to light. In hot Countries, where the sun is seldom clouded, and where it rays dart more directly upon the earth, the light is more intense than in colder Climates; and therefore the apertures may be less: and, in small buildings, where the apartments, generally speaking, are likewise small, there is no necessity for having windows of the same size as in large ones, the rooms of which, being commonly spacious and high, require a considerable quantity of light. Palladio observes that the windows should not be broader than one quarter of the room, nor narrower than one fifth of it; and that their height should be twice and one sixth of their breadth. But as in one house there are large, middling, and small rooms, and all the Windows on one floor must be nevertheless be one size, he prefers those rooms of which the length exceeds the breadth in the ratio of 5 to 3, for determining the dimensions of the window. Thus, when the breadth of the room is eighteen foot, and the length thirty, he divides the breadth into four and half parts, giving one of them to the height; marking the Window of the other rooms if the same size.

In England the window of the smallest private house are commonly, from three and a half foot broad; and being twice their breadth in height, or somewhat more in the principal Apartments, they generally mount to within a foot or two of the ceilings of the rooms, which are sometimes no higher than ten foot, and at most twelve or thirteen: but, in more considerable houses, the Apartments are from fifteen to twenty foot high, or sometimes more; and in these the windows are from four to five, and five and half foot broad, and high in proportion. These dimensions are sufficient for dwelling houses of any size in this Country: when they are larger they admit too much of the cold air in winter: but churches, and other buildings of that kind, may have much larger windows, and proportioned to the architecture of which these structures are composed, the parts of which are generally very large.

(decoracion)

(P73) The breast of all the windows on the same floor should be on the same level, and raised above the floor, from two foot nine inches, to three foot, at the very most; when the walls are thick, they should be reduced under the apertures of the windows for the conveniency of looking out; and seats may be contrived in the thickness of the wall, as is the custom in most English Houses. In France, the windows are frequently carried quite down to the floor; and this, when the building is surrounded with Gardens, or other beautiful prospects, renders the apartments exceeding pleasant. But the Iron-work, which in that country, is placed on the outside, by way of a fence to prevent Accidents when the window are thrown open, ought to be avoided; for all the gilding and flourishing in the world cannot make it tolerable. The best way is to compose the fence only of two or three plain Iron-bars placed directly on a level with the cross bars of the sashes, close to them, and of the same colour that they are, which when the Window is shut, will by that means not be discovered.

In HOUSES of State, the brast of the Window in the ground floor must be raised six foot above the Pavement on the outside of the building, to hinder passengers from looking into the Apartments. But when this cannot be done, without raising the floor itself more than is necessary, the lower parts of the window may be furnished with blinds. The tops of the Apertures of the windows, within the Apartments should never be carried close to the cornice of the room, but a sufficient space be left for introducing an architrave, or at least two or three mouldings, round them, without crouding upon the cornice.

The interval between apertures of windows depends, in a great measure, on their enrichment. The breadth of the Aperture is the least distance that can be between them; and twice that breadth should in dwelling houses be the largest; otherwise the rooms will not be sufficiently lightened, and the building will look more like a prison, than a place calculated for the conveniences and enjoyments of life. The purpose for which the building is intended should likewise be considered and regulate the quantity of light to be introduced (…)

The windows nearest to outward angles must be at least the breath of the aperture from them; and a larger distance will render the building still more solid. The windows in all the stories of the same aspect, must be placed exactly one above another; and those to the left must be symmetries with those to the right, both in size, situation, number, and figure. The reasons for all these things are obviously enough, and therefore it is needless to enumerate them. The licentious practice of intermitting the architrave and frize if an order, in the intervals between the columns of Pilasters, to make room for the windows and their enrichments, which are brought close to the cornice, can on no account whatever be suffered in regular Architecture; it being in the highest degree absurd to carry the windows above the ceiling, and a great want of judgment in an architect to intermix and croud together, such a number of rich and complicate parts, as those of the Entablatures of the orders and the entablature of the Windows. Besides, the whole beauty of the order, when so mutilated, is destroyed; its proportions and figure being entirely changed. The interrupting the whole entablature, to make a room for a window, and converting it into a inpost to the archivolt, as we see on the flanks of the mansion-house, is a license equally unpardonable. Sir Christopher Wren was extremely fond of these sorts of mutilations; and every lover of architecture must owe him a grudge for having so unmercifully mangled many parts of the inside of St. Paul's.

(…)

The sashes of windows are generally made of oak. The London artificers excel in these works: they make them strong, though in appearance flight, and extremely neat: the squares of glass are proportioned to the size of the windows; there being commonly three in the breadth, and four in the height, whatever be the dimensions of the window: each sash is composed of two equal parts, placed one above the other; and either the lowermost or both of them, being hung on pullies, are moved up or down with great ease, the cords and the leads that counterpoise the sash being both concealed. These sashes are much neater, and more convenient, than the French ones; which are composed of two vertical divisions, turn on hinges, and are closed with apparatus of iron-work weighing a hundred weight or two. The shutters are always within the Apartments, wherever beauty is aimed at; those on the outside entirely destroying the beauty of the front. They are divided into several vertical slips, folding over each other, for the conveniency of ranging them in the thickness of the wall, each slip or fold is framed and composed of several panels; each of which may be surrounded with small ogee, or ovolo, contained in the thickness of the framing: and when the profiles in the room are enriched, these mouldings must likewise be so; particularly on the fold that faces Aperture, when the shutters are folded back; the front of which must come flush with the inner edge of the architrave round the aperture, all the other folds being ranged behind it.

Of Chimney-Pieces (p78-79)

(…) The size of the chimney depends upon the dimensions of the room where it is placed. In the smallest apartments, the breadth of the aperture is never less than three foot, to three foot six inches: in rooms from 20 to 24 foot square, or of equal superficial dimensions, it may be four foot broad; in those of 24 to 27, from four to four and half, and in such as exceed these dimensions, the Aperture may be extended to five, five and half, or even six foot. But if the room be extremely large, as is frequently the case of halls, galleries, salons, &c. and that a chimney of this size affords neither sufficient heat to warm the room, nor space round it for the whole company, it is much more convenient and handsomer to have two Chimneys of a moderate size, than a single one exceeding large, all the parts of which would be clumsy, and disproportioned to the other Ornaments of the room.

The chimney should always be situated so as to be immediately seen by those who enter; that they may not have the persons already in the room, who are generally seated near the fire, to look for. The middle of the partition wall id the properest place in halls, salons, and other rooms of passage, to which the principal entrance are, commonly, in the middle of the front of the back walls; but in drawing-rooms, dressing-rooms, and the like, the middle of the back-wall is the best situation; the chimney being then far removed from the door of the communication entrance are generally at one end. In bed-rooms the chimney is always placed in the middle of one of the partitions walls; and in closest, and other very small places, it is, to save room, put in a corner. Wherever two chimneys are used in the same room, they must be regularly placed either directly facing each other, if in different walls, or at equal distances from the center of the wall, in which they both are. The Italians frequently put their chimneys in the front walls, between the windows: but this must be avoided; for by so doing that side of the room is crouded with ornaments, and the rest are less bare, the front walls are much weakened, and the length of the funnel at the top of the building, which must necessary be carried above the ridge of the roof, have a very disagreeable effect, and are far from being solid. In large buildings where the walls are of a considerably thickness, the funnels are carried up in the thickness of the wall: but small ones this cannot be done; and therefore the chimneys advance considerably into the rooms, which hath a very bad effect; and, where room can be spared, it will always be best to make cup-boards, or closests, in the recesses on each side of the chimneys, with blind doors to them; the partitions being either of wainscot, with panels, hung with paper,, or finished in any manner suitable to the other part of the room. By this means, the cornice, or entablature, of the room may be carried round without any breaks, the ceiling be perfectly regular, and the chimney have no more projection than is necessary to give ornaments a proper relief.

The proportion of he Apertures of Chimney-pieces of a moderate size, is generally near a perfect square; in small ones is a trifle higher; and in large ones a thrifle lower.(..)

Chimney-pieces are composed of wood, stone, or marble; the last of which is to be preferred (..)

<table>
<tr><td>AUTOR</td><td colspan="2">Edward Oakley</td></tr>
<tr><td>TÍTULO</td><td colspan="2">EVERY MAN A COMPLEAT BUILDER; OR, EASY RULES AND PROPORTIONS FOR DRAWING AND WORKING THE SEVERAL PARTS OF ARCHITECTURE.</td></tr>
<tr><td>AÑO PUBLICACIÓN</td><td colspan="2">London 1766</td></tr>
<tr><td colspan="3">HABLA DE</td></tr>
<tr><td>Dedicatoria</td><td>There is no but…
To built to plant whatever you intend
To rear the column or the arch to bend
To swell the terras orto sink the grot
In all let nature never be forgot
POPE</td><td>NO</td></tr>
<tr><td>A quien va dirigido/Prefacio</td><td></td><td>NO</td></tr>
<tr><td>NOTAS SOBRE EL LIBRO</td><td>Containing:
I.- Practical Geometry
II.- The five orders of architecture regulated by equal parts, with the manner of glewing up and fluting of columns and pilasters; after so concise a method, that renders it useful to all artist, and easy to every capacity.
III.- the method of reducing each order into practice, in the formation of designs for doors and windows.
IV.- Great variety of Carpenter’s work, shewing the method of placing girders, binding, bridging, and common joist, in flooring; various methods for scarfing together, raising plates, tenanting joists, and trussing girders, explaining a particular method of trussing a girder, when its proper place, if any great weight should cause it to swag; the true method of finding the lengths and backings of Hip rafters, for regular or irregular roofs. Trussed partitions and roofs, centering for groins and angle brackets, demonstrated.
V.- Variety of plans, hand rails, newels, banisters and brackets for stair-cases; together with a true and concise method for striking the ramp and squaring the twisted rail, to square and circular plans.
VI. The builder’s dictionary, or, a practical and familiar explanation of the terms made use of in architecture, particularly describing the several parts and members contained in this book.
(list of books printed for Henry Webley)
< 9. The manner of securing all sorts of buildings from fire, or a treatise upon the construction of arches made with bricks called a bricked roof, with some letter that passed between the Count of Espie, Peter Wynche, and William Beckford, >>>></td><td>Después de ese listado de contenidos, te encuentras con:
Of practical geometry: y describe todos las figuras de la plate 1.
Luego pasa directamente a describir la plate XXXI que exhibe el método de pegar una columnsa y hasta la XXXVII va describiendo detalles constructivos de los órdenes.
PLATE XXXVIII.- PLATE L casa ikea
Luego explica los órdenes de la arquitectura de forma simple (con 2 líneas los liquida) sse intercalan plates.
Luego las plates que se han descrito previamente al final un diccionario de términos.</td></tr>
<tr><td>Casa Ikea</td><td>PLATE XXXVIII
Figure A shews how to place girders, binding, bridging, and common joist in flooring, in placing girders particular</td><td></td></tr>
</table>

care must be taken, that they are not placed over windows, nor doors, if it can possibly be avoided; for in being so placed, are liable to cause settlements in the arches, over windows, and it is by no means safe, unless there is lintels that reaches from peir to peir: (they should be of English oak) this method id necessary, when placed upon peirs, as it keeps the ends from decaying; girders should have at least ten or twelve inches bearing. Binding joists are those kind of joists that are framed flush with the underside of the girder, and about two inches below the upper side of the girder. Bridging joists, are these shewn…

PLATE XXXIX

Is ten different methods for scarfing together, raising plates, and six different designs for tenoning joists. Fig. A exhibits the section of a girder, which I suppose to be trussed when in its proper place, if any great weight should cause it to swang. The manner of applying the truss to practice; first provide yourself with an English oak plank of about three inches thick, out of which cut your trusses , then suppose B to be the upper side of the girder, in which being first to six your dovetail piece marked a, which must have a good bearing at fig. I then proceed to let in the truss marked b, so as to have a good bearing at 2, and at the same time fix the brancing truss marked n, fox the next dovetail piece so as to have a good bearing at 3, and so in like manner, till all the dovetails, and trusses are fixt, then by driving the wedge, which must not be too taper, you will tighten the whole work, and if properly executed will cause the girder to spring an inch or more. I have seen this applied to practice. D and E shews two different designs for trussing girders; F shews how they ought to be screwes together.

PLATE XL.

Exhibits the method of finding the length and baking od hip rafters.

PLATE XLI.

Is an irregular roof in ledgment.

PLATE XLII.

Is a regular roof in lodgment, with the manner of placing entertusses, so as not to weaken the principal rafters.

PLATE XLIII

Seven different designs for trussing roofs.

PLATE XLIV

Variety of methods for trussing, circular, ogee, and common roofs.

PLATE XLV.

Exhibits de manner of trussing partitions, &c.

PLATE XLVI

In this plate is shewed the manner of finding the angle bracket for a plaister cornice, the front bracket being given and likewise the manner od finding the curves ot the necessary ribs for groins, by one general rule.

PLATE XLVII

Five plans for stair-cases, that marked A, is the commonest and which is most proper to be applied to practice, for several reasons. First, it is to be executed with much less expence, than circular, elliptical, octangular, &c. as those plans marked BC and D, which ought never to be applied, but when room is wanted, or some other reason of as great importance. Secondly, the steps of these stair cases are both ends or a width, for which reason two people may pass without stopping, and without the least danger of falling. Thirdly, these kind of stair cases have half spaces, or breathing places, which renders the ascending much more agreeable to the ascender. Fourthly, there is generally a better opportunity of lighting these stair cases than the other, which is a very material part of contrivance, to which particular care must be taken; for stair cases of all kinds ought to be well

<table>
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<td>lightened. Fifthly, care must be taken in proportioning the risers and treads; the rise of steps should not be less than 4 inches and a half, nor more than 7 inches, unless necessity should require it. The width of steps may be fron 10 to 15 inches wide; 12 inches is a very good width, and what is pretty much practiced. Lastly, every part of a stair case ought to be proportioned and ornamented agreeable to the superbness of the fabric wherein it is erected; the plan E, is upon the same principle as that of A, only after you ascend the first flight you may turn to either right or left, for which reason, two people need never be upon one flight at a time; this stair case id very proper to be erected in a hall, for when the rail twist both ways at the bottom it has a very agreeable effect.
PLATE XLVIII
A small flight of five stairs with two banisters of step, also three designs for handrails, and scales to ditto, together with the method od mitering a rail ino a circular cap; this flight of stairs is proportioned by the scale od feet and inches under it. (…)
PLATE XLIX
Shews two different newels, four banisters, and four brackets, with which I intend to ornament the preceeding stair-case, in plate 43.
PLATE L.
Exhibit the manner of describing and squaring the twisted rail to square and circular plans. (…)</td>
<td></td>
</tr>
<tr>
<td></td>
<td colspan="2">A practical explanation of the terms made use of in the foregoing sheets
Abacus // Angle // Arch // Architecture // Architrave // Astragal// Attic.
Band // Balister // Base // Bead // Beam // Bells // Bevel // Brace // Bracket // Building
Cabled // Cant // Cap // Capital // Cavetto // Centre // Channels// Cincture // circle // Circular // Circumference // Collarino // Colonade // Column // Composite Order // Corinthian Order // Cornice // Corona // Curve // Cylinder // Cymatium //
Dentils // Diagonal // Diameter// Diminish // Doric Order // Door // Dovetail // Drip
Ellipsis // Elliptical // Entablature // Eye
Face /7 Fillet // Floors // Flutes // Frame // Framing // Frize // Front
Geometry // Geometrical // Girders // Glue
Hall // Hollow // Hypotenuse
Impost // Intercolumniation // Intersection // Ionic Order.
Kneel
Leaves // Level // Line // Lintels //
Materials // Metops // Miter // Modillion // Mortise // Moulding // Mutule
Nails // Naked
OAK // Octagon // Octangular // Ogee // Order // Ordinates // Ovolo
Partitions // Pedestal // Pediment // Perpendicular // Pier // Pilaster // Plaister // Pitch // Plan // Plancere // Planck // Plte band // Plinth // Profile // Projecture.
Radius // Rafters // Rails // Raising // Raking // Revolution // Rim // Rose // Roof //
Scale // Scheme // Scotia // Section // Semicircle // Shaft // Slate // Square // Stairs
Tenon // Throat // Torus // Triangle // Truss // Trigliph // Tuscan Order //
Volute</td>
</tr>
<tr>
<td>COMENTARIOS</td>
<td colspan="2">Es un libro que no llega a un doble moleskino, es extraño, en el contenido te dice lo que vas a encontrar, lo que pasa es que está totalmente desorganizado.
La parte en la que explica las cubiertas y las escaleras es muy didáctica.
Está muy bien el glosario de términos aunque la mayoría se refieren a elementos decorativos o a los órdenes, es más completo que el que encontré en el otro libro de este autor.
Interesante: en la revisión de los libros que había publicado la misma editorial hay uno con un título interesante que probablemente se refiera a la “volta a la catalana”.</td>
</tr>
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AUTOR	Thomas Rawlins.	
TÍTULO	FAMILIAR ARCHITECTURE: CONSISTING OF ORIGINAL DESIGNS OF HOUSES FOR GENTLEMEN AND TRADESMEN, PARSONAGES AND SUMMER-RETREATS WITH BACK FRONTS, SECTIONS &C. TOGETHER WITH BANQUETING-ROOMS, CHURCHES, AND CHIMNEY-PIECES. TO WICH IS ADDED. THE MASONRY OF THE SEMICIRCULAR AND ELLIPTICAL ARCHES, WITH PRACTICAL REMARKS.	
AÑO PUBLICACIÓN	Londres 1768 // E.b.398	
HABLA DE_		
Dedicatoria	To the public.	
A quien va dirigido/Prefacio	The lofty and extensive Ideas of our Great Authors, being solely confined to Stateliness and splendor, rise to a superb a Strain, that they can be little assistance to the Studies of the Young Architect. For before he can be made acquainted with the necessary Conveniences of a Building for Small family, he is hurried imperceptibly away with ecstatic Views of becoming great at once. From such Imaginations, I must, for may own part, beg leave to different. My plan being form something that may be a great utility to the public in general, which a Prefer to all other views. In towns and villas, Architects are rarely to be met with: therefore this work is so calculated, that the meanest Capacities may comprehended it: the great variety of plans here explained, are to point out the many different Conveniences that may be made in a House from thirty to sixty feet in front, and upwards; this I thought would improve their ideas, and make them capable of conducting small buildings with freedom, simplicity and elegance. (…) I imagine, pointing out the nearest way of conforming Plans agreeable to the ground allotted, with as much convenience as the nature of the Place will admit of, must give to real geniuses a fair Opportunity of improving and Bringing designs to the greatest Perfections. A I have before mentioned the inconvenient of Offices under Ground, I may be allowed to descant somewhat farther on them, The heats and Steams arising from Kitchens so situated, are not only disagreeable, but unhealthy: ---- Yet when the offices are properly disposed in wings, or at the most distance parts of the House, as here delineated, every Nusance will be carry'd off, every unpleasing Stench avoided, and the whole rendered commodious as well as wholesome. Since I am speaking of the wings, I must take notice that every particular Convenience is not considered. For it open happens, that Persons possessed of equal Property, as their spirits or tempers vary, may not require the same accommodations: these therefore may be either contracted or enlarged a pleasure. Frequent observations have been made, that where there are large halls with cross passages, in small buildings, the Rooms in general are no better than lobbies; which inconvenience is here carefully avoided, as far as the Plans inserted will admit of. A proper Entrance, with free communications to each apartment, without going through another, forms the whole commodious.	

	(…) The one alledges, that you must be well acquainted with the Prices of all the Sorts of materials and Works, that you may not be liable to the impositions of mercenary workmen: --- And I hope too, for better Reasons that so illiberal and indiscriminate a suspicion. One qualification for an Architect, I presume is to be thoroughly acquainted in the practical part of Building, which must be gained by a close Application and much experience in the different branches. Thus he will be the more able to form a judgment, when he draws a design, whether it can be applied to Practice; and whether all Parts, when fixed on their proper basis, stand in a State of Equilibrium. If this had been the first Principle of their study, we should not see the many blunders in the executive part so often committed. As for adjusting the prices, how can a Theorist, who gets his knowledge only in a Study, judge the value of work? When at the same time, if he knew how many feet, yards or squares, one more workmen can performing in a Day or week, &c. he might then have a thorough knowledge of Charges; be able to find out those who are more mercenary than honest and to distinguish and recommend Workmen of strict integrity; who I believe are many. That the seeds of genius are sown in the Mind, at our first Formation in womb, which may be termed innate Ideas, or such Natured has implanted in us. And if this natural Genius be cherished improved and refined by proper methods of study and close application, is gradually grows to maturity. One science only, will gone genius fit, So vast is art, so narrow human wit. What is here presented to the public, I undertook to calculate for the laying a Foundation for a Work of general use, and specially in the remote parts o the country, where little or no assistance for designs is to be procured; as also for instruction of youth after their study of the five orders (which I have not introduced in this work, there being sufficient instructions about them already published) and their close application to this treatise, I flatter myself, may be the means of improving their ideas, and rendering their works useful.	Entra en las proporciones de habitaciones puertas y ventanas. Y en los órdenes. También se mete con esos que van diciendo por ahí que si no se sale del país y se han dibujado las columnas romanas, no se ha aprendido nada; en su opinión: No hace falta ir a copiar cosas por ahí. Se apoya en una cita de Pope y su ensayo de la crítica. Hace advertencias a los jóvenes arquitectos para que no se dejen llevar por el lujo, y la multiplicidad de ornatos, que se sigan las proporciones naturales, libres y harmónicas mezclada con la “Neatness” y la simplicidad.
NOTAS SOBRE EL LIBRO	Practical remark on Arches &c.	Hace un resumen de como se han de diseñar los diferentes tipos de arcos, siguiendo las indicaciones de varios maestros, y trabajadores, de piedra. Luego viene una explicación de cada “PLATE”… es decir, primero hace una pequeña explicación de cada diseño y luego las tienes todas representadas. Es fantástico. (

<table>
<tr>
<td>Casa Ikea</td>
<td>PLATE I
The plan and elevation of a small building 30ft, in front by 28ft deep. The rooms are divided in the following manner
a. Passage
b. Parlour
c. Large parlour
d. Stair-case 11ft. high
e. Closed
f. Pantry
g. Kitchen
The chamber floor consists of three rooms and closets over f and a: 10ft.

PLATE III.
Plan an elevation of a small building designed for a summer-retreat, to be placed on a pleasing Eminence, and divided as follows.
a. Hall
b. Parlour
c. Stair-case
d. Dinning-parlour
e. Door-way to stair-case
f. F. closed and scullery
g. Store-room or large Pantry
h. Passage to
i. Two small lodging for servants
j. Kitchen
N.B. The Stair-case is illuminated with attic windows opposite to each other over b and d are two chambers, each story being 12 ft high, as also a and k.</td>
<td>Dos ejemplos de cómo se describen las casas. Son casa de campo.</td>
</tr>
<tr>
<td></td>
<td colspan="2"></td>
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<tr>
<td>COMENTARIOS</td>
<td colspan="2">Es un libro grande, aunque no enorme, manejable, y la verdad es que cumple con su objetivo de enseñar, no pretende enseñar grandes cosas, sólo la forma de distribuir más cómodamente para los diferentes propietarios, dependiendo del propietario se diseña la casa de una manera o de otra tiene una lógica absoluta.
Me gusta el prefacio, es una lástima que las ideas, de cimientos, y demás se queden sólo en apuntes de ideas, pero son bastante lógicas y dignas de tener en cuenta.</td>
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<table>
<tr><td>AUTOR</td><td colspan="2">Anonimo , hay una nota manuscrita William Watron…</td></tr>
<tr><td>TÍTULO</td><td colspan="2">RUDIMENTS OF ARCHITECTURE; OR THE YOUNG WORKMAN'S INSTRUCTOR (TWO PARTS).
Part first containing,
The five orders of columns entire, with Frontispieces, doors, windows, porticoes, intercolumnations and arcades, suited to each; rustic quoins; the manner of constructing Brick and Stone-arches; centuring for groins and vaulting; stairs, twisted rails, roofs and domes; inspectional scales, tables, &c. Directions for drawing Plans and Elevations with Indian ink: likewise, the French and Spanish orders.
Part second containing,
Geometry; the mensuration of solids and superficies; plain trigonometry, and surveying land With twenty-three elegant designs of buildings, the most of which have been actually executed in North Britain.
To which is added the Builder's dictionary.
<u>Intended for those whose time will not allow them to attend teachers.</u>
Illustrated with upwards of 373 Examples, accurately engraven upon Forty-nine large copper-plates</td></tr>
<tr><td>AÑO PUBLICACIÓN</td><td colspan="2">Edinburgh 1773, Printed by William Auld, Tuck's close, Lawnmarket</td></tr>
<tr><td colspan="3">HABLA DE_</td></tr>
<tr><td>Dedicatoria</td><td>No hay</td><td></td></tr>
<tr><td>A quien va dirigido/Prefacio</td><td>(…)
To remove every impediment which has the least tendency to obstruct the knowledge of architecture, as well in theory as in practice form becoming general, and to make it level with the lowest capacities, by application only, without the assistance of a master, (which is often not to be obtained, and always expensive), is the great object which the compilers of the following work have constantly keep in view.
To effect this important end the Compilers have very carefully selected whatever is really useful in the most approved books in this subject; and, among other interesting particulars, the justly celebrated inspectional Scales an tables in the London Art of Building, in which they will venture to say, the merit of that book chiefly consists: so that they flatter themselves the readers will find in the following sheets every thing truly valuable that has been published on this Science for the use of workmen, without the expence and trouble (either of which are by no means small) of purchasing and perusing the many volumes through which it is otherwise diffused(…)
(…)
In plate XXV is given a elevation of a house, with plans and sections; with a view to explain the Young workmen the manner of representing windows, doors, vents, &c.</td><td>A los propietarios tanto en el campo como en la ciudad. Y también a los arquitectos.?????</td></tr>
<tr><td>Casa Ikea</td><td>CHAP XX: Of architectural axioms and analogies (pag 49).
I.- Of doors.
That the height of all doors be double their breadth. That doors, in general, be proportionable to the magnitude of the rooms.
That the breadth of inner doors be never less than two feet and a half, nor more than six foot: that the doors of the second and third stories be placed exactly over the doors of the first: that an arch of bricks or stone be turned over every door to</td><td></td></tr>
</table>

discharge the weight that presses upon them, which oftentimes ruins the structure.

II.- Of Windows.

That the bigness and number of windows be proportional to the rooms they are to enlighten, and their height double their breadth, with the addition of ¼, 1/3, ½, part, as shall be found necessary: that the height of the windows in the second story be 1/2 of the first, and the height of the attic, or third story, ¾ of the second story: that windows be not placed too near the angles of any building, for thereby the structure will be weakened.

That over every window be turned and arch to discharge the weight that lies over them.

That no girder be laid over any door or window, but always on the most substantial part of the brick or stone piers, &c. that solid may rest upon solid.

III.- Gates.

That the breadth of principal gates of entrance be never less than seven foot and a half, nor more than twelve feet.

That the height of principal gates of entrance be never less that once and a half their breadth, nor more than twice, which is the best proportion.

IV.- Of halls

That the length of halls, be not less than twice their breadth, nor more than three times.

That the height of halls, whose ceilings are flat, be not less than 2/3 of their breadth, or more than ¾ of length.

That the height of halls, whose ceilings are arched or coved, be no less than 5/6 , nor more than ½ ½ of their breadth.

V.- of galleries.

That their fight be toward the north, on account that the north light is the best for paintings, pictures, &c.

That the breadth of galleries be not less than 16 foot, nor more than 24.

That the length of galleries be not less than five times their breadth, nor more than eight at most.

That the height of galleries be equal to their breadth, if with flat ceilings; but if arched, or covered 1/6, ¼, or 1/3 of the breadth may be superadded.

VI:- Of Antichambers

VII.- Of Chambers.

VIII.- Of Floors.

That the floor of every story in a building ,be truly level throughout, so as to pass out of one room into another, without going up or down stairs, as is common in many buildings.

That the height of the level of the first or ground floor be never less than one foot, nor more than four feet.

IX.- Of Chimneys.

1. Of Hall Chimneys

That the proportion of hall chimnies be as follows; viz. their distance between the jaumbs from six to eight feet; their height form four feet and a half to five feet; their projection from two feet and a half to three feet at most; the breadth of the jaumbs from nine to twenty inches, or more as occasion may require, according to the order that the chimney id adorned with.

2. Of chamber chimneys

The proportions of Chambers chimnies are as follow; viz. Their breadth from five to seven feet;

their height four feet and half, and projecture two feet and a half.

3. Of chimneys in studies, &c.

The proportions of chimnies in studies are as follow; viz. Their breadth from four to five feet at most; their height four feet, and projecture two feet and half.

That the funnels of chambers-chimnies, or studies, be not narrower than ten inches, or wider than fifteen, which is a good size for kitchen-chimnies.

X.- Of the funnels of chimneys.

That the funnel of chimney be carried a sufficient height above the ridge, that winds may have the less power to beat the smoke back.

That the funnels of chimneys be not wide, because thereby the wind may drive down the smoke into the room; or too narrow, so that it cannot have a free passage out.

That the funnels of chimneys be truly perpendiculars, otherwise the smoke cannot so freely pass.

That no timber, joist, &c be laid nearer than six inches to the back of any chimney.

That the funnels of all chimneys have no any timber, as girders joists, &c. laid therein, left, some time or other, they chance to take fire.

XI.- Of joist, rafters, and girders.

That the greatest distance that joist, or rafters, are laid from each other, do not exceed 12 inches; and quarters in partitions 14 inches asunder: that no joist bear at a greater length than twelve feet; or single rafters more than ten feet.

That the length of joist laid in the wall be not less than seven inches, and no girder less than nine inches.

XII.- Of Materials

1. That money and materials be always ready from the beginning, or laying of the foundation, to the turning of the key, when the whole is completed.
2. That the great care be taken in the goodness of foundations, and that they be truly level.
3. That the thickness of all foundations be double to the insistent wall.
4. That the most heavy materials be employed in the foundation.
5. That all walls diminish in thickness, according to the nature and height of the structure.
6. That every wall be perpendicular.
7. That such bricks as are not well burnt, be not used in any building.
8. That the depth of all fabricks in the ground, that have cellars, vaults, &c be 1/7 of the whole height; and those that have no cellars to be 1/6 of the height.
9. That the kitchen be spacious and light, and as remote from the parlour as possible, and to be under-ground; as also the pantry; bake-house, still-room, buttery, dairy, and servants offices in general.
10. That cornices do not project too far out from the building, whereby the windows be darkened.
11. That of all kinds of arches none are so strong as the semi-circle.
12. That the depth of all rusticks be never more than one foot nor less than nine

	inches. 13. That the thickness of pilasters, of doors and windows, be not more than 1/3 of their aperture or breadth, nor less than 1/6. 14. That the projecture of pilasters in general be 1/6 of their thickness. 15. That the roofs of all buildings be not too heavy, or not too light, and that interior walls support part of the same. 16. That the convenient cisterns be well placed, plentifully to furnish every office with water; and that proper machines be made to raise the same therein. Lastly, that convenient drains, to carry away soil, &c. be well contrived, and secretly placed, with vents to discharge the noisome vapours that usually arise from them. (p.55)	
NOTAS SOBRE EL LIBRO	CONTENTS. PART I I. Of the tuscan order II. Of the doric order III. Of the ionic order IV. Of the corinthian order V. Of the composite order VI. Of the intercolumnation of the 5 orders of columns in architectura VII. How to find a module by arithmetical calculation VIII. A description and use of an inspectional plane-scale, for finding exacter diameter, in proportion to any limited height of columns and pilasters. IX. A description of an inspectional plane-scale, for reducing modules and minutes to feet and inches How to draw a Frontispiece according to any of the Five Orders T find the pitch of the Pediment. X. A continuation of above. Of Pediments a d the manner of finding their raking and returning mouldings for their cornices. To describe the curve of the cornice. The description and use of a scale, for dividing a module into minutes. XI. Of the assembling of orders How to find the Module of an order that is to be placed over another. Of pilasters placed one over another. XII. Of windows. Of the ornaments of doors and windows Of Block cornices How to proportion the Tuscan, Doric, ionic, &c. Orders to the height of any room. Of covers to ceilings One general rule for finding the curves of the necessary Ribs for groins. XIII. A description of several sorts of stair cases and the formation of all sorts of twisted rails. XIV. Ditto XV. To form the arch or Mould to the Hand Rail of a pair of Stairs, which is to be circular, &c. XVI. Of roofs XVII. Of the hip roof. XVIII. Of the roof bevel at one end, and the square at the other; the gable end square, the bevel hipped XIX. Of a roof bevel and both ends, and broader at one end and the other XX. Of architectural axioms and analogies (ver casa ikea) Of Doors and Windows Of Gates, halls, Galleries. Of Antichambers, Chambers, Of Floors, Chimneys Of joist, Rafters and Girders Of materials. XXI. Description and use of the table for finding diameter, in proportion to any height of columns or pilasters, throughout all the 5 orders in architecture. XXII. Description of an Inspectional Table, shewing the value of one foot of timber that is squared and cut to any scantling or Size, fit for building, at any price per foot, cubical measure XXIII. General directions for drawing with Indian Ink.	

Of the French order
Of the Spanish order
The description of a regular Double roof.
The construction of brick and stone arches
A table of the different proportions in the Five orders of architecture, as laid by modern and antient authors.

PART II.

I. Geometrical definitions and problems, necessary to be known by those who are desirous to understand the art of building
II. Ditto
III. Measuring of superficies plains.
IV. Of measuring solids
V. Of plain trigonometry, geometrically performed.
VI. Of the mensuration of heights and distances.
VII. Of surveying lands, &c.

Twenty three elegant Designs of buildings, the most of which have been actually executed in North Britain; with explanations to all designs
The Builder's dictionary, containing and explanation of the terms made use in architecture; also, the terms of art used by workmen concerned in building.

CHAP XII

Of Windows. Plate XXII, XXIII; &c.

Windows should be proportioned according to the heights of the different stories: Fig A Plate XXII, is a Tuscan Window, whose height is 1 diameter ¾ (ver dibujo) ; Fig B is a Doric Window, which is 2 diameters; (…)

CHAP XIII

<u>A description of the several sort of stair-cases, and the formation of all sorts of twisted rails.</u>

To every stair-case are required three openings.
First, the door leading thereto
Secondly, the window or windows, that give light to them and, *thirdly* their landing.
First. The door leading to a stair-case, should be so placed, that most of the building may be seen before you come at the stairs; and in such manner, that it may be easy for any person to find out.
Secondly. For the windows: if there be but one, it must be placed in the middle of the stair-case, that thereby the whole may be enlightened.
Thirdly. The landing of stairs should be large and spacious, for the convenient entering into the rooms: in a word, stair-cases should be spacious, light, and easy in ascent. The height of large steps must never be less than six inches, nor more than seven inches and half.
The breadth of steps should never be less than 10 inches, nor more than 18 inches; and the length of them be not less than three feet, nos more than 12 feet.
In making of stair-cases, this rule should be observed: That the number of steps at every landing be odd, and not even; for, thereby, when you begin to ascend with your right foot first, as all persons generally do, you will end with the same foot also.

CHAP XIV.

<u>Of several Stair-cases. Plate XXVII (en libreta negra)</u>

First, Of making them

Though there are rules laid down in the foregoing chapter, for the height and breadth of steps; yet workmen are not so strictly tied to those rules, as not to vary in the least from them: For they must still observe to make all the steps of the same stair-case of an equal height and bread: to do which, they must first consider the height of the room, as also the width, or compass, they have to carry up the stairs in.
Then, to find the height of each particularly step, they ought first to propose the height of each step, and by that proposed height divide the whole height of the room; which done, the quotient will shew the number of steps: but if the division fall not out exact, but that there be a remainder; then, in this case, take the quotient, not regarding the remainder, for the number of steps, and by that number divide the whole height of the room; so the quotient shall give you the exact height of each step.
EXAM. Suppose the whole height of the room be 9 foot 3 inches, and suppose you designed to make each step 6 inches high, turn the whole height of the room into inches, and divide those inches by 6, the quotient will be 18 and the remainder 3; therefore take 18 for the number of steps, and by it divide 3, and the quotient will be will be 6 3/18 or 6 1/6 inches; which must be the exact height of each step.
Then to find the breadth of each step, divide the space of compass that you have to carry them up in, by the number of steps, the quotient will shew you the breadth of each step.

The several kinds of Steps.

There are many kinds of stairs-cases; for in some the steps are made strait; in others winding; in others mixed of both. Of strait stairs, some fly directly forward; others are square; others triangular; others called French flights, or winding stairs, which in general called Spiral or Cockle-stairs; of which som are square; some circular or round; and some elliptical, or oval; and these again are various; for some wind about a solid; others, about an open newel. Stairs mixed of strait and winding steps are also of various kinds; some are called dog-legged; some there are that wind about a solid newel, and others that fly about a square open newel.
There might be a larger description given of every one of these kinds of Stair-cases; but if these are well understood, it will be easy to compose other sorts from the following figures.

Of Strait Stair-case Fig 14 Plate XXVII (Libreta negra)
These are such as always fly, and never wind, and are by some called flyers; going directly from one floor to another, without turning to the right or the left.
Square Flyers Fig 13
These fly round the sides of a square newel, either solid or open, and are of two kinds; and at every corner of the newel there is a square foot-pace that takes up ¼ of a circle.
Triangular flyers. Fig 17
These fly round by the side of a triangular newel, either solid or open, and are of two kinds. At each corner of the newel is a trapezial foot-pace that takes up 1/3 of a circle; the length of the stairs is at right angles with the side of the newel
French flyers fig 15
These kind of stairs, first fly directly forward, till they come within the length of a step of the wall, and then they have a quarter-pace, from which you immediately, without any steps between, ascend to another quarter-pace; and from this second quarter-pace the stairs fly directly back again, parallel to the first flight.
Winding stairs Fig. 18
These are such as always wind, and never fly; there are many kinds of these stairs that wind round either a circle, an oval, a square, or and equilateral triangle; and of each of these, some wind round a solid newel, and others round and open or hollow newel.
Mixed Stairs. Fig 15
Theses are such as do both and wind; and therefore are by some called by the general name of flyers and winders: here is also shewn a twisted rail at the beginning of the first flight, and the manner of forming it. See next chapter.
CHAP XV.
<u>To form the Arch or mould, to the Hand Rail of a Pair of Stairs, which is to be circular, Part of the two first steps, so as to make it stand perpendicular over the ground, or plan and the manner of squaring the Rail, without setting it up in its position.</u>
(Perspectiva, no hay notas)
CHAP XVI
Of Roofs Plate XXVII
The first thing to be considered in roofs, is the covering wherewith the building is to be enclosed, as lead pan-tiles, slates, or plain tiles; they each require more pitch or slope, than the other; for which observe the following rules.
Fig 1. Is a proper pitch for covering with lead. To find the perpendicular height, divide the breadth of the building into four equal parts, and subdivide the part betwixt one and two, or two and three, into four equal parts.
Then half of the building, and one of those parts for the length of the rafter; which said length being used as a radius, describe the arches intersecting in A
Fig 2. Is a proper pitch for covering with pan-tiles and slates. To find the perpendicular height, divide the building into four parts; again, divide one of those parts into two, and take half the building, and one of those parts for the length of the rafter, which will intersect in B the perpendicular height.
Fig 3. Is a proper pitch for covering with plain tiles. To find the perpendicular height, divide the breadth of the building also in four parts, and take three of those parts for the length of the rafter, which will intersect in C the perpendicular height; this is called *true*, or *common pitch*, it being most in use.
In these three examples are also shewn the manner of framing timbers of the beams, which serve to truss and strengthen the principal rafters, which ought always to be carefully observed.
Fig. 4. Is a roof partly flat, of a different kind to all the others; it rises ¼ of the span, and by scarsing, or piecing the beams together, in the manner of the beam C, it will be capable of spanning any breadth whatsoever; and, if room should be wantingin the middle of the roof, the braces B and C may be omitted.
Fig.5 is a flat roof, having but 1/8 of its span for its perpendicular height, and must be covered with lead, and the rafters thus joggled into the beams, which are made camber, will be very substantial.
Fig 6. Is another flat room rising somewhat higher the perpendicular being 1/6 of its span, and with those trusses will be exceeding strong. Also here is shewn how drips may be made to walk upon, as A.
Fig. 7 Is for a curve ceiling: And although the beam or tye be interrupted, yet, by this manner of trussing, this roof will be exceeding strong.
Fig. 8. Is a roof formed, that, if the foregoing pitch for plain tiles is judged to be too lofty, then, by this method of having a gutter in the middle, one third of the height of the roof is taken off, as is plain by the divisions on the plate; and these are called M roofs, from their likeness of an M.
Fig. 9. Is a roof that spans beyond the walls; and of this sort are the roofs of Covent-Garden and Horsly-down churches, which are very proper, by reason they give a covering to people under the eaves, as well as to the building itself.
Figures 10. 11 and 12, are curvilineal roofs, which are much in use for summer-houses, temples, &c.; they are supported by pillars at a a.
CHAP XVII.
<u>*Of the HIP-ROOF. Plate XXIX. Fig 1 (p45)*</u>
Instructions to find the length and back of the hip-rafter, so as it may answer the side and the end of the perpendicular line of the gable-end, the two skirts, the side of the roof, whether in plano, or lying in lodgment, with the hip and gable-end; the diagonal and perpendicular lines being laid down proportional to any breath or length.
EXAMPLE Fig 1

Let ABCD be the sides and ends of the said roof, one end to be hipped, and the other a gable-end; draw the lines ABCD the breadth and the length of that roof; then draw the gable-end AHB, whose sides AH, and BH are equal in length to ¾ of the width of the house, or true pitch; then draw the perpendicular line OH, the height of the gable-end, which line is of general use to level the ridge of all roofs; and if the other end be hipped, as in the design CDE, then it serves to find the length and back of the hip, so that it may answer both sides and ends of the roof, always observing that the middle of the breadth of the house is as OV; then draw the line SWXF through the centre Q, which will make right angles to the line OV, both in square and bevel houses; and the distance WS and XF are each equal to the length of the rafters AH, or BH; then extend the line AB on both sides to T and I, and to the same length also; so will IF, and ST, make the length of the ridge QO, and SC, and DF, the two skirst.

To find the length of the HIP

Draw the diagonal lines CQ and QD, over which the hip is to hang when in its due place; then take the perpendicular line OH, and place it from the point Q to the point RR, the one perpendicular to the diagonal, or base line CQ, and the other to QD; so is QR, and QR, the pitch of the hip equal to the point Q; then take the lines CR, and RD, placing them from C to E, and from D to E, and it gives the length of the hip CED; and when laid to their pitch will all meet perpendicular to the point.

To find the Back of the Hip, so that it may answer both sides and Ends of the Roof, whether Square or bevel.

Lay a ruler from the point W to the point V, and from the point V to X, and mark where it cuts the diagonal lines CQ, and QD, at zz; then set one foot of the compasses in the point z, extend the other foot to the nearest distance on the hip-lines CR, and DR, and with that distance mark the points GG, upon the same diagonal lines; then draw the pricked lines WGV, and VGX, which makes the back of the hip for the two corners of that roof.

CHAP XVIII

<u>Of the Roof Bevel at one End, and Square at the other; the Gabled-end Square, the Bevel-End Hipped. Fig 2</u> <u>Plate XXIX</u>

Suppose the breadth of the house 20 foot, the length more on one side than the other, as in the design CNEP; then draw the gable-end CAE, whose sides from C to A and from A to E, is ¾ of the breadth of the house, or is the length of the principal rafters; then draw the perpendicular AD, the height of the roof from the floor; and if kneed, then from the top of the knee.

The sides of the roof BGFQ, to be drawn as is described in the foregoing design.

Divide the breadth of the house into two equal parts, and draw the line DLR; then take the distance LV, which is the half breadth of the house, and make it parallel to NRB, as HLK and L will be the point whose perpendiculars IL will meet the principal rafters and hips.

To find the Length of each hip distinct from the other; and, first, of the longest hips.

Draw the diagonal line PL, and take the height of the gable-end DA, and place it perpendicular to PL at I; so have you the height of the roof perpendicular from PL, equal to DA, the gable-end; and the line PI will be the length of the hip-rafter, which will be equal to PQ, the skirt for that side of the hip, and SP, the side of that hipped end.

To find the Back of the longest Hip to IP.

Lay the ruler from the point K to R, and mark where it cuts the diagonal line at M; then set one foot of the compasses in the point M, and extend the other foot till it touches the line IP at the nearest distance; then make it touch the diagonal line at O; then draw the lines KO, OR, which is the back of the hip for that corner of the roof.

The find the shortest hip IN.

Is all the same as to find the length of the longest hip; and the backing of the shortest hip, is also found by the same method; as is already taught, and needs no other explanation.

N.B. This rule serves for all bevel-roofs, let the pitch or slops.

CHAP XIX.

<u>Of a Roof Bevel at both ends, and broader at one End than the other. Plate XXIX Fig 3</u>

Suppose ABCD the length and breadth of the house, and LMN the length of the rafters, or pitch between the widest and narrowest en, about the middle of the house, to stand over the pricked line SO. K, K, are the points of the two hip-ends, which, when brought to their due place, will be perpendicular to P and P, and will meet the sides FH, GI, over the same points P and P. The points XXXX are the perpendiculars and length of the hips from ABCD; the points WWWW shew the back of the hips, or hip-mould due to each corner; and VVVV are the points to find out the points WWWW for each back. RT, ZZ are the lines representing half the breadth of the house parallel to each end; YY represents the middle of the house.

Notwithstanding the bevel-ends, you may place the beams for your principal rafters to stand on a square, or so near a square as may be, or between both; as from the ends of the pricked lines FG, HI, bringing the outside of them strait under P, which will be more handsome for the house within side, although it bevels outward.

CHAP XX.

<u>Of Architectonical AXIOMS and Analogies (Casa IKEA)</u>

CHAP XXII

General direction for drawing with Indian Ink.

Of Spanish order

Of French order

The description of a regular double ROOF. Plate XXXIII Fig A

The out-lines of this plan *afgk*, wherein *h*B, BE, E*i*, and *ih*, are the ridges; *a*B, E*f*, *ik*, and *hg*, are the hips; *h*AC, BAC, DAE, BAE, and D*ai*, are the valleys; AC, BA, the gutter; *sq*, the height of the pitch; *pq* and *qr* a

	pair of principal rafters, *vf* and *tk* hip-rafters; lay out the ends *fe*, *ik*, and *a*B, *hg*; also the skirts *abef* and *g*AI*k*; continue *g*H to *c*, *kI* to *d*, *ab* to *c*, and *fe* to *d*; and because the lengths the of the Valleys are equal to the lengths of the hips, therefore, make H*c*, I*d*, *bc* and *de*, each equal to one of the hips, as *Ik*, and draw the lines *cd*; this being done, draw in all the principal and finall rafters at discretion, and then the whole will be completed as required. Fig. B is a section of the dome of St Paul's. *The construction of BRICK and STONE ARCHES.* Semicircular headed doors are more graceful than those that are semi-elliptical; which last is seldom used but at such times when the height will not admit of a semicircle, as being either too high or too low. When the given height, that an arch must rise above the impost from which it springs, is more than half the breadth of the opening, the arch must be a semi-ellipsis made on the conjugate diameter, (as *fig 9* plate XXXIII). But when the given height is less than half the opening, the arch must be a semi-ellipsis made on the traverse diameter, (as *fig 7* Plate XXXIII). *Fig 1, 2, 3, 4, 5, 6* and *7*, are arches of brick; *fig 1* and *3*, the distance of the centre, to which all the joints have their sommering, is equal to the breadth of the window; but those of *fig. 2, 4*, is the centre of a geometrical square, whose sides are equal to the breadth; *fig 5*, is a semicircular arch, whose joints sommer to its centre; *fig. 6*, is a Gothick arch, which has its sommerings at *abc* and *d*, *Fig 9* is a semielliptical arch made on the conjugate diameter; the left-hand side of which sommers to its centre *a*, and the right-hand side sommers to a*bcd* and *e*; *fig. 10* is a semicircular stone arch.
COMENTARIOS	Libro de tamaño normal, ni enorme ni moleskino (A4) Primero título, contenidos (que los he puesto en las notas), "prefatory introduction" una especie de prefacio que te da cuenta de para que se ha hecho este libro, básicamente entre varios autores han cogido todo el saber escrito sobre arquitectura y lo han puesto aquí, bueno, todo lo que puede ser útil. Y ya empezamos con la parte 1 que se refieren a las "plates I y II" te dan una tabla de proporciones referida a las plates en la primera está el capitel y la parte alta del fusta y en la segunda la base. Luego hay una explicación del orden. Sigue con el cap II. Descripción, plates y tabla de cálculos. Añado el capítulo XII en comentarios

ANEXO C

AUTOR	William Leybourn (Philomath)	
TÍTULO	THE COMPLEAT SURVEYOR: CONTAINING THE WHOLE ART OF SURVEYING OF LAND, BY THE PLAIN TABLE, THEODOLITE, CIRCUMFERENTOR, AND PERACTOR: AFETER A MORE EASIE, EXACT AND COMPENDIOUS MANNER, THEN HATH BEEN HITHERTO PUBLISHED BY ANY: THE PLAIN TABLE BEING SO CONTRIVED, THAT IT ALONE WILL CONVENIENTLY PERFORM WHATSOEVER MAY BE DONE BY ANY OF THE FORE-MENTIONED INSTRUMENTS, OR ANY OTHER YET INVENTED, WITH THE SAME EASE AND EXACTNESSE; AND IN MANY CASES MUCH BETTER. TOGETHER WIT THE TAKING OF ALL MANNER OF	
AÑO PUBLICACIÓN	London 1653	
HABLA DE_		
Dedicatoria	To his much honoured friend Edmund Wingate of Grayes Inne, ESQ.	Por lo visto ese señor lo defendió delante de los que opinaban que no valía la pena lo que escribía.
A quien va dirigido/Prefacio		A los lectores, entiende que tendrá detractores, y gente que ha esperado este libro y que no es lo que esperaban, a los primeros, y a los segundos lo siento aquí está. Te explica cómo ha dividido el libro y porqué.
NOTAS SOBRE EL LIBRO	The following treatise is divided into I. Of Geometry, which consist of: 1. Definitions (p 3) 2. Theorems (p 10) 3. Problemes concerning 1. Raising and letting fall of perpendiculars I I 2. The making of equal angles, and drawing of parallel lines 3. The dividing of right lined figures 4. The constituting of right lined figures 5. The working of proportions by lines 6. The divided of right lines proportionally 7. The dividing of triangles according to proportion, both arithmetically and geometrically by a line arawn 8. The power of lines and superficies. 9. The reduced of figures from one to another as four, five six, sided figures into triangles. 10. The dividing of any plain superficies into two or more parts, according to any proportion, by lines drawn either from any angle, or from a point in any side, 30. II. Of instruments. 1. In generall (p37) 2. Of the theodolite 3. Of the circumferentor 4. Of the plain table. 5. Of chains, and chiefly of Mr Rathoborns and Mr Gunters. 6. Of the protactor 50. 7. Of scales: plain and diagonal. 8. Of a field-book. 9. Of the parallelogram. III. Of trigonometrie	Entra con una carta de agradecimiento, sigue con un "para el lector" un índice de lo que va a explicar el volumen está dividido en 4 libros, y como se usan.

	1. Of the description of the tables of sines and logarithmic. 2. The application and use of these tables, as also of the lines of numbers, sines and tangents, in resolving of plain triangles: right angled and oblique angled. IV. The use of instruments and 1. Of scale 2. Of the protractor in 3. Of the plain table, theodolite, circunferentor, to finde an angle in the field therewith. 4. Of the labell, thereby to observe 5. Of taking distances 6. Of taking altitudes 7. Of taking diverse distance at once, by the plaint table and thodolite 8. To take the plot of a field as one station taken in the middle thereof by the (PT, T and C) and to protact the same, 9. To take the plot of a field at one station taken in any angle thereof, by the (PT, T and C) and to protact the same, 10. To take the plot of a field at two stations taken in any parts thereof by the (PT, T and C) and to protact the same. 11. To take the plot of a field at two stations taken in any parts thereof, only measuring the stationarie distance, by the (PT, T and C) and to protact the same. 12. Of large champion plains or woods, to take plots thereof by the (PT and T) and to protact the same with away to prove the truth thereof. 13. To take the plot of any field, wood, park chase, forrest, or other large champion plain by the C and to protact the same woth diverse cautions for the exact performance thereof. 14. Of the peractor, contrived by Mr Rathborn, how to make the PT to do the work thereof better then the peractor itself 15. To take the plot of any piece of land by the pearctor, and to protact the same. 16. Pf finding the area or superficiall content of any piece of land, the plot thereof being first taken, and chiefly of (the geometrical Square, the Long Square, the Triangle, the Trapezia, Any irregular plot of a field, the circle. 17. The manner of casting up the content of any piece of landing acres &c by Mr. Rathborn and Mr. Gunter chain 18. To reduce acres into perches, and the contrary. 19. The use of scale of reduction necessary for finding the fractions parts of an acre 20. Diver sompendious rules for ready casting up of any plain superficies,	

	with diverse other compendiums in surveying, by the line of numbers 21. Of statute and customary measure to reduce one to the other at pleasure 22. Of the laying of the common fields into furlongs 23. Of hills and mountains, how to find the lengths of the horizontall lines on which they stand several ways. 24. Of mountainous and uneven grounds how to protract or lay the same down in plano after the best manner, giving the area or content thereof 25. How to take the plot of a whole manner by the (PT, T and C) with the keeping and account in your field-book after the best and most certain manner, ant to protract any observations so taken. 26. Of inlarging or disminishing of plots according to anny possible proportion by: two semicircles, Mr. Roathborn rule,, a line into 100 parts, the parallelogram. 27. Pf conveying of water.	
Casa Ikea		No sirve a menos que utilicemos la parte de estudio del terreno que es el libro 4 que explica cómo se usan los instrumentos de medición, y como levantar planos del terreno
COMENTARIOS	Es un libro tamaño mediano, manejable no muy grueso. Es un libro básicamente de topografía, todo lo que ha de saber un buen topógrafo sobre el terreno, los cálculos y los diferentes instrumentos para calcularlo. Es un libro de TOPOGRAFÍA, muy didáctico.	

AUTOR	Thomas Fuller	
TÍTULO	THE CHURCH-HISTORY OF BRITAIN, FROM THE BIRTH OF CHRIST UNTIL THE YEAR M DC XLVIII.	
AÑO PUBLICACIÓN	London 1655	
HABLA DE_		
Dedicatoria	To the illustriuous Esme Stuart, duke of Richmond	
A quien va dirigido/Prefacio		A los lectores, te explica que en los 3 primeros libros llegan hasta el reinado del pasado rey y a partir de ahí los 8 siguientes en cómo se transforma la monarquía en estado.
NOTAS SOBRE EL LIBRO		Historia de la iglesia pero no el edificio sino la fé.
Casa Ikea		
COMENTARIOS	Es un libro grande y pesado con hojas parecidas a las de la biblia. Con anotaciones a los lados. Hay un dibujo de los escudos de los caballeros de la época de la invasión por parte de los Normandos. Al final hay una breve historia de la Universidad de Cambridge, que empieza con un mapa de la ciudad del 1634. 1 1 libros de más de 150 hojas.	

AUTOR	John Evelyn Fellow of the Royal Society	
TÍTULO	A PARALLEL OF THE ANTIENT ARCHITECTURE WITH THE MODERN, IN A COLLECTION OF TEN PRINCIPAL AUTHORS WHO HAVE WRITTEN UPON THE FIVE ORDERS… WRITTEN IN FRENCH BY ROLAND FREART, SIEUR DE CHAMBRAY;… MADE ENGLISH BY JOHN EVELYN.	
AÑO PUBLICACIÓN	Londres 1664	
REFERENCIAS EN		
Hanno-Walter Kruft		
Dora Wiebenson		
David T. Yeomans		
Eileen Harris		
NOTAS SOBRE EL LIBRO	The epistle. Dedicatory. The Preface: - five orders: three are from Greece: dorique, ionique, conrinthen and two that are not Greece (Tuscan and Composite) Building has the solid, the mean and the delicate (3 orders 3 characteristics) => TRIADA. *These lows and reptile souls, who never arrive to the universal knowledge of the Art, and embrance her in all her dimensions, are constrain to stop there for want habilities, incessantly crawling, after these poor little things; and as their studies have no other objects, being already empty, and barren of themselves, their Idees are so base and miserable, that they produce nothing save Mascarons, suratched Cartouches, and the like idle and impertinent Grotesks with which they have even infected all our Modern Architecture (…)* *Symetrie and Oeconomie of the whole.* El rey que ha vuelto al antiguo orden: los griegos, de donde viene todo. Alaba a los antiguos maestros que estaban bajo la influencia del cielo (al principio del libro hay una ilustración en la que se ve como un ángel le entrega a “los griegos” los órdenes). Cada uno puede opinar lo que quiera, pero estos principios se han basado en la observación y los ejemplos y no precisan demostración. Los tres órdenes griegos son fantásticos sin comparación con los dos nuevos órdenes: la rudeza del Tuscano y la irracionalidad del Composita. Crítica sobre Scamozzi y a los 5 órdenes. Transforma las medidas a palmos, pulgadas y pies. Primer parte: Nadie salvo Scamozzi, da las medidas de los 5 órdenes Vitruvio- Ordinance Corinthian- Ornament. Dorique- Solidity Ionique- in the middle. Cap II.- Origen del nombre Dórico. Cap III.- Ejemplo, teatro Marcellus. Cap IV.- Dioclethian baths – Rome. Cap V.- Grand Manner and elevate perspective Albano, near Rome. Cap VI.- Autores: Palladio, Vincentine, Scamozzi, Serlio, Barozzio, Vignola, Alberti, Philibert de Lorme, Jean Bullant. Cap VII.- Palladio y Scamozzi upon the Dorique Order: compara las 2 columnas en unn dibujo y lo comenta. Cap VIII.- Serlio y Vignola Cap IX.- Barbaro vs Pietro Cataneo Cap X.- Alberti- Vignola Cap XII.- Bullant vs de Lorme. Cap XIII-XXI.- Ionique	

	Cap XXII.- Cariatides. Cap XXIII.- of the Persian order. Second Part. Tuscan and Composite Order. The interpreter to the reader (113) Definición de arquitecto que coincide con la del Diccionario Architect is a superintendent: he must control the strength, the utility, and the beauty. Be careful if a Clerk undertook a Work and spend more than his calculations. Has a definition of Workmen: masons, Stone-cutters, Quarry-men, Sculptors, Plasterers, pavimeners, Carpinters, Joyners, Smiths, Glaziers. Ofrece la historia de donde viene la palabra arquitectura. Vocabulario Latín-Ingles Estudio de las Estatuas de Alberti.
COMENTARIOS	Es un libro, que te has de mirar de principio a fin, no hay índice al principio del libro, yo sencillamente lo he ido redactando a medida que encontraba capítulos. Evelyn es un autor muy leído, y copiado, porque más adelante me he encontrado con modelos similares: es decir, un prefacio donde explica de que va el libro y porque lo ha escrito: en este caso para que esas “viles almas” dejen de “manchar” la arquitectura y se vuelva a las formas del pasado, a los órdenes clásicos: pero los clásicos los 3 órdenes: dórico, jónico y corintio que los equipara a la tríada, el dórico es fuerte-sólido, el corintio es bello, y el jónico, se puede considerar una mezcla de ambos y ser útil. La explicación de los órdenes, en este caso haciendo comparaciones con otros autores. Recomendaciones finales, que suelen ser en las que se habla realmente de construcción y algo de vocabulario y cultura general. Lo realmente interesante son las apreciaciones que hace al final del libro sobre la figura del arquitecto y lo que debe saber: nunca un responsable de obra ha de gastar más de lo que ha calculado que gastará, o ha habido un cambio en la obra, o hizo un mal cálculo.

AUTOR	Stephen Primatt	
TÍTULO	THE CITY & COUNTRY PURCHASER & BUILDER. /	
AÑO PUBLICACIÓN	Londres 1667	
NOTAS SOBRE EL LIBRO		Objetivo: Para los nobles del campo que pueden construir porque casi todos los arquitectos se han trasladado a la ciudad. INDICE: 1ª Parte: tratado de Compra de tierras y casas.
	PAGE 1.- A particular computation of lands and how many years purchase, and what may be given for land in fee simple, for term of life, or years, for copy hold estates, appedant to Manors, or in Gross, mines, mills, with other things.	PAG 1.- Un cómputo particular de tierras y cuantos años hace de la compra, y qué se puede dar por un terreno de plena propiedad, por el término de vida, o años, para estados de asimiento de copia, referidos a Señoríos, o en la Totalidad, minas, molinos, con otras cosas.
	PAGE 14.- A table shewing the value that may be given for a lease, form one year to an hundred, for ten pounds per Annum and the land out of which the same doth issue, being at twenty years purchase, an so yielding five per cent. There being set down in the first line in the Margent, the quantity of years; and in the other, what may be given for the same. PAGE 17.- The use of the six tables. PAGE 18.- A table after the same form as the former having after the rate of 6% per annum. PAGE 19- PAGE 40.- different kind of tables. PAGE 40.- Rules that must be used to the different arising between Land Lord and Tennant, by the reason of the late tore, whereby Proprietors concerned may end their differences, without giving trouble to the most honorable count of Judicature.	Pag. 14.- Una tabla que enseña el valor que se puede dar por un arriendo, de un año a cien, por diez libras por año y la publicación del tipo de tierra que tiene las mismas dotes, siendo una compra de veinte años, por el que se cede un cinco por ciento. Estando primero, en la línea de Margent, la cantidad de años, y por otro, que se puede dar pos lo mismo. PAG 17.- El uso de seis tablas. PAG 18.- Una tabla después de la misma forma, habiendo aumentado el 6% anual. PAG 19-PAG40.- Diferentes clases de tablas. PAG 40.- Reglas que se han de usar para diferentes subidas entre tierras, propietario y arrendatarios, por la razón del último ratio, donde los propietarios preocupados pueden acabar sus diferencias, sin dar problemas a la más honorable corte de Judicatura.
	LIBER SECUNDUS.	LIBRO SEGUNDO.
	PAGE 50.- Advice for the city builder. An inspection into the artificers respective Mysteries employers in Building. PAGE 53: Bricklayer. PAGE 59: Carpenters. PAGE 67: Plaisters PAGE 68: Masons. PAGE 69: Plumbers. PAGE 70: Glassery and painters. PAGE 71: Joyners-work, carvers	PAG 50.- Consejo para el constructor de ciudad. Una inspección a los respectivos artífices misteriosos empleados en construcción. PAG 53.- Albañil PAG 59.- Carpinteros. PAG 67.- Yeseros. PAG. 68.- Masones PAG 69.- Fontaneros. PAG 70.- Vidrieros y pintores. PAG 71.- Ebanistas y tallistas.
	PAGE 72: How houses must be built in high and principal streets. What several houses in high and principal streets may cost building. A computation on a house that is to be built in a high street, according to the statute, and is to be 20 foot front, and 44 foot in depth, wherein is particularly shewed the charge of such building, with several observation thereon.	PAG 72.- Como deben ser construidas las casas en altura en las calles principales. Que deben costar la construcción de casas en altura en calles principales. Un cálculo de una casa que se ha de construir en una calle alta, de acuerdo con el estatuto, y ha de ser de 20 pies de frente, y 44 pies de profundidad, donde está particularmente señalado la carga de el tipo de edificio, con algunas observaciones de la zona.
	PAGE 77.- A platform for the same dimensions scantlings for timber for floors, set down by the	PAG 77.- Una plataforma con las mismas dimensiones y escalas de madera para pisos,

	statue for high and principal streets, or lanes of Nute. PAGE 81.- Scantlings for timber for ROOFING, set down by the statue for principal streets. PAGE 87.- A platform for a house in high street, or lane of note, where the chimneys are placed in the middle. The front being 20 foot and depth 44 the summers and a computation of the charge thereon.	asentamientos para estatuas en las calles principales, o "lane of nute". PAG 81.- Cerchas para madera de techar, asentada para las estatuas de las calles principales. PAG. 87.- Una plataforma para una casa en la calle alta o "lane of nute" , donde las chimeneas están colocadas en el medio. El frente ha de ser de 20 pies y la profundidad de 44.
COMENTARIOS	Es un tratado tamaño Moleskino. Primatt es abogado y pretende dar una solución al problema de la valoración del terreno, después del incendio de Londres no es fácil tasar los terrenos y las propiedades. Contempla leyes, máximos y mínimos de una fachada o longitud de una casa, medidas mínimas y lo que cuestan. Lo que consigue es poner varemos para que la gente sepa lo que cuesta una casa y no se produzcan abusos, ya que el hecho de que el incendio dejó sin hogar a gente, siempre se podía dar el caso de que alguien se quisiera aprovechar de la circunstancia y sacar provecho económico de la desgracia.	

AUTOR	Godfrey Richards
TÍTULO	THE FIRST BOOK OF ARCHITECTURE / BY ANDREA PALLADIO; TRANSLATED OUT OF ITALIAN: WITH APPENDIX TOUCHING DOORS AND WINDOWS, BY PIER LE MUET TO THE FRENCH KING; TRANSLATED OUT OF FRENCH, BY G.R. ALSO RULES AND DEMONSTRATIONS, WITH SEVERAL DESIGNS FOR THE FRAMING OF ANY MANNER OF ROOFS EITHER ABOVE PITCH OR UNDER PITCH, WHETHER SQUARE OR BEVEL, NEVER PUBLISHED BEFORE. WITH DESIGNES OF FLOORS OF VARIETY OF SMALL PIECES OF WOOD, LATELY MADE IN THE PALLACE OF THE QUEEN MOTHER, AT SOMMERSET-HOUSE; A CUIROSITY NEVER PRACTICAL IN ENGLAND BEFORE.
AÑO PUBLICACIÓN	Londres 1663
REFERENCIAS EN	
Hanno Walter Kruft	Sorprendentemente, en los siglos XVI y XVII no se publicó ninguna traducción inglesa de los “Quatro libri” de Palladio, haciendo excepción el primer llibro traducido por Godfrey Richards (1663). Más esta traducción era en realidad una versión inglesa de la “Regle des cinq ordres” de Pier Le Muet (1645), que sólo se refiere a Palladio entre otros nombres.
NOTAS SOBRE EL LIBRO	El tratado en realidad son una serie de ilustraciones, copiadas de aquí y de allí, como dice el título y luego comenta Yeomens en su artículo lo realmente importante son los detalles sobre la cubierta de madera y los detalles para decorar los suelos. El índice del libro: I.- Antes de construir: CIMIENTOS/ DISEÑO. II.- De la madera III.- De la Piedra. IV.- De la arena. V.- Del limo y como trabajarlo. VI.- De los metales. VII.- De la calidad del terreno donde se van a poner los cimientos. VIII.- De las cimentaciones. IX.- De las paredes: OJO CON EL DISEÑO! Tipos de mampostería X.- Métodos antiguos para la realización de edificios de piedra. XI.- De la disminución de las paredes y sus partes. XII.- De los 5 órdenes usados por los antiguos XIII.- De los SWELLING de columnas y su disminución, de intercolumnas y pilastras. XIV-XVIII.- Órdenes. XIX.- Pedestales. XX.- Errores.

AUTOR	Robert Pricke	
TÍTULO	A NEW TREATISE OF ARCHITECTURE, ACCORDING TO VITRUVIUS. WHEREIN IS DISCOURSED OF THE FIVE ORDERS OD COLUMNS, VIZ. THE TUSCAN, DORICK, IONICK, CORINTHIAN, AND COMPOSITE. DIVIDED INTO SEVEN CHAPTERS. WHICH DECLARE THEIR DIFFERENT PROPORTIONS, MEASURES, AND PROPER NAMES, ACCORING TO THE PRACTICE OD THE ANTIENT ARCHITECTS, BOTH GREEKS AND ROMANS; AS ALSO OF ALL THEIR PARTS GENERAL AND PARTICULAR: NECESSARY IN THE BUILDING OF TEMPLES, CHURCHES, PALACES, CASTLES, FORTRESSES, AND ALL OTHER BUILDINGS, WITH THEIR DEPENDANTS: AS GATES, ARCHES-TRYUMPHANT, FOUNTAINS, SEPULCHRES, CHIMNEYS, CROSSBARD-WINDOWS, PORTALS, PLAT-FORMS, AND OTHER ORNAMENTS; SERVING AS WELL FOR THE BEAUTIFYING OF BUILDING CITIES, AS FOR NECESSARY FORTIFICATIONS OF THEM	
AÑO PUBLICACIÓN	London 1669	
HABLA DE_		
Dedicatoria		
A quien va dirigido/Prefacio		A los lectores, muy elaborado, en realidad introduce el libro de forma pomposa
NOTAS SOBRE EL LIBRO		Tuscano: historia, donde se usa y como dibujarlo, diseños muy precisos. Dórico: Idem Jónico: idem Jónico: pedestal (ídem) Corinto: sin pedestal (ídem) Corinto: con pedestal (ídem) Composite: (ídem) Resumen gráfico de donde se usan los órdenes en. ➢ Arcos de triunfo/puertas ➢ Las proporciones del órden Tuscano ➢ Las proporciones del dórico ➢ Las proporciones del jónico ➢ Las proporciones del Corinto ➢ Las proporciones del Composite ➢ Reglas para diseño de columnas según Vignola ➢ Reglas de perspectiva.
Casa Ikea		No es útil, es de decoración.
COMENTARIOS	Es un libro tamaño grande (no excesivo) poca letra, muchos dibujos, básicamente de los órdenes, didáctico, es muy exacto a la hora de definir las proporciones de los órdenes	

AUTOR	Joseph Moxon, hydrographer to the kins most excellent majesty	
TÍTULO	PRACTICAL PERSPECTIVE; OR PERSPECTIVE MADE EASIE: TEACHING BY THE OPTICKS, HOW TO DELINEATE ALL BODIES, BUILDINGS, OR LANDSKIPS, &C. BY THE CATOPTRICKS, HOW TO DELINEATE CONFUSED APPEARENCES, SO AS WHEN SEEN A MIRROR OR POLLISHT BODY OF ANY INTENDED SHAPE, THE REFLECTION SHALL SHEW A DESIGNE. BY THE DIOPTRICKS, HOW TO DRAW PARTS OF MANY FIGURES INTO ONE, WHEN SEEN THROUGH A GLASS OR CHRISTAL CUT INTO MANY FACES.USEFULL FOR ALL PAINTERS, ENGRAVERS, ARCHITECTS…	
AÑO PUBLICACIÓN	Londres 1670	
HABLA DE_		
Dedicatoria	To the Worshipfull William Roper esq. Sir, I present you with this peece of Practical Perspective: Not that I think you unskillful in this science, for I know your affection to Mathematical Arts are great; and your perfections to learn any thing from me. But as you are a general incourager of ingenious Studies, and have express a particular respect to me by your many civilities, I always reckoned my self bound to an humble acknowledgement; which Sir, if you will accept this as a token of, it will yet more oblige me to be.	
A quien va dirigido/Prefacio	To the reader.	Opina que la perspective es una ciencia-arte muy importante para pintores, grabadores, arquitectos… que a pesar de que existe un libro de Serlio sobre el tema (que primero se tradujo al holandés y luego al inglés), le llegan las palabras pero no la ciencia, por lo que se decide a hacer este libro que está ilustrado por dibujos de otros, que le ayudarán con las explicaciones.
NOTAS SOBRE EL LIBRO	CH I.- Containing the Definition of Perspective and its species. CH II.- Containing definitions used in this art ➢ Base ➢ Height ➢ Virtual point ➢ Horizontal line ➢ Distance ➢ Section (6) ➢ Virtual Raies or Diametrals. ➢ Lines of distance or Diagonlas ➢ Object CH III.- Several Methodical Rules and Observations, that may facilitate your Practice in Perspective.	10 definiciones de los tipos de perspectiva. (6) En la sexta definición de este capítulo el tipo ha puesto un 3 D para que se entienda mejor el concepto.
Casa Ikea		
COMENTARIOS	Libro mediano, manejable, muy específico de un tema en concreto que es la perspectiva. Es fácil de entender aunque un poco pesado, porque excepto en los primeros capítulos a partir del tercero, te va explicando las reglas, pero los diseños están al final, se hace pesado.	

AUTOR		
TÍTULO	THE ARTIST REPOSITORY AND DRAWING MAGAZINE, EXHIBITING THE PRINCIPLES OD THE POLITE ARTS IN THEIR VARIOUS BRANCHES. (4 VOLUMENS)	
AÑO PUBLICACIÓN	London 1700	
HABLA DE_		
Dedicatoria		
A quien va dirigido/Prefacio		Va dirigido a culturizar, a Hombres y Mujeres (primera vez que leo que entran las mujeres en el pack) sobre las diferentes artes, pintura, escultura, arquitectura, pero sobre todo pintura.
NOTAS SOBRE EL LIBRO		En el primer volumen, te enseña a pintar el cuerpo humanos, primero sus partes y luego su todo. En el segundo entra en la perspectiva y de ahí a la arquitectura (de la que explica básicamente la decoración y los órdenes, a parte de la historia de la arquitectura, desde el templo de Salomón, griegos y romanos, pasando por China, Méjico, el Mississipi… en fin) bastante rollo, pero las ilustraciones de las plantas de los diferentes templos griegos, son muy buenas, pequeñas, pero bonitas, todo muy explicado, pero desde el punto de vista del diseño y su teoría más que desde el punto de vista de la construcción propiamente dicha. De ahí pasa a los paisajes. En el volumen III hacen una miscelánea de pintores y escultores, explicando sus obras, hay algún diseño, pero poco, básicamente retratos de dichos autores. En el volumen IV, diccionarios de palabras básicas para entender el arte, están enfocados a la pintura, el primero es de términos generales y el segundo es un diccionario dedicado a los colores. Además hay una explicación del arte de transformar las caras humanas en monstruosas, mezclándolas con elementos de animales, por ejemplo colocando en la cara humana los ojos y su expresión, de un animal. Al final unos estudios de flores de su color.
Casa Ikea		Nada
COMENTARIOS	Son cuatro libros, de tamaño un poco mayor que un moleskino, son prácticos en su manejo, tienen su voluntad de enseñar aunque se hacen un poco tediosos por lo eruditos. Me ha gustado la parte de cómo enseñan a dibujar desde la expresión de los ojos, la nariz la boca, la oreja para pasar a ponerlo todo en proporción, pero eso no es incumbencia de mi tesis La única parte es la que habla en el libro 2 de arquitectura pero al sólo dedicarse a arquitectura clásica y a la explicación de los órdenes su teoría y la importancia en la decoración, no tiene un valor constructivo real.	

AUTOR	Robert Pricke	
TÍTULO	THE ARCHITECTS STORE-HOUSE; BEING A COLLECTION OF SEVERAL DESIGNS OD FRONTISPIECES, DOORS AND WHIDOWCASES, CEILING-PIECES, ALCOVES, CHIMNEY-PIECES AND FOUNTAINS, WITH DIVERS OTHER SORRTS USEFUL IN EMINENT BUILDINGS, LIKEWISE A REPRESENTATION OD THE FIVE COLUMNS OD ARCHITECTURE, VIZ. TUSCAN, DORICK, IONICK, CORINTHIAN, AND COMPOSITE. USEFUL FOR: PAINTERS, CARVERS, MASONS CARPENTERS, BRICKLAYERS, JOYNERS, CABINET-MAKERS, PLAISTERERS &C. CONTAINING FIFTY COPPER-PLATES	
AÑO PUBLICACIÓN	London 1700	
HABLA DE_		
Dedicatoria		NO HAY
A quien va dirigido/Prefacio		Se supone que a cualquiera que trabaje en arquitectura, pero no hay un prefacio
NOTAS SOBRE EL LIBRO		Es todo dibujos, empieza con las puertas, chimeneas, fuentes, techos, decoraciones varias, y acaba con el diseño de las columnas de los órdenes, que es parecido a lo que ya había explicado en el otro libro (mucho más esquemático)
Casa Ikea		
COMENTARIOS	Libro mediano (ni muy grande ni muy pequeño) totalmente compuesto de diseños, preciosos, muy bonitos, y con escala para que se compruebe siempre la proporción, a ese nivel didáctico. Pero poco práctico de cara a la construcción a pesar del título, son meros detalles constructivos.	

AUTOR	Thomas Bateman	
TÍTULO	An answer to a pamphlet entitul'd Frauds and abuses at St. Paul's : with an appendix relating to the revenues and repairs of that cathedral	
AÑO PUBLICACIÓN	Londres 1713 / E.h. 164 (2)	
HABLA DE_		
Dedicatoria		
A quien va dirigido/Prefacio		
Casa Ikea		
NOTAS SOBRE EL LIBRO	Es un libro en el que una comisión se queja de los abusos que se están realizando al llevar a cabo la restauración de la catedral de sant Paul, resulta que Wren no quiere hacer la restauración, se factura más material del que se ve en la obra y la gente, que está contratada a tiempo completo durante medio año o un año, se larga a trabajar a otras obras y se ha comprobado. Chúpate esa mandarina. O sea, que tienen una comisión que controla los abusos… en España eso existía???	
COMENTARIOS	El tamaño del libro es un poco más grande de un Moleskino,.	

AUTOR	Brook Taylor	
TÍTULO	LINEAR PERSPECTIVE OR, A NEW METHOD OF REPRESENTING JUSTLY ALL MANNER OF OBJECTS AS THEY APPEAR TO THE ETE IN ALL SITUATIONS. A WORK NECESSARY FOR PAINTERS, ARCHITECTS &C. TO JUDGE OF A REGULATE DESINGS.	
AÑO PUBLICACIÓN	Londres 1715	
REFERENCIAS EN		
Hanno-Walter Kruft		
Dora Wiebenson		
David T. Yeomans		
Eileen Harris		
NOTAS SOBRE EL LIBRO	Tratado que se basa en cómo dibujar en perspectiva.	
COMENTARIOS	Es un volumen pequeño, pero no aporta conocimiento constructivo, de cómo dibujar en perspectiva.	

AUTOR	Anthony, Earl of Shaftesbury	
TÍTULO	CHARACTERISTICKS OF MEN, MANNERS, OPINIONS, TIMES. IN THREE VOLUMES.	
AÑO PUBLICACIÓN	Londres 1723 (Third Edition)	
REFERENCIAS EN		
Hanno-Walter Kruft		
Dora Wiebenson		
David T. Yeomans		
Eileen Harris		
NOTAS SOBRE EL LIBRO	Vol. I. A letter concerning Enthusiasm- Sensus comunix; an Essay on the Freedom of Wit and Humor. Soliloquy or Advice to an Author. Vol. II. An Inquiry concerning Virtue and merit. The Moralist; a Philosophical Rhapsody. Vo. III. Miscellaneous Reflections on the said Treatises, and other Critical Subjects. A notion of historical Draught, or Tablature of the Judgments of Hercules.	
COMENTARIOS	Es un libro que habla básicamente de filosofía. “a priori” desde el punto de vista de la construcción no hay por donde cogerlo.	

AUTOR	William Halfpenny .	
TÍTULO	PRACTICAL ARCHITECTURE, or a sure guide to the true working according to the rules of that science: representing the five orders, with their several doors & windows taken from Inigo Jones& other celebrated architects to each plate tables containing the exact proportion of the several parts are likewise fited. Very usefull to all true lovers of architecture, but particularly so to those who are engaged in the noble art of Building.	
AÑO PUBLICACIÓN	Londres 1724	
HABLA DE_		
Dedicatoria	To Thomas Frankland Elq: In token of true gratitude for unnumerited favours this small volume is humble dedicated,	
A quien va dirigido/Prefacio		Letra minúscula: cree innecesario dar explicaciones de porque se ha decidido a escribir, ese volumen sobre las medidas de la belleza. De ahí pasa a una explicación de las tablas, con un ejemplo.
NOTAS SOBRE EL LIBRO		Son una serie de gravados a los que va añadida una tabla de proporciones, primero de las columnas y piezas de los órdenes y luego de los diferentes tipos de puertas y ventanas.
Casa Ikea		
COMENTARIOS	Tamaño un poco más que un moleskino (un dedo) es muy “cute” pero poco útil para mi tesis, pero es bastante útil porque da las proporciones exactas calculadas, recordar que no hay calculadoras en la época, los diseños son bonitos, además no has de pasar de tabla al diseño sino que uno está al lado del otro y es cómodo de llevar. Hay varias ediciones.	

FICHA ORIGINAL

AUTOR	William Halfpenny
TÍTULO	THE ART OF SOUND BUILDING, DEMONSTRATED IN GEOMETRICAL PROBLEMS.
AÑO PUBLICACIÓN	Londres 1725
NOTAS SOBRE EL LIBRO	Es un libro dedicado a Arquitectos y Carpinteros. Es una ayuda para la construcción de: arcos, templetes,… tanto regulares como irregulares. “No pretendo ser vano enseñando a los arquitectos su oficio pero considero que es deber de todo hombre revelar cualquier cosa que pueda ser de servicio público” “la naturaleza de toda clase de arcos en este trabajo, estableciendo formas fáciles y prácticas de dibujarlos y trabajarlos, para que cada trabajador con pequeños conocimientos, pueda entender la naturaleza, los peros e interjecciones de toda clase de arcos, desde el momento en que los ha de reforzar y como hacerlos más hermosos con grados irregulares” El libro está dividido en cinco secciones y como resolver los diferentes problemas los cuales numera hasta 55. SECCIÓN I: De la descripción de los arcos mediante la intersección de líneas. ➢ Problema I: Como plantear una perpendicular en el centro de una recta dada. ➢ Problema II: Como plantear una perpendicular desde el punto final de una recta dada. (…) ➢ Problema X: Como plantear un arco elíptico por medio de una trama. SECCIÓN II: Aristas de arco. ➢ Problema XXI: Encontrar el ángulo o medio arco de una arista regular cuando los arcos que se unen son semi-círculos. (…) ➢ Problema XVIII: El arco alrededor de una torre, o de otro edificio circular dado, donde se ha de colocar una ventana semi-circular; como formar el centro así el masón o el albañil, han de unir sus arcos sin CRIPPLING ellos. SECCIÓN III: De la formación de NICHES. ➢ Problema XXIX: Como formar un NICH semi-circular con lados, como si fuera normal cuando ha de ser enyesado. (…) SECCIÓN IV: De la formación de twisted rails. ➢ Problema XXXIII: Como encontrar el arco correcto o molde, para que el HAND-RAIL en pares circulares de escaleras, en la manera que continúe siendo perpendicular sobre, su base, o arco de WELL-HOLE. (…) ➢ Problema XXXVII: Como formar el arco o HOLD del pasamanos de un par de escaleras que SWEEPS dos escalones más rápido de FOREGOING. SECTION V: Del trabajo de arcos y NICHES en piedra y ejemplos en ladrillo. ➢ Problema XXXVIII: Como trabajar un arco recto con piedra o ladrillo. (…) ➢ Problema XLIX: Como trabajar un NICH en ladrillo. ➢ Problema L: Como trabajar un arco de nivel en una pared circular. ➢ Problema LI: Como trabajar un arco para una BOW-ventana en ladrillo o piedra . ➢ Problema LII: Como trabajar regular o irregular aristas en ladrillo o piedra. ➢ Problema LIII: Como disminuir una columna o pilastra. ➢ Problema LIV: Como trabajar a DISMINISHING pilastra en ladrillo ➢ Problema LV: Como trabajar a DISMISHING columna en ladrillo.
COMENTARIOS	El tamaño del libro es el doble de un Moleskino, resulta muy práctico a la hora de consultarlo, que por lo que comenta Kruft es lo que se pretendía. La consulta directa del tratado te da una idea de la importancia que se da en ese momento a los órdenes y la geometría en general. Viene directamente influenciado de Palladio, la necesidad de tener unos parámetros

	para poder ejecutar “correctamente” columnas, y pilastras. Las críticas que realiza son válidas, pero por otro lado, es el primer libro de geometría aplicada de forma gráfica sin necesidad de fórmulas matemáticas, complejas para los que no están habituados a ellas. Por lo que creo que se habría de valorar este esfuerzo, lo que probablemente redundaría en el beneficio de una mejora a la hora de construir, o como mínimo dejar menos margen al error. Me llamó mucho la atención que la mayoría de los problemas, sobretodo alguno de los primeros, los había tenido que resolver yo cuando realizaba asignaturas de geometría descriptiva gráfica realizando mis estudios elementales. Es fascinante comprobar que algunas cosas no cambian tanto como se pretende y que lo que para nosotros son problemas básicos que realiza cualquier colegial, en un momento dado eran verdaderos retos para los trabajadores.

AUTOR	William Kent
TÍTULO	THE DESIGNS OF INIGO JONES, CONSISTING OF PLANS AND ELEVATIONS FOR PUBLIK AND PRIVATE BUILDINGS.
AÑO PUBLICACIÓN	Londres 1727
NOTAS SOBRE EL LIBRO	El libro es muy grande, con pocas hojas, contiene una introducción, una descripción de las láminas y el listado de suscriptores a la obra. Tuve la oportunidad de revisar tanto la edición de 1727 como la de 1744 en esta última a parte de las 18 láminas que son realmente de Inigo Jones hay 32 de William Kent.
COMENTARIOS	Es un libro básicamente de diseños, láminas, más que detalles constructivos copias de lo que se ha construido para llevarlo a cabo. En realidad es una manera de ensalzar la figura de Inigo Jones, incluso en la parte que dibuja William Kent lo hace queriendo ensalzar al maestro como Seguidor de Palladio para ello presenta una copia de la Iglesia de Sant Paul, que se encuentra en el Covent Garden y la compara con San Giorgio il Maggiore de Palladio. Realmente este tratado lo único que tiene de remarcable es que la influencia de Palladio es muy marcada en este momento no sólo por este libro y el ya mencionado de Richards, hay otros autores que lo admiran.

AUTOR	Robert Morris of Twickenham
TÍTULO	AN ESSAY IN DEFENCE OF ANCIENT ARCHITECTURE; OR A PARALLEL OF THE ANCIENT BUILDINGS WITH THE MODERN; SHOWING BEAUTY AND HARMONY OF THE FORMER, AND THE IRREGULARITY OF THE LATTER. WITH IMPARTIAL REFLECTIONS ON THE REASONS OF THE ABUSES INTRODUCED BY OUR PREFERENT BUILDERS
AÑO PUBLICACIÓN	Londres 1728
REFERENCIAS EN	
NOTAS SOBRE EL LIBRO	En el inicio hay una lámina con un ángel que le baja las columnas con los 3 órdenes a un arquitecto supuestamente griego. Dedication: to all Encourageous and Practicioners of ancient architecture. Barbarous Goths and Vandals. HISTORY: Athens – Vitrubius – Pliny. Los genios de hoy, Inigo jones, Sir Christopher Wren; los protectors Earl of Burlington, the honourable Lord Herbert and sir Andrew Fountaine. Donde los enemigos invaden las bellezas. (…) But not my subject. There is a particular erroneous folly, which seems to be a principle imbibed in Minority, which too many (who are readers only) are guilty of: it is not only an uncountable error in this playins their judgements by proceding to read in or near the later end of a Treatise before having perused the beginning; but from thence falling into a more imperdonable Falshood, which is to judge from that place only the truth of falsehood, the valuable or invaluable parts of it. Another => Que toman opiniones de otros. (…) Elevate sense a perfect idea of the Beautiees of the Ancient Architecture. I.- Muchos libros que hablan de arquitectura pero no se rigen por lo que era importante para los antiguos que no aprecian las proporciones. II.- Building mechanick talent => When Reason is the support and Guide to our desires they are more perfect ang pleasing in the Survey, tan the intrincat labyrinths of Sell-opinion, in Practice, and are more aceptable to the supple part of Making, tan the critical Doctrine of Ocular Demonstration. III.- materials. IV.- Time An Essay: Chap I.- General Introduction. 1. Arquitectura es la ciencia en la que se basa la divinidad. 2. Trabajos más satisfactorios. 3. Arquitectura basada en la Naturaleza. 4. Las grandes bellezas de la naturaleza continúan existiendo ahora. 5. Que Dios dirige a los hacedores (lámina inicial) Considera la arquitectura como un arte divino, don que ha tocado el hacedor. Las Moderneces y extravagancias son locuras. Chap II.- Of the general extent of architecture, as relates to the practice of the Ancients. Proporciones y ódenes clasicos en: puertas, ventanas, arquitraves, “reystones”, Chimeneas, magnitud de las habitaciones, “Niches”, intercolumnados. Critica los objetos que no las siguen: “los eclécticos que piratean partes de los órdenes a su antojo y dicen que es arte” los considera Locos. Chap III.- Of the antiguity and general causes of the Decey of Architecture. Chap IV.- Touching the orders in general. Chap V.- Doric order defined, in a verbal Demonstration to its minuter Proportions and divisions. Chap VI.- The proportions of the entablatures of the Doric order consider, with Reflections upon the causes which introduced its Enemies, Singleness and novelty. Chap VII.- The Doric Order examined from the Profiles. Chap VIII.- Remarks on the ionic order. Chap IX.- Remarks on the Corinthian Order. Chap X.- Remarks upon the profile of Stone of a frontispiece, executed in 1724. Chap XI.- Touching some general proportions regulated in a Conformity to the practice of the Ancient in Buildings. Chap XII.- a profile of two Fronts and the Iconography of the Plants, composed according to the foregoing Rules, or the practice of the ancients.

	Chap XIII.- a Modern Profile executed in 1724. Chap XIV.- An Ionikck Profile, according to the practice of the Ancients. Chap XV.- A Profile according to the practice of the Ancients. Chap XVI.- A Profile of the Corinthian Order, according to the practice of the Ancients. Chap XVII.- Some impartial Reflections on the reasons of the Decey of Ancient Architecture by the visible abuses in the practice of our Modern. Chap XVIII.- Concerning to the use of the Inspectional Table, calculate for the general proportions of the Diameters, and Heights in Feet and Inches.
COMENTARIOS	Es un volumen grande. En principio se supone que es un tratado que compara la arquitectura antigua y la moderna, desde luego deja la moderna muy mal. La considera bárbara y sin clase.

AUTOR	James Gibbs
TÍTULO	A BOOK OF ARCHITECTURE, CONTAINING DESIGNS OF BUILDINGS AND ORNAMENTS.
AÑO PUBLICACIÓN	Londres 1728
NOTAS SOBRE EL LIBRO	To John Duke of Argyll and Greenwich. Introduction (…), That such of work as this would be of use to such Gentlemen as might be concerned in Buildings, especially in the remote parts of the country, where little or no assistance for design can be procured. Such may be here furnished with Draughts of useful and convenient Buildings and Proper Ornaments; which may be execute by any Workman who understands lines, either as here Designed, or with some Alteration, which may be easily made by a person of judgment, without which a Variation in Draughts, once well digested, frequently proves a detriment to the Building, as well as a Dispargement to the person that gives them. I mention this caution Gentlemen from suffering any material Change to be made in their designs, by forwardeness of unskillful Workmen or the Caprice of ignorant, assuming pretenders. Some, for want to better helps, have unfortunately put in the hands of common workmen, the management of buildings of considerable expence; which when finished, they have had the mortification to find condemned by persons of Tast, to that degree that sometimes than would have procured better advice from an able artist; or if they have stood, they have remained lasting Monuments of the Ignorance or Patrimoniousness of the Owners, or (it may be) of a wrong judged Profuseness. Critica a lo que puede ocurrir si materiales Buenos caen en manos no capaces. Para prevenilo. Él escribe el libro. The church of Sant Martin in the Fields – Westminster. (…) Rebuilding it at their own Charges. THe comissioners appointed therein where pleased to make a choice of me for Surveyor of that work; and several Plans of different forms being prepared and laid before them, the fixed upon the following, as most proper for that side. There nere two designs med for round church, which were approved by the commissioners, but where laid aside upon account of the expensiveness of executing them; tho they where more capacious and convenient than what they pitched upon: I have inserted them likewise in this Book. The commissioners having signed the Plan agreed on, gave me orders to begin the work and everything being ready for laying the foundations, his Majesty was pleased to direct the Right Reverend the Bishop of Salisbury then Lord Almoner, attended by Sir Thomas Hewyt, then surveyor General, to lay the first stone of this fabric (inscription) => Ceremony => Building, 5 years; which, not understanding the great oeconomy of the commissioners, cost the Parish upwards of 32.000 pounds. I have given here 7 plates of this church. PI. Perspective. PII. Geometrical Plan and POrtico: P III. The west front and steeple; P IV. The east end the section from south to north; P V. The Section from east to west; P VI. The ceiling of the Church and Portico. That Church is Elliptical, which I find by Experience to be much better for the voice into Pannels, enriched with Fret-work by signori Arteri and Bagutti the best Fret-workers that even came to Englend. P VII. The North side of the Church. P VIII. The plan of the first Draught of a Round Church, being 95 feet in diameter. P IX. West front and Steeple; P X Noth side; PXI East End and section from south to North. Una serie de descripciones con las medidas de las casas y al final los planos de las mismas. Plate 88. 6 dibujos de Peer for Gates and 3 desings of Iron Work=> detalles de forja, puertas entrada. Plate 89. The same. Plate 90. The same for large courts. Plate 92-97. Chimneys. Plate 98-110. Puertas y ventanas.
COMENTARIOS	Es un volumen muy grande que, como dice en el prefacio pretende ser una ayuda para los que se dedican a la construcción pero en realidad es una loa a su propio trabajo en la Iglesia de Sant Martins in the Field, “a priori” parecía que iba a explicar el proceso de cimentación, pero sólo comenta que bajo el permiso de su majestad, la primera piedra la coloca el Prior con la inscripción… Es una obra en la que el autor se dedica a ponerse flores a sí mismo, es muy habitual en esta clase de libros pero en este caso es de lo más evidente.

AUTOR	William Halfpenny .	
TÍTULO	MAGNUM IN PARVO: OR, THE MARROW ARCHITECTURE. Shewing how to draw a Column with its base, capital, entablature and pedestal; and also an arch of any of the five orders. And duly limit the Rise and Projection of everyone, even the finallest member. According to the proportions laid down by the most celebrated PALLADIO, to utmost degrees of exactness and speed possible. Soplain & so easy, that a young Gentleman tho'an utter stranger to e Art, may apprehend the whole by seing anly example wrought in a method entirely new.	
AÑO PUBLICACIÓN	Londres 1728	
HABLA DE_		
Dedicatoria		
A quien va dirigido/Prefacio		Va dirigido al lector, le dice que si tiene paciencia, a pesar de lo largo del título, realmente es un tratado muy útil, que entra en materia en seguida.
NOTAS SOBRE EL LIBRO		Introducción y entra directo a los órdenes y son una serie de láminas explicadas a su estilo directo.
Casa Ikea		
COMENTARIOS	Es un doble moleskino, muy cómodo y manejable. Como viene siendo tónica habitual en Halfpenny muy instructivo, pero no me habla de lo que me interesa.	

<table>
<tr><td>AUTOR</td><td colspan="2">Batty Langley</td></tr>
<tr><td>TÍTULO</td><td colspan="2">A SURE METHOD OF IMPROVING STATES, BY PLANTATIONS OD OAK, ELM,ASH, BEECH, AND OTHER TIMBER-TREES, &C. WHEREIN IS DEMONSTRATED, THE NECESSITY AND ADVANTADGES THEREOF; THEIR MANNER OF RAISING, CULTIVATING, FELLING, &C. IN ALL KINDS OF SOILS, WHEREBY ESTATES MAY BE GREATLY IMPROVED.</td></tr>
<tr><td>AÑO PUBLICACIÓN</td><td colspan="2">London 1728</td></tr>
<tr><td colspan="3">HABLA DE_</td></tr>
<tr><td>Dedicatoria</td><td>To the right hounourable Lord Viscount Torrington, and to the rest of the lords Commisioners of the Almiralty</td><td>Se lo dedica a ellos porque considera que de alguna manera la marina es la que ha servido para mejorar el comercio en la nación y ha ayudado a mejorar los cultivos de madera</td></tr>
<tr><td>A quien va dirigido/Prefacio</td><td>To the nobility and gentry of Great Britain.
Whereas the success of plantations wholly depends upon the well preparing of soils, and adapting the several kinds of timber-trees to their various natures.
These are to give Notice, that the author's advice may be commanded to any part of Great Britain or Ireland.
As also, for the laying out, and planting of gardens in general, after a rural and more grand manner, than has been done before. And Noblemens Estates most accurately surveyed and mapped, with curious prospects thereof: also, grottoes, baths, cascades, fountains, canals made, and engines for raising water to any height required.
TIMBER measured and calued, either growing felled.
And in consideration that the just mensuration od timber being most expediously performed by the line of numbers, on the two feet, to the sliding rules; this is to inform the curious, that the most accurate rules for these purposes, as well as all other mathematical instruments, in silver, brass, ivory or wood are most exactly made and sold, at very reasonable rates, by Benjamin Scott; at the Mariner and Globe, against ExeterCharge in the Strand, London.</td><td></td></tr>
<tr><td>NOTAS SOBRE EL LIBRO</td><td>The contents.
VER FICHA</td><td>Al final hay un índice de árboles y términos por orden alfabético, que puedes encontrar en la página.</td></tr>
<tr><td>Casa Ikea</td><td></td><td></td></tr>
<tr><td></td><td colspan="2"></td></tr>
<tr><td>COMENTARIOS</td><td colspan="2">Es un libro un algo más que un moleskino algo grueso pero manejable.

No habla del tema que me interesa, pero es muy interesante que plantea, la necesidad de plantar árboles que al fin y al cabo son la materia prima para la construcción de casas y barcos.

Hay que prever que se van a necesitar y que puede ser un negocio muy rentable, es decir que el autor nos introduce en un "nuevo negocio" que va a ser muy importante desde el punto de vista naval, y de la construcción.</td></tr>
</table>

AUTOR	Batty Langley	
TÍTULO	THE YOUNG BUILDER'S RUDIMENTS: OR THE PRINCIPLES OD GEOMETRY, MECHANICKS, MENSURATION AND PERSPECTIVE, GEOMETRICALL DEMONSTRATED. TOGETHER WITH THE FIVE ORDERS OF COLUMNS IN ARCHITECTURE. ACCORDING TO THE PROPORTIONS OF THE CELEBRATED PALLADIO. Calculated for the use of workmen, gentlemen, and others, who delight in designing, drawing, painting, engraving, and gardening &c. Adorned with about thirty copper plates, curiously engraved by J. Vandergucht and B. Cole	
AÑO PUBLICACIÓN	London 1730	
HABLA DE_		
Dedicatoria	To the Right Hounorable William, Lord Harrington	Por lo visto es un tipo que sabe de mates, literatura, y es el protector de Langley en ese momento.
A quien va dirigido/Prefacio		NO HAY
NOTAS SOBRE EL LIBRO	CONTENTS PART I: Lecture 1: of the definitions of such geometrical lines, superficies, and solid bodies, as are necessary to be understood by every workman concerned in the noble art of sound Buildings Lecture 2: of such geometrical problems as are necessary to be understood by workmen. Lecture 3: of the five orders of columns in architecture, according to the proportions of the celebrated Andrea Palladio. Lecture 4: of the Mechanick Powers, or manner of raising heavy bodies. Lecture 5: Mechanick proportions of the Balance. Lecture 6: of the power of the leaver Lecture 7: of the power of the pully. Lecture 8: of the power of the wheel by its axel. Lecture 9: of the power of the wedge. Lecture 10: of the power of the screw. Lecture 11: of the mensuration of superficies. Lecture 12: of the mensuration of solid bodies. Of the mensuration of artificers work by sliding rule. PART II: PERSPECTIVE MADE EASY. Section 1: introduction. Of the principal lines and points incident to the art of perspective. Section 2: of lineal perspective. Section 3: of superficial perspective, or the manner of representing all kind of plain geometrical figures, as triangles, circles, parallelograms, polygons, &c. Section 4: of solid perspective, or the manner of representing solid bodies, as they appear to the eye in any view and distance assigned. Section 5: of the manner of representing the perspective elevations of buildings in general	Lista de libros editados por la misma editorial. Es un libro que habla básicamente de geometría y perspectiva, no me aporta nada nuevo en cuanto a sistemas constructivos, pero las láminas que acompañan las explicaciones son muy didácticas Al final como siempre en los libros de Langley hasta ahora te encuentras la tabla de "principal matters" que es una tabla de términos, ordenada por orden alfabético en la que te da la referencia de la página donde se habla de esa palabra en concreto.
Casa Ikea		
COMENTARIOS	Libro mediano, manejable, totalmente basado en geometría y perspectiva, también entra en los órdenes, en general, es bastante didáctico pero no me sirve en mi tesis. Las láminas en general son preciosas.	

AUTOR	Batty Langley	
TÍTULO	THE YOUNG BUILDER'S RUDIMENTS: OR THE PRINCIPLES OD GEOMETRY, MECHANICKS, MENSURATION AND PERSPECTIVE, GEOMETRICALL DEMONSTRATED. TOGETHER WITH THE FIVE ORDERS OF COLUMNS IN ARCHITECTURE. ACCORDING TO THE PROPORTIONS OF THE CELEBRATED PALLADIO. Calculated for the use of workmen, gentlemen, and others, who delight in designing, drawing, painting, engraving, and gardening &c. Adorned with about thirty copper plates, curiously engraved by J. Vandergucht and B. Cole	
AÑO PUBLICACIÓN	London 1730	
HABLA DE_		
Dedicatoria	To the Right Hounorable William, Lord Harrington	Por lo visto es un tipo que sabe de mates, literatura, y es el protector de Langley en ese momento.
A quien va dirigido/Prefacio		NO HAY
NOTAS SOBRE EL LIBRO	CONTENTS PART I: Lecture 1: of the definitions of such geometrical lines, superficies, and solid bodies, as are necessary to be understood by every workman concerned in the noble art of sound Buildings Lecture 2: of such geometrical problems as are necessary to be understood by workmen. Lecture 3: of the five orders of columns in architecture, according to the proportions of the celebrated Andrea Palladio. Lecture 4: of the Mechanick Powers, or manner of raising heavy bodies. Lecture 5: Mechanick proportions of the Balance. Lecture 6: of the power of the leaver Lecture 7: of the power of the pully. Lecture 8: of the power of the wheel by its axel. Lecture 9: of the power of the wedge. Lecture 10: of the power of the screw. Lecture 11: of the mensuration of superficies. Lecture 12: of the mensuration of solid bodies. Of the mensuration of artificers work by sliding rule. PART II: PERSPECTIVE MADE EASY. Section 1: introduction. Of the principal lines and points incident to the art of perspective. Section 2: of lineal perspective. Section 3: of superficial perspective, or the manner of representing all kind of plain geometrical figures, as triangles, circles, parallelograms, polygons, &c. Section 4: of solid perspective, or the manner of representing solid bodies, as they appear to the eye in any view and distance assigned. Section 5: of the manner of representing the perspective elevations of buildings in general	Lista de libros editados por la misma editorial. Es un libro que habla básicamente de geometría y perspectiva, no me aporta nada nuevo en cuanto a sistemas constructivos, pero las láminas que acompañan las explicaciones son muy didácticas Al final como siempre en los libros de Langley hasta ahora te encuentras la tabla de "principal matters" que es una tabla de términos, ordenada por orden alfabético en la que te da la referencia de la página donde se habla de esa palabra en concreto.
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COMENTARIOS	Libro mediano, manejable, totalmente basado en geometría y perspectiva, también entra en los órdenes, en general, es bastante didáctico pero no me sirve en mi tesis. Las láminas en general son preciosas.	

AUTOR	William Halfpenny .	
TÍTULO	PRACTICAL ARCHITECTURE, or a sure guide to the true working according to the rules of that science: representing the five orders, with their several doors & windows taken from Inigo Jones& other celebrated architects to each plate tables containing the exact proportion of the several parts are likewise fited. Very usefull to all true lovers of architecture, but particularly so to those who are engaged in the noble art of Building.	
AÑO PUBLICACIÓN	Londres 1730 (5th edition)	
HABLA DE_		
Dedicatoria		
A quien va dirigido/Prefacio		
NOTAS SOBRE EL LIBRO		
Casa Ikea		
COMENTARIOS	Ver notas edición 1724 es exactamente el mismo pero es un poco más pequeño (moleskino)	

AUTOR	Michael Hoare, carpenter	
TÍTULO	THE BUILDER'S POCKET COMPANION. Shewing and easy and practical method for laying down lines, for all sorts of arches and curves used in House buildings, ship-building, gardening, &c. also to make the centers or ribs for vaults or ceilings, and brackets for coves, either Regular or Irregular. Together. With the true and concise rules to find the lengths, bevels, and moulds for the back of a hip, in anu kind of roofs, whether square or bevel, hexagon or pentagon, &c. let their rafters be straight, or curves of different sorts. To which added THE FIVE ORDER OF COLUMNS; with their entablatures and pedestals, the proportions whereof are taken from the immortal Andrew Palladio, and laid down after Will Halfpenny's practical method: with several other useful problems, never before	
AÑO PUBLICACIÓN	London 1731 (the second edition corrected)	
HABLA DE_		
Dedicatoria		NO HAY
A quien va dirigido/Prefacio		Se ha dado cuenta de que los alumnos, no hacen más que quejarse de que no tienen los conocimientos, para llevar a cabo los temas de perspectiva, aquí los compila, a partir de lo que explican otros autores como Euclides, Mr. Pope, Mr. W. Halfpenny y otros.
NOTAS SOBRE EL LIBRO		Es un compendio de geometría descriptiva, como trazar una perpendicular desde el centro de una línea, desde uno de los extremos…
Casa Ikea		Habla de cómo dibujar una cubierta a cuatro aguas
COMENTARIOS	Es un libro tamaño moleskino, (53 hojas con letra bastante grande) va describiendo los procedimientos y tiene un diseño al lado que va guiando al alumno o estudiante. Es práctico pero sólo sirve para descriptiva.	

AUTOR	James Gibbs
TÍTULO	RULES FOR DRAWING THE SEVERAL PARTS OF ARCHITECTURE INN A MORE EXACTLY EASY MANNER THAN HAS BEEN HERETOSOR PRACTISED, BY WHICH ALL FRACTIONS, IN DIVIDING THE PRINCIPAL MEMBERS AND THEIR PARTS ARE AVOIDED.
AÑO PUBLICACIÓN	Londres 1732
REFERENCIAS EN	
NOTAS SOBRE EL LIBRO	Para el honorable Edward Earl of Oxford and Earl of mortimer, Baron Harley of Wigmore. Hay un indice => The contents. - Of the columns and their measures => Tuscan, Dorick, Ionick, Corinthian, Roman or Composite. - Of Entablatures. - Of Pedestals. Sólo habla del diseño de las mismas; hay una descripción de cómo hacerlo y un posterior ejemplo. PROPORCIONES PARA EL DIBUJO
COMENTARIOS	Es un volumen muy grande. Las láminas son una gozada pero no habla de materiales ni de cómo se construye.

AUTOR	Robert Walpole	
TÍTULO	THE PLANS, ELEVATIONS, AND SECTION; CHIMNEY-PIECES, AND CIELINGS OF HOUGTON IN NORFOLK: THE SEAT OF THE MOST HONOURABLE SIR ROBERT WALPOLE.	
AÑO PUBLICACIÓN	Londres 1735	
REFERENCIAS EN		
Hanno-Walter Kruft		
Dora Wiebenson		
David T. Yeomans		
Eileen Harris		
NOTAS SOBRE EL LIBRO	Es un libro muy grande. Hay un prefacio en Latín y una serie de planos desde la situación a los establos de los diferentes edificios de Norfolk.	
COMENTARIOS	Es un volumen interesante pero no me es de utilidad para la tesis.	

AUTOR	Francis Price (arquitecto y carpintero)
TÍTULO	THE BRITISH CARPENTER: OR A TREATISE ON CARPENTRY../.
AÑO PUBLICACIÓN	Londres 1735
REFERENCIAS EN	
NOTAS SOBRE EL LIBRO	INTRODUCCIÓN. Se dividen los edificios en tres partes: • Solidez/resistencia • Uso. • Belleza. OBSERVACIONES: Descripción de estados de la madera, para la formación de vigas para cubiertas. Hay una humedad en toda la madera, en toda la madera para BEARING ha de tener una moderada CAMBER o redondez para que la humedad de alguna clase se seque PUNTOS OBSERVADOS EN EL LIBRO: 1.- Geometría. 2.- Uniones de la madera 3.- Jácenas en función de la planta. 4.- Planteamiento de la inclinación de la cubierta en función de la geometría de la planta. 5.- Sistema de trabajar la madera para: a) Ventanas b) Puertas c) Escaleras SUPLEMENTO: o Órdenes de Palladio: ▪ Toscano ▪ Jónico ▪ Corintio ▪ Composite. o Proporciones ornamentales en puertas, ventanas, etc. o Proporciones ornamentales en pedestales o Proporciones ornamentales en columnas y capiteles
COMENTARIOS	Éste es un tratado específico para carpinteros, desde el punto de vista de Yeomens, evidentemente es lo mejor que se escribió en el momento e incluso Eileen Harris, dice que hasta 1820 no se encuentra un tratado mejor de carpintería. Realmente es un tratado único ya que lo realiza directamente un carpintero una persona que trabaja directamente la madera que se ha enfrentado a los problemas. A pesar de sólo hablar de carpintería se puede considerar como un tratado de construcción ya que habla de elementos constructivos importantes como son los forjados y las cubiertas. Sí que es cierto que casi no habla ni de paredes ni de cimientos, ni de terreno ni de cómo orientar un edificio cosa que si hemos podido comprobar en otros tratados, pero el hecho de que facilite el trabajo de carpinteros que participan en la ejecución de parte de la estructura del edificio, de la construcción de escaleras y barandillas de protección, y de ventanas y puertas le da bastante validez como tratado.

AUTOR	William Salmon Junior, Carpenter of Colchester	
TÍTULO	BUILDER'S GUIDE, ANDGENTLEMAN AND TRADER'S ASSISTANT OR A UNIVERSAL MAGAZINE OF TABLES.	
AÑO PUBLICACIÓN	Londres 1736	
HABLA DE_		
Dedicatoria	No hay	
A quien va dirigido/Prefacio	Table- Timber-Measure whereby the content of any Piece of timber, or Stone, and may be exactly found, the Gird or Side of the Square, is also the length being know, from 6 inches to 36 inches, the side of square, or the Girt; and from I foot to 40 foot in length. Note: the reason that I began this table with 6 inches, was because all trees which do not hold that gird, are not allowed the name of Timber; so likewise have I omitted setting down any more of the content that what amount to feet and quarts of feet, by reason that no person either buys or sells Timber to ouch exactness, as to account anything for the odd Inches in the context of a tree; neither do they in many places allow the quarters of feet in the content and therefore to have inserted the odd inches in the content, would have be needless Table II.- is of flat or superficial measure for the measuring of Boards, Planks, &c and ready cast up, from I foot to 30 foot long and from 5 to 18 inches broad; and by addition only, will serve to any greater length or Breadth. Table III.- shews at once how to many loads are contained in any number of feet, of either rough or squares timber, or of Plank of any thickness. Table IV: Shews how many bricks are required to build any Piece of Brickwork that consists of any number of superficial Feet, from 1 foot to 14.000 feet, and at any thickness from ½ a brick thick to 2 ½ and by addition only to any thickness required. This table is likewise of daily and excellent use, to all persons concerned in Building inception	Como no hay tablas buenas la idea es hacer unas claras para cualquier persona pero esencialmente para PROPIETARIOS. (en el prefacio te dice exactamente que contiene cada una de las tablas. Después hay un resumen de contenidos ordenados alfabéticamente para que vayas a la página donde las puedes encontrar. Cada tabla va precedida de una explicación de cómo usarla y uno o 2 ejemplos para que quede claro . Como hacer un EEMM perfecto.
Casa Ikea	Tablas de mediciones	
NOTAS SOBRE EL LIBRO	(inicio) Imagen de alguien con un libro en la mano mientras se cortan árboles.	
COMENTARIOS	El tamaño del libro es un poco más que Moleskino. Hay que enseñar cómo medir la construcción, lo más exacta posible, lo que pasa es que estas tablas creo que se solapan. Miden cosas distintas.	

AUTOR	Batty Langley	
TÍTULO	ANCIENT MASONRY BOTH IN THE THEORY AND THE PRACTICE, DEMONSTRATING THE USEFUL RULES OF ARITHMETICK, GEOMETRY AND ARCHITECTURE, IN THE PROPORTIONS AND ORDERS OF THE MOST EMINENT MASTERS OD ALL NATIONS, VITRUVIUS, BRAMANTE, JULIO ROMANO, MICHAEL ANGELO, CARLO CESARE OSIO, ANDREA PALLADIO, VINCENT SCAMOZZI, M.J. BAROZZIO (OF VIGNOLA), SEBASTIAN SERLIO, DANIEL BARBARO, L.B. ALBERTI, P.CATANEO, P. DE L'ORME, VIOLA, J DE BULLANT, JULIAN MAU-CLERC, J. BERAIN, SEBASTIAN LE CLERC, CLAUDE PERRAULT, INIGO JONES, SIR CHRISTOPHER WREN &C, &C, &C And also de Cariatides, Persians, French, Spanish, and English. Together with their most valuable designs for temples, triumphal arches, portico's, colonnades, piazza's, arcades, frontespieces, gates and doors, windows, niches, entablatures, pediments, capitals, festoons, trophies, balusters, balconies, balustrades, ceiling-pieces, chimney-pieces, floors, pavements, arches, groins, stair-cases, roofs, obelisques, ornaments, &c. The whole interspersed with critical observations on each master, illustrated by above three thousand examples engraved on four hundred and ninety four large folio copper plates with a dictionary index, explaining the terms of art used herein.	
AÑO PUBLICACIÓN	London 1736	
HABLA DE_		
Dedicatoria	To His Royal Highness Francis Duke of Loraine, The most noble: ENTERA EN FICHA	
A quien va dirigido/Prefacio	At a meeting of the Society in 21st day of December, 1732 the following manuscript of Vulgar Arithmetick was read and ordered that the same was printed for the first part of the principles of ancient masonry, &c by the members then present: A_____________ A _______________ B_____________ B _____________--- C D G S H Q R S T X Z &C	Entra en el número de libros publicados sobre este tema, pero que no son realmente útiles, este si lo es porque lo han escrito en sociedad. Entra en los requisitos que ha de tener un arquitecto según Vitruvio: 1. Dócil e ingenioso. 2. Leído 3. Con talento para el diseño y el dibujo 4. Geometría 5. Óptica 6. Aritmética 7. Historia 8. Filosofía 9. Música 10. Medicina 11. Leyes 12. Astrología Aunque según él se puede saltar lo de las leyes, Física y astrología. A partir de ese punto va explicando porque cada una de esas artes es importantes, y lo importante que es el conocimiento y el saber. Al final de la introducción hay:
NOTAS SOBRE EL LIBRO	Plate 44. The intercolumnations od the Protico of St	Empieza con una dedicatoria larga como el pan. Sigue de un índice de contenidos Después hay notas para el lector Y una introducción antes de empezar. (ver apartado anterior)
Casa Ikea		

COMENTARIOS	Son 2 libros enormes nada manejables, y para moverlos, prácticamente se necesita una grua. Empieza con agradecimientos a (Dios, la virgen y el credo). Luego tengo el índice de contenidos. EL vocabulario útil, referenciado a la página en la que se describe, (pero está definido, es decir, que da la palabra, definición y página o páginas en las que se habla de dicho término). Son 2 libros, uno con texto de 428 hojas y el otro con plates de 466 Abulta más el segundo porque las plates (sólo son de un lado) A parte del tamaño, puede ser un libro útil ya que tiene la explicación en un volumen mientras vas consultando el dibujo en el otro, lo cual a nivel de estudios es muy práctico, si no fuera porque son enooormes. Además, B. Langley, no tiene problemas en decir de donde ha sacado cada uno de los detalles constructivos que ha usado, por ejemplo en los de carpintería ha usado a Smith (ver Yeomens) y a Price, y lo pone, si son de Serlio, de Serlio, no miente, las explicaciones son exactas de los dibujos.	

AUTOR	William Halfpenny .	
TÍTULO	PRACTICAL ARCHITECTURE, OR A SURE GUIDE TO THE TRUE WORKING ACCORDING TO THE RULES OF THAT SCIENCE: REPRESENTING THE FIVE ORDERS. With their several, doors and windows, taken from inigo jones an other celebrated architects to each plate tables containing the exact proportions of the several parts are likewise fited. Very useful to all true lovers of architecture, but particularly so those who are engaged in the noble art of building	
AÑO PUBLICACIÓN	Londres 1736	
HABLA DE_		
Dedicatoria	To Thomas Frankland elq: in token of true gratitude for unmerited favours this small volume is humble dedicated	
A quien va dirigido/Prefacio		Imposible leerlo, la letra es minúscula
NOTAS SOBRE EL LIBRO		Es una serie de láminas en las que tiene por un lado la tabla de las proporciones y por el otro el diseño, de los cinco órdenes primero la columna y luego el friso correspondiente; al final te proporciona las puertas y las ventanas. Siempre comenta de donde ha sacado la información, bien sea Palladio, Inigo Jones, los arquitectos antiguos o los modernos.
Casa Ikea		
COMENTARIOS	Es un molesquino con pocas hojas, muy práctico, va a lo que va.	

AUTOR	James Smith
TÍTULO	A SPECIMENT OF ANCIENT CARPENTRY: CONSISTING OF VARIETY OF DESIGNS FOR ROOFS, EXEMPLEFYD IN COMMON CIRCULAR MIST SPIRAL &SUCH WHICH HAVE BEEN FRAM'D IN PUBLIC AND PRIVATE ANTIQUE BUILDINGS; TO WHICH ARE ADDED DESIGNS OF FRONTISPIECES TO DOORS, GATEWAYS, PIERS, PAVILLIONS, TEMPLES, CHIMENEY PIECES & OTHER USEFUL DECORATIONS NEVER BEFORE PUBLISHED BY WILLIAM JONES.
AÑO PUBLICACIÓN	Londres 1736
NOTAS SOBRE EL LIBRO	Es un libro para hacer cerchas de cualquier tipo, no da detalles constructivos de las mismas.
COMENTARIOS	Desde el punto de vista de tratado de construcción es un poco pobre porque se limita demasiado a un tipo de estructura. Es interesante porque te señala el tipo de cubiertas que se hacían en el Medioevo. Y siempre es bueno tener cuanta más información mejor sobre las formas de construir en diferentes épocas.

AUTOR	Edward Hoppus
TÍTULO	PRACTICAL MEASURING MADE EASY TO THE MEANEST CAPACITY BY A NEW SET OF TABLES.
AÑO PUBLICACIÓN	Londres 1777 (1a edición en 1736)
NOTAS SOBRE EL LIBRO	CONTENIDOS EN EL PREFACIO. DE LOS DEFECTOS Y ERRORES: Los defectos de Darling. Las imperfecciones de Keay La norma general establecida por Keay es absolutamente falsa. Un ejemplo y demostración que prueba que si te aventuras a realizar mediciones siguiendo las normas y las tablas de Keay, te equivocarás en 5's por libra Otro ejemplo y demostración probando que si te aventuras a calcular a partir de las tablas y reglas de Keay, te equivocaras del orden de 3's por libra. El autor de estas tablas considera que es su deber advertir al público del peligro de calcular siguiendo malas tablas. De hecho considera que el público en general estará contento de seguir buenas tablas de cálculo. El método de estas nuevas tablas es natural y sencillo. Es un sistema de tablas que mide, calculando con una exactitud de un cuarto de pulgada, hay que tener cuidado a la hora de realizar los cálculos intentando no cometer errores previos. Las tablas son tan extensas como el volumen. CONTENIDO: Los contenidos son el uso de las tablas para el cálculo de formas tanto regulares como irregulares de madera, piedra, etc. De cómo medir los sólidos: ➢ Formas rectas de madera, piedra etc. ➢ Formas redondeadas de madera, piedra etc. Pies al cubo Medidas planas. Los contenidos del apéndice. Tablas de precios y pesos de clavos especiales.
COMENTARIOS	Es un libro cuadrado que a simple vista recuerda un panetone pero que está encuadernado al lado. Tiene todo su interior lleno de cuadros medidas y precios. Constructivamente no te aporta mucho conocimiento a parte, de que te proporciona un listado de materiales en qué forma se usaban o se llevaban a obra. Lo que si te da es la importancia de unos cálculos previos, hoy disponemos de calculadoras y ordenadores que nos permiten calcular áreas con gran precisión, en aquel momento disponían de estas tablas y era muy importante que fueran lo más exactas posibles porque podía significar un desvío significativo de dinero. Es muy significativo que realice pruebas de que realmente los cálculos realizados con otras tablas de alguna manera lo que pretende es que la gente no crea ciegamente en lo que dice. De alguna manera el hecho de que se dedique a la "mejora" de los libros de otros sobre construcción es una prueba de que sus conocimientos de construcción son muy válidos.

AUTOR	Jacobo Gibbs, Architecto	
TÍTULO	BIBLIOTECA RADCLIFFIANA	
AÑO PUBLICACIÓN	London 1737	
HABLA DE_		
Dedicatoria	NO	
A quien va dirigido/Prefacio	NO	
NOTAS SOBRE EL LIBRO	1. Ichnographica delineatio situs bibliotecae radcliffiance 2. Ichonographia basis rusticae testudinatae subter bibliothecam radcliffianam. 3. Ichonographia bibliothecae redcliffianae 4. Elevatio sive orthographia exteriorbibliotheca radcliffianae. 5. Sectio sive orthographia interior bibliotheca radcliffianae	1.- plano de situación 2.- ichnographia basis
Casa Ikea		
COMENTARIOS	Es un libro bastante grande, poco manejable, que consiste en los planos de una biblioteca circular, para un campus universitario. Bonito pero poco útil.	

AUTOR	Batty Langley	
TÍTULO	THE BUILDERS COMPLEAT CHEST-BOOK, OR LIBRARY OF SCIENCES, ABSOLUTELY NECESSARY TO BE UNDERSTOOD BY BUILDERS AND WORKMEN IN GENERAL.	
AÑO PUBLICACIÓN	London 1738	
HABLA DE_		
Dedicatoria	To my worthy friends, the subscriber to this work	
A quien va dirigido/Prefacio		
NOTAS SOBRE EL LIBRO	A table of contents. Part I.- of Arithmetic Part II.- Of Geometry Part III.- Of Architecture Lect 1-20.- orders and decorations Lect 21,. Of trussed partitions (p. 147) Lect 22.- Of naked flooring Lect 23. Of Roofs.(p 150) Lect 24-30.- designs ornaments Part IV.- Of Mensuration. Part V.- plain Trigonometry Part VI.- Of Surveying Lands. Part VII.- Of Mechanics (Física) Part VIII.- Of Hydrostatics A table of the plates, and pages wherein they are explained. L LI	
Casa Ikea	Part III.- Of Architecture Lectura XXI. Of Trussed partitions. When partitions have solid bearings throughout their whole extent, they have no need to be trussed; but when they can be supported, but in some particular places, then they require to be trussed in such manner that the whole weight shall rest perpendicularly upon the places appointed for their support, and nowhere else. As partitions are made of different heights, to carry one, two or more floors, as the kinds of buildings require, therefore in Plate L. (…) The strength of timber in general, is always in proportion to the quantity of solid matter it contains. The quantity of solid matter in timber is always more or less, as the timber is more or less heavy. (…) As the whole weight on partitions, is supported by the principal posts, their scantlings must be first considered ; and which should be done in tow different manners, viz. First when the quarters, commonly called Studds, are to be filled with brickwork, and rendered thereon; and lastly, when to be lathed and plaistered on both sides. When the quarter are to be filled between with brick-work, the thickness of the principal posts should be as much less than the breadth of a brick, as twice the thickness of a lath; so that when those posts are lathed to hold on the rendering, the laths on both sides may be flush with the surfaces of the brick-work; and to give these posts sufficient strength, their breadth must be increased at discretion; but when quarters are to be lashed on both sides, or when wainscoting is to be placed against the partitioning, then the thickness of the posts, may be greater at pleasure (…) LECT XXII. Of naked flooring.	

	The principal thing to be observed in naked flooring, is first the disposition of girders, or manner of placing them in the most secure and advantageous manner. Secondly their scantlings, and lastly, the manner of trussing them, when their lengths require it. There are some carpenters, who insist that girders should be laid on strong lentils over windows, and who alledge that girders, being laid on lentils in piers, the piers are endangered at the decay of those lentils. Others insist, that it is best to lay girders in piers, as being the most solid bearings, and that if sound oaken lentils are laid under them, they will endure as long as the brick-work will remain sound. In buildings, whose piers are narrow at the renewing of lentils, the piers will be endangered in both these cases; for lentils laid over windows, must be laid into the piers, on both sides of a window, and which, when taken out, will make large fractures, that will be very little less dangerous than the other, and therefore I shall submit this point to the discretion of the workman.	
COMENTARIOS	Vuelven a ser 2 libros, pero el tamaño no tiene nada que ver, la dedicatoria es a los suscriptores del trabajo, la lista es interminable, más larga que en la ficha anterior por lo que no pienso transcribirla. El tamaño de los libros, el de texto es un doble moleskino no muy grande, pesa poco. El otro es un casi el doble que el primero, manejable, es el de diseños/dibujos/láminas. (plates) Es casi lo mismo que el otro, aunque hay más MECHANICALS (lo que para nosotros es física o cálculo de estructuras (en este caso de madera) estática, te explica cómo van las fuerzas, y el diseño en función de su capacidad portante, son sólo 3 puntos pero algo es algo, además están los diseños que acompañan que siempre son un añadido.	

AUTOR	Batty Langley	
TÍTULO	THE CITY AND COUNTRY BUILDERS, AND WORKMAN TREASURY OF DESIGNS: OR, THE ART OF DRAWING, AND WORKING THE ORNAMENTAL PARTS OF ARCHITECTURE.	
AÑO PUBLICACIÓN	Londres 1740	
REFERENCIAS EN		
David T. Yeomans	It is not always possible to make a clear distinction among his titles between those concerned with the decorative elements of building and those devoted to technical matters. His *Treasury of designs* (1740) for exemple, mainly contains designs for door cases, chimney pieces, and the like but also has plates of roof trusses.	No siempre es posible hacer una clara distinción entre sus títulos, entre los concernientes a los elemetos decorativos de la construcción y esos dedicados a temas técnicos. Su *Treasury of Designs* (1740) por ejemplo, casi no contiene diseños para DOOR CASES, piezas de la chimenea y como que tiene ilustraciones de cerchas de cubiertas.
Eileen Harris	With the exception of *Ancient Architecture*, Langley's architectural books are unoriginal, repetitive slap-dash productions. Nevertheless they were continually in use and demand, and their influence on standard eighteen-century building all over the British Isles was enormous. The 500 subscribers to *the Builder's Complete Assistant* (1738) and *the Country Builder's and Workman treasury* (1740) came from Canterbury, York, Ipswich, Gloucester, Woodbridge, Malton, Norwich, Lower Hardres in Kent and of course, from London and its environs. They were carpenters, joiners, glaziers, masons, surveyors, carvers and craftsmen such as these. With few exceptions (for example James Paine end the elder John Wood) they are the forgotten men who did the daily work of building. Cabinet-makers, whom we do not normally associate with architectural books, prove to have been just as eager as builders to acquire patterns of capitals, cornices, pediments, doors and windows, complete with examples by Thomas Langley of how these features could be put together to form bookcases.	Con la excepción de *Ancient Architecture*, los libros de arquitectura de Langley no son originales, repetidas SLAP-DAHS ediciones. A pesar de ello estaban continuamente en uso y demanda, y su influencia en la construcción estándar del siglo XVIII en todas las Islas Británicas fue enorme. Los 500 suscriptores del Builder's Complete Assistant (1738) y del Country Builder's and Workman Treasury (1740) procedían de Canterbury, York, Ipswich, Gloucester, Woodbridge, Malton, Norwich, Lower Hardres en Kent y desde luego, desde London alrededores. Eran carpinteros, ebanistas, vidrieros, masones, topógrafos, CARVERS Y CRAFTSMEN y cosas así. Con pocas excepciones (por ejemplo James Pain y el viejo John Wood) eran los hombres olvidados que hacían el trabajo diario de la construcción. CABINET_MAKERS, quienes normalmente no relacionaríamos con libros de arquitectura, probaron tener tanto EAGER como los constructores para asimilar diseños de capiteles, cornisas, rodapiés, puertas y ventanas, completas con ejemplos de Thomas Langley de cómo esas formas podían estar juntas para formar BOOKCASES.
NOTAS SOBRE EL LIBRO	El libro trata de las partes ornamentales del edificio. En el capítulo uno trata de las proporciones de los cinco órdenes de las columnas en Arquitectura de ALIQUOT partes. En el capítulo dos trata de los intercolumnios o las distancias adecuadas que ha de haber entre columnas en cada uno de los órdenes, como se ha de colocar; la forma de los diseños, para frontispicios, puertas, ventanas, etc.	
COMENTARIOS	Quizás es de los libros menos interesante de Batty Langley en el sentido en que sólo se dedica a motivos de decoración. En cualquier caso es importante esa voluntad de hacer llegar a todo el mundo la cultura.	

AUTOR	John Worgan, Surveyor	
TÍTULO	A NEW SET OF TABLES, CALCULATED AFTER A PLAIN, EASY, AND CORRECT METHOD: IN WHICH INSPECTION, ARE GIVEN THE TRUE SOLID CONTENTS OF ANY PIECE OF TIMBER OR STONE, &C. BEING OF GRAT USE TO SURVEYORS, CARPENTERS, SAWYERS, MASONS AND ALL OTHERS CONCERN'D IN BULLING OR SELLING SUCH MATERIALS US'D IN THE BUILDING WAY: AND NEVER MADE OUT BY AN AUTHOR BEFORE TO THIS EXACTNESS. WITH SOME ANIMADVERSIONS ON THE WORK OF A LATE AUTHOR IN THIS WAY (I.e. EDWARD HOPPUS) SETTING FORTH THE INSUFFICIENCY OF HIS METHOD TO COMPLETE A WORK OF THIS NATURE.	
AÑO PUBLICACIÓN	Londres 1740	
HABLA DE_		
Dedicatoria	No hay	
A quien va dirigido/Prefacio	Having said thus much Vindication of myself, for increasing the Numbers of Authors on this subject, what remains is to inform the Reader what he is to expect from the following sheets	Habla de que ha visto un montón de libros sobre tablas para medir, que son muy populares, pero no ve ninguno con buenos ojos, y ha decidido escribir este porque realmente cree que será útil a los surveyors, a los que van a realmente trabajar con él
Casa Ikea	Tablas de mediciones	
NOTAS SOBRE EL LIBRO	Tables of scantlings of Ends of Timber or Stone, ¬c. Pointing to the tables of Solid Quantities. Their Use. Viz. Whatever the dimensión is, take the Lesser first. Examples (7) The index tables of scantlings or superficies of Ends. (tablas, con ejemplo al final). The tables of Solid Quantities, referred to from the Tables of Scantlings. (tablas). Animadversions: My friend Mr Edward Hoppus, surveyor to the London Insurance Fire office when he published his book , called, Practical measuring by a new Set of Tables , Ready to calculated, after a plane easy and correct Method and safely to be depended on by all etc, made me a present of one of the Copies; and I being eager to peruse it, sat myself immediately down to it, hoping agreeable to the Opinion I had always had of that Gentleman's capacity and Industry Vamos que se leyó el libro, empezó a calcular las cosas tal y como las dice Hoppus, y decidió que tenía que escribir un libro con tablas verdaderas y una corrección de las de Hoppus.	
COMENTARIOS	El tamaño del libro es el doble de un Moleskino alargado. Sigue la voluntad de enseñar, a quien sea, y de que la enseñanza sea lo más exacta posible, hay que transmitir conocimientos, y corregir los que se han transmitido mal. Hay un momento en el que dice que no sabe cómo será Hoppus como matemático pero que para calcular temas de Mecánica no vale. No entro en si los cálculos son buenos o no o si tiene razón o no, pero se ha de hacer constar que estos libros que facilitaban cálculos cuando no había calculadoras debían tener su importancia.	

AUTOR	John Wood (Architect)	
TÍTULO	THE ORIGIN OF BUILDING OR, THE PLAGIARISM OF THE HEATHENS DETECTED: IN FIVE BOOKS	
AÑO PUBLICACIÓN	Londres 1741,	
REFERENCIAS EN		
Hanno-Walter Kruft		
Dora Wiebenson		
David T. Yeomans		
Eileen Harris		
NOTAS SOBRE EL LIBRO	The contents: Book the first: Containing an account of the Rise and Progress of Building, from the creation of the world, to the time in which Moses Finished his tabernacle in the Wilderness. CI.- Introduction. CII.- Of the rise of the building. CIII.- Of the Progress of Building, from its introduction by Cain till Noah began the Ark. CIV.- Of Noah's ark, and the Luge. CV.- Of the progress of Building, from deluge, till the confusion of languages. CVI.- Of the progress of building, from the confusion of Languages till Joseph's advancement till the court of Pharaoh King of Egypt. CVII.- Of Joseph advancement in Egypt, and manner in which the prince… CXII.- Urim and THuming. Book the second: Containing a description of speculative Architecture; of proportion; of beauty; and various parts or the tabernacle. CI.- Introduction. CII.-Of Architecture. CIII.- Of Pillars. CIV.- Of Orders. CV.- Of Proportion. CVI.- of Beauty. CVII.- The manner in which Israelitas were instructed in law. (…) CXV.- Moses. Book the third: Tabernacle, Solomon's temple. Book the fourth: Solomon's Temple => Asia, Egypt, Greece and Italy. Book the fifth: Orders of columns; of the forms and proportions of Temples, Basiliscs and other celebrates Edifices of Antiquity; and the standard measures of the antients. ➢ CX.- Of the State of Building in Britain (p 218-222); Mr Tolland => Historiador ??? "The Cathedral of Landaff, in Glamorganshire => the East Part wereof was built to imitate Solomon's Temple; and when it was repaired, about the year 1120, the Nave enlarged, as form a Figure similar to that Noah's Ark. "HISTORIA DE LA ARQUITECTURA" (PUNTO DE VISTA RELIGIOSO: ANTIGUO TESTAMENTO)	
COMENTARIOS	Grande.	

AUTOR	Batty & Thomas Langley	
TÍTULO	ANCIENT ARCHITECTURE RESTORED AND IMPROVED BY A GREAT VARIETY OD GRAND AND USEFUL DESIGNS, ENTIRELY NEW IN THE GOTHIC MODE FOR THE ORNAMENTS OF BUILDINGS AND GARDENS. Exceeding everything that extant. Exquisitely engrave don LXIV large Quarto Copper Plates and printed on Superfine Royal Paper	
AÑO PUBLICACIÓN	London 1741	
HABLA DE_		
Dedicatoria		
A quien va dirigido/Prefacio		
NOTAS SOBRE EL LIBRO		
Casa Ikea		
COMENTARIOS	Es como 4 moleskinos, de diseños, he tenido una sensación de “deja vu” sencillamente porque estos diseños son los que se usaron en el 1747 para el de la GOTHIC ARCHITECTURE. Ya anoté en la ficha que el año de alguna de las láminas era el 1741, ahora ya sé porque, lo que intentaba era que te dieras cuenta de que en realidad se habían dibujado para un volumen anterior.	

AUTOR	Batty Langley	
TÍTULO	THE BUILDERS JEWEL: OR THE YOUTH'S INSTRUCTOR, AND WORKMANS REMEMBRANCER. Explaining easy rules, made familiar to the meanest capacity, for drawing and working. I.- the five orders of columns entire; or any part of an order, without regard to the module or diameter. And to enrich them with their rustics, flutings, cablings, dentules, modillions, &c. also to proportion their doors, windows, intercolumnations, portico's and arcades. Together with fourteen varieties of raking, circular, scrolled, compound and contracted pediments; and the true formation and accadering of their ranking and returned cornices; and mouldings for capping their dentules and modillions. II.- Block and cantaliver cornices, rustic quoins, cornices proportioned to rooms, angle brackets, mouldings for tabernacle frames, paneling, and centering for groins, trussed partitions, girders, roofs and domes. With a section of the dome of ST Paul's. LONDON	
AÑO PUBLICACIÓN	London 1741	
HABLA DE_		
Dedicatoria		
A quien va dirigido/Prefacio		
NOTAS SOBRE EL LIBRO	Just published, printed for R. Ware,, the two following books Introduction: Chap I: Of the orders en general, and of their principal parts. Chap II: Of pedestals and their parts. Chap III: Of columns and their parts. Chap IV: Of entablatures. Chap IV(errata): Of doors, windows, portico's, arcades, and the intercolumnation of columns in general. Chap V: Of Pediments and the manner of finding their Raking, and returned Mouldings for their cornices, and for capping of their ranking mutules and modillions. Chap VI: Of Block and cantaliver cornices, rustic quoins, cornices and coves, proportioned to rooms of any height, angle-brackets, mouldings for tabernacle-frames, panels and centering for groins. Chap VII: of trussed partitions, trussed girders, naked flooring &c Chap VIII: Of roofs	Enseña como dibujarlas y las medidas básicas mínimas para trabajar con ellos IDEm
Casa Ikea		
COMENTARIOS	En la intro: el hombre está preocupado porque los trabajadores y profesionales no se pueden llevar todo el saber en la cabeza, y con ayuda de trabajadores y estudiantes, a partir de ahí decide montar este libro, tamaño moleskino, para que la gente se pueda llevar el saber en el bolsillo, ha puesto lo más básico y además las láminas son una monada. Lo más interesante desde mi perspectiva son los 2 últimos capítulos, pero en realidad son descripciones de las láminas, para llevar a cabo la construcción y las medidas, que seguro que las ha extraído de alguna de las normativas imperantes en aquel momento que él describe muy bien en el apéndice de "a sure guide for…."	

AUTOR	Batty Langley	
TÍTULO	THE MEASURERS JEWEL EXHIBITING RULES AND ANALOGIES FOR THE MENSURATION OF ALL KINDS OF GEOMETRICAL FIGURES AND BODIES, ARTIFICERS WORKS, LANDS, TIMBER &C. To which is prefixed, vulgar and decimal Arithmetic, in the most concise and easy manner; with the extraction of the square root.	
AÑO PUBLICACIÓN	London 1742	
HABLA DE_		
Dedicatoria		
A quien va dirigido/Prefacio		
NOTAS SOBRE EL LIBRO	Contents. Part I: vulgar arithmetic p 1 Part II: decimal arithmetic p78 Part III: vulgar fractions p92 Part IV: extraction of the square root, 103 Table roots, from 10 to 200, 106 Various propositions in mensuration 108 to end Book printed for J. Wilcox	
Casa Ikea		
COMENTARIOS	Libro tipo moleskino, ya era hora, muy manejable, para llevar en el bolsillo, es totalmente para matemáticas, aritmética, fracciones… Lo que dice el contenido es lo que hay.	

AUTOR	William Salmon	
TÍTULO	THE LONDON & COUNTRY BUILDER'S VADE MECUM: OR THE COMPLEAT AND UNIVERSAL ARCHITECT'S ASSISTANT.	
AÑO PUBLICACIÓN	Londres 1736	
HABLA DE_		
Dedicatoria	No hay	
A quien va dirigido/Prefacio		A los propietarios tanto en el campo como en la ciudad. Y también a los arquitectos.
Casa Ikea	Tablas de mediciones	
NOTAS SOBRE EL LIBRO	Otro libro sobre mediciones: cierta obsesión por los números y las proporciones. I.- Table for the reducing of brickwork of any thickness to the statute thickness of a Brick and ½ II.- A table which shews how many Bricks are sufficient to built any piece of Brick-work, of any number of feet and thickness III.- A table of tiling, whereby is shewn how many tiles will cover a roof. IV.- Variety of tables, which flew the proper Scantling to cut timber to, fit for any Building and for valuing the same, by the foot, lined measure. V.- A table of pavements, shewing how many bricks, pammans &c will pave any floor. VI.- variety of tables for shewing the value of all shorts of Nails, Bolts, tinges &c. VII.- A table of solid measure, for measuring of Timber or Stone that is either round square or unequal fided, and the content given in feet, Inches and parts. VIII.- A table for Ready casting up what any nimber of feet, yards, squares, rods &c, come to, at any Price by foot yard &c. (preface) The carriage of the materials and scaffolding is excepted in all the works herein mentioned, and therefore when they are to be included, a suitable allowance must made.	
COMENTARIOS	El tamaño del libro es un poco más que Moleskino. Es un ITEC que te proporciona es el valor de los materiales y cuanto entra.	

AUTOR	Batty &Thomas Langley	
TÍTULO	THE GOTHIC ARCHITECTURE, IMPROVED BY RULES AND PROPORTIONS. IN MY GRAND DESIGNS OF COLUMNS, DOORS, WINDOWS, CHIMNEY-PIECES, ARCADES, COLONADES, PORTICOS, UMBRELLOS, TEMPLES AND PAVILIONS &C.With plans, elevations and profiles; geometrically exposed.	
AÑO PUBLICACIÓN	London 1747	
HABLA DE_		
Dedicatoria		Por una vez, no hay
A quien va dirigido/Prefacio		No hay
NOTAS SOBRE EL LIBRO		Pasamos directamente a una serie de láminas de proporciones de cómo habría de ser el gótico, bonito, pero no me interesa especialmente.
Casa Ikea		
COMENTARIOS	Es un libro de tamaño normal (4 moleskinos) al ser de láminas es un tamaño, correcto, ni muy grande ni muy pequeño. Curiosidad, las láminas fueron dibujadas en su mayoría en los años 1741 y 1742, de lo que deduzco que es una recopilación.	

AUTOR	Batty Langley	
TÍTULO	THE BUILDERS BENCH-MATE: OR INESTIMABLE POCKET COMPANION... /	
AÑO PUBLICACIÓN	Londres 1747	
REFERENCIAS EN		
David T. Yeomans	His *Builders Bench Mate* (1747) is a collection of both gothic and classical details while his *Sure Guide to Builders* (1747) deals with elementary geometry and its application to setting-out as well as containing descriptions of the orders.	Su *Builders Bench mate* (1747) es una colección de detalles tanto góticos como clásicos mientras que su *Sure Guide to Builders* (1747) habla de geometría elemental y sus aplicaciones así como también descripciones de los órdenes.
Eileen Harris	Gothic architecture was taken up and pursued by Langley primarily because it is English and is masonry. Its ancient history is the very foundation on freemasonry. By promoting it and giving in the classical respectability of orders, rules, and proportions, he was fulfilling again the principal charges of every freemason, devotion to country and to brethren, just as he did by inventing an English order or by opposing the Palladian invasion and the employment of a Swiss engineer to design Westminster Bridge. The gothic orders, however absurd, are a work of originality and obvious potentiality of which he made surprisingly little.	La arquitectura gótica se toma y defiende por Langley mayormente porque es inglés y porque es masón. Su historia antigua se basa en la masonería. Mediante la promoción y dándole la respetabilidad de los órdenes clásicos, reglas y proporciones, él estaba convencido de ganar los principales cargos de cada masón, devoción al país y a sus nativos, lo hizo inventando un Orden Inglés opuesto a la invasión Palladiana y al emplear a un ingeniero Suizo para diseñar el Puente de Westminster. Los órdenes góticos, aunque absurdos, son un trabajo de originalidad y tienen una potencialidad que los hacen ligeramente sorprendentes.
NOTAS SOBRE EL LIBRO	Haciendo fácil para cualquier capacidad, los órdenes de la arquitectura griegos, romanos y góticos, mediante cerca de quinientos ejemplos , tomados de los antiguos, de pedestales. Proporcionado mediante minutos y partes iguales. Nunca hecho antes. Mejorado con 184 láminas.. Donde los órdenes de Andrea Palladio son desestimados, libres de erróneas mediciones publicadas en lso libros de Leoni, Campbell, Hoppus, Ware etc. Escrito para el uso de caballeros Es básicamente un diccionario con todos los términos al principio y dibujos al final, con tamaño cómodo.	
COMENTARIOS	Batty Langley es básicamente inglés y masón. Es un xenófobo bastante extremo, así que la manera que se le ocurre de defender el hecho de ser inglés y masón es criticar el Palladianismo que crece por toda Inglaterra, y ponerse a favor del gótico inventándose unos órdenes. En este libro habla básicamente de órdenes siguiendo el sistema de diccionario, forma, por otro lado, que es muy utilizada desde el principio, parece que se sienten cómodos con ello. En cualquier caso desde el punto de vista de construcción tiene pocos detalles.	

AUTOR	Batty Langley	
TÍTULO	A SURE GUIDE FOR BUILDERS; OR THE PRINCIPLES AND PRACTICE OF ARCHITECTURE GEOMETRICALLY DEMONSTRATED.	
AÑO PUBLICACIÓN	Londres 1747 (primera edición 1729)	
REFERENCIAS EN		
David T. Yeomans	His *Builders Bench Mate* (1747) is a collection of both gothic and classical details while his *Sure Guide to Builders* (1747) deals with elementary geometry and its application to setting-out as well as containing descriptions of the orders.	Su *Builders Bench mate* (1747) es una colección de detalles tanto góticos como clásicos mientras que su *Sure Guide to Builders* (1747) habla de geometría elemental y sus aplicaciones así como también descripciones de los órdenes.
Eileen Harris	His outburst against Jones and the Burlingtonians is, for the period, fare more extraordinary than his liking for Hawcksmoor or the Gothic, all the more so as it is a reversal of the esteem he had expressed for Jones, Burlington and Pembroke five years earlier in A Sure Guide To Builder's (1729). Why this abrupt change of heart in 1734?	
NOTAS SOBRE EL LIBRO	Empieza con una tabla con materias principales ordenadas por orden alfabético. Debajo del título: Esas definiciones geométricas, teoremas, problemas y etc. que son la base de la arquitectura explicados de forma fácil e inteligible para cualquier capacidad. Tiene también varios usos ilustrando en la construcción de escalas decimales y diagonales, midiendo y dibujando planos geométricos, y levantar el edificio, describiendo todos las molduras usadas en Arquitectura; disminuciones, flotantes, cableadas, y floreadas los ejes de las columnas y pilastras, describiendo la voluta jónica, divisiones y proporciones de rústicos, delineando los cinco órdenes de columnas de acuerdo con sus proporciones asignadas y determinar el extremo de los rodapiés etc. Junto con las proporciones de pedestales, columnas, entablaturas, impostas y sus disposiciones o intercolumnas en pórticos, arcos, puertas, ventanas, etc. Curiosamente seleccionados y dibujados. Desde lo más antiguo, tanto como Roma, u otros lugares donde la arquitectura ha florecido, como de Vitruvio, Palladio, Scamozzi, Vignola, Serlio, Perrault, Bosse, Angelo, y otros célebres arquitectos, antiguos y modernos. A los que he añadido un apéndice donde se describen los Actos del Parlamento relativos a constructores, edificios y materiales, que son explicados para el servicio de topógrafos, jefes de obra, trabajadores y propietarios de edificios. Todo ello iluminado con la gran variedad de diseños para frontispicios, puertas, ventanas, piezas de techo, pavimentos etc. Con los términos y columnas y arcos, después de los antiguos arquitectos griegos y romanos, aumentado con dos grandes láminas. OBJETIVO: Yo he llevado a cabo este trabajo con el plan más instructivo y con la manera más demostrable que soy capaz de proporcionar; y que espero sea muy útil para todo aquel que quiera complacer en este noble arte, de forma más fácil y más preparada para demostrar la razón y los efectos de todas las operaciones que va a realizar. Y para ayudar a los jóvenes estudiantes, debo advertirles , que no lean más allá de lo que comprenden y entienden, y que deben estar muy seguros antes de actuar. CONTENIDOS: Cap I.- Definiciones geométricas. Cap II.- Teoremas de geometría Cap III.- Problemas de geometría Cap IV.- Donde los anteriores problemas se aplican en mediciones y dibujos geométricos, plantas y alzados de edificios, columnas, pilastras etc.	

	Cap V.- De las proporciones generales de los cinco órdenes de columnas en la arquitectura, de acuerdo con las propociones de Vitruvio, Palladio, Scamozzi, Vignola, Serlio, Perrault, Bosse y M. Angelo. Cap VI.- De los pedestales y sus ornamentos. Cap VII.- De columnas y sus ornamentos Cap VIII.- De las tablaturas y sus ornamentos. Cap IX.- De pilastras y sus floreos. Cap X.- De los diversos errores cometidos por algunos arquitectos en su manera de colocar columnas y pilastras en los ángulos o esquinas de los edificios. Cap XI.- De los rodapiés. Cap XII.- De la proporción de entradas (hall), ante-cámaras, cámaras (habitaciones), galerías, puertas, ventanas, etc. Cap XIII.- De pisos, techos, chimeneas y cajas de escalera. ➢ Medidas máximas de puertas y ventanas. ➢ No se han de subir y bajar escaleras para ir de una habitación a otra. ➢ La cocina ha de ser espaciosa e iluminada tanto como sea posible; y de hecho tanto como los otros “office” están mejor situados bajo tierra, donde SPRINGS LIE DEEP ENNOUGH TO ALLOW THEREOF. APENDICE. 1. Respecto a los cimientos. 2. Escoger a un topógrafo (arquitecto técnico) con referencias. 3. Es muy conveniente añadir un ladrillo al grosor de la cimentación de cada pared de partición. Para prevenir el fuego es conveniente colocar una pared de ladrillo o piedra entre dos edificios. 4. Con respecto a las vallas principales. 5. Con respecto a ventans 6. Con respecto a la salida de agua de cubiertas y balcones. 7. Con respecto a las chimeneas; como se han de construir, que no haya madera cerca. 8. Con respecto a luces y canales de agua. 9. Con respecto a los niveles de los edificios después de que la ciudad de Londres fuera reconstruida después del fuego: de los pisos, para los tejados, de los ladrillos.
COMENTARIOS	Es un completo libro de construcción incluye todos los aspectos, las referencias a este volumen de Batty Langley son muy vagas en todos los textos, parece ser que prima más su condición de contestatario, postura que postuló después de la redacción de este libro. Probablemente este libro es una recopilación y copia de varios otros, pero lo hace un manual muy completo, lo que facilita su uso.

AUTOR	Batty Langley	
TÍTULO	THE BUILDERS BENCH-MATE: OR INESTIMABLE POCKET COMPANION, MAKING EASY TO THE MEANEST CAPACITY, THE GRECIAN, ROMANS &GOTHICK ORDERS OF ARCHITECTURE, BY NERA FIVE HUNDRED EXAMPLES TAKEN FROM THE ANCIENTS, OF pedestals, bases, shafts, capitals, columns, architraves, frizes, brackets, cornices, arches, imposts, key-stones, trusses, moldings of raking pediments, frontispieces, portico's, arcades, colonnades, chimney-pieces, frets, guilochi's, groins, weatherings, moldings for tabernacles, frames, &c.	
AÑO PUBLICACIÓN	London 1747	
HABLA DE_		
Dedicatoria		
A quien va dirigido/Prefacio		Habla de que hay un montón de libros sobre Palladio, pero la mayoría de ellos, son una serie de ilustraciones, que no explican nada, él lo que trata de hacer en este libro es resumir de forma clara, los conceptos de Palladio y las ilustraciones tiene proporciones para poder seguirlas sin problemas.
NOTAS SOBRE EL LIBRO		En la introducción te explica de que va el libro luego hay un glosario de términos explicados, y en la página (o lámina) en la que puedes encontrar lo definido.
Casa Ikea		
COMENTARIOS	Libro tamaño moleskino, que se hizo con la idea de ser práctico, como sólo habla de órdenes en realidad me sirve de poco, pero es una monada.	

AUTOR	John Wood (Architect)	
TÍTULO	CHOIR GAURE, VULGARY CALLED STONEHENGE ON SALISBURY PLAIN: DESCRIBED, RESTORED, ANND EXPLAINED; IN A LETTER TO THE RIGHT HONOURABLE EDWARD LATE EARL OF OXFORD, AND EARL MORTIMER.	
AÑO PUBLICACIÓN	Londres 1747	
REFERENCIAS EN		
Hanno-Walter Kruft		
Dora Wiebenson		
David T. Yeomans		
Eileen Harris		
NOTAS SOBRE EL LIBRO	Plano con las medidas de Stonehenge, a partir del mismo monta una teoría de las proporciones para saber qué es lo que había ahí. ➢ Figuras geométricas: como debieron estar al principio	
COMENTARIOS	Pequeño.	

AUTOR	William Halfpenny, Architect.	
TÍTULO	A NEW AND COMPLEAT SYSTEM OF ARCHITECTURE DELINEATED, IN VARIETY OF PLANS AND ELEVATIONS OF DESIGNS FOR CONVENIENT AND DECORATED HOUSES. Together with offices and out-buildings proportioned thereto, and appropiated to the several uses and situations required. As also an estimate of each by the great square. Prefixed to these are ten different sorts of piers, with gates of various compositions suitable to the same intended for entrances to courts, gardens, &c. As also new architectonic rules for drawing the member, in all kinds and proportions of the orders. And to them are also added a perspective view of the sinking pier of Westminster-Bridge, with the two adjoining arches; and a method proposed by trusses &c. to take off ¾ of the weight, or abutment and pressure now the pier, and discharge it as set forth on the plate. The whole comprised on 47 copper plates, with explanations thereto in common press-work	
AÑO PUBLICACIÓN	Londres 1749	
HABLA DE_		
Dedicatoria	To the reader.	
A quien va dirigido/Prefacio	As necessity was the parent of building, convenience should be the architect's first view; this in the following designs I have made the principal and foundation; as to beauty and magnificence; harmony is the result of the first, and proportion elegantly composed is the certain effect of the latter; and in these I have used all possible diligence to regulate the whole in the neatest and most exact manner, with regard as well to convenience, as to beauty and decoration. When I began this work, I intended only 15 designs for small edifices, from 200l. to 700l. value, but by the advices of some friends who approved of what I had begun, I have added to them 16 designs more: the value of the largest of which does not exceed 6000l. And in order to render those designs more universally useful, as well to artificers concerned in building, as to gentlemen and others of higher dignity, I have made estimates of each design; calculated by the magnitude of the plan, by the area of great square, and in this I think, I can safely say; the difference in the expence of building in most parts of England or Ireland, where a gentleman is obliged to by his materials, will be little more than 5 pounds in 100l. this by observation and experience in many parts, upwards of 20 years being employed therein, I can with the greater certainly assert. When I had finished these designs, I considered the usefulness of some orders, and proportions necessary for piers, and gates, for entrances to courts, gardens, &c. and these I have regulated and proportioned in a method entirely new, and I have prefixed them to the work as a preparatory introduction in 12 plates; also one plate shewing the use of architectonic rules, which is more methodically explained in the latter part of this book. The drawings of the whole being completed, and having time on my hands, curiosity led me to view the sunk pier of the new bridge at Westminster (which was the first time I was on that work) an accident or misfortune of that kind, in so great a structure, and which was erected for public utility, put me immediately upon thinking how the evil might be remedied, and prevent any future mischance to that noble design; the result of these thoughts was the scheme I annexed at the end od the work being a	

	perspective view of these 2 arches adjoining, and the sunk pier with the truss, &c. intending to secure them. This I laid before the right honourable and honourable the commissioners of the bridge for their consideration, and shall with pleasure think myself well employed, if my sentiments in the whole or in part may be found useful as one society; every individual has a right to contribute his sentiments for the public good; and if mine may be thought worthy their notice, I have done no more than the duty of every being in community, thought if should not anything contribute to may own immediate interest. These are the principal things I have to say on this subject, and I hope my explanations and remarks on so noble science as ARCHITECTURE, and properly introduced, I have found and innocent and agreeable amusement in the composition of them, as I hope the reader will in the perusal; and whatever may farther contribute to it in this science, I may perhaps in some future essay attempt to lay before the publick: but before I conclude, I beg leave to acknowledge may gratitude to may ingenious friend Mr. Robert morrice architect, to whom I communicate my designs, who gave me his friendly opinion on the same and am his and the publicks.	
NOTAS SOBRE EL LIBRO		Descripción de una serie de láminas que están al final del libro, lo bueno es que te pone hasta el precio de lo que costaría la casa finalizada.
Casa Ikea		
COMENTARIOS	Es 2 moleskinos apaisados, los diseños son una pasada, sobretodo el del puente de Westminster. Hay una parte de órdenes que ni fu ni fa, pero la parte de los diseños de las casas, con las medidas, y los precios es relativamente útil. Hay otro libro de las mismas características escrito posteriormente.	

AUTOR	Batty Langley	
TÍTULO	THE LONDON PRICES OF BRICKLAYERS MATERIALS AND WORKS, BOTH OF NEW BUILDING AND REPAIRS, JUSTLY ASCERTAINED: AND THE COMMON EXATIONS AND ABUSES THEREIN DETECTED. Interspersed with rules for estimating, performing and measuring all kinds of plain, circular, elliptical, gothic, spherical, spherodical, conical and pyramidal brick-works: wherein the abutment of all sort of arches, and the manner of building brick-flooring for the prevention of the fire, is clearly explained. The whole arithmetically and geometrically demonstrated. Also illustrated with a great variety of designs for plain and rusticated piers, for gates, piazzas, &c. In thirty-two curious copper-plates written for the use of gentlemen, stewards, and workmen in general, and particularly for such landlords and tenants who are subject to the repairs of building	
AÑO PUBLICACIÓN	London 1749	
HABLA DE_		
Dedicatoria		
A quien va dirigido/Prefacio	INTRODUCTION.	INT A todos los que se dedican al mundo de la construcción pero sobre todo a los propietarios e inquilinos, los cuales han de pagar los abusos de los albañiles.
NOTAS SOBRE EL LIBRO	Advertisement: books published, and sold by the author The city and the complete Bricklayer	Publicidad. Como dice el "título" es una guía para precios, en el primer capítulo 1 te da los precios de los materiales, y en el 2 de lo que costaría los trabajos de las diferentes partidas, en función de materiales y mano de obra. Es muy completo, diferencia los modelos constructivos y los precios, por ejemplo no es lo mismo un cimiento que la pared de la planta baja. Llega a detallar como se ha de valorar la ejecución de arcos y cúpulas. Como calcular la raíz cuadrada (cuadros de cálculos, recordemos que no había calculadoras). Y problemas de cómo hacer los cálculos a partir de los datos dados También tiene una serie de láminas descriptivas, muy explicativas. Al final de todo hay un glosario de términos y referenciados a la página en la que se habla de ellos.
Casa Ikea		
COMENTARIOS	Libro tamaño un poco más que un moleskino, hay que fijarse que últimamente los libros de Langley, son más pequeños, tiene en cuenta que la gente se los ha de llevar arriba y abajo, porque son datos que no puede contener de una en la cabeza.	

<table>
<tr><td>AUTOR</td><td colspan="2">Batty Langley</td></tr>
<tr><td>TÍTULO</td><td colspan="2">THE BUILDER'S COMPLEAT ASSISTANT, OR A LIBRARY OF ARTS AND SCIENCES, ABSOLUTELY NECESSARY TO BE UNDERSTOOD BY BUILDERS AND WORKMEN IN GENERAL.
(VIZ.)
I.- ARITMETICK, vulgar and decimal in whole numbers and fractions
II.- GEOMETRY, lineal, superficial, and solid.
III.- ARCHITECTURE, universal.
IV.- MENSURATION
V.- PLAIN TRIGONOMETRY
VI.- SURVEYING of lands, &c.
VII.- MECHANICK POWERS
VIII.- HYDROSTATIKCS.
Illustrated by above thirteen hundred examples od lines, superficies, solids mouldings, pedestals, columns, pilasters, entablatures, pediments, imposts, block cornices, rustic quoins, frontispieces, arcades, portico's, &c.
Proportioned by modules and minutes, according to Andrea Palladio and by Equal Parts.
Likewise, great varieties of trussed roofs, timber bridges, centering, arches, groins, twisted rails, compartments, obelisques, vases, pedestals for busto's, sun-dials, fonts, &c. and methods for raising heavy bodies by also water, by the common pump crane, &c.
Wherein the properties, and pressure of the Air on water, & is explained.
The whole exemplified by 77 large quarto copper-plates</td></tr>
<tr><td>AÑO PUBLICACIÓN</td><td colspan="2">London 1750 (2nd edition)</td></tr>
<tr><td colspan="3">HABLA DE_</td></tr>
<tr><td>Dedicatoria</td><td></td><td></td></tr>
<tr><td>A quien va dirigido/Prefacio</td><td></td><td></td></tr>
<tr><td>NOTAS SOBRE EL LIBRO</td><td>A table of plates, and pages wherein they are explained

A table of contents.
Part I.- of Arithmetic
Part II.- Of Geometry
Part III.- Of Architecture
Lect 1-20.- orders and decorations
Lect 21,. Of trussed partitions (p. 147)
Lect 22.- Of naked flooring
Lect 23. Of Roofs.(p 150)
Lect 24-30.- designs ornaments
Part IV.- Of Mensuration.
Part V.- plain Trigonometry
Part VI.- Of Surveying Lands.
Part VII.- Of Mechanics (Física)
Part VIII.- Of Hydrostatics</td><td></td></tr>
<tr><td>Casa Ikea</td><td></td><td></td></tr>
<tr><td></td><td colspan="2"></td></tr>
<tr><td>COMENTARIOS</td><td colspan="2">Es exactamente igual que el "THE BUILDERS COMPLEAT CHEST-BOOK, OR LIBRARY OF SCIENCES", bueno, casi, la lista de planos en este está al principio, en el otro está al final y en este ha pasado de dedicatorias; y además el Segundo tomo en lugar de ser apaisado, los dibujos los han doblado por la mitad, y se extienden, con lo cual, a nivel volumen es del mismo tamaño que el primero lo que lo hace más manejable.

A nivel contenidos es lo mismo, coincide hasta la numeración de las páginas.

Supongo que por eso lo considera una segunda edición aunque en realidad, los ha titulado diferente</td></tr>
</table>

AUTOR	John Wood	
TÍTULO	A DISSERTATION UPON DE ORDERS OF COLUMNS, AND THEIR APPENDAGES; THE WHOLE CONSTITUTING THE ORDERS OF ARCHITECTURE: INTERSPERSED WITH A BRIEF ACCOUNT OF THE VARIOUS KINDS OF INTERCOLUMNATION OBSERVED BY THE ANTIENTS: AND ILLUSTRATED WITH PROPER DRAUGHTS FROM THREE AND TWENTY COPPER PLATES ENGRAVED BY MR PAUL FOURDRINIER	
AÑO PUBLICACIÓN	Londres 1750	
HABLA DE_		
Dedicatoria		
A quien va dirigido/Prefacio	This tratise, deficient as it is of the great important End sought after, was nevertheless thought worthy of an English translation, to give Workmen a better idea of the Orders than they could receive by the Parallel itself; and it must be confessed than them nearer to the primitive rules of columns, and their appendages, than other book had done	
Casa Ikea		
NOTAS SOBRE EL LIBRO	Me faltan las 7 primeras páginas. Donde empieza, explica que los franceses fueron haciendo medidas de los órdenes, los va nombrando a Desgodetz (que fue a Roma por orden del rey para hacer unos dibujos explicados que eran el orgullo de la nación francesa) contribuyendo a la restauración de los órdenes de la arquitectura. Después M. Perrault (1683) realiza una revalorización de los órdenes de las columnas y sus apéndices, adapta las columnas a las partes del cuerpo… La idea de restaurar los órdenes de la arquitectura. Justifica los pilares con forma de árbol, porque los antiguos también les daban formas. Tiene diseños muy buenos pero se basa en las columnas	
COMENTARIOS	El tamaño del libro es pequeño (no moleskino, un poco más). Es un libro que pretende ser didáctico pero es muy aburrido, porque te da las indicaciones de cómo hacer los diferentes tipos de columnas, incluido: bases, capiteles intercolumnios, etc. Pero intercala "su sabiduría", como dijo Vitrubio, que a su vez siguió… se hace farragoso de leer. A pesar de la voluntad por parte del escritor de enseñar en realidad sólo luce lo mucho que sabe sobre los diferentes historiadores de arquitectura, tanto históricos (desde Salomón, los judíos, los egipcios, micénicos etc) pasando por los griegos, llegando a los romanos, para hablar de los franceses que hablan del tema, que creo que al final son lo que realmente se ha leído.	

AUTOR	Stephen Wren	
TÍTULO	Parentalia: or, Memoirs of the family of the Wrens : viz. of Mathew [sic] Bishop of Ely, Christopher Dean of Windsor, &c. But chiefly of Sir Christopher Wren, late Surveyor-general of the royal buildings, president of the Royal Society, &c. &c. In which is contained, besides his works, a great number of original papers and records; on religion, politicks, anatomy, mathematicks, architecture, antiquities; and most branches of polite literature / compiled by his son Christopher ; now published by his grandson, Stephen Wren, esq ; with the care of Joseph Ames	
AÑO PUBLICACIÓN	Londres 1750 / E.e. 550	
HABLA DE_		
Dedicatoria		
A quien va dirigido/Prefacio		
Casa Ikea		
NOTAS SOBRE EL LIBRO	Part II.- Of Sir Christopher Wren's Architectonical Works. ➢ Introduction (p 263) ➢ Sect I: Of London in ancient times, and the boundary of the Roman Colony, after the Great Fire (1666). ➢ Sect II: Proposals for rebuilding the City of London after the Great Fire. ➢ Sect III: Of the ancient cathedral churches of St. Paul, from the first Age of Christianity to 1666. And of the surveyor's Design for repairing old structure, made by order of his Magesty &c. four months before the Conflagration// Dr William Sancroft Letters to him concerning St Paul's, 25 April, and 2th July 1668. ➢ Sect IV: Of the new Cathedral Church of St Paul's, and of its model, by Comand of the King to Christopher Wren, LL.D. ➢ Sect V: Of the taking down the vast Ruins of the old Cathedral, and of the Foundations of the old and new Structure. ➢ Sect VI: Answer to Objections and some account of the new Fabrick . Names of the Architects who built St. Peters at Rome, also the Popoes from 1503 to 1648; the difference between the dimensions of ST peters at Rome and St Paul's at London. ➢ Sect VII: The architectonical account of St. Peter's at Westminster antient and modern. ➢ Sect VIII: The Architectonical account of Salisbury cathedral. ➢ Sect IX: A Catalogue short description, dimensions &c of above fifty parochial Churches erected according to designs, and under the Care and Condduct of Sir Christopher Wren, demolished by the fire ; together with oder Churches built and repaired // A letter of his relating to Building, addressed to a friend of his (1708) // An accurate Account of the Quantity, by Measurements. Of the great column of London (the monument) and Inscription according to first conception ➢ Sect X: A catalogue and short description of the Surveyor's Designs of Buildings, in the service of the Crown. // Preface to Sect XI of the designs for the Tomb of King Charles the First. ➢ Sect XI: A Catalogue and short account of Designs, in pursuance of the Royal Comands for Buildings, which have not been in execution. ➢ Sect XII: A Catalogue, and account of Designs of Buildings in the Universities of Oxford and Cambridge // Carmen Pindaricum in Theatrum Sheldonianum, & ejus Architectum // Conclusion // His inscription on a small table of marble in the Vaults of St Paul's etc. Appendix. Of Architecture. Observations on antique Temples & from some rough draughts imperfect. SECT II. ➢ Closeness of Buildings. ➢ Combustible material Wren took an exact Survey of the whole area and confines of the Burning, having traced over, with great Trouble and Hazard, the great Plain of Ashes and Ruins; and designed a Paln or Model of a new city, in which the deformity and Inconveniencies of the old Town were remedied, by the inlarging the Streets and Lanes, and carrying them as near parallel to one another as might be; avoiding, if compatible with	

	Greater conveniences, all acute angles ; by seating all the parochial Churches conspicuous and insular; by forming the most publick Places into large Piazza's, the centers of eight Ways; by uniting the Halls of the twelve Chief Companies, into one regular Square annexed to Guild-ball, by making a commodities Key on the whole Bank of the River, from Blackfiars to the Tower.
COMENTARIOS	El tamaño del libro es grande aunque manejable, enciclopedia. La idea del libro es hacer una historia de la familia Wren hasta llegar al arquitecto, te habla desde los curas Wren, cosas sobre la liturgia escocesa, temas sobre la defensa de la fe, también por lo visto tocaron la Astronomia, pertenecían a la Royal Society , métodos de cura y demás. Eran humanistas. A Sir Christopher le encomendaron la labor de reconstruir la ciudad a partir de sus cenizas pero intentando hacerlo de una forma inteligente, se habían dado cuenta de que los incendios venían de que se usaban materiales combustibles, que las casas eran muy altas para poder huir de ellas, y además estaban muy cerca las unas de las otras. Hay que realizar un replanteamiento total de la ciudad a partir de sus cenizas, para ello realiza un plano de la ciudad, plantea las medidas de las calles, etc. Es un trabajo faraónico pero lo lleva a cabo y además plantea la colocación de iglesias en puntos estratégicos y con zona verde alrededor. Tiene unos puntos de vista extraños, si quieres pero pensados hasta el último detalle, es interesante como libro descriptivo. La segunda parte, la primera ni la he mirado porque la astronomía no forma parte de mi cometido en la vida.

AUTOR	William and John Halfpenny, Architects.	
TÍTULO	RURAL ARCHITECTURE IN THE GOTHICK TASTE. Being twenty designs, for temples, garden-seats, summer-houses, lodges, terminies, piers, &c. on sixteen copper plates with instructions to workmen, and hints where with most advantage to be erected.	
AÑO PUBLICACIÓN	Londres 1752	
HABLA DE_		
Dedicatoria		no
A quien va dirigido/Prefacio		no
NOTAS SOBRE EL LIBRO		Es un libro de descripción de las “plates” y luego las “plates” son templetes con formas góticas.
Casa Ikea		
COMENTARIOS	Tamaño un poco más de un moleskino, “tratado” para la construcción de templetes, pero a nivel gráfico, en las explicaciones sólo te dice el tamaño del templete, en este caso no te da los precios como sucede en otros libros del mismo autor.	

AUTOR	William Halfpenny, Architect and Land-surveyor.	
TÍTULO	THE COUNTRY GENTLEMAN'S POCKET COMPANION AND BUILDER'S ASSISTANT, FOR RURAL DECORATIVE ARCHITECTURE. CONTAINING THIRTY-TWO NEW DESIGNS, PLANS AND ELEVATION OF ALCOVES, FLOATS, TEMPLES, SUMMER-HOUSES, LODGES, HUTS, GROTTO'S &C. In the Augustine, gothick and Chinese Taste, which proper direction annexed. Also an exact estimate of their several amounts, which are from twenty-five to one hundred Pounds, and most of them portable. Correctly engraved on twenty-five copper-pltes, FROM DESIGNS, AND UNDER DIRECTION OF WILLIAM AND JOHN HALFPENNY.	
AÑO PUBLICACIÓN	Londres 1753	
HABLA DE_		
Dedicatoria		Vuelve a haber anuncios de libros publicados, esta vez todos de Halfpenny
A quien va dirigido/Prefacio		NO HAY
NOTAS SOBRE EL LIBRO	Is the elevation of an open Temple decorated in the chinesse manner. The Back and Front are equal, the Roof is a semi-circular Dome, ceiling within; the Clear of the room is seven feet square, and the height, from the floor tod the springing eight feet fix inches; where is intended a Cornice of seven inches round the walls; the cielins springs from a Circle of five Feet diameter, which will create four spandrels on the flat ceiling, and give room for proper decorations about the foot of the dome. The walls are to be studded Work, filled with Brick, and stucco'd within and with out; the Roof to be covered with Lead, and the floor laid with squared pavement. The whole may be completed for Fifty pounds.	Directamente pasa a explicar la "PLATE I. numberI"
COMENTARIOS	Un poco más grande que un moleskino, totalmente manejable, hay una descripción de los templetes para jardín y su precio. És útil, aunque no para mi tesis.	

AUTOR	Francis Price
TÍTULO	A SERIES OF PARTICULAR AND USEFUL OBSERVATIONS, MADE WITH GREAT DILLIGENCE AND CARE UPON THAT ADMIRABLE STRUCTURE, THE CATHEDRAL CHURCH OF SALISBURY... /
AÑO PUBLICACIÓN	Londres 1753
REFERENCIAS EN	
NOTAS SOBRE EL LIBRO	Es un estudio histórico de la Catedral, muy completo, desde su traslado en 1220 desde Old Sarum. Con un posterior levantamiento de lo que es la geometría de la Catedral de Salisbury. Lo más significatico es que al final de todo del estudio llega a la conclusión de que la catedral aguantará.
COMENTARIOS	Es un documento de gran valor, aunque era muy complicado de leer, y basa sus conclusiones en el estudio histórico del que hace hipótesis a partir de las que saca sus conclusiones. Empieza prácticamente desde la ubicación del nuevo edificio, hasta el estudio que realiza para llevar a cabo las reparaciones luego el levantamiento físico le ayuda a acabar de completar sus ideas.

AUTOR	William Halfpenny, Architect and Land-surveyor.	
TÍTULO	PERSPECTIVE MADE EASY: OR A NEW METHOD FOR PRACTICAL PERSPECTIVE. SHEWING THE USE OF A NEW-INVENTED SCENOGRAPHICAL PROTACTOR; SO EASY, THAT A PERSON, WHOSE AN ENTIRE STRANGER TO PERSPECTIVE, MAY, BY READING A FEW LINES, BECOME A MASTER OF THE INSTRUMENTS, WITHOUT THE HELP OF A MASTER Is useful in taking the perspective Draughts of Towns, Counties, Houses, and Gardens, or any Objects whatever; much easier than what has hitherto been practiced. With several useful examples in practica perspective. Together with the draughts of several remarkable Places, in and about Cities of Bristol and Bath. In twenty Copper Plates.	
AÑO PUBLICACIÓN	Londres 1754	
HABLA DE_		
Dedicatoria		Tiene un anuncio de los libros que ha publicado la editorial (primera vez que lo veo) incluye 1.- Arithmetick and Measurements … de Halfpenny. 2.- The builders jewel… de Langley 3. The builders complet assistant… de Langley 4.- A treatise on architecture de Mr. Chambers. 5.- The four books of Palladio… de Isaac Ware. 6.- The workmans golden Rule… de Langley. 7. The Builder's pocket companion… de Michael Hoare 8.- Un diccionario 9.- Practica de aritmética de W. Pardon
A quien va dirigido/Prefacio	Although the world is crowded with volumes of this kind, I know none that has published a practical instrument to useful in Perspective, as this stenographical Protractor; which was the only inducement I had to write on this subject. And to make the work more useful to young artist, I have laid down several examples of lineal perspective, in an easy and practical method: also a view of the Hot-Wells at Bristol &c. Which I drew by the help of this instrument. See PLATE I and the following explanations	Al Lector, como siempre
NOTAS SOBRE EL LIBRO		Antes, incluso que el título hay la mencionada lámina de la ciudad de Bristol, muy buena. Te describe-dibuja, el SCENOGRAPHICAL PROTRACTOR, que es como una mesa doble que te permite ver la perspectiva y a partir de ahí dibujarla. Luego va describiendo como dibujar prismas de diferentes bases con diferentes focos. Cada vez complica más las bases. Luego les pone iluminación para las sombras. Sigue con los decorados de los pavimentos en perspectiva, primero los hace en planta y de ahí los fuga A las plantas les da volumen, y luego sombrea. Luego ya muebles Puentes, cabañas… mansión.
Casa Ikea		
COMENTARIOS	No es muy grande, 3 moleskinos, es apaisado, y como siempre muy didáctico poco útil para mi tesis… ¿o no?	

AUTOR	William Salmon	
TÍTULO	THE LONDON & COUNTRY BUILDER'S VADE MECUM: OR THE COMPLEAT AND UNIVERSAL ESTIMATOR.	
AÑO PUBLICACIÓN	Londres 1755	
HABLA DE_		
Dedicatoria	No hay	
A quien va dirigido/Prefacio		A los propietarios tanto en el campo como en la ciudad. Y también a los arquitectos.
Casa Ikea	Tablas de mediciones	
NOTAS SOBRE EL LIBRO	Imagen cortando árboles Índice de tablas Prefacio (idéntico) TABLAS DE MEDIDAS Y PRECIOS El índice de trabajos lo pone al final, en lugar de antes de la descripción de las tablas	
COMENTARIOS	El tamaño del libro es un poco más que Moleskino. Es un ITEC que te proporciona es el valor de los materiales y cuanto entra.	

<table>
<tr><td>AUTOR</td><td colspan="2">William Halfpenny, Architect and Carpenter.</td></tr>
<tr><td>TÍTULO</td><td colspan="2">USEFUL ARCHITECTURE; BEING THE LAST WORK IN THIS KIND OF WILLIAM HALFPENNY, ARCHITECT AND CARPENTER, In twenty-five designs, with a full and clear instructions, in every particular, for erecting PARSONAGE-HOUSES, FARM-HOUSES, AND INNS, with their respective offices, &c. of various dimensions, at the most moderate Expence, the largest not exceeding Five Hundred Pounds, and the Smallest under One Hundred Pounds. As will evidently appear By their several dimensions and stimates particularly set with respect both to Brick and Stone, adapted to the useful Measurements of Great Britain and Ireland. Together with a supplement, containing several designs for building with timber only, with estimates annext in like manner.
The four designs added, are for bridges, which in rural situations are generally necessary and always pleasing, being suited to small pieces of water, brooks, &c. and the chief ornament where strength with beauty is needful.
The whole intended as an improvement of what has hitherto been given on that subject, and rendered both practicable and beneficial to all concerned in Building.</td></tr>
<tr><td>AÑO PUBLICACIÓN</td><td colspan="2">Londres 1755</td></tr>
<tr><td colspan="3">HABLA DE_</td></tr>
<tr><td>Dedicatoria</td><td></td><td></td></tr>
<tr><td>A quien va dirigido/Prefacio</td><td>Architecture hath been so variously treated of as to occasion a late author to say, nothing new can be published thereon, particularly with respect to plain buildings, such as are herein described. But the truth will ever stand uncontested, that more real beauty and elegance appears in the due symmetry and harmony of a well-constructed Cottage, than can be found in the most exalted palace, where the variety of frippery inventions are introduced to make good the least deficiency of proportion; and such authors only prove their arrival at the ne plus ultra of their own genius if the base copiers of another's invention can be said to have genius at all. They treat this noble, useful, and ever-valued science, generally as they do the many excellent artifits who have written thereon; for as from their ignorance they confound and abuse the first principles of the former, so from their arrogance and self-conceit they saddle the latter with whatever base, dull, and heavy constructions they have laboriously pretended to extract from their works. Yet, in truth, so extensive is the science of architecture, that thought ten thousand authors had written thereon, and each made choice of a different subject, there is still lest a field sufficient to employ the most fertile genius.</td><td>No pone a quien va dirigido, sólo compara la arquitectura, considera que un “cottage” bien construido, siguiendo una simple simetría es mucho más agradable, que una mansión que parece una mezcla de muchas cosas que sólo sirve para dar la grandilocuencia del autor.
Y luego entra en lo que se ha escrito sobre arquitectura, que por eso se ve en la obligación de escribir él.</td></tr>
<tr><td>NOTAS SOBRE EL LIBRO</td><td></td><td>CUIDADO LAS NOTAS SON LAS QUE HE SACADO DE LA FICHA 9.</td></tr>
<tr><td>Casa Ikea</td><td>PLATE I
This plan and elevations represents a farm-house, whose Measures are as follow.
REFERENCES.
Ft. in. ft. in.
A. Court or Garden .... 44 0 by 17 6
B. Passage and stairs....... 18 0 by 7 0
C. Best Kitchen .... 19 0 by 15 0
D. Common ditto .... 19 0 by 15 0
E. Pantry .... 9 0 by 7 3
F. Dairy room .... 13 0 by 9 0
G. Closed .... 9 0 by 6 0
H. Open Shed .... 23 0 by 9 0
I. Calf House .... 10 0 by 8 0
J. G
K. Bog- house .... 8 0 by 4 6
L. Cart House .... 20 0 by 11 6
M. Stable .... 20 0 by 20 0</td><td></td></tr>
</table>

N. Hog-style ………………….. 12 0 by 8 0
O. Barn ………………………….. 33 0 by 20 0
P. Barn and Stable yards…. 58 0 by 47 0

NB. Arched Cellars are intended under CD; the Kitchen and Chamber Stories 9 feet high in the clear, and the height of the Stories E F G H but 8 feet in the Clear to make better Head way in the shaded Lofts over them.

The different thicknesses between Brick and Stone-walls.
If brick walls are intended, let those Cellars be two Bricks and a Half thick, up to the Springing of the arch; the Archo cone brick, and the other parts of the House two bricks to the surface of the Earth, and from thence to the Wall-plates of the roof one brick and a half, and all Gable-ends one Brick. The Walls of the Barn and Stable two Bricks to the surface of the Earth and one brick and a half from thence to the wall plate of the roof. The walls of the bog-house, calf-house, and hog-style, one brick, and the Mound Walls one brick and a half thick. The measurement of the several walls to be reduced to one brick and a half thick.
But if stone-walls are intended, make the foundations-walls of the cellars up to the springing of the arch, two feet four Inches thick, and those of the other Parts of the Dwelling-house, up to the surface of the Earth, two feet thick, and from thence to the wall-plate of the roof, twenty inches ; the arch of the cellar of flags, eighteen inches, or common stone-work twenty inches thick; the walls of the Barn and Stables, two feet to the surface, and from thence upwards twenty inches; the calf-house, bog-house, hog style and Mound Walls, twenty inches thick; the whole measurement to be reduced to twenty inches thick.
A perch contains 16 feet 6 inches superficial.

Estimate of the Dwelling-house only.

	Estimate of the Dwelling-house only.	Stone Built			Brick Build		
		l.	s.	d.	l	s	d
	To digging the cellars and foundations	2	0	0	2	0	0
265	Perch of rough Stone-walls, at 2s. 9d. per perch	32	8	9			
265	Perch of brick-walls, at 6s. per				79	10	0
81	Yards of punched Flag Pavement in the cellarsat 18d. per Yard	6	1	6			
81	Yards of brick on Edge Pavement, fet in mortar, at 15d. per Yard				5	1	3
90	Yards of chifeled flagging in tha kitchens, &c at 2s. 4d. per yard	10	10	0			
90	Yards of Brick on Edge Pavement, fet in snad, in Kitchens, &c. at 15d. per yard				5	13	3
10	Stone steps to Cellars	1	10	0			
10	Brick steps with oak Binders, to cellars				1	5	0
22	Square and half of Pantileing pointed, at 16s. per square	18	0	0	18	0	0
26	Yards on brick on edge pavement in the shed H, at 15d. per Yard	1	12	6	1	12	6
4	Oak door-frames, 6 foot 6 inches by 3 ft. 2in. in the Clear, scantlings 4 ½ in. by 3 ½ at 6d. each	1	6	0	1	6	0
	Carried forward	73	8	9	114	8	0
	Brought forward	73	8	9	114	8	0
2	Whole Deal ledged Outside-doors, at 7s. 6d. each	0	15	0	0	15	0
14	Inch deal ledged inside doors, at 5s. 3d. each	3	13	6	3	13	6
12	Tranfum window-frames at 7s. 6d. each	4	10	0	4	10	0
6	Single Light Window frames at 2s. 6d. each	0	15	0	0	15	0
4	Luthron Windows and Cheeks, at 9s each	1	16	0	1	16	0
17	Square and half of joist scantling 8In. by 2 1/2, and red	42	0	0	42	0	0

	Whole Deal floor Boarding, at 2l 8s. per square						
6	Square and half of quartered Partition, at 12s. 6d. per square	4	1	3	4	1	3
21	Square of roofing scantling of rafters, purlines and struts, 5In by 3 In. Wall-plates 4 ½ in. by 4 at 1l. 2s. per square	23	2	0	23	2	0
2	Stories of stairs	3	10	0	3	10	0
	To window-boards, dressers. Shelves &c	3	0	0	3	0	0
	To flit and whole-deal partitions in the garrets	2	10	0	2	10	0
	To bond-timber and centers fir arches	4	0	0	4	0	0
	To Iron casements, hinges, locks, staples, latches &c.	5	5	0	5	5	0
313	Yards of inside rendering or Wall plastering at 3s. per yard	3	18	3	3	18	3
193	Yards of lath and plaistered ceilings, at 6d ½ per Yard	5	4	6 ½	5	4	6½
134	Feet of Leaded Glass at 7d. per feet	3	18	2	3	18	2
	To painting the outside, windows, doors &c.						
	TOTAL HOUSE	186	12	5½	227	11	8½
	The estimates of the Barn, Stable, Mound, Walls, &c	Stone Built			Brick Build		
		l.	s.	d.	l	s	d
	Brought over	186	12	5½	227	11	8½
	To digging the boughouse and foundations	0	18	0	0	18	0
136	Perch of rough Stone Walls, at 2s. 9d. per perch	18	14	0			
130	Perch of Brick Walls, at 6s. per perch				39	0	0
3	Square and three quarters of quartered Partition, at 12s. 6d. per square	2	6	10½	2	6	10½
6	Square and three quarters of joist and boarding to hay loft and granary at 2s. 6d per square	15	10	0	15	10	0
27	Square of roofing over barn and stable, at 25s. per square	33	15	0	33	15	0
3	Square and quarter of ditto over the calf-house, boghouse and hogstyle at 20s. oer square	3	5	0	3	5	0
	To a door-frame, door, floor, and seat to the boghouse	1	10	0	1	10	0
	To a door and frame to the calf-house	0	15	0	0	15	0
	To door, posts, &c. to the hogstyle.	0	12	0	0	12	0
3	Door-frame with proper fastenings, and doors to the barn and stables, at 22s. each	3	6	0	3	6	0
	Steps of stairs to the granery	1	5	0	1	5	0
	Rack and manger to the stable	4	0	0	4	0	0
31	Square of pantileing, at 14s per square	21	14	0	21	14	0
44	Yards of Patching in the stable, at 15d per yard	2	15	0	2	15	0
2	Five-barr gates and posts, with proper fastenings	2	10	0	2	10	0
2	Garden gates and posts, with proper fastenings	1	14	0	1	14	0
	Painting gates, doors &c	0	14	0	0	14	0
	Total out-buildings	115	3	10½	135	9	10½
	The total Expence of the whole	301	16	4	363	1	7

COMENTARIOS	Un libro un poco más que un molesquino, muy didáctico, te dibuja el plano exacto con las medidas, te lo describe, para que sepas exactamente cómo ha de ir, las medidas clavadas de las paredes, en función de si son de ladrillo o de piedra, y para finalizar un estado de mediciones, cutre… pero completo para que sepas de donde viene cada precio. Vale, falta el "Como construir" pero no está mal.

AUTOR	Batty Langley	
TÍTULO	THECITY AND COUNTRY BUILDER'S AND WORKMAN'S TREASURY OF DESIGNS: OR THE ART OF DRAWING, AND WORKING THE ORNAMENTAL PARTS OD ARCHITECTURE. ILLUSTRATED BY UPWARDS FOUR HUNDRED DESIGNS.	
AÑO PUBLICACIÓN	London 1756	
HABLA DE_		
Dedicatoria		
A quien va dirigido/Prefacio	The great pleasure that builders and workmen of all kinds have of late years taken in the study of architecture; and the great advantages that have accrued to those, from whom they have been employed, by having their works executed in a much neater and more magnificent manner than was ever done in this Kingdom before; has been the real motive that induced me to the compiling of this work, for their further improvement. Besides, as the study of architecture is really delightful in all its process; its practice is evidently of greater importance to artificers in general and its rules so easy, as to be acquired at leisure times, when the business of days is over, by the way of diversion; it is a matter of very great surprise to me; how any person dare presume to discourage others from the study thereof, and thereby render than very often less serviceable to the publick than so many brutes.	
NOTAS SOBRE EL LIBRO	Contents The art of designing and working the ornamental parts of building. CHAP I: of the manner of proportioning the five orders od columns in architecture by aliquot parts. 1. Of the Tuscan order. (14 problems) 2. Of the Dorick order. (17 problems) 3. Of the ionick order. (18 problems) 4. Of the Corinthian order (16 problems) 5. Of the Composite order. (14 problems) CHAP II: of the intercolumnation or proper distance that the columns of every order, are to be placed at; in the forming and designs, for frontispieces, doors, windows, &c. ➢ Of intercolumniations ➢ Of piers for gates ➢ Of frontispieces for doors to mansion houses ➢ Of windows ➢ Of niches ➢ Of chimneys pieces, pavements, altar pieces, pulpits, tombs, &c. ➢ Of obelisques, time pieces, fronts, &c. ➢ Designs for ceilings, &c. ➢ Designs for Iron work for gates, for balconies, &c.	
Casa Ikea		
COMENTARIOS	Un solo volumen, es grande pero manejable (nada que ver con los mamotretos) 4 moleskino quizás. Sculp Es exactamente igual a la edición del 1745, sólo cambia el numerado de las páginas pero en contenido es exactamente el mismo	

<table>
<tr><td>AUTOR</td><td colspan="2">William Halfpenny .</td></tr>
<tr><td>TÍTULO</td><td colspan="2">A NEW AND COMPLEAT SYSTEM OF ARCHITECTURE, DELINEATED IN A VARIETY OF PLANS AND ELEVATIONS; TOGETHER WITH OFFICES AND OUT-BUILDINGS PROPORTIONET THERETO, AND APPROPIATE TO THE SEVERAL USES AND SITUATIONS REQUIRED; AND ESTIMATES OF EACH DESIGN.
PREFIXED TO THESE THERE ARE TEN DIFFERENT SORTS OF PIERS, WITH GATES OF VARIOUS COMPOSITIONS SUITABLE TO THE SAME; INTENDED FOR ENTRANCES TO COURTS, GARDENS &C. ALSO NEW ARCHITECTONIC RULES FOR DRAWING THE MEMBERS, IN ALL KINDS AND PROPORTIONS OF THE ORDERS. TO WHICH IS ADDED A METHOD OF DISCHARGING AND SUPORTING ARCHES IN BRIDGES, AS IT OFTEN HAPPENS THAT THERE IS A SINKING IN THE PIERS. THE WHOLE COMPRISED ON FORTY-SEVEN COPPER-PLATES, WITH EXPLANATIONS THERETO IN COMMON PREF. WORKS.</td></tr>
<tr><td>AÑO PUBLICACIÓN</td><td colspan="2">Londres 1759</td></tr>
<tr><td colspan="3">HABLA DE_</td></tr>
<tr><td>Dedicatoria</td><td></td><td></td></tr>
<tr><td>A quien va dirigido/Prefacio</td><td>As the necessity was the parent of building, convenience should be the Architect first view; this in the following designs I have made the principal and foundation; as to beauty and magnificence; harmony is the result of the first, and proportion elegantly composed is the certain effect of the latter; and in these I have used all possible diligence to regulate the whole in the nearest and most exact manner, with regard as well to convenience, as to beauty and decorations.

And in order to render those designs more universally useful, as well to artificers concerned in building, as to gentlemen and others higher dignity, I have made estimates of each designs; calculated by the magnitude of the plan, by the area or great square, and in this I think, I can safely say; the difference in the expence of building in most parts of England and Ireland, where a gentleman is obliged to buy his material, will be little more than 5 pounds in 100 l. this by observation and experience in many parts, upwards of 20 years being employed therein, I can with the greater certain assert.</td><td>Va dirigido al lector, empieza diciendo que la necesidad es el pariente de la construcción, la conveniencia habría de ser el primer objetivo; y después el diseño.

l. ¿?????

Por lo visto su primera idea era hacer 15 diseños de unos 200 l. a 700 l. pero aconsejado por los amigos añadió unas 16 los valores de algunas exceden las 6000 l.

Después pasa a los motivos por lo que también ha añadido los órdenes y el puente.</td></tr>
<tr><td>NOTAS SOBRE EL LIBRO</td><td>VARIETY OF NEW PLANS AND ELEVATIONS OF BUILDINGS, WITH DESIGNS OF PIERS AND GATES SUITABLE TO SEVERAL ENTRANCES INTO COURTS, GARDENS, &C.</td><td>De la “plate I” a la XII, se observan una serie de puertas de entrada, totalmente explicadas, para que las proporciones sean exactas.

A partir de la XIII empieza a describir casas.
En esta primera hay diseñadas dos casas (ver casa IKEA):

Así como la descripción de ésta pasa a describir el resto, el grueso de las paredes siempre está referido a esta primera casa, como si eso fuera ley.

También hay diseños para casas circulares.
En la plate 21 es una mansión con su valla, los establos a parte, patio.

Dependiendo del tipo de diseño te da precauciones.

En todas estima el precio de la casa

Hay casas que ocupan más de una “plate”</td></tr>
</table>

Casa Ikea	n.1 The plan and elevation of a design for a house of 48 feet 6 inches front, and 47 feet 6 inches deep, divided into rooms, &c. in the following manner. A hall and stairs 12 feet by 12 feet. B Kitchen 20 feet by 18 feet. C Larder &c. 13 feet by 12 feet. D Scullery &c. ditto. E Little parlour, ditto. F Great, ditto, 20 feet by 18 feet. G Study &c. 12 feet by 12 feet. H Dark closet 7 feet by 6 feet I Stable 13 feet by 12 feet. The parlour story is 12 feet high clear, and that in the chambers over B, F, G 10 feet, but those over C D, E, I, are no other than sheaded lofts; see the front. There are supposed to be vaulted cellars under A B C, whose floor ought not to be less than 5 feet 6 inches below the surface of the earth; the walls which rise two stories to be 2 feet 6 inches thick, from the foundation to the top bed of the front plinth (not including an offset of 6 inches to bear the valuated arches) and from thence upwards two feet thick. The front walls of G D I F need be no more than 2 feet thick, from the foundation to the top of the plinth, and 1 foot 6 inches from thence upwards. If the building be carried up of brick, the foundation of those walls which rises 2 stories ought to be three in length to the top bed of the plinth, and from thence upwards 1 ½. Estimate to N.1 That part of the house marked A B G F, which rises 2 stories above the parlour floor, with garrets over, contains 15 square 3/4 , and may be built in a strong and middle finished manner for 35L per square. Those parts marked C D I E, which rises one story, and lofts over them contains 8 square, and may be built in proportion to the other at 20 L per square. 15 square at 35 l per square -------- 551 5 8 square at 20 l. per square -------- 160 0 TOTAL EXPENCE---711 5	
COMENTARIOS	Es un libro manejable, 2 molesquinos pero apaisado, la verdad es que es precioso. Muy instructivo y preciso, la casa ha de ser así, con los gruesos de paredes, y las estimaciones de precios, es como un catálogo de casas: póngame esta y la quiero a este precio. No entra mucho en los órdenes todo es más tema de que sea proporcionada en general y útil, como dice al principio, utilidad y arquitectura, son parientes.	

AUTOR	P. Decker
TÍTULO	GOTHICK ARCHITECTURE DECORATED: CONSISTING OF A LARGE COLLECTION OF TEMPLES, BANQUETING, SUMMER AND GREEN HAUSES… OBELISKS, PYRAMIDS, &c. MANY OF WHICH MAY BE EXECUTED WITH POLLARDS, RUDE BRANCHES AND ROOT TREES. BEING A TASTE ENTERELY NEW. LIKEWISE DESIGNS OF THE GOTHIC ORDERS, WITH THEIR PROPER ORNAMENTS, AND RULES FOR DRAWING THEM. THE WHOLE ENGRAVED ON TWELVE COPPER PLATES.
AÑO PUBLICACIÓN	Londres 1759
NOTAS SOBRE EL LIBRO	Es un libro dedicado al diseño de entradas, y elementos de jardín, tipo glorietas y bancos, con formas consideradas góticas.
COMENTARIOS	Es un volumen muy bonito, los diseños están perfectamente delineados, pero no aporta nada desde el punto de vista de la construcción.

AUTOR	William Halfpenny, Architect and Carpenter.	
TÍTULO	THE THIRD EDITION, WITH FOUR ADDITIONAL DESIGNS OF USEFUL ARCHITECTURE BEING THE LAS WORK IN THIS KIND OF WILLIAM HALFPENNY, ARCHITECT AND CARPENTER, IN TWENTY-FIVE DESIGNS, WITH FULL AND CLEAR INSTRUCTIONS IN EVERY PARTICULAR, FOR ERECTING PARSONAGE-HOUSES, FARM-HOUSES, AND INNS, Eith their respective Offices, &c. of various dimensions, at the most moderate Expence, the largest not exceeding Five Hundred Pounds, and the Smallest under One Hundred Pounds. As will evidently appear By their several dimensions and stimates particularly fet with respect both to Brick and Stone, adapted to the useful Measurements of Great Britain and Ireland. Together…	
AÑO PUBLICACIÓN	Londres 1760	
HABLA DE_		
Dedicatoria		
A quien va dirigido/Prefacio		No pone a quien va dirigido, sólo compara la arquitectura, considera que un "cottage" bien construido, siguiendo una simple simetría es mucho más agradable, que una mansión que parece una mezcla de muchas cosas que sólo sirve para dar la grandilocuencia del autor. Y luego entra en lo que se ha escrito sobre arquitectura, que por eso se ve en la obligación de escribir él.
NOTAS SOBRE EL LIBRO		
Casa Ikea	PLATE I This plan and elevations represents a farm-house, whose Measures are as follow. REFERENCES. Ft. in. ft. in. A. Court or Garden ………. 44 0 by 17 6 B. Passage and stairs……. 18 0 by 7 0 C. Best Kitchen …………….. 19 0 by 15 0 D. Common ditto ………… 19 0 by 15 0 E. Pantry ……………………. 9 0 by 7 3 F. Dairy room …………….. 13 0 by 9 0 G. Closed ……………………. 9 0 by 6 0 H. Open Shed ………………. 23 0 by 9 0 I. Calf House ………………. 10 0 by 8 0 J. G K. Bog- house ………………. 8 0 by 4 6 L. Cart House ………………. 20 0 by 11 6 M. Stable ………………………. 20 0 by 20 0 N. Hog-style …………………. 12 0 by 8 0 O. Barn …………………………. 33 0 by 20 0 P. Barn and Stable yards…. 58 0 by 47 0 NB. Arched Cellars are intended under CD; the Kitchen and Chamber Stories 9 feet high in the clear, and the height of the Stories E F G H but 8 feet in the Clear to make better Head way in the shaded Lofts over them. The different thicknesses between Brick and Stone-walls. If brick walls are intended, let those Cellars be two Bricks and a Half thick, up to the Springing of the arch; the Archo cone brick, and the other parts of the House two bricks to the surface of the Earth, and from thence to the Wall-plates of the roof one brick and a half, and all Gable-ends one Brick. The Walls of the Barn and Stable two Bricks to the surface of the Earth and one brick and a half from thence to the wall plate of the roof. The walls of the bog-house, calf-house, and hog-style, one brick, and the Mound Walls one brick and a half thick. The measurement of the	

several walls to be reduced to one brick and a half thick.
But if stone-walls are intended, make the foundations-walls of the cellars up to the springing of the arch, two feet four Inches thick, and those of the other Parts of the Dwelling-house, up to the surface of the Earth, two feet thick, and from thence to the wall-plate of the roof, twenty inches ; the arch of the cellar of flags, eighteen inches, or common stone-work twenty inches thick; the walls of the Barn and Stables, two feet to the surface, and from thence upwards twenty inches; the calf-house, bog-house, hog style and Mound Walls, twenty inches thick; the whole measurement to be reduced to twenty inches thick.
A perch contains 16 feet 6 inches superficial.

Estimate of the Dwelling-house only.

	Estimate of the Dwelling-house only.	Stone Built			Brick Build		
		l.	s.	d.	l	s	d
	To digging the cellars and foundations	2	0	0	2	0	0
265	Perch of rough Stone-walls, at 2s. 9d. per perch	32	8	9			
265	Perch of brick-walls, at 6s. per				79	10	0
81	Yards of punched Flag Pavement in the cellarsat 18d. per Yard	6	1	6			
81	Yards of brick on Edge Pavement, fet in mortar, at 15d. per Yard				5	1	3
90	Yards of chifeled flagging in tha kitchens, &c at 2s. 4d. per yard	10	10	0			
90	Yards of Brick on Edge Pavement, fet in snad, in Kitchens, &c. at 15d. per yard				5	13	3
10	Stone steps to Cellars	1	10	0			
10	Brick steps with oak Binders, to cellars				1	5	0
22	Square and half of Pantileing pointed, at 16s. per square	18	0	0	18	0	0
26	Yards on brick on edge pavement in the shed H, at 15d. per Yard	1	12	6	1	12	6
4	Oak door-frames, 6 foot 6 inches by 3 ft. 2in. in the Clear, scantlings 4 ½ in. by 3 ½ at 6d. each	1	6	0	1	6	0
	Carried forward	73	8	9	114	8	0
	Brought forward	73	8	9	114	8	0
2	Whole Deal ledged Outside-doors, at 7s. 6d. each	0	15	0	0	15	0
14	Inch deal ledged inside doors, at 5s. 3d. each	3	13	6	3	13	6
12	Tranfum window-frames at 7s. 6d. each	4	10	0	4	10	0
6	Single Light Window frames at 2s. 6d. each	0	15	0	0	15	0
4	Luthron Windows and Cheeks, at 9s each	1	16	0	1	16	0
17	Square and half of joist scantling 8In. by 2 1/2, and red Whole Deal floor Boarding, at 2l 8s. per square	42	0	0	42	0	0
6	Square and half of quartered Partition, at 12s. 6d. per square	4	1	3	4	1	3
21	Square of roofing scantling of rafters, purlines and struts, 5In by 3 In. Wall-plates 4 ½ in. by 4 at 1l. 2s. per square	23	2	0	23	2	0
2	Stories of stairs	3	10	0	3	10	0
	To window-boards, dressers. Shelves &c	3	0	0	3	0	0
	To flit and whole-deal partitions in the garrets	2	10	0	2	10	0
	To bond-timber and centers fir arches	4	0	0	4	0	0
	To Iron casements, hinges, locks, staples, latches &c.	5	5	0	5	5	0
313	Yards of inside rendering or Wall plastering at 3s. per yard	3	18	3	3	18	3
193	Yards of lath and plaistered ceilings, at 6d ½ per Yard	5	4	6 ½	5	4	6½
134	Feet of Leaded Glass at 7d. per feet	3	18	2	3	18	2
	To painting the outside, windows, doors &c.						
	TOTAL HOUSE	186	12	5½	227	11	8½
	The estimates of the Barn, Stable, Mound, Walls, &c	Stone Built			Brick Build		
		l.	s.	d.	l	s	d
	Brought over	186	12	5½	227	11	8½
	To digging the boughouse and foundations	0	18	0	0	18	0

136	Perch of rough Stone Walls, at 2s. 9d. per perch	18	14	0			
130	Perch of Brick Walls, at 6s. per perch				39	0	0
3	Square and three quarters of quartered Partition, at 12s. 6d. per square	2	6	10½	2	6	10½
6	Square and three quarters of joist and boarding to hay loft and granary at 2s. 6d per square	15	10	0	15	10	0
27	Square of roofing over barn and stable, at 25s. per square	33	15	0	33	15	0
3	Square and quarter of ditto over the calf-house, boghouse and hogstyle at 20s. oer square	3	5	0	3	5	0
	To a door-frame, door, floor, and seat to the boghouse	1	10	0	1	10	0
	To a door and frame to the calf-house	0	15	0	0	15	0
	To door, posts, &c. to the hogstyle.	0	12	0	0	12	0
3	Door-frame with proper fastenings, and doors to the barn and stables, at 22s. each	3	6	0	3	6	0
	Steps of stairs to the granery	1	5	0	1	5	0
	Rack and manger to the stable	4	0	0	4	0	0
31	Square of pantileing, at 14s per square	21	14	0	21	14	0
44	Yards of Patching in the stable, at 15d per yard	2	15	0	2	15	0
2	Five-barr gates and posts, with proper fastenings	2	10	0	2	10	0
2	Garden gates and posts, with proper fastenings	1	14	0	1	14	0
	Painting gates, doors &c	0	14	0	0	14	0
	Total out-buildings	115	3	10½	135	9	10½
	The total Expence of the whole	301	16	4	363	1	7

COMENTARIOS	Un libro un poco más que un molesquino, muy didáctico, te dibuja el plano exacto con las medidas, te lo describe, para que sepas exactamente cómo ha de ir, las medidas clavadas de las paredes, en función de si son de ladrillo o de piedra, y para finalizar un estado de mediciones, cutre… pero completo para que sepas de donde viene cada precio. Vale, falta el “Como construir” pero no está mal.

AUTOR	T. Lightoler, architect	
TÍTULO	THE GENTLEMAN AND FARMER'S ARCHITECT. A NEW WORK. CONTAINING A GREAT VARIETY OF DESIGNS. BEING CORRECT PLANS AND ELEVATIONS OD PARSONAGE AND FARM HOUSES, LODGES FOR PARKS, PINERY, PEACH, HOT AND GREEN HOUSES, WITH THE FIRE-WALL, TAN-PIT, &C. PARTICULARLY DESCRIBED. Dutch and other barns, cow-houses, stables, sheepcots, huts, façades; with all other offices appertaining to a well-regulated farm; their situations rendered convenient, and aspects agreeable. With scales and tables of reference, describing the several parts, with their just dimension and use.	
AÑO PUBLICACIÓN	London 1762	
HABLA DE_		
Dedicatoria		No hay
A quien va dirigido/Prefacio		No hay
NOTAS SOBRE EL LIBRO		Son una serie de diseños muy interesantes sobre las distribuciones de las casas de campo, incluso hay una en el que a misma planta se le adjudican 3 tipos de fachadas.
Casa Ikea		
COMENTARIOS	Es un libro muy sencillo grande pero no demasiado, un plano con sus leyendas que te indica que es que, siempre acotado, te da nociones de cómo han de ser las casas de campo, que estancias son absolutamente necesarias y su ubicación.	

AUTOR	William Pain // James Pain
TÍTULO	THE BUILDERS COMPANION, AND WORKMAN GENERAL ASSISTANT... /
AÑO PUBLICACIÓN	Londres 1762 (Primera edición en 1758)
NOTAS SOBRE EL LIBRO	Dibujos hasta el detalle, MUY EXPLICADOS. <u>INTRODUCCIÓN</u> Las cimentaciones: son muy importantes y muy difíciles de reparar. Se puede cimentar en roca pero hay que tener en cuenta que unas son menos duras que otras. Han de ser dos veces la pared. Las paredes se hacen más delgadas a medida que se elevan. <u>ÍNDICE:</u> PARTE I: De los cimientos Proporciones de ligereza. Proporciones de chimeneas. PARTE II: De las figuras geométricas: Grados y ángulos en escuadra Arcos de ladrillo y piedra. Formas circulares. Nichos y veletas. Medidas para puertas. Jarrones, tablas de piedra y fuentes. Pedestales para relojes de sol y bustos. PARTE III: De formar cumbreras principales, pisos, tabiquería y entramados de vigas Longitud y apoyo de las aguas. Respaldo curvo de las aguas Atado, tejados y cúpulas. Enmarcado de cornisas. PARTE IV: Juegos de escaleras. La formación de escaleras. Elevación de las escaleras. PARTE V: De los órdenes. PARTE VI: Los órdenes en los frontispicios. PARTE VII: Piezas de altar PARTE VIII: Cinco columnas góticas.
COMENTARIOS	Es un libro muy completo, empieza por los cimientos pasa por todas las partes del edificio y evidentemente al final habla de los órdenes, algo que parece que no puede faltar. Es un libro mayoritariamente de detalles constructivos comentados, no habla de materiales o mediciones pero al menos no se deja partes del edificio.

AUTOR	William Pain
TÍTULO	THE BUILDERS POCKET-TREASURE; OR PALLADIO DELINEATED AND EXPLAINED ... /
AÑO PUBLICACIÓN	Londres 1763
NOTAS SOBRE EL LIBRO	INDICE: - Órdenes y proporciones - Chimeneas - Escaleras. - Techos/cubiertas. - Tabla de escalas para cortar formas de madera en cualquier edificio - Tipologías constructivas ➢ CASA ➢ CASA DE VERANO ➢ INVERNADERO ➢ ASIENTO PARA EL JARDÍN ➢ TEMPLETE ➢ TEMPLETE CHINO
COMENTARIOS	Parece que tiene el mismo tipo de información que en el tratado anterior sólo que en tamaño reducido para que se pueda llevar en el bolsillo, se vuelve a la importancia del tamaño pequeño que da a este tipo de manuales un valor añadido, la portabilidad. En cualquier caso encuentro que faltan materiales y mediciones así como sistemas de ejecución.

AUTOR	William Halfpenny .	
TÍTULO	A NEW AND COMPLEAT SYSTEM OF ARCHITECTURE, DELINEATED IN A VARIETY OF PLANS AND ELEVATIONS; TOGETHER WITH OFFICES AND OUT-BUILDINGS PROPORTIONET THERETO, AND APPROPIATE TO THE SEVERAL USES AND SITUATIONS REQUIRED; AND ESTIMATES OF EACH DESIGN. PREFIXED TO THESE THERE ARE TEN DIFFERENT SORTS OF PIERS, WITH GATES OF VARIOUS COMPOSITIONS SUITABLE TO THE SAME; INTENDED FOR ENTRANCES TO COURTS, GARDENS &C. ALSO NEW ARCHITECTONIC RULES FOR DRAWING THE MEMBERS, IN ALL KINDS AND PROPORTIONS OF THE ORDERS. TO WHICH IS ADDED A METHOD OF DISCHARGING AND SUPORTING ARCHES IN BRIDGES, AS IT OFTEN HAPPENS THAT THERE IS A SINKING IN THE PIERS. THE WHOLE COMPRISED ON FORTY-SEVEN COPPER-PLATES, WITH EXPLANATIONS THERETO IN COMMON PREF. WORKS.	
AÑO PUBLICACIÓN	Londres 1770 (Nueva edición, no se que número)	
HABLA DE_		
Dedicatoria		
A quien va dirigido/Prefacio	As the necessity was the parent of building, convenience should be the Architect first view; this in the following designs I have made the principal and foundation; as to beauty and magnificence; harmony is the result of the first, and proportion elegantly composed is the certain effect of the latter; and in these I have used all possible diligence to regulate the whole in the nearest and most exact manner, with regard as well to convenience, as to beauty and decorations. And in order to render those designs more universally useful, as well to artificers concerned in building, as to gentlemen and others higher dignity, I have made estimates of each designs; calculated by the magnitude of the plan, by the area or great square, and in this I think, I can safely say; the difference in the expence of building in most parts of England and Ireland, where a gentleman is obliged to buy his material, will be little more than 5 pounds in 100 l. this by observation and experience in many parts, upwards of 20 years being employed therein, I can with the greater certain assert.	Va dirigido al lector, empieza diciendo que la necesidad es el pariente de la construcción, la conveniencia habría de ser el primer objetivo; y después el diseño. *l. ¿?????* Por lo visto su primera idea era hacer 15 diseños de unos 200 l. a 700 l. pero aconsejado por los amigos añadió unas 16 los valores de algunas exceden las 6000 l. Después pasa a los motivos por lo que también ha añadido los órdenes y el puente.
NOTAS SOBRE EL LIBRO	VARIETY OF NEW PLANS AND ELEVATIONS OF BUILDINGS, WITH DESIGNS OF PIERS AND GATES SUITABLE TO SEVERAL ENTRANCES INTO COURTS, GARDENS, &C.	De la “plate I” a la XII, se observan una serie de puertas de entrada, totalmente explicadas, para que las proporciones sean exactas. A partir de la XIII empieza a describir casas. En esta primera hay diseñadas dos casas (ver casa IKEA): Así como la descripción de ésta pasa a describir el resto, el grueso de las paredes siempre está referido a esta primera casa, como si eso fuera ley. También hay diseños para casas circulares. En la plate 21 es una mansión con su valla, los establos a parte, patio. Dependiendo del tipo de diseño te da precauciones. En todas estima el precio de la casa Hay casas que ocupan más de una “plate”

Casa Ikea	n.1 The plan and elevation of a design for a house of 48 feet 6 inches front, and 47 feet 6 inches deep, divided into rooms, &c. in the following manner. A hall and stairs 12 feet by 12 feet. B Kitchen 20 feet by 18 feet. C Larder &c. 13 feet by 12 feet. D Scullery &c. ditto. E Little parlour, ditto. F Great, ditto, 20 feet by 18 feet. G Study &c. 12 feet by 12 feet. H Dark closet 7 feet by 6 feet I Stable 13 feet by 12 feet. The parlour story is 12 feet high clear, and that in the chambers over B, F, G 10 feet, but those over C D, E, I, are no other than sheaded lofts; see the front. There are supposed to be vaulted cellars under A B C, whose floor ought not to be less than 5 feet 6 inches below the surface of the earth; the walls which rise two stories to be 2 feet 6 inches thick, from the foundation to the top bed of the front plinth (not including an offset of 6 inches to bear the valuated arches) and from thence upwards two feet thick. The front walls of G D I F need be no more than 2 feet thick, from the foundation to the top of the plinth, and 1 foot 6 inches from thence upwards. If the building be carried up of brick, the foundation of those walls which rises 2 stories ought to be three in length to the top bed of the plinth, and from thence upwards 1 ½. Estimate to N.1 That part of the house marked A B G F, which rises 2 stories above the parlour floor, with garrets over, contains 15 square 3/4 , and may be built in a strong and middle finished manner for 35L per square. Those parts marked C D I E, which rises one story, and lofts over them contains 8 square, and may be built in proportion to the other at 20 L per square. 15 square at 35 l per square -------- 551 5 8 square at 20 l. per square -------- 160 0 TOTAL EXPENCE---711 5	
COMENTARIOS	Es un libro manejable, 2 molesquinos pero apaisado, la verdad es que es precioso. Muy instructivo y preciso, la casa ha de ser así, con los gruesos de paredes, y las estimaciones de precios, es como un catálogo de casas: póngame esta y la quiero a este precio. No entra mucho en los órdenes todo es más tema de que sea proporcionada en general y útil, como dice al principio, utilidad y arquitectura, son parientes. HAY UNA EDICIÓN ANTERIOR COMENTADA, LA SENSACIÓN DE DEJA VU ES MUY FUERTE.	

AUTOR	Robert & James Adams.	
TÍTULO	THE WORKS IN ARCHITECTURE.	
AÑO PUBLICACIÓN	Londres 1773-	
HABLA DE_		
Dedicatoria		
A quien va dirigido/Prefacio	Libro 1 (1773)	Va dirigido a cualquiera que practique el arte de la arquitectura, en el prefacio a medida que va dando palabras, las define en la misma como pie de página, es decir, aclara todos los posibles conceptos conflictivos con notas al pie; es bastante original. Creo que lo hacen porque son conscientes de que se han escrito muchos libros sobre el tema, y aunque les parece necesario explicar todo el vocabulario, no es necesario que se lea entero sino que cada uno busque el concepto que le interese. Los órdenes, los ingleses, son demasiado escrupulosos con las proporciones de los órdenes los antiguos no lo eran tanto.
	Libro 2 (1774)	Utiliza este prefacio como una excusa para hablar de los órdenes en las columnas (empieza diciendo que es importante su disminución, para luego hablar de fuste, pedestal y capitel, de los 5 órdenes).
	Libro 3 (1775)	Poco prefacio, agradece al conde en cuestión que ejecutó la casa en 1767; describe la situación como privilegiada, con el lago, el rio y los bosques en harmonía. Y en medio de todo el edificio de piedra… que no podría quedar mejor
	Libro 4 (1776)	Nos introduce en la importancia de los edificios públicos, habla de que en Italia debido a la religión hay superstición de que sean regios, en Inglaterra empiezan a darles su importancia.
	Libro 5 (1778)	Se han hecho grandes progresos en Inglaterra, desde el siglo XVI, han tenido un gran poeta, Bacon, un gran filósofo, Newton está descubriendo los misterios de la ciencia, pero en las Artes (Pintura, escultura, arquitectura, nada) Pero si en alguna lo han conseguido es en arquitectura, gracias a Inigo Jones, el cual hizo que se dejara atrás el gótico, y se entrar directamente al gusto por los clásicos griegos y romanos. Seguido por Wren y Vanburgh (no el del teatro)
	Libro 1 (volII) 1779	Habla de la historia de los antiguos, justifica que el conde haya decorado sus habitaciones con motivos etruscos, porque al fin y al cabo éstos fueron robados por los romanos previamente.
	Libro 2 1779	No hay
	Libro 3 1779	No hay
	Libro 4 1779	Continuación de lo que se hizo para el duque de Northumberland sobre Sión
	Libro 5 1779	
NOTAS SOBRE EL LIBRO	VOLUMEN I 1.Containing part of the designs of Sion House, a magnificent seat of his grace the Duke of Nothumberland, in the country of Middlesex 2. Containing part of the designs of lord Mansfield's	El libro está escrito simultáneamente en inglés y francés

	Villa at Kenwood, in the country of middleessex 3. Containing part of the designs of Luton House in Bedfordshire, one of the seats of the Earl of Bute 4. Containing designs of some public buildings 5. Containing designs for the king and queen and her royal highness the late Princess Dowager of Wales &c. VOLUMEN II 1. Containing of the designs of the earl of Derby's House in Grosvenor-Square 2. Containing part of the designs of the house of sir Watking Williams Wynn, Baronet in St. James- Square. 3. Containing Part of the Designs of Shelburne House in Berkeley- Square 4. Being a continuation of the designs of Sion House, a magnificent seat of the Duke of Nothumberland in the county of Middlesex 5. Containing various Designs of Public and Private Buildings.	Parece ser que la planta en un momento dado fue alterada y han puesto el plano original y la modificación En la planta se puede ver que la planta baja es para el señor y la planta alta para la señora. Atrás cocinas, establos y servicio.
Casa Ikea		
COMENTARIOS		

AUTOR	John Soane
TÍTULO	DESIGNS IN ARCHITECTURE: CONSISTING OF PLANS, ELEVATION AND SECTIONS, FOR TEMPLES, BATHS, CASSINES, PAVILIONS, GARDEN-SEATS, OBELISKS, AND OTHER BUILDINGS; FOR DECORATING PLEASURE-GROUND, PARKS, FORESTS &C.&C. ENGRAVED ON 38 COPPER-PLATES.
AÑO PUBLICACIÓN	Londres 1778
NOTAS SOBRE EL LIBRO	La introducción es una bibliografía: I. Dr Brook Taylor's Method of perspective. II. The prespective of Architecture. (Dr Brook Taylor) III. The description and Use of a new Instrument called the Architecture Sector. IV. The builder's Price-book. V. The Carpenters and Joiner's Vade Mecum by Robert Clavering. VI. The Practical Builder bay William Pain. VII. Currus Civilis VIII. A New Book of Ornaments. By P. Columbani IX. A Variety of Capitels, Freezes and Cornices by P. Columbani. X. The Modern Joiner. By N. Wallis. XI. Ornaments in the Palmyrene Taste. By N.Wallis XII. The Carpenters Treasure. By N. Wallis. XIII. Laws New Book of Ornaments. XIV. A book of Vases by T. Laws. XV. A Book of Vases by P. Columbani. XVI. A Book of Vases from Antique. XVII. Gerard's New Book of Foliage. XVIII. A Small book of Ornaments G. Edwards. XIX. Nature, Phylosophy and Art in Friendship W. Cauty. XX. A plan an Elevation of the King of Protugal Palace in Manfra. XXI. A North-west View of Greenwich Church. XXII. A Treatise on Building in Water. George Sampler. XXIII. Golden Chain of salvation by Rev. J. Clark XXIV. The Carpenter's and Joiner's Repository. By William Pain
COMENTARIOS	Es un volumen que se basa en dibujos, no es excesivamente grande. Sorprende que pase del título a una serie de bibliografía que por lo visto es un anuncio de lo que se estaba publicando en ese momento. Y de ahí directamente a los grabados, son muy buenos, como casi todos los que se hacen en ese momento pero no aportan nada nuevo a pesar de lo redundante del título.

AUTOR	James Ralph, Architect.	
TÍTULO	A CRITICAL REVIEW OF THE PUBLIC BUILDINGS, STATUES AND ORNAMENTS. IN AND ABOUT LONDON AND WESTMINSTER.	
AÑO PUBLICACIÓN	Londres 1783	
HABLA DE_		
Dedicatoria		
A quien va dirigido/Prefacio	Arithmetic, as being the ground work of mensuration, either as to extent or solidity; as being the medium of all calculations, and the only road to any degree of practical knowledge in mathematics. Geometry follows in the next place, and is indeed the foundation that all students must build upon, since is impossible to attain to any perfection in architecture without it. It is geometry that lays down all the first principles in building, that adjunts all bearings and proportions, and measures points, angles and solidities. In short, there is no being master of architecture, without being perfect in all the parts of geometry; and he that is so, thought he may err in decorations, can never do the same either in strength or proportion. Masonry, or the mechanical means of raising perpendiculars, turning arches erecting bridges, and forming stair-cases, is another branch of this art, and must be understood with great accuracy and readiness, as being the execution of the whole which the student desires to learn. Levelling the hydraulicks are likewise of great importance to the builder; the first at once enabling him to understand good situations, or amend tham if they are otherwise; and the last, of course, directing the conveyance of water, the draining of low grounds, and teaching the whole secrets of collecting reservoirs, or afterwards employing them to the best advantage. In short, on these depend both the necessary use of the water for family supply, and also all the beautiful effects that can result from it in gardens, by basons, fountains, cascades, &C. Mechanicks is another essential in this noble art. It is by understanding their power and effect, that such machines are contrived as alone are able to raise up the heavy materials to buildings of any considerable height, or empty waters from a bottom, or drain a level, or force them upwards, as art would direct or necessity require. These and the art of sketching and drawing are all the different branches of study which are necessary to form a complete mechanical architect	En el prefacio te habla del buen gusto, la parte filosófica del tema, en las artes y demás… (10 primeras hojas) Después entra en la arquitectura directamente y te habla de que es unión de dos conceptos belleza y utilidad (lo de la "firmitas" se lo salta). Por lo que se ve va dirigido a los arquitectos, a cómo han de ser, que ciencias han de conocer y a partir de ellas y de cierta facilidad para el diseño por parte del alumno, potenciar la observación del medio para hacer de él un buen arquitecto. Hace una reflexión bastante buena sobre que los edificios enriquecen los países, Italia es muy visitada porque la gente admira los edificios, y el rey Luis XIV en Versalles ha hecho una maravilla.

		Hace un repaso de los arquitectos, Inigo Jones fue un genio, pero llegó la guerra civil (los acontecimientos históricos se mezclan con el desarrollo de las ciencias) y se vuelve a entrar en un periodo oscuro hasta que llega Christopher Wren y hace un esquema de la ciudad muy bueno pero lo sabotean los que llegan después (paralelismo con Cerdà???? Interesante para otra tesis). Total que en ese momento es un ciudad de edificios algunos buenos, otros pésimos por lo recargado, que en su conjunto y empieza la crítica.
NOTAS SOBRE EL LIBRO	CRITICAL REVIEW OF THE PUBLIC BUILDINGS &C. MORNING I. (…) and at a less depth are buried wooden pipes that supply every house plentifully with water, conducted by leaden pipes into the kitchens or cellars, three times a week, for the trifling expense of six shillings per quarter. In these pipes, at convenience distances in the streets are plugs to be drain in case of fire; and as they are covered by the pavement, their places always marked out by an admeasurements painted on the nearest wall.	Es un tour por Londres describiendo cada uno de los edificios que hay al final en el índice. Y las calles, y las "maravillas" como el sistema de alcantarillado, y las tuberías que permiten llevar el agua a las casas… cosas que otras ciudades no tienen Es una guía, en la que además te va contando la historia de los monumentos de la ciudad, a parte de las cosas buenas y las cosas malas.
Casa Ikea		
COMENTARIOS	Moleskino, por fin…. Es un libro que te gustaría leer mientras paseas por Londres, es una guía, como cualquiera que te venden por ahí, como "rareza" al fin y al cabo es del siglo XVIII la encuentro genial, a parte de la parte que habla de la educación de los arquitectos y de la importancia del agua dentro de la ciudad. EL FUEGO, obsesión constante en Inglaterra, es lo único remarcable. No me lo acabo, porque no creo que pueda usarlo en mi tesis, pero si algún día tengo tiempo, para tomar notas y hacer un tour por Londres siguiéndolo.	

AUTOR	William Pain// James Pain
TÍTULO	PAIN'S BRITISH PALLADIO; OR THE BUILDER'S GENERAL ASSISTANT... /
AÑO PUBLICACIÓN	Londres 1786
NOTAS SOBRE EL LIBRO	Son una serie de planos que consisten en: alzado, planta baja, sección, planta segunda, estructura, sección chimeneas, detalles. Precios estimados de los trabajos
COMENTARIOS	Es un libro de tamaño grande, no muy fácil de manejar. Las láminas son muy gráficas pero es un poco pobre en contenidos. Eileen Harris no hace ningún comentario específico de este libro en concreto.

AUTOR	Peter Nicholson
TÍTULO	THE STUDENS INSTRUCTOR IN DRAWING AND WORKING THE FIVE ORDERS OF ARCHITECTURE... /
AÑO PUBLICACIÓN	Londres 1795
NOTAS SOBRE EL LIBRO	Se instruye a los estudiantes en los cinco órdenes de: 1.- Diferentes tipos de molduras. 2.- Modernas molduras 3.- Las molduras de las columnas 4.- Dimensión de las columnas. 5.- Diámetros de las columnas. 6.- Decoraciones en pilastras. 8.- Dibujar el toscano. 10.- Columnas de orden toscano 12.- Orden Dórico. 15.- Voluta jónica 18.- Dibujar voluta angular
COMENTARIOS	Es un tratado muy gráfico, mantiene las enseñanzas sobre geometría y los órdenes que se han ido transmitiendo desde el principio.

AUTOR	Peter Nicholson
TÍTULO	THE CARPENTERS AND JOINER'S ASSITANT; CONTAINING PRACTICAL RULES FOR MAKING ALL KINDS OF JOINTS …/ALSO EXTRACTS FROM M. BELIDOR, M DU HAMEL, M DE BUFFON &C. ON THE STRENGTH OF TIMBER, WITH PRACTICAL OBSERVATIONS. ILLUSTRATED WITH SEVENTY-NINE PLATES, AND COPIOUS EXPLANATIONS.
AÑO PUBLICACIÓN	Londres 1797
NOTAS SOBRE EL LIBRO	INTRODUCTION: Con un Nuevo esquema para la construcción de escaleras y barandillas, y para escaleras con forma cónica etc. A lo que añadimos: EJEMPLOS DE VARIAS CUBIERTAS EJECUTADAS, con escalas, y con mediciones actuales. Con normas para MORTICES y TENONS, para la fijación del metal en el encuadre de madera, con observaciones prácticas ilustradas, con setenta y nueve láminas, y copiosas explicaciones. OBJETIVO: Ampliación del Carpenter's New Guide. LIBRO EN GRAN PARTE: 67 LÁMINAS COMENTADAS TEJADOS: EJEMPLOS ➢ De la cúpula de Sant Paul's Cathedral: explica - Los ladrillos: cuantos y como han de ser. - El andamio: que ha de ser circular. - Descripciones al milímetro ayudadas por dibujos. ➢ Sant Paul del Covent Garden. ➢ Iglesia de islington. ➢ Sant Martins in the Church. ➢ El Teatro de Birminham. ➢ El Teatro de Drury-lane Explica cómo se hacen las uniones de las cerchas incluyendo el hierro-metal; experimentos en roble y el comportamiento de la Madera. Haciendo toda clase de uniones y varios métodos para que trabajen juntos. Para la formación de puertas para plantas cuadradas o circulares; para la construcción de ventanas y SHUTTERS para contestar a varias propuestas con reglas para colgarlas. Para la construcción de suelos, particiones, SOFFITS, aristas, arcos. Para la piedra Para la construcción de tejados de la mejor manera de una dada cantidad de madera.
COMENTARIOS	Es un intento de tratado completo a la manera de Price, añadiendo materiales que no tienen que ver con la carpintería. Al mismo tiempo se nota un tono más científico.

<table>
<tr><td>AUTOR</td><td colspan="2">James Malton.</td></tr>
<tr><td>TÍTULO</td><td colspan="2">AN ESSAY ON BRITTISH COTTAGE ARCHITECTURE SUPPORTED BY FOURTEEN DESIGNS .; irregular braks</td></tr>
<tr><td>AÑO PUBLICACIÓN</td><td colspan="2">Londres 1798</td></tr>
<tr><td colspan="3">HABLA DE_</td></tr>
<tr><td>Dedicatoria</td><td>(…) I figure in my imagination a small house in the country; of odd, irregular form, with various, harmonious colouring, the effect of weather, time and accident; the whole environed with smiling verdure, having contented, cheerful, inviting aspect, and door on the latch, ready to receive the gossip neighbor, or weary, exhausted traveler. There are many indescribable somethings, that must necessarily combine to give to a dwelling this distinguishing character. A porch at entrance; irregular breaks in the direction of the walls; one part higher than another; various roofing of different materials, thatch particularly, boldly projecting; fronts partly built of walls of brick, partly weather boarded, and partly brick-noggin dashed; casement window lights, are all conducive, and constitute its features. The most happy description of some of the exterior furniture of a Cottage, that I remember ever to have met with any of our poetical authors, is in a poem called the landscape: (poema)</td><td>En la introducción entra en la disquisición de ¿Qué es un “cottage”, como se puede definir.

En general es una Oda al Cottage.</td></tr>
<tr><td>A quien va dirigido/Prefacio</td><td></td><td></td></tr>
<tr><td>NOTAS SOBRE EL LIBRO</td><td></td><td>Es un libro, en el que después de la introducción entra en la descripción de las láminas que hay al final (preciosas) las fachadas están hechas a color (cosa que veo por primera vez) Y van acompañadas de las distribuciones tanto de la planta inferior como de la superior (cosa no tan habitual, en muchos tratados con láminas no siempre te muestran el resto de plantas, lo dejan a la imaginación.
Las secciones son una maravilla.</td></tr>
<tr><td>Casa Ikea</td><td></td><td>Si que tiene bastante ya que los diseños son para la buena construcción y proporción, pero habla poco de cimientos y materiales, que no sean las ventanas (importante por la luz).</td></tr>
<tr><td></td><td colspan="2"></td></tr>
<tr><td>COMENTARIOS</td><td colspan="2">Libro un poco grande, pero manejable, no muy grueso (más bien fino) letra grande, se le va la cabeza en las descripciones… es romántico, le gusta el sabor añejo del cottage, se recrea cuando lo describe.</td></tr>
</table>

ANEXO D

http://archive.museumoflondon.org.uk/Londons-Burning/Themes/1405/1408/Page1.htm

The 1667 Rebuilding Act

An Act for erecting a Judicature for Determination of Differences touching Houses burned or demolished in the late Fire which happened in London. (18-19 Chas II, 7).

I Whereas the greatest part of the houses in the City and some of the suburbs thereof have been burnt by the dreadful and dismal Fire, many of the tenants, undertenants or late occupiers whereof are liable unto suits and actions to compel them to repair and rebuild the same and to pay their rents as if the same had not been burned, and are not relievable therein in any course of law, and great differences are like to arise concerning the said repairs and new building and payment of rents, which, if they should not be determined with all speed and without charge, would much obstruct the rebuilding of the City. And for that it is just that everyone concerned should bear a proportionable share of the loss according to their several interests, since no general rule can be prescribed, be it therefore enacted that the Justice of the Courts of the Kings Bench and Common Pleas and the Barons of the Coife in the Exchequer or any three or more of them sitting at the same time and place are hereby authorised to hear and determine all differences and demands whatsoever which have arisen or may arise.

1) between landlords, proprietors, tenants, lessees, undertenants or late occupiers of any of the said buildings with their appurtenances or
2) any person having or claiming any estate, right, title or interest in the same, or
3) any other persons concerning the repairing, building or rebuilding of the said houses or any other grounds lying within that part of the City lately ruined by reason of the said Fire, or
4) concerning the payment or abatement of any rent other than the arrears of rent due before the Fire (the Judges) shall and may upon the verdict of the jurors, testimony of witnesses upon oath, examination of interested parties, according to their discretions proceed to the hearing and determining of the demands and differences between the said parties and there shall be no appeal or review for the removal or reversal of the same.

II (The Judges) shall have authority to order

1) the surrender, increase, abridging, ceasing, determining or changing of any estate;
2) new or longer leases not exceeding 40 years at such rents or fines as they shall think fit.

III And for the better enabling (the Judges) shall issue notes and warrants warning the person or persons therein named and concerned in the said complaint to appear before them.

IV The judgements and determinations which shall be made betwixt party and party by authority of this Act shall be recorded in a book or books which shall be placed in the custody of the Lord Mayor and Alderman of the City unto which all persons concerned shall or may view.

V (The judges) are hereby enabled to order a table of such reasonable fees to be made.

An Act for the Rebuilding of the City of London (18-19 Chas II, 8)

I For as much as the City of London by reason of a most dreadful fire was for the most part thereof burnt down and now lies buried in its own ruins, for the speedy restoration whereof and for the better regulation, uniformity and gracefulness of such new buildings as shall be erected, and to the end that great and outrageous fires may be reasonably prevented and that all encouragement and expedition may be given and all impediments and obstructions removed, be it therefore enacted that the rules and directions hereafter in this Act prescribed be duly observed by all persons therein concerned.

First, that no building for habitation be hereafter erected within the City unless it conforms to the rules and orders of building prescribed in this present Act, (otherwise) the builder thereof shall be committed to the common gaol till he have abated or demolished the same.

II That irregular buildings may be better prevented, the City shall erect one or more discreet and intelligent person or persons knowledgeable in the art of building to see the said rules well and truly observed.

III There shall be only four sorts of building: first and least sort fronting by-lanes, second sort fronting streets and lanes of note, the third sort fronting high and principal streets. The roofs of each shall be uniform. The fourth and largest sort of mansion houses for citizens or other persons of extraordinary quality not fronting the three former ways.

IV The Lord Mayor shall on or before the 1st April 1667 declare which and how many streets shall hereafter be deemed by-lanes, streets or lanes of note, or high and principal streets. All the said streets intended to be rebuilt shall be marked and staked out (so that) the breadth, length and extent thereof shall be better known and observed. (The penalty for moving or removing these stakes was three months imprisonment or £10, or, if the offence was committed by a person of low and mean condition, that he shall be openly whipped till his body be bloody).

V That all the outsides of buildings be henceforth made of brick or stone.

VI Party walls to be set out equally on each builder’s ground: to be built up by the first beginner of such building, and convenient toothing to be left in the front wall for the better joining of the next house.

VII-IX Proportions of first, second and third sort of houses specified. (see Table below)

Table showing proportions of the new sorts of buildings

Sort of Building	Storey	Height of Storey	Thickness of Front & Rear Walls	Thickness of Walls between Houses

First	Cellar	6ft 6ins	2 bricks	1 ½ bricks
	1st	9ft	1 ½ bricks	1 ½ bricks
	2nd	9ft	1 ½ bricks	1 ½ bricks
	Garret		1 brick	1 brick
Second	Cellar	6ft 6ins	2 ½ bricks	2 bricks
	1st	10ft	2 bricks	1 ½ bricks
	2nd	10ft	2 bricks	1 ½ bricks
	3rd	9ft	1 ½ bricks	1 ½ bricks
	Garret			
Third	1st	10ft	2 ½ bricks	2 bricks
	2nd	10ft 6ins	1 ½ bricks	1 ½ bricks
	3rd	9ft	1 ½ bricks	1 ½ bricks
	4th	8ft 6ins	1 ½ bricks	1 ½ bricks
	Garret		1 brick	1 brick

X The fourth sort of building being mansion houses of the greatest bigness shall bear the same scantlings as in the Table, the number of stories and height thereof left to the discretion of the builder, so long as he exceed not four stories.
XI-XII In front of all houses erected in high streets, balconies 4 foot broad with rails and bars of iron shall be placed and water falling from the top of the said houses be conveyed into channels by pipes on the sides and fronts of houses. No jetties, windows or anything of the like sort shall be made to extend beyond the ancient foundation line of any house, save for the stall boards when their shop windows are set open.

XIII If any person with any ground which was formally builded upon, the houses thereupon being burned or pulled down, shall not within three years build up the same, then the Mayor shall give notice to cause the same to be rebuilt within the nine months next following. And if the owners shall refuse or neglect to rebuild after inquiry and valuation thereof, it shall be lawful for the Mayor to make sale of the property.

XIV-XV And to the end that the said builders may receive due encouragement by having the materials for building at reasonable prices and getting of workmen for moderate wages, two judges of the Kings Bench may set the prices of bricks, tiles and mortar etc.

XVI That all carpenters, bricklayers, masons, plasterers, joiners and other artificers, workmen and labourers employed in the buildings who are not freemen of the City shall for the space of seven years (i.e. until 1674) or until all the said buildings shall be fully furnished, have the same liberty as Freemen of the City.

XVII Differences arising between builders or any others concerning the stopping up of lights, windows, watercourses, gutters etc may be heard by the Alderman of the ward.

XVIII The number and places for all common sewers, drains and vaults and the manner of paving and pitching the streets and lanes shall be designed and set out by persons appointed to the Mayor.

XIX Trades and occupations judged noisome or perilous in respect of fire may be prohibited in the high and principal streets.

XX Conduits now standing in the high streets may be removed and erected in other public places.

XXI The Mayor empowered and required to enlarge Fleet Street, the south from east end of St Paul's into Cheapside, that from Cheapside into Poultry to the west end of Cornhill, Blowbladder Street, Newgate Steet where the shambles lately stood, Ave Maria Lane, that from St Marin's Le Grande to Blowbladder Steeet, from St Magnus Church to Gracechurch Street, the north end of Gracechurch Steet, Thames Street, Old Fish Street.

XXII Mayor shall enlarge any other street or narrow passage less than 14 feet in breadth.

XXIII-XXV Compensation payable to those who lost ground through such street widening schemes.

XXVI The 2nd September be yearly for ever after observed as a day of public fasting and humiliation within the City and Liberties thereof to implore the mercies of Almighty God upon the said City to divert the like calamity for the time to come.

XXVII The better to preserve the memory of this dreadful visitation, a column or pillar be erected on or as near unto the place where the said Fire so unhappily began, as conveniently be made in perpetual remembrance thereof.

XXVIII That all traders of money formerly made at the late Royal Exchange now be made at Gresham House.

XXVIX-XXXI That the parish churches to be rebuilt within the said City of London in lieu of those which were demolished by the late Fire shall not exceed the number of 39.

XXXII-XXXIII That for the prevention of inundations and for the easiness of ascent, Thames Street and all the ground between it an the River Thames shall be raised at the least by 3 foot above the surface of the ground as now it lieth, and no buildings shall be built within a distance of 40 feet from the Thames from the Tower to Temple Stairs, nor any house to be built within 40 foot of the middle of the River Fleet from the Thames to Clerkenwell on either side before the 24th March 1668.

XXXIV-XXXVIII To enable the Mayor to perform and accomplish the work in this Act mentioned, that for all coals brought into London to be sold by the chaldrun or tun, there shall be paid by way of imposition thereupon 12 pence for every tun paid unto the Mayor. Every such sum which shall be raised thus shall in the first place be applied for the satisfaction of such persons whose grounds be taken for the enlarging of the streets and for the making of wharves and quays on the North side of the Thames, on each side of the sewer called Fleet ditch and also for the building of prisons in the City.
There shall be kept in the Chamber of London books in which all monies thereupon received shall be set down.

XXXIX Provisions for rebuilding in timber the waterhouse at London Bridge.

XL The Mayor to open and enlarge several streets leading down to the Thames for the conveniencing of trade and better passage of carts.

Transcription of the declaration

His Majesties DECLARATION
To His City of LONDON
Upon occasion of the late Calamity by the lamentable FIRE

Printed by John Bill and Christopher Barker Printers to the KING'S most Excellent Majesty, 1666.

As no particular Man hath sustained any loss or damage by the late terrible, and deplorable Fire in his Fortune or Estate, in any degree to be compared with the loss and damage We Our Self have sustained, so it is not possible for any Man to take the same more to heart, and to be more concerned and sollicitous for the rebuilding this Famous City, with as much expedition as is possible : And since it hath please God to lay this heavy Judgment Upon Us all in this time, as an evidence for his displeasure for Our sins, We do comfort Our self with some hope, that he wil upon Our due humiliation before Him, as a new instance of his signal blessing upon Us, give Us life, not only to see the foundations laid, but the buildings finished, of a much more beautiful City then is at this time consumed; and that as the seat and scituation of it is the most convenient and noble, for the advancement of Trade, of any City in Europe; so that such care wil be taken for the re-edification of it, both for use and beauty and such provision made for the future, against the ordinary and casual accidents by Fire as may as far as humane wisdom can provide, upon the sad experience We have had, reasonbly secure and the same, and make it rather appear to the world as purge with the Fire (in how lamentable and manner foever) To a wonderful beauty and comliness, then consumed by it; and We receive no smal encouragement in this Our hope by the alacrity and chearfulness We observe in those who have undergone the greatest loss and seem the most undone, who with undaunted Courage appear to desire the same We do, and resolved to contribute their utmost assistance thereunto. We have therefore thought fit, most necessary and agreeable to the great and constant affection We have alwayes had, and alwayes shal retain for this Our Native City, to use this expedition in publishing Our Thoughts, Resolutions, and Intentions upon this great affair, that though such present Rules and Directions cannot be formed, as must upon more mature deliberation be established for the re-edification, Yet such inconveniences may and shal be prevented, which may arise by the hasty and unskilful buildings many may propose to erect, for their present conveniences, before they can know how the same wil sute and consist with the design that shal be made; And if this candour of Ours, which resolves with the blessing of God so to provide for the just right and interest of all, that no shal have cause to complain of wrong and oppression; And if this Our seasonable animadversion shal not meet with that prudent submission we expect, but that some obstinate and refractory persons wil presume to erect such Buildings as they shal think fit, upon pretence that the Ground is their own, and that they may do with it what they please, such their obstinacy shal not prevaile to the publick prejudice; but We do hereby require the Lord Mayor, and the other Magistrates of the City of London, in the several limits, to be very watchful in such cases, and speedily to pul down whatsoever such men shal presume to set up, so much to the disturbance Of Publick Order and decency, and that they forthwith give notice to Us or Our Privy Council of such their proceedings, and return the names of such refractory persons who presume to contemn this Our Injunction, and We shal give order for the exemplary punishment without the violation of the Publick Justice.

And because no men shal complain or apprehend that by this caution or restraint of Ours, they shal or may for a long time be kept from providing Habitations for themselves and for the carrying on their Trades, though We make no question, but in a short time, with the assistance and advice of the Lord Mayor and Court of Aldermen (who have besought us for some time to put this restraint) to finish the whole design, even before any men can make provisions of materials for any valuable. Edifices: We do declare, that if any considerable number of men (for it is impossible to comply with the humour of every particular man) shal address themselves to the Court Aldermen, & manifest to them in what places their Ground lies, upon which they design to build, they shal in a short time receive such order and direction, for their proceeding therein, that they shal have no cause to complain; and so We proceed to the setting down such general to which all particular, designs must conform themselves.

In the first place woful experience in this late heavy visitation hath sufficiently convinced all men of the pernicious consequences which have attended the building with Timber, and even with Stone it self, and the notable benefit of Brick, which in so many places hath resisted and even extinguished the Fire; And we do therefore hereby declare Our express Wil and Pleasure, That no man whatsover shal presume to erect any House or Building, great or smal, but of Brick, or Stone, and if any man shal do the contrary, the next Magistrate shal cause it to be pulled down, and such further course shal be taken for his punishment as he deserves; And We suppose that the notable benefit many men have received from those Cellars which have been wel and strongly arched, wil persuade most men who build good Houses to practice that good husbandry, by Arching all convenient places.

We do declare, That Fleet Street, Cheapside, Cornhill, and all other eminent and notorious Streets, shal be of such abreadth, as may with Gods blessing prevent the mischief that one side may suffer if the other on fire, which was the case lately in Cheapside, the precise breadth of which several Streets, shal be upon advice with the Lord Mayor and Aldermen Shortly published, with many other particular Orders and Rules, which cannot yet be adjusted; in the mean time We resolve though all Streets cannot be of equal breadth, yet none shal be so narrow as to make the passage uneasy or inconvenient, especially towards the Water-side; nor wil we suffer any Lanes or Alleys to be erected, but where upon mature deliberation the same shal be absolutely necessary, except such places shal be set aside which shal be designed only for buildings of that kind, and from whence no publick mischief may probably arise.

The irrepairable damage and loss by the late Fire, being next in hand of God in the terrible Wind, to be imputed to the place in which it first broke out, amongst small timber houses standing so close together, that as no remedy could be applied from the River for the quenching thereof, to the contiguousness of the Buildings hindering and keeping all possible relief from the Land side, We do resolve and declare, That there shal be a fair Key or Wharf on all the Riverside, that no house shall be erected within so many foot of the River, as shal be within few days declared in the Rules formerly mentioned; nor shal there be in those Buildings which shal be erected next to the River, which We desire may be fair structures, for the ornament of the City, any houses to be inhabited by Brewers, or Dyers or Sugar-Bakers which Trades by their continual Smokes contribute very much to the unhealthiness of the adjacent places; but We require the Lord Mayor and Aldermen of London upon ful consideration, and weighing all conveniences and inconveniences that can be foreseen, to propse such a place as may be fit for all those Trades which are carried on by smoke to inhabit together, or at least several places for the several quarters of the Town for those occupations, and in which they shal find their accompt in convenience and profit, as wel as other places shal receive the benefit in the distance of the neighbourhood, it being Our purpose that they who exercise those necessary processions, shal be in all respects as wel provided for and encouraged as ever they have been, and undergo as little prejudice as may be by being lass inconvenient to their Neighbours.

These grounds and foundations being laid, from the substances whereof we shal not depart, and which being published are sufficient advertisements to prevent any mans running into, or bringing an inconvenience upon himself by a precipitate engagement an any Act which may cross these foundations; We have in order to the reducing this great and glorious design into practice, directed, and We do hereby direct, that the Lord Mayor and Court of Aldermen do with all possible explanation cause an exact Survey to be made and taken of the whole ruins occasioned by the late lamentable Fire, to the end that it may appear to whom all the Houses and Ground did in truth belong, what Term the several occupiers were possessed of, & at what Rents, and to whom, either Corporations, Companies, or single persons, the Reversion and Inheritance appertained, that so provision may be made, that though every man must not be suffered to erect what Buildings and where he pleases, he shal not in any degree be debarred from receiving the reasonable benefit of what ought to accrue to him from such Houses or Lands, there being nothing less in Our thoughts, then that any particular persons right and interest should be sacrificed to the publick benefit or convenience, without such recompense as in justice he ought to receive for the same: And when all things of this kind shall be prepared and adjusted by such Commissioners, and otherwise, which shal be found expedient, We make no doubt but such an Act of Parliament will pass, as shal secure all men in what they shal and ought to posess.

By the time that this Survey shal be taken, We shal cause a Plot or Model to be made for the whole building through those ruined places, which being wel examined by all those persons who have most concernment as wel as experience, We make no question but all men wil be pleased with it, and very willingly conform to those Orders and Rules which shal be agreed for the pursuing thereof.

In the mean time we do heartily recommend it to the charity and magnanimity of all wel disposed persons, and We do heartily pray unto Almighty God that he wil infuse it into the hearts of Men speedily to endeavour by degree to re-edify some of those many Churches which in this lamentable Fire have been burned down and defaced, that so men may have those publick places of Gods Worship to resort to, to humble themselves together before Him upon His heavy displeasure, and join in their devotion for His future Mercy and Blessing upon Us, as soon as We shal be informed of any readiness to begin such a good Work, We shal not only give Our assistance and direction for the model of it, and freeing it from buildings at too near a distance, but shal encourage it by Our Own bounty and all other ways We shal be desired.

Lastly, that We may encourage men by Our Own example, We wil use all the expedition We can to re-build Our Custom-House in the place where it formerly stood, and enlarge it with most conveniences for the Merchants that can be devised, and upon all the other Lands which belong unto Us, We shal depart with any thing of Our own right and benefit for the advancement of the publick service and beauty of the City, and shal further remit to all those who shal erect any buildings according to this Declaration all duties arising to Us upon the Hearth-money for the space of seven years.

Given at Our Court at Whitehall the thirteenth day of September, One Thousand six hundred and sixty six, in the Eighteenth Year of Our Reign.

Handwritten on the last page:

1666 September 2. The Fire began at one Farryner's house a Baker in Pudding Lane between the hours of 1 & 2 in the morning & continues burning until the 6th September following. Consuming as by the surveys appears 373 Acres within the walls, & 63¾ without the walls. There remains 75 acres 3 roads fit & standing within the walls unburnt, 11 parishes within the walls yet standing. Houses burnt
13200.

Jonas More
Ralph Gatrix
Surveyors

Transcription of the regulations

At the Court at WHITEHALL the eighth of May 1667.

Present

The KING'S most Excellent Majesty,

His Royal Highness the Duke of York, Lord Arch-Bishop of Canterbury, Lord Chancellor, Lord Privy-Seal, Duke of Albemarle, Marquess of Dorchester, Lord Chamberlain, Earl of Bridgewater, Earl of Berkshire, Earl of Bathe, Earl of Carlisle, Earl of Craven, Earl of Lauderdaill, Earl of Middleton, Lord Arlington, Lord Asbley, Mr Comptroller, Mr Secretary Morice, Mr Chancellor of the Duchy, Sir William Coventry.

An ORDER made by the Lord Mayor, Aldermen and Common Council of the City of London, of the 29. of April last past, in the ensuing words, (viz.)

It is Ordered, That the Surveyors take special care, that the Breast Summers of all houses do range of an equal height house with house, so far as shall be convenient, and there to make breaks by their Directions. And that they do encourage and give Directions to all Builders for ornament sake, That the Ornaments and projections of the Front Buildings be of rubbed Bricks and that all the naked part of the walls may be done of rough Bricks neatly wrought, or all rubbed, at the discretion of the Builder, or that the Builders may otherwise inrich their Fronts as they please.

That if any person or persons shall desire in any Street or Lane of Note to build on each side of the Street or Lane (opposite one to the other) six or more houses of the Third Rate, or that the upper Rooms or Garrets may be flat Roofs encompassed with Battlements of Bricks covered with Stone, or Gable ends, or Rails and Bannisters of Iron or Stone, or to vary their Roofs for the greater ornament of Building; the Surveyors, or one of them, shall certifie their opinions therein to the Committee for Re-building, who shall have liberty to give leave for the same, if they see cause.

That in all the Streets no Sign posts shall hang cross, but the Signs shall be fixed against the Balconies, or some other convenient part of the Side of the house.

It is Ordered that a Postern shall be made on the North side of Newgate for Conveniency of Foot-passengers, and that Holborn-Bridge shall be enlarged to run straight on a bevil Line from the Timber-house on the North-side thereof, known by the Sign of the Cock, to the Front of the Buildings at the Swan Inne on the said North-side of Holborn-hill.

Forasmuch as it is Provided in the late Act for Re-building, That the Surveyors shall take care for the equal setting out of all party Walls and Piers, and no person be permitted to build till that be done; therefore, for prevention of any Eraction in the taking of such Surveys, and all Quarrells and Contentions that may arise between the Builders, it is Ordered, That no Builder shall lay his Foundation, until the Surveyors, or one of them, (according to the Act) shall view it, and see the party Walls and Piers equally set out, and that all persons observe the Surveyors Directions concerning the Superstructure to be erected over the said Foundations.

And that for the defraying that, and all other incident Charges of Measuring, Staking out, taking the Levell, and Surveying the Streets and Ground, each Builder, before he lay his Foundation, or such Survey shall be taken, do repair to the Chamber of London, and there enter his Name, with the place where his building is to be set out, and to pay to the Chamberlain the summe of six shillings eight pence for every Foundation to be re-built. For which Mr Chamberlain shall give Acquittances: upon Receipt of which Acquittances the Surveyors shall proceed to set out such persons Foundations.

And it is Ordered, That all persons who have already laid any Foundations shall forthwith pay into the Chamber of London six shillings eight pence for every Foundation.

And the Court is consenting and desirous that all streight and narrow Passages, which shall be found convenient for common Benefit and Accommodation, and shall receive his MAJESTIE's Order and 'Approbation', shall and may be Enlarged and made wider, and otherwise Altered, before 20. day of May now next ensuing, as shall be fitting for the Beauty, Ornament, and Conveniency thereof, and Staked and let out accordingly.

Several late Inhabitants of Fleetstreet, intending to Re-build their houses which did formerly stand backward of other foundations near adjoining , and desiring liberty to advance their houses, that the whole Front may run on a straight line; the Committee did agree to the same, if the Right Honourable the Lord High Chancellor of England and the other Lords shall approve thereof, and procure his MAJESTIE's 'Approbation' to the same: and the Committee do desire liberty may be given for other persons in other places, where it shall be found convenient.

And it is Ordered, That the Committee for Re-building do present the Particulars aforesaid to the Right Honourable the Lord High Chancellor of England and the other Lords, and the same (if they receive his MAJESTIE's 'Approbation') shall be forthwith Printed and Published.

Which being this day represented to the board by the Right Honourable the Lord High Chancellor of England, the same was allowed and approved of; and it was Ordered that the same be punctually observed in every part thereof. And all persons concerned are required and commanded to yield due obedience and conform themselves thereunto. And that the said Order be forthwith Printed and Published.

Edw. Walker.

Printed by James Flesher. Printer to the Honourable City of LONDON.

Rebuilding the churches

Although the original Rebuilding Act of 1667 specified the number of City parishes to be reduced to 39, this Additional Act sets the number at 51. Many parishes had to be united, such as the parishes of Allhallows Bread Street and St John the Evangelist. The church of Allhallows Bread Street was chosen for rebuilding and was the parish church for the new united parish. There are 6 pages in the Act which list the parishes to be united and the churches to be rebuilt.

Any dues that the parishioners traditionally paid to their local clergy, such as tithes, went to the new parish church. The church plate from disused churches also went to it. Disused churches were to be demolished, the land enclosed by walls and converted to cemetery space (unless it had already been leased as market space or any other purpose approved by the City authorities).

Clergymen were exempt from the usual penalties for not rebuilding their properties within the three-year time limit (e.g. that their property would be seized by the City authorities and sold off). They were also let off paying any dues to the king or church authorities until they started to make a profit from their rebuilt churches. Furthermore, ministers would not be punished for not preaching the elements required by law, such as the 39 Articles, until their new churches were completed.

An Act For Preventing and Suppressing Of Fires Within The City Of London And Liberties Thereof.

The inhabitants calamitous, and much impoverished by the great Losses they sustained, and is by all justly resented as a most sad and dismal Judgement of Heaven: For the Prevention, Avoiding and Supressing (as much as Humane Prudence is capable of) the like deplorable (and still too too visible) Events, and dreadful Danger of Fire for the future, within this City, and Liberties thereof, Be it Ordained, Enacted and Established by the Right Honourable the Lord Mayor, the Aldermen his Brethren, and the Commons in this Common Council assembled, and by the Authority of the same, in maner and form following; this is to say,

I. That the City, and the Liberties thereof, shall be divided and appointed into four equal Parts or Quarters; and the East Part or Quarter to contain these Wards following, viz. Portsoken, Aldgate, Tower, Billingsgate, Bridge, Langborn, and Lime-Street; the West Part or Quarter to contain Farringdon within, Farringdon without, Castle-Baynard, Cheapside, and Aldergate; the North part or Quarter to contain Cornhil, Broadstreet, Colemanstreet, Ballishaw, Bishopsgate, and Cripplegate; and the South Part or Quarter to contain Queenhith, Breadstreet, Vintry, Cordwainer, Dowgate, Walbrook, and Candlewick-Street.

II. Item, That every of the said Quarters shall be furnished and provided, at or before the Feast of the Birth of our Lord God next ensuing, of Eight Hundred Leathern Buckets, Fifty Ladders, viz. Ten Forty two Foot long, Ten Thirty foot long, Ten Twenty Foot long, Ten Sixteen Foot long, and Ten Twelve Foot long; as also of so many Hand-Squirts of Brass as will furnish Two for every Parish, Four and twenty Pickax-sledges, and Forty Shod Shovels.

III. Item, That every one of the Twelve Companies provide and keep in readiness Thirty Buckets, One Engine, Six Pickax-Sledges, Three Ladders, and Two Hand-Squirts of Brass.

IV. Item, That all the other inferiour Companies provide and keep in readiness Buckets and Engines proportionable to their Abilities, of which those least able, to provide portable Engines to carry up Stairs into any rooms or Tops of Houses, the number of which Buckets and Engines to be from time to time prescribed and allotted by the Lord Mayor, and Court of Aldermens Direction.

V. Item, That every Alderman who hath passed the Office of Shrievalty, provide Four and Twenty Buckets, and One Hand-Squirt of Brass; and all those who have not been Sheriffs, Twelve Buckets, and One Hand-Squirt of Brass, to be kept at their respective Dwellings: and all other principal Citizens and Inhabitants, and every other person being a Subsidy–man, or of the degree of a Subsidy-man, shall provide and keep in their Houses a certain number of Buckets, according to their quality.

VI. Item, That the feveral Inhabitants and Furniture of each respective Quarter shall remain and abide within their own Quarters. And not go out farther; excepting onley such serviceable persons of other Quarters fit to take pains in that behalf, who may be called to yield their help as need shall require, and none other Persons or Furniture, without special Order of the Lord Mayor and Sheriffs for the time being.

VII. Item, It is farther Ordained by the Authority aforefaid, That in every of the said Quarters or Parts of this City, by the Advice of the Alderman and Common Council of each several Ward within that Quarter there shall be chosen, retainned and appointed for each Ward on honest and sufficent person, dwelling within the same, to be Bell-man there, who shall from hence forth every Night, from the Feast of St. Michael, until the Annunciation of St. Mary, diligently walk up and down within the same Ward, from Ten of the Clock in the Night, till Five of the Clock next Morning. Their Wages or Salaries to be levied within their respective Wards, according as the same shall be assessed by the Common Council of the same Ward, or the greatest part of them.

VIII. Item, That every Housholder upon any Cry of Fire, shall place a sufficent man at his door Door well armed, and hang out a Light at his Door, if in the Night time; upon deafult whereof, every party offending shall forfeit Twenty shillings.

IX. Item, That every Housholder shall, during the time of any Fire, have water in a Vessel ready at his Door to Quench and suppress all farther Encrease of the Fire.

X. Item, That in every of the said four Quarters or Parts of this City a noted Bell be rung from Lady-day to Michaelmas at ten of the Clock every Night, and at five of the Clock every Morning; and from Michael-mas to Lady-day at eight of the Clock every Night, and seven of the Clock every Morning; at which respective Hours the Watch shall punctually sit and rise, who as soon as they are met together, one out of every Watch shall be sent the Rounds into every part of the Ward, and at his return another shall be sent out, and so successively all Night long without intermission, for Prevention of Fire, Robbing, or other Inconvenience.

XI. Item, That every inhabitent prepare some secure place in their Dwellings (not under or near any Staircase) to lay in their Seacole-Ashes, Embers, or any other sort of Fire-Ashes; and that the said Ashes be quenched with water every Night before they go to Bed: and that all Constables make inquiry of the Security of Hearthes, Ovens, and Stoves, and places for laying Fire-Ashes in, twice every year.

XII. Item, That Plugs be put into the Pipes in the most convenient places or every Street, whereof all Inhabitants may take notice, that breaking of the Pipes in disorderly manner maybe avoided.

XIII. Item, That as many Wells as can be found may be provided in every street, with Pumps, placed conveniently for furnishing of Water, especially in Frosty weather, when other Water may be scarce.

XIV. Item, That the Lord Mayor and Sheriffs, as also the Deputies and Common-Council-men of such Ward where any Fire shall happen, have speedy notice thereof by several Messengers to be dispatched from the Constables upon the first Discovery.

XV. Item, That at all such times the Lord Mayor be attended with all his Officers, with the Marshalls and all their men, as also the City Workmen and their Labourers, the Bridge-masters with the Bridge-house Officers and Work-men, and their Labourers, who are all upon notice of any Fire forthwith to repair to the Lord Mayor, and to observe such Directions as shall be given them; the Sheriffs also to be attended with all their Officers, upon pain to them of forfeiting Three pounds in default of such their Attendance.

XVI. Item, That the several Companies of Carpenters, Bricklayers, Plaisterers, Painters, Masons, Smiths, Plummers, and Paviers, do yearly for each Company elect two Master-Workmen, four Journey-men, eight Apprentices, and sixteen Labourers, to be ready upon all occasions of Fire to attend the Lord Mayor and Sheriffs for quenching the flame.

XVII. Item, That all Workmen and Labourers belonging to any public Water-works within the City, the Seacole-meters, Porters, Blackwel-hall Porters, Leaden-ball Porters, Ticket-Porters, and Package-Porters, do constantly attend the Lord Mayor and Sheriffs in such Service; and that a List of all the Names of the aforementioned persons, with the places of their Aboad, be brought yearly in a table to the Lord Mayor elect upon the first day of October, to be placed in the Hall of the said Lord Mayor to public view; and that henceforth the Admittances of all such persons may be upon the same Condition.

XVIII. Item, That all the persons, unless such as are employed or allowed by the Lord Mayor or Sheriffs, Alderman, Deputies, or Common-Council-men, do keep (during the same time of any Fire) within their own Dwellings, until they are summoned to give their Aid; that so Disorder and confusion in the streets maybe prevented.

XIX. Item, That all the Constables and Watchmen of the Ward where any Fire happens, assemble immediately at such place, and there attend on the Lord Mayor and Sheriffs, and follow their Directions.

XX. Item, That all Brokers on the Exchange (according to their Obligation at their Admittance) do attend, in order to take care for such Goods and Houshold-stuff as may be removed.

XXI. Item, That yearly there be chosen some able Citizen and skilfull Engineer, to attend the Lord Mayor and Sheriffs or any of them upon such Accident, who by their Advice is to give his Assistance, and to blow up by their Directions such Houses whereby the Encrease of the Fire may be most probably prevented; and that Labourers be appointed to attend such Engineer.

XXII. Item, That the Lord Mayor, Aldermen and Sheriffs, Deputies, Common-Council-men, Engineer and all persons appointed and required by the Lord Mayor and Sheriffs to be aiding in suppressing and extinguishing the Fire, by blowing up, or pulling down Houses, shall be indempnified by this Court.

XXIII. Item, That all persons whose Houses shall be blown up, or otherwise demolished, for the prevention of the Encrease of a Fire, shall have such Damages as the Common-Council shall award; and that all persons labouring therein, shall be rewarded as by Order of the Court of Aldermen shall be appointed; and that a Rate be laid by the Common-Council on the remaining Houses of the City and Liberties for satisfying thereof.

XXIV. Item, That once a Quarter the Deputy and Common-Council of every Ward return Certificates to the Lord Mayor and the Court of Aldermen, of the Numbers and Condition of their Buckets, Engines, Ladders, and all other Necessaries of that nature, and the Engineer to examine the same, that on all occasions they may be found in readiness; and that the Certificates of Michael-mas Quarter, be returned as well to the Lord Mayor elect, as to the Lord Mayor.

XXV. Item, That such quantities of Powder as shall be thought fit by the Lord Mayor and Court of Aldermen, shall be provided by the several Wards, and the feveral Companies of this City respectively, and laid up in such convenient places as the said Lord Mayor and Court Aldermen shall from time to time direct and appoint; and that the principal Engineer make trial of all such Powder, that being satisfied of the strength and goodness thereof, he may the better use it accordingly.

XXVI. Item, That no person whatsoever be henceforth permitted at any time to make or cause to be made any sort of Fire-works, or to fire, or cause to be fired any such Fire-works, within the City or Liberties thereof, expect such persons onley as shall be thereunto appointed by His MAJESTY, or any lawful Authority under Him.

XXVII. Item, That no Gunpowder be kept within the Walls of the city (except, as aforesaid) but in such secure places shall be allowed and approved of by the Court of Aldermen.

XXVIII. Lastly, That no person lay Hemp, Flax, Wax, Gunpowder, Pitch, Tarr, Brimstone, Rosin, or the like combustible commodities, in any Cellar,Warehouse, or other place on that side next the Street, which by the shaking of Links, Torches, or casting in of other Fire at the Windows next the street, may be in danger of such fire.

And it is farther Enacted and Ordained by the Authority aforefaid, That all and singular the Peins, Penalties and Forfeitures, which shall be forfeited or incurred by virtue of this Act, shall be obtained, levied and recovered, either by Action of Debt, Bill, Plaint, or Information, in the name of the Chamberlain of the said City for the time being, in the KINGS MAJESTY's Court holden in the Chamber of the Guildhall of the said City, before the Lord Mayor and Alderman of the said City for the time being, in which no Essoign, Protection, or Wager of Law shall be admitted or allowed for the Defendant: and the Chamberlain of the said City for the time being, in all Suits to be prosecuted by virtue of this Act against any Offender or Offenders, shall recover the ordinary Costs of Suit, to be expended in or about the prosecution of them, or any of them: And that all such Peins, Penalties and Forfeitures (the Charges of Suit for Recovery thereof being first deducted) shall be divided into two equal Parts, one Moyety whereof to be paid unto the Treasurer of Christ's Hospital (for the time being) to be imployed towards the Maintenance of the poor Children harboured and kept in the said Hospital; and the other Moyety to him or them what will sue for the same, any other Act or Ordinance to the contrary thereof notwithstanding.

A v e r y.

See a larger image

View of rebuilt London: *A General View of London and Westminster*

Producer: Buck, S. & N.; Sayer, Robert; Bennett, J.

Date: 1777

This is part of a panorama of London, seen from the south bank of the Thames, which dates to the mid 1700s. It gives a sense of what London looked like once it was rebuilt after the fire. It is still a crowded city but the style of the houses is very different. They are made from brick, instead of wood and of a uniform structure, as set out in the Rebuilding Act of 1667. The spires of the churches and the dome of St Paul's Cathedral, all designed by Christopher Wren, dominate the skyline. The quayside has been straightened, and the Fleet River has been turned into a canal - all works specified in the Rebuilding Act. The Act hoped to introduce 'uniformity and gracefulness' to the buildings and 'that great and outrageous fires may be reasonably prevented'. In these aims it was successful.

Accession number: Z6759

Measurements: H 325 mm; L 4002 mm [CCity]

Gallery location: CCity: Z1.2.1

http://www.fire.org.uk/history-of-fire-safety.html

FIRE NET

17th Century
The Great Fire of London started in the early hours of 2nd September 1666 at the end of a long dry summer and after burning for 4 days had destroyed five-sixths of the city.
Although only 6 people died it was a national disaster and London acquired it first complete code of building regulations and means for its implementation
1666
On September 13th King Charles II issued a proclamation in which The walls of all new buildings were to be of brick or stone
The main streets were to be widened to prevent fire spread
Existing narrow alleyways were to be considerably reduced
A survey of every ruin and ownership shown of every plot
1667
On 8th February the Act for Rebuilding the City of London received Royal Assent
1684
A Mutual Friendly Society was formed for assisting members in case of fire
1698
Following a history of serious fires in Edinburgh, the small wooden cottages covered with straw had begun to be replaced by houses of ten or twelve storeys fronting narrow streets an "*Act Regulating the Manner of Building within the Town of Edinburgh*" was passed which required that no buildings should exceed five storeys.
1731
Fire Of Note ( )Blandford, Dorset 1731

18th Century
The Fires Prevention (Metropolis) Act came into being in 1774. This Act listed buildings into 7 classes with thickness of external walls and party walls laid down for each class. The Act also included provisions with the maximum area of warehouses. London boroughs were to appoint Surveyors and "every parish should provide three or more proper ladders of one,two and three storeys high,for assisting persons in houses on fire to escape therefrom"
1794
Theaters had been taking their toll of fire victims for many years when in 1794 the rebuilt Drury Lane Theater incorporated an iron safety curtain in addition to a water tank situated on the roof which was intended for use in the event of fire. Other eighteenth century innovations were the treatment of theatrical scenery with boax, alum or ferrous sulphate.

https://sites.google.com/site/edinburghdeanofguild/home/edinburgh-building-legislation-and-legal-precedents (ultima visita 18/05/2015)

https://sites.google.com/site/edinburghdeanofguild/

Edinburgh building legislation and legal precedents

1621

Scottish Parliament: 1 June.

Our Sovereign Lord and the estates of the present Parliament considering that sundry persons of mean quality, acquire unto themselves the heritable right of sundry ruinous lands and wastes, and for want of means to build the same sufficiently, thackes [thatches] the same with straw and diales, whereby the lands next adjacent unto the same builded upon the great charges and expences of the Heritors are often time brought in great hazard and sometimes to decay in time of sudden fire. Therefore and for the further decoration of the Burgh being the head Burgh of the Realme Our Sovereign Lord with consent foresaid Statutes and Ordains that in time coming no manner of person or persons shall be suffered or permitted to build any houses within the said Burgh of Edinburgh but such as shall be covered with slate or skaillie, lead, tyle or stone and also Statutes and Ordains that the Heritors of such houses as are already thacked with thack and straw (if the same thack and straw roofs shall hereafter at any time become ruinous) shall be astricted to thack the same again with slate or skaillie, lead, tyle or thach stone. [This is a transcription of the Act below, given in a petition to the Dean of Guild Court in 1782]

ACT XXVI

Anent thaicking of houses in Edinburgh with sklate and skailyee

Oure soverane lord and estaittis of this present parliament, considdering that sindrie persounes of meane qualitie acquyre unto thame selffis the heretable right of sindrie ruinous landis and wastes within the town of Edinburgh, and for want of meanes to build the same sufficientlie thaickes the same with straye and daillis, quhairby the landis nixt adjacent unto the same, builded upone the gryit chairgis and expenses of the heritoures, ar oftentymes brocht in gryite hazert and sometyme to decaye in tyme of suddane fyir; thairfore, and for further decoratioun off the said burgh, being the heid burgh of this realme, oure soverane lord, with consent of the saidis estaittis, statutes and ordanis that in all tyme to cum no maner of persoun or persones salbe suffered or permitted to builde anye housis within the said burgh of Edinburgh bot suche as salbe covered with sklaite or skailyee leid tyild or thakstane; and also statutes and ordanis that the heritouris of suche housis as ar alreddye thaicked with thack and straw (if the same thack or straw ruifes sall heirefter at anye tyme becum ruinous) salbe astricted to thaick the same agane with sklait or skailyee leade tyild or thackstone; and ordanis lettres of horning to be directit heirupoun aganis the heretouris of the saidis landis in forme as effeiris; and siclyik ordanis the provest and bailyeis of the said burgh to put this act to executioun.

Records of the Scottish Parliament

[The Act below, of the same year, was quoted in the petition to the Dean of Guild Court 9 March 1780, in relation to candlemakers boiling tallow away from the common streets and houses in the Town]

ACT XXIX
Scottish Parliament 1 June.
Ratificatione of the act of secreit counsell aganis baxteris, brewstaris, flescheouris and candlemakeris off Edinburgh
Oure soverane lord, with advyse and consent of the estaittis off this present parliament, by the tennour heiroff, ratiefies, apprevis and confermes the act of secreit counsell of the date the sevintene day of Februare jM sex hundereth and auchtene yeiris maid and sett doun by his majestie, with consent of the lordis of his hienes secreit counsell, aganis the baxteris, browsteris, flescheris, candlemakeris and utheris thairin conteanit, induellaris within Edinburgh, with the publicatioun and proclamatioun following upoun, in all and sindrie heiddis, poyntis, passages, circumstances and utheris specifit thairintill, conforme to the tennour thairoff in all poyntis; and willes and declaires the same to have bene in all tyme bygane sine the making and publicatioun thairoff, and to be and stand in all tyme cuming, gude, valiable and effectuall in the selff and to have the dew benefite and executiuon thairoff conforme thairunto aganis all who have transgressed or salhappin to transgres and contravene the tennour of the same, off the [quhilkis the] tennour followes:

Apud Edinburgh, decimo septimo die mensis Februarii anno Domini millesimo sex centesimo cecimo octavo. Forasmuche as the kingis majestie and lordis of his previe counsell, considdering the dangerous and fearfull abuse whiche hathe bene of continewance these many yeiris bygane within the burghe off Edinburgh by the tollerance, connivance and oversight whiche hathe bene gevin unto baxteris, browisteris and utheris to build and keip stakkis of haither, brome, quhinnes and uther fewall in the heart of the said burgh and in the vennallis and closses of the same, quhair sindrie of his majesties gude subjectis, inhabitantis of the said burgh, have, with gryit chairges and expenses, builded many guidlie housis and buildingis, to the credit of the said burgh and for the policie and decoratioun of the same. By the whiche stackis of heather, broome, quhinnes or uther fewall builded and keipt within the said burgh, not onlie ar the nightboures of the nixt adjacent pairtes thairunto haldin in continewall feare and dreddour and ar in verie great hazard and danger gif ather by negligens or wilfull malice (as God forbid) fyre suld be sett in the saidis stakes (as fell out by the fyring of sum stackis in Peibles Wynd in the 1584 yeir of God), bot a gryit number off pepill who ar inclyned and disposed to bestow sum pairt of thair estate upoun building within the said burgh ar with haldin therefrome for feare of the saidis stakkis. And besyiddis this abuse, whiche is bothe fearfull, dangerus and hes produced manye inconvenientis and gryit skaithe frome tyme to tyme to the said burgh, thair is ane uther schamefull abuse thairin whiche, altocht it be not altogidder so fearfull and dangerous as the uther, yit it is noyesum to the whole civill and honest nightboures and to all the nobilitie and cuntrey pepill whiche cum hither for thair privat adoes, and with that it is detestable in the sight of strangeris, corrupteth the air and cariethe manye disgracefull and schamefull imputatiounes aganis the said burgh as being a pudle of filthe and filthienes, to wit, the oversight whiche is gevin unto candlemakeris to keip thair chopes and housis quhair they melt thair talloun and craklingis within the heart off the said burgh, and to flescheouris to keip thair slauchter choppes within the town and to toome the filthe of the slauchterit goodis upoun the hie streittis and in oppin vennellis and closses, quhairby it often tymes falleth out that in manye streittis and vennellis of the said burghe the

filthe of slauchterit goodes is in suche abundance, exposed unto the view of the pepill, and the closses and streittis ar so filled thairwith as thair can no passage be had throw the same. For removeing of the whiche tuo abuses so dangerus and disgracefull to the said burgh, the kingis majestie, with advyse of the lordis of his secreit counsell, hath resolvit, concludit, commandit and ordanit that frome the first day off Maii nixtocum thair salbe no stackes of heather, broome, quhynnes nor uther fewall keipit nor sufferit to be in anye of the vennellis, wyndes or closses of the said burghe, nor within housis nor upoun the streitis of the samene; and that no flescheris salbe sufferit by thame selffis, thair servandis or utheris in thair names to keip anye slauchterhousis within this burgh, nor in anye wynd, close or vennall of the same, nor to toome the blude and filthe of thair slauchterit guidis upoun the streittis or in closses or vennallis, nor that no candlemakeris keip thair melting houses within the said burgh, bot that the saidis stakis of hather, broome, quhynnes and uther fewall salbe varied, sett at some remote pairtes of the said burgh besyid the portis, wallis or northe loche syid where there ar no housis, and that the saidis flescheouris sall prowyid thame selffis of slauchter houses at the northe loche syid quhair they may have the use of the water for the awaytaking of the filthe off thair slauchterit guidis, and that the candlemakeris prowyid thame selffis of housis for melting of thair talloun and cracklingis at some remote pairtis of the toun frome the commoun streitis, closses and vennellis of the same. And ordanis lettres to be directit to mak publicatioun heirof by oppin proclamatioun at the mercate croce of Edinburgh, quhairthairow nane pretend ignorance of the same, and to comand, charge and inhibite all and sindrie persounes, inhabitantis within the said burgh, of quhat tred or calling so evir they be, that they, nor nane of thame, nor nane by thair command and directioun, found, build or keip any stakis or rukkes of haither, broome, quhynnes or uther fewall within anye of the closses, vennallis or wast places of the said burgh, nor within thair housis, and that thai remove the stackes whiche they alreddy have and builde the samen at sume remote places about the poirtis and wallis of the said burgh where there ar no housis or at the north loche syid betuix and the said first day off Maii nxytocum under the payne of confiscatioune of the same hather, brome and quhymes so to be stacked aganis the meaning and intent of this act; and further, under the payne of fyve hundreth pundis to be payit by thame so oft as they salhappin to faill. And siclyik to command all and sindrie flescheoures, inhabitantis within the said burghe, that thai prepare thame selffis of slauchter houses at the north loche syid quhair they may have the commoditie of water for thair use, and that thai in nowayes presume nor tak upoun hand efter the said day to toome the filthe or bloode of thair slauchterit goodes upoun the streittis, nor in the vennellis, closses and wyndis of this burgh. As also to charge all candlemakeris that thai betuix and the day foirsaid prowyid thame selffis of housis for melting of thair talloun and craklingis at sum remote pairtis of the town frome the commoun streitis, closses and vennellis of the same under the payne of fyve hundereth pundis money to be incurrit by everie persoun, flescheour or candlemaker, sa often as they sall faill. And siclyik to command and charge the provest and bailyeis of Edinburgh that thai have a speciall care and regarde to see this present act to be preceislie and inviolablie keipit as they will answer to his majestie and the saidis lordis upoun the dewtiefull discharge of thair office.
Records of the Scottish Parliament

1661

Scottish Parliament: 22 March Ratification,

Our sovereign lord, with advice and consent of his estates of parliament, considering that by two charters and infeftments underwritten his majesty's dearest father, of blessed memory, promised in the word of a prince to ratify and approve the said charters and infeft in time of sudden fire, Therefore and for

further decoration of the Burgh of the Realmments and contracts, whereupon they proceeded, in his majesty's next parliament to have been held in Scotland, and to dissolve from the crown the lands, mills, superiorities and others after-mentioned therein-contained; as also that by the thirteenth act of the first parliament of his majesty's said dearest father held in the year 1633 entitled, anent regalities of erections, all rights of regalities within this kingdom which pertained to abbots, priors and other beneficed persons therein-mentioned are declared to pertain to his majesty, yet it is by the said act declared, decreed and ordained that the lands and barony of Broughton, comprehending the towns, lands, burgh of barony, mills and others mentioned in the infeftments granted by his majesty under the great seal to Robert [Ker], earl of Roxburghe the [...] day of [...] 1630 years, **should not be comprehended therein**, excluding the same completely therefrom, to remain with the said earl, his heirs and successors, after the form and manner of the infeftments made to him and his authors of the same; therefore, and upon other good considerations, his majesty, with advice and consent of his said estates of parliament, has ratified and approved and, by these words, ratifies, approves and confirms a charter and infeftment granted by his majesty's said dearest father, of blessed memory, under the great seal of the date 11 December 1639, to the provost, bailies, council and community of the burgh of Edinburgh, and their successors heritably, of all and sundry the particular lands, burgh of regality, superiority, privilege of regality and others after-specified namely, the burgh and regality of the Canongate, lying beside the burgh of Edinburgh, and monastery of Holyrood, that part of the village of Leith lying upon the south side of the water thereof, which of old pertained to the convent and monastery of Holyrood, with the right of fishing port, customs, teinds and other privileges therein-contained; and of all and whole the village, houses, yards of St Leonards, called the lands of Diraneugh, alias Pleasance, and with liberty and privilege of a regality, chapel and chancellery and offices of justiciary and bailiary within the bounds foresaid, in manner at length specified in the said charter, which proceeds upon the resignation of Robert, earl of Roxburghe and Dame Elizabeth Ker, lady Broughton, and contains a new gift of the same bearing diverse other rights, liberties and privileges, at more length purports. And in like manner, another charter and infeftment granted by his said majesty's dearest father, of blessed memory, upon 11 December 1639, to the provost, bailies, ministers and council of the burgh of Edinburgh as feoffs in trust and governors of Heriot's Hospital [for the use and to the behoof of the said hospital' inserted] of all and sundry the lands, mills, superiorities, feu duties and others after-specified namely, of all and whole the town and lands of Broughton, with the waulk mill and waulk mill lands and two corn mills built thereon by Dame Elizabeth Ker and Sir William Bannatyne, her son, commonly called the Newmills and lands called the Batlehaughs; of the lands called the Wrightslands, Godbairnes croft, Harelaw and Barbourland, the lands of Fendreich, Friarton, Backspittal and Forespittal, Lochflat, Meldrumsheugh, Coates, Lochbank, alias Halkerstouns croft, Whytecroft, the lands called Fergusons croft, the lands of Warriston, Bonnington, Bullhousfield, Pilrig, Floores, Earneside, lands of St Leonard's (except that part thereof called Deireneuch alias Pleasance) the mills called Canonmills, mill-lands, multures and sucken thereof, lying within the sheriffdom of Edinburgh; and also of the lands of Little Falside lying within the constabulary of Haddington, and lands of Slipperfield, Middlethird and Souththird, lying within the sheriffdom of Peebles, with castles, towers, fortalices, mills, woods and fishings; and of all and whole these back lands called the Crosshouse of the tenements of the chaplainry of the blessed virgin Mary, founded by the late Sir John Easton, curate, within the kirk of Holyrood and within the parish aisle thereof; and of all and whole these two tenements of land built by the late John Kinloch and his spouse, lying upon the east side of the close of the same lands, and the other on the south side of the same close with the garden, yards, orchards, tennis court, backclose, houses and biggings lying contiguous, and with free ish and entry through the foregate of the west tenement, and also that tenement of land lying near his majesty's highway between the tenement of [...] from the east, the tenement of the late John Bryne from the west, and all and sundry their pertinents, lying within the burgh of the Canongate upon the south side of the highway thereof, bounded in manner specified in the said charter; together with liberty and privilege of a regality, chapel and chancellery and offices of justiciary and bailiary within the bounds foresaid, in manner at length specified in the said charter, which likewise proceeds upon the resignation of Robert, earl of Roxburghe and Dame Elizabeth Ker, Lady Broughton, and contains a new gift, as the same likewise bearing diverse other rights, liberties and privileges, at more length purports, in all and sundry the heads, articles, clauses, provisions and conditions of the said charters, with the precepts and instruments of sasine following thereupon and contracts whereupon the same proceeded, willing and declaring this ratification to be as valid and sufficient as if both the said charters were herein at length engrossed.
Records of the Scottish Parliaments

1663
Scottish Parliament: 18 June 1663.
Act anent ruinous houses in royal burghs.

Our sovereign lord, being informed that upon the high streets of several of his majesty's burghs royal, and in the vennels and other passages within the same, there are many houses in the public view of all people resorting thereto very ruinous and not inhabited these diverse years bygone, nor likely to be repaired by any, to the great opprobrium of the said burghs and common scandal of the kingdom, as being altogether defective of that policy and good order which is and ever has been so earnestly intended in the many wholesome and laudable laws already made by his majesty and his royal progenitors of most worthy memory, and finding the burghs very desirous to have these many dangers and inconveniences prevented and remedied, which the inhabitants of these burghs and the rest of the lieges frequenting the same do continually fear from such ruinous buildings; does therefore, with advice of his estates of parliament, ordain the provost and bailies of the burgh where such ruinous houses are to cause warn and charge all persons, that have or pretends right to the property of such lands and buildings, or any annualrents furth thereof, to cause build and repair in a decent way within a year and a day such houses and buildings as have been wasted and not inhabited three years before the date of this present act, or shall be wasted and not inhabited hereafter by the foresaid space of three years, or else to sell the same to others, to be built within the same space of a year and a day, and to charge all known persons personally or at their dwelling places, and by open proclamation at the parish kirk or market cross of the burgh, and all others by open proclamation at the said market cross and parish kirk, and in case of their absence out of this realm at the cross of Edinburgh and pier and shore of Leith, upon 60 days, with certification to them if they fail the said provost and bailies shall cause the said lands and tenements to be valued by certain persons to be chosen and sworn by them for that effect, and sell the same to any person that will buy them and pay the price of the same to these owners, if they be known, and if they be not known, to consign the prices thereof in the hands of the provost, one of the bailies or dean of guild of the said burgh, to be forthcoming to those who have interest thereto; and if no man will buy them, it shall be lawful to the said provost and bailies, after apprising thereof, as said is, and payment or consignation of the prices of the same, to cast down the said ruinous houses and cause build the same of new. And his majesty, with advice foresaid, declares that it shall not be lawful in time coming to any manner of person to pursue them nor their successors thereof, nor pretend any right nor interest thereto, but that the said right shall be a perfect security to the builders thereof and their successors.
Records of the Scottish Parliaments

1673

Court of Session, June1673.
Bailie Robert Lermont *against* William Brown, The Incorporation of the Skinners of Edinburgh, and Others.

The said Robert Lermont, being to rebuild a waste tenement he had acquired in Skinner's Close, obtained from the Council of Edinburgh, after a visitation appointed by them, and a report thereon, an act giving him liberty to oversail the close, having both sides thereof, and cast a transe over it for communicating with both his houses, as also, for building fore-stairs alongst the said close; and after he had proceeded a pretty length in his building, a suspension was put in by William Andersone, William Brown, the Skinners, and the other neighbours in the close, of the said act and warrant, and for stopping his building. And the Lords having ordained them to be heard upon the bill, they

Alleged, [First] The said act behoved to be suspended, because only the Dean of Guild Court, and not the Council of Edinburgh, were competent judges to such questions, in prima instantia. [Second] The neighbours were not heard nor cited, as uses and ought to be. [Third] The ground whereupon the council granted him the said liberty, was frivolous and unjust, videlicet, that none of thir complainers had any servitude upon his tenement, and, therefore, he might raise it ad caelum if he pleased, though it should damnify their lights: because the passage of the close is common to all the heritors there ; and as he could not encroach or build upon the street of the close, so neither can he oversail; seeing that is directly to appropriate to himself that void which is common, and whereby the houses of the close receive their light, and will diminish all their rents upon that account. And for stopping such encroachment there needs no servitude: but in that case that just maxim of the law takes place, in re communi potior est conditio prohibentis, and every neighbour who is prejudged may stop and oppose.

Answered, What he has done sauthoreprcetore; (vide l. 28, D. De communi dividendo;) and what they crave is invidious, and only in emulationem vicini. They have no prejudice, but the town is decored. As to the first, the council, if not more, are every quite as competent as the dean of guild, and their power is cumulative. (Vide Hayning and the Town of Berwick's pleading.) To the second, though they needed not call the neighbours, yet they were cited, and were present. To the third, it is a mistake to say, a simple interest in a common passage in a close is sufficient to hinder an oversailyie; seeing all it can import is, that the passage be preserved as convenient as before, and which is done by the height of this trance and oversailyie; and without they can condescend upon some eminent prejudice, or a servitude they have, they cannot stop it; and the axiom In re communi is not applicable here, seeing the res communis, videlicet, the common passage, is not wronged nor encroached on, and for inconsiderable prejudices to light, the council has power to gratify a neighbour, notwithstanding thereof; and as for the gable lights, they are never allowed in Edinburgh to interrupt a building.

Replied, Their inconveniencies and prejudices are very great and palpable; for not only does he stop their lights, and make their houses both unwholesome and unpleasant, taking away that benefit of the sun which God hath given both to the just and unjust, and deforms the beauty and regular symmetry of the city, but also closes up William Brown's gable lights, and would introduce, without any right, a servitude tigni immittcndi upon him ; and all, forsooth, that is objected to palliate thir enormities is, that there is a liberty and faculty allowed by the law to all persons to build upon their own ground ad libitum et arbitrium, he owing no servitude; whereas, the lawyers do state that servitus altius tollendi rather to be naturalis libertas quam servitus, yet all do understand that natural privilege and faculty cum mica salis, videlicet, that licet prcedio dominanti meliorem facere conditionem preedii servientis, non autem deteriorem. And so in Hayning's case with the town of Berwick, your Lordships, without considering that illimited and universal liberty re sua utendi et abutendi, inclined to the legal, just, and natural restrictions put thereupon ; and therefore ordained the material prejudices done by letting out the said loch, to be condescended on, and would have accordingly determined. And this unbridled licence of building and heightening, in all well regulated commonwealths and cities, is retrenched, without any need of a servitude. And so it was used in Rome, where, by law and consuetude, they had a general gage of height appointed for all houses within burgh, and a reciprocal and mutual servitude amongst all the inhabitants, ne altius tollatur; both that there might be an uniformity in houses, and no deformity in the city, by the superbity of some edifices and lowness of others; as also, that no man might prejudge his neighbours, by building higher than was appointed by the law.

The Lords, after they had nominated two of their number to visit the ground, they found by their report no such prejudice, and therefore adhered to the act of council, and found their opposition ill grounded.

Robert Lermonth lived but about eight days after the gaining of his cause.

M. P. Brown, *Supplement to the Dictionary of Decisions of the Court of Session* [Decisions of Lord Fountainhall] Vol. III (Edinburgh 1826) p. 17.

1674

Act of the Town Council: 1 May 1674. Ratified by the Privy Council [when?]

It is enacted that no craftsman of this Burgh in any time coming shall repair or build any houses or tenements of land within this Burgh, Leith, Canongate, West Port, Potterrow or Pleasance without first acquainting the Dean of Guild & his Council with the design of the reparation or building to the end that a visit may be made upon the ground of the said lands that the heritors and others concerned may receive a warrant from the Dean of Guild & his council to repair or rebuild conform to the tenor of the said Act in all points certifying every mason, wright or any other person that does in the contrary that they shall be liable in the penalty of one hundred pounds Scots money *toties quoties* [as often] they contravene the said Act by & allow the punishment thereof.

1681

Scottish Parliament: 28 July 1681.

Ratification of several acts and decreets of his majesty's privy council, anent the new buildings at the entry to the Parliament house

Our sovereign lord and estates of Parliament, considering that his majesty's privy council, for the conveniency of his majesty's lieges attending the supreme judicatories of this kingdom, and for ornament of the city of Edinburgh, by their decreets and acts of 21 February 1678 and 17 March 1681, did appoint the passage from the High Street to the Parliament Close to be enlarged thirty foot eastward from the wall of the kirk, whereof twenty foot to be for the passage of coaches and ten foot for a foot walk, and the houses to be built of ashlar-work and with piazzas from the street to the southeast corner of the kirk, and from thence that the buildings be of plain ashlar-work to be drawn in a right line as far as that part of Thomas Robertson's new building where the exchange is built, and ordained the heritors of the Brunt land, either to build in common in the way and manner foresaid, or such as would not build in common to sell and convey their respective interests to the magistrates (that either they or some other undertakers may build) upon payment of the sums whereat the same were appraised by a sworn inquest, authorised to that effect by the council; and for enlarging the court, the said lords have ordained that at the term of Whitsunday [4 June] next the goldsmiths' shops in the court and Straton's land at the back thereof, shall be demolished, upon payment to be made to Arthur Straton of the sum contained in the decreet of council, to the effect that the new land now in building by Mr Alexander Paterson, may front the court to the west,

without any interruption, and whereas now the passage aforesaid is made conforming to the foresaid appointment, and the new buildings in a great measure advanced, our sovereign lord and estates of parliament are well satisfied with the foresaid design, and have ratified and hereby ratifies and approves of the said acts and decreets of council, to the effect and intent foresaid, in the whole heads and articles thereof, and declare this ratification to be as valid and sufficient as if the said decreets and acts were particularly inserted and engrossed herein, with the generality whereof his majesty has dispensed and hereby dispenses for ever.
Records of the Scottish Parliaments

1698
Scottish Parliament: 30 August 1698
Act regulating the manner of building within the town of Edinburgh

Our sovereign lord considering that the new buildings within the city of Edinburgh, having been built without any settled rule or particular oversight, several of the houses are built to excessive, incommodious and dangerous height and all of them very slight and insufficient, whereby not only the policy and good neighbourhood of the town is prejudiced, but also in case of fire happening all access for staying or extinguishing the same is so difficult that it may prove dangerous to the whole town. For remedy whereof, and for the better ordering and regulating of all new buildings within the city of Edinburgh in all time coming, his majesty, with advice and consent of the estates of parliament, statutes and ordains that, in the building of any new houses or land within the city and suburbs, these following rules should be observed:

that the thickness of the side wall above the street be after this manner, that the first storey should be three foot thick, the second storey two foot, nine inches thick, the third storey two foot, six inches thick, the fourth storey two foot, three inches and the fifth storey two foot thick. And, if the walls be built with ashlar work, that every tenth stone shall go through the wall to be a binding stone, and that all middle or passage walls wherein there is no chimneys shall be at least ten inches thick.

And that all breasts of in-going windows shall be from twelve to fourteen inches thick.

And that all single gables where chimneys are placed shall be of sufficient thickness for their vents of smoke, allowing ten inches thick for the back and eight for the bosom, and the wideness between back and bosom shall be according to the several uses, that is kitchen chimneys which ought to be five or six foot of range, two foot four inches wide between back and bosom at the top of the lintel or arch, and gradually to diminish to the coping of ten inches one way and eight inches the other way; and in all other chimneys which are three foot of range shall be one foot and a half between back and bosom at the lintel and diminish to the coping eight inches the one way and six inches the other way; and other chimneys of lesser size are to be of fourteen inches between back and bosom at the lintel and diminished to the top seven inches the one way and six inches the other way; as also that the hearths of chimneys be corbelled with stone a foot without the face of the perpendicular wall for carrying the hearth stones, and what remains for carrying the hearth, as need requires, may be supplied with boards.

And gables that carry chimneys on both sides, there shall be one foot thickness between back and back of the funnels, and that all bridges between vents shall be three inches thick of hewn work.

And statutes and ordains that all new houses be built no higher than five stories above the street, as also that each puncheon load of lime be refreshed at least with one or two loads of sea sand besides the old rubbish of lime that may be made use of; and that all joists laid in walls be two joists thickness of void between joists, and that no joists be laid under hearths or at the back of vents; and what joists are laid at the side of chimneys to be six inches free of any vent and to be built about with enclosed masonry work to defend them against fire, and that all joists may be only eight foot free void, having a foot thick of mason work at each end free of any vent that may happen to be where they are laid.

And ordains the dean of guild and his council within the burgh of Edinburgh to give out jedges and warrants, in the terms of and conforming to this present act and not otherwise, in all time coming. As also ratifies and approves of all acts of parliament made in relation to the building and repairing of ruinous houses within burghs, and particularly the fifth act, third session, parliament first, Charles II and ordains the same to be put to further execution.
Records of the Parliaments of Scotland

1760
Court of Session, Edinburgh: 5 August 1760.
George Buchan of Kello, against Charles Freebairn, Architect in Edinburgh.

Some old houses upon the high-street, at the head of Cant's close, in Edinburgh, being taken down, a plan for rebuilding them of the height of five stories above the shops or ground-floor, was authorised by the guild-court, after citation -of all the conterminous heritors, and no objection made.

After the building was carried to the intended height in the front by Charles Freebairn the proprietor, Mr Buchan complained, in a bill of suspension, of the raising the back part of the upmost story, as prejudicial to the lights of a house belonging to him in Dickson's land, which stands immediately to the west of the new building; and he insisted, That as by act 8th, Parl. 1698, it is provided, "That all new houses be built no higher than five stories above the causeway," this upmost story of the new building being the sixth from the causeway, could not be lawfully erected.

Answered for Charles Freebairn; [1st], This objection comes too late, as it ought to have been made before the Dean of Guild granted warrant for rebuilding the house, according to the plan which has been since exactly followed out. [2nd], The practice of the city authorised by warrants of the guild court, has immemorially explained the act, so as to allow five stories above the shops in the front, and the story immediately above them is always held to be the first story, and so progressively. Consuetude or practice is sufficient even to abrogate statute-law, and much more to explain it; and it tends more to beautify the city, to allow the raising the front or side walls five stories above the shops, than to have such fifth stories made by projections, or stormonts, as they are called, in the depth of the roof, which is admitted to be subject to no prohibition by this statute. And, [3rd], According to the words of the act, the computation of five stories from the causeway ought to be made from the highest part of the causeway adjacent to the house; and, in this case, the causeway of the close ascends from the street, so that the story on a level with the shops is, in the back part, opposite to the suspender's windows, almost entirely sunk below ground; and, consequently, the top-story in question is in that part only the fifth above the causeway, though, computing the shops, it is, at the front, the sixth above the level of the high-street.

Replied for the suspender; [1st], It is not competent for the Dean of Guild to authorise a plan contrary to the statute; and if he has been misled to yield to this attempt, it cannot bar this court from confining the building to the legal regulation, especially when the challenge is made before it is finished. [2nd], The meaning of the statute is clearly expressed in computing the five stories from the causeway, and appointing the thickness of the side-walls to be proportionally lessened as they ascend; so that it cannot be doubted, the fifth story, including the shops, is the highest the law allows to be finished within the sidewalls. Positive statutes, enacting rules of an arbitrary nature, may be abolished in Scotland (though not in England) by disuse. But necessary rules of pub- lie police can never be abolished by disuse, or rather by a very bad custom counteracting them; *L. 39. D. De legibus*. But further, instances have been discovered, where parties have complained of this very abuse j and the Court of Session has interposed its authority to support the law, particularly in 1742, in the case of a land opposite to the Luckenbooths, then rebuilt by Messrs Farquhar, Menzies, and Baillie, where the Lords prohibited them from building higher than five stories, inclusive of the shops or ground-story. And, [3rd], It is apparent from the whole tenor of the statute, that the elevation of the house is to be computed from the causeway of the high-street. This is the rule, where closes descend from the street, so that the buildings in the back parts frequently contain several stories more than in front, which is held to be within the bounds of the law; and there is no reason why the same rule should not be applied where closes happen to ascend.

"the Lords found the act still in force, and therefore passed the bill."

Reporter, *Kames*. Alt. *Rae*. For the suspended, *Ferguson*.

From: William Maxwell Morrison: *The Decisions of the Court of Session* Vol. XVI (Edinburgh 1804) pp. 13173-4.

1767

.... And whereas the grounds after mentioned are without the Royalty of the said city, and it being just and reasonable that the Royalty of the said city should be extended over these grounds, in consideration of the great expence the city has been and will be put to in building the said bridge, and making the communication and access to the said city otherwise easy: and for the equal apportioning of public burdens and benefits, and administration of justice amongst all the real inhabitants of the place; but as this salutary purpose cannot be accomplished without the authority of parliament, and as the proprietors of the several parcels of ground after mentioned, have either consented, or are bound by their titles to consent, that their respective lands shall be included within the Royalty of the city of Edinburgh, your Majesty's most dutiful and loyal subjects, the Lord Provost, Magistrates and council of the city of Edinburgh, on behalf of themselves and community of the said city,

Do therefore most humbly beseech Your Majesty, that it may be enacted, and be it enacted by the King's most excellent Majesty, by and with the advice and consent of the lords spiritual and temporal, and commons, in this present Parliament assembled, and by the authority of the same, that from and after the 24th June1767, the Royalty of the city of Edinburgh shall be extended over, and comprehend the following lands, which now belong in property to the said city, videlicet, thirty four acres, one rood, twelve falls, and twenty fix ells, being part of the lands and barony of Broughton, also thirty two acres of the lands called Barefoot Parks. Also six acres, ten falls, and twelve ells of the lands of Moultreeshill. Also two acres, two roods, thirteen falls; and twenty four ells, and one rood, thirty five falls, and twelve ells, likewise parts of the said barony of Broughton, and lately purchased from James Hogg and Katharine Thomson. And also the lands called Forglen and Allen's Parks, the lands of Caltonhill, the lands of Greenside, and the lands of Piccardy, (excepting such parts of the lands of Caltonhill which lie within the Barony of Wester Restalrig, and do not belong in property to the city of Edinburgh.) and also these of her lands which have been feued by the governors of George Herriot's Hospital, to the several persons after mentioned, under an express condition and covenant, that in cafe the Royalty of the city of Edinburgh should at any time thereafter be extended, so as to comprehend their grounds, they, their heirs and assignees the proprietors of the said grounds for the time, should not only be subjected to build such houses as they shall build thereon, agreeably to the plan to be concerted by the Town Council of Edinburgh, and other managers for the time; but likewise the said houses to be built thereon shall be subject and liable to pay the same public burdens as the other inhabitants of the city are subject and liable to pay, videlicet, four acres, feued to Hew Crawfurd; five acres, twenty four falls, and twenty one ells, to James Grant; twelve acres, one rood, and thirty nine falls, to James Stuart; one acre, two roods, and nineteen falls, to Andrew Chalmer; two acres and one rood to John Jardine; nine acres, one rood, thirty three falls, and thirty four ells, to James Finlay; two acres, one rood, thirty nine falls and half a fall, to Robert Raeburn; eleven acres and sixteen falls to Charles Erskine; nineteen acres, two roods, four falls, and thirty one ells, to a Alexander Cunninghame; five acres, one rood, thirty two falls, and fifteen ells, to Robert Anderson; one acre, one rood, and sixteen falls, to Thomas Simpson; one rood to Thomas Spence; five acres, one rood, twenty six falls, and five ells, to Andrew Chalmer; twenty six falls to William Laudcr; thirteen acres, three roods, and fifteen falls, to William Mure; one acre, twenty six falls, and half a fall, to Robert Mylne; three acres, two roods, and thirty seven falls, to Robert Anderson; one rood, twelve falls, and half a fall, to Daniel Seton; twenty three falls to Patrick Fairley; two acres, one rood, thirty six falls, and ten ells, to Alexander Hunter; and two acres, three roods, twenty four falls, and thirty two ells, feued to Lauchlan Hunter. And likewise, the following two parcels of land, which, by consent of the proprietors, are to be included within the said royalty, videlicet, eleven acres, and half an acre, of the lands of Broughton, belonging to the heirs of George Drummond, Esq., deceased; and seven acres, three roods, and twenty falls, part of the lands of Broughton Parks, belonging to the governors of George Herriot's hospital. And that the said Magistrates and Town Council, from and after the said 26th June 1767, shall have and enjoy the same rights, privileges, and jurisdictions over the said grounds hereby annexed to, and comprehended in the said Royalty, as they do now enjoy and exercise over and within the limits of the present Royalty, by any law, statute, or established custom: and shall, and they are hereby impowered to levy the same maills, duties, customs, and other taxations, within these annexed grounds, in the same manner, and by such actions at law, as the saw Magistrates and Town Council are entitled to use, by any law, statute, or otherwise, within the present Royalty, for recovery of such maills, unties, customs, and taxations, as aforesaid.

And whereas several parcels of the lands feued out as aforesaid, by the governors of George Herriot's hospital, and comprehended within the said Royalty were granted by the said governors, and acquired by the purchasers for the purpose of building thereupon country-houses and offices, with gardens and inclosures adjoining; and it being reasonable that the parcels so granted should not be subjected to the city burdens and taxations, so long as they shall continue to be used and occupied in the manner and for the purposes originally granted, be it therefore enabled, by the authority aforesaid, that nothing in this act contained shall be understood to subject to the said city burdens and taxations any country-house or offices, built, or to be built, on such parcels of land as aforesaid, in any case where the owner of such country house is possessed in property of at least: three acres of ground adjoining to such country house and offices, including the areas of the fame, and on which there shall be no other buildings, except the country-house and offices aforesaid. "provided always, and it is hereby enacted and declared, that the five north most acres of the aforesaid seven acres three roods and twenty falls, part of the lands of Broughton, belonging to the governors of George Herriot's hospital, of which five acres John Dickson of Kilbucho esquire is to obtain a feu-right, by virtue of articles of agreement entered into betwixt him and the Magistrates and Town Council of Edinburgh, shall not be comprehended within the royalty of the said city of Edinburgh, unless the said John Dickson or his heirs do, by a written consent under his or their hands, signify his or their willingness to have the said five acres comprehended within the royalty of the said city; and that the said consent be recorded in the particular register of Sasines for the shire of Edinburgh, within twelve calendar months after the 24th June 1767, anything in this Act to the contrary. From: *An act for extending the royalty of the city of Edinburgh over certain adjoining lands; and for giving powers to the magistrates ... for the benefit of the said city.* 1767.

1783

Court of Session, Edinburgh: 3 March 1783.

Sir William Forbes and others against John Ronaldson.

On the west side of the entry from the High street to Gray's Close there is a piazza supported by pillars, bounded on the south and west by a shop and cellar belonging to Mr Ronaldson, and on the north by the plain-stone pavement.

Mr Ronaldson intending to advance his shop to the pavement, by taking into it the area occupied by the piazza, obtained for this purpose consent of some of the inhabitants of Gray's close, and a warrant from the Dean of Guild of the burgh.

Of this procedure, as prejudicial to the public, by narrowing the entry to the close, and depriving passengers of the shelter afforded by the piazza, Sir William Forbes and others complained by bill of suspension.

Pleaded in defence; As the rights under which the defender possesses this shop and cellar are limited by 'the entry to Gray's close on the east.' and 'the public street to the north,' the area within the piazza, which, with no propriety, can fall under either of these descriptions, must be held as his property, by occupying which occasionally with articles of merchandise, he has deprived every benefit of which, in its present condition, this spot of ground is capable. Nor can the transitory accommodation of ten or a dozen of passengers, when productive of no sort of inconveniency to the defender, be presumed to have introduced a servitude of this anomalous nature, and to have disabled him from converting his property to a more beneficial purpose.

Could this space be considered as part of the public street, it ought not to permitted to a few individuals, from motives of caprice, to oppose an alteration which, without any sensible inconvenience to the public, is greatly conducive to the beauty of the street, and which, on this account, has received the approbation of his neighbours, and of that officer within the burgh whose peculiar province it is to superintend matters of this sort. Hence, though by far the greatest part of the High street of this city seems in ancient times to have been bounded by piazzas, scarcely a vestige of these remains; the conterminous heritors, when rebuilding their houses, having been allowed without challenge to follow the measures adopted by the defender.

Answered; From the history of this city it appears, that in the beginning of the 16th century the Magistrates, in order to promote the sale of wood belonging to the community, permitted the purchasers to advance the front of their houses seven feet into the street, upon their leaving these new fronts supported with pillars for the conveniency of passengers; Maitland's History of Edinburgh. The space therefore, occupied by these piazzas is the property of the public - At any rate, it has for ages been used as part of the public street, on which no private party, upon pretence of improvement, can be allowed to encroach. Nor can former precedents, occurring through the convenience or neglect of the Magistrates, and now sanctified by long possession, afford an excuse for new alterations. Although the Magistrates consented, every inhabitant of the burgh has a right to put a stop to them.

The Lord Ordinary 'having visited the ground, repelled the reasons of suspension;' but the Court considering the alteration to be an encroachment on the public street, altered that interlocutor, and 'Suspended the letters'.

Lord Ordinary *Kennet* Act, *Nairn Tytler* Alt. *Maclaurin* Clerk, *Home.*

From: William Maxwell Morrison: *The Decisions of the Court of Session* Vol. XVI (Edinburgh 1804) pp. 13185-6.

1789

Court of Session, Edinburgh: 20 June 1789.

The Procurator Fiscal of the County of Edinburgh, against Thomas Dott and Alexander Paterson.

Thomas Dott and Alexander Paterson purchased a small piece of ground for building, bounded on the north side by the road leading from the College to the Infirmary, and on the west by Nicholson's Street. This piece of ground, being part of the old barony of Broughton, is not subject to the jurisdiction of the Dean of Guild in the town of Edinburgh.

After the building was nearly finished, a complaint was preferred to the Sheriff Depute of the county, in the name of the Procurator Fiscal, setting forth, That the directions of the statute of 1698 had not been observed, the houses being more than five stories above the level of the street. Answers were given in for the defenders, in which they

Pleaded; By the common law, every person may build on his property to any height, provided he does not occasion some danger to his neighbours from the insufficiency of the work. It is true, that in 1698, this common law right was restrained in a certain degree within the City and suburbs of Edinburgh, the Dean of Guild, whose jurisdiction not only extends over the royal burgh, but to Canongate, Potter row, including Bristo street, &c. being directed to give out jedges and warrants, under the limitations therein prescribed. But this enactment cannot have any influence on the present question. The Dean of Guild cannot interpose, because the ground on which the buildings are erected does not lie within his jurisdiction. And the interposition of the Sheriff of the county would be equally improper, as the execution of the statute has not been entrusted to him, but to the Dean of Guild.

Answered; The statute in question being founded in great expediency, ought not to be narrowed by a critical interpretation of its words. As the danger to be avoided from the exorbitant height of buildings is as great in the avenues to the town as in the town itself, the same rule ought equally apply to both. Indeed, the use of the word 'suburbs' which is of infinite import, including whatever buildings, in the gradual enlargement of the town, mat fall under that description, would be enough to show this to have been the intention of the legislature. As to the mention which is made of the Dean of Guild, this was only intended to press the observance of the law on that Magistrate, who, from the nature of his office, would have most occasion to attend to it, and cannot be thought to exclude the interposition of the Judge Ordinary in those cases where the Dean of Guild from a limitation of his judicial authority is prevented from interfering.

It was also *pleaded* by the defenders, That the buildings erected by them were not prohibited by the enactment, as they consisted of only five stories, what was called a sixth being no more than a French roof, including a tympany in the centre of the building.

The Sheriff Depute 'repelled the declinature; and found, that the building in question was one story higher than it ought to be, and ordered the same to be reduced to five stories.'

A bill of advocation was preferred by Thomas Dott and Alexander Paterson, which being followed with answers, replies and duplies, was reported by the Court.

The Lords remitted to the Lord Ordinary to refuse the bill.

Reporter, *Lord Hailes* Ac. *Solicitor General* Alt. *Dean of the Faculty*.

From: William Maxwell Morrison: *The Decisions of the Court of Session* Vol. XVI (Edinburgh 1804) pp. 13187-8.

1805

Act for regulating the Police in the City of Edinburgh. Royal assent 10 April.

.... The streets to be marked, and houses numbered—persons destroying such marks to be fined 10s.

Shops and houses under pillars may be extended to the street, to prevent them becoming receptacles for idle or disorderly people, provided the alteration does not occasion any damage to the superior tenements. The foundations of houses, buildings, &c. to be fenced in, and all persons creating any kind of nuisance on the streets, &c. or any carter or waggoner driving contrary to law, or leaving their cart unyoked in the streets; or persons riding or driving furiously along the streets, or riding on the pavements, shall be fined by the Superintendant in a sum not exceeding 10s. besides the damage incurred—but in case of buildings not fenced in, the fine may be 1os. besides damages and expences.

1812

Court of Session, Edinburgh: 12 November 1816.
Sir James Fergusson, of Pitfour, Esquire against Sir John Marjoribanks, Bt.
Property Servitude. *Found, that the proprietor of a story of a tenement is not entitled, without the consent of the proprietors of the higher storeys, to make very material alterations on the walls, such as may naturally excite apprehension of danger, though reported by tradesman to be safe.*

Two shops, one of them in the ground storey, the other in the sunk storey of a tenement in the High Street of Edinburgh, belonged to Sir John Marjoribanks. The three storeys immediately above belonged to Mr Fergussou of Pitfour; and there were storeys above those, belonging to other parties. Sir John Marjoribanks proposed to improve the upper shop, by widening the door six inches, and the windows from three to five inches; by removing the stone lintels of the windows, and putting wooden ones in their place, flush with the ceiling; by slapping the main Wall for a comunication by a door of five feet wide between it and a separate building behind, so as to convert the latter into a back shop; and by lowering the floor of it, so as to be level with that of the proposed back shop: and he proposed to improve the lower shop, by striking out a door from it to an adjoining close, and by taking down the wall of rubble work between that shop and the close, and substituting a wall of ashler eight inches thick: and be applied to the Dean of Guild for authority to make these alterations. The Dean of Guild pronounced this interlocutor:—

> The court having visited the subjects in question, and considered the plans in process, together with the report of Messrs Dickson, Paton, Stewart, Ritchie, Macgibbon, and Crichton, produced by the petitioner, find that the operations proposed may be executed with perfect safety to the property belonging to the respondents, the superior heritors ; find that the walls of the inferior tenement are not common property, but the exclusive property of the inferior heritor, burdened merely with a servitude *oneris ferendi* in favour of the upper heritors tenement; and that he is entitled, without their consent, to make such alterations on his property as are not dangerous to the property of the upper heritors, and calculated to defeat their right of servitude; therefore, repel the defences; and grant warrant to the petitioner to make the alterations craved, and conform to the two plans produced, marked as relative hereto, the petitioner finding caution *de damnis* before extract.

Mr Fergusson -presented a bill of advocation of this interlocutor. The Lord Ordinary remitted to three architects, who reported that the shop door ought only to be widened four inches, and the windows four inches; that the lintels ought not to be touched; that, before the wide door behind was opened, a strong arch ought to be built above the place; that the floor might be lowered, and that an ashler wall might be substituted for the rubble wall; and that, under these restrictions, the alterations might be made with safety. Sir John acceded to these restrictions. And the Lord Ordinary reported the case on memorials to the First Division of the Court, who unanimously passed the bill.

The Lord Ordinary in the Outer-House, in consequence of its being stated that there were arches above the lintels of the windows, remitted to the persons who had reported to the Lord Ordinary on the Bills, to say whether that circumstance made any alteration in their opinion; and ordered memorials. Those persons adhered to their former report. And the Lord Ordinary, on advising the memorials, ordered informations to the Court, in order that the parties might obtain a speedy decision; but, in a note, intimated his opinion that the decree of the Dean of Guild ought to be recalled.

Pleaded by Mr Fergusson, the advocator. The different tradesmen consulted in the present case have differed as to the extent to which the alterations might be safely made; and there have been instances of alterations, which had been reported by trades men to be safe, being attended with damage. But, independently' of apprehension of danger, the advocator is not bound in law to submit to alterations upon the inferior property. The proprietor of each of several storeys has an exclusive interest as to possession; but all the proprietors have not a servitude merely, but a common interest in each of the storeys, to the effect of preventing the proprietor of it from making any material albera,tion on that part of the common tenement. *Dig. de servitud. praed. urban. Voet. ibid.* § 16; *Stair*, b. ii. tit. 7. § 6.; *Bankton*, b. ii. i tit. 7. § 11.; *Erskine*, b. ii. tit. 9. § 11; Anderson against Dalrymple, 20th June 1799', Reid against Nicoll, 16th November 1799; Sharp against Robertson, 5th February 1800; Royal Bank against Swanston, 1804, (not reported), Young and Company against Dewar, 3d February 1814, (not reported).
But even though the advocator's right over the inferior property were merely a servitude *oneris ferendi*, the owner of it would not be entitled to make any innovation on the servient walls ; *Dig. de servitud. praed. urban.* §33.

Answered for Sir John Marjoribanks.- The tradesmen are agreed that the alterations may be executed with perfect safety; under the modifications and precautions to which the respondent has acceded. The instances given of damage having arisen, notwithstanding a previous report that the operation was safe, are neither authenticated nor sufficiently specific to merit attention. The connexion between the upper and under storeys of a tenement is merely a right of servitude. *Dig. de servitud. praed. urb.* § 24, 33; *Stair*, b. ii. tit. 7. § 6; *Bankton*, b. ii. ti-t. 7. § 9; *Erskine*, b. ii. tit. 9. § 11; Hall v. Corbet, 14th December 1698; *Fount.*; White, Mitchell, and Dewar, against Murdoch and others, 1772 (not reported); Robertson against Rankine, 8th March 1784. Immemorial practice has sanctioned the owner of a lower storey, in making alterations of the nature proposed, where it could be done without danger to the higher storeys.

The case of Anderson against Dalrymple, cited by the advocator, related to a common passage, which, being joint property, could not be touched without the consent of all the proprietors. Reid against Nicol was similar. Sharp against Robertson related to an attempt to add a storey to a house, and introduce an additional family into a common stair, by converting the garrets into an attic storey. The decision in Young and Company against Dewar rested entirely on the construction of a clause in the title deeds of parties.

Observed on the Bench.—Lords Glenlee, Bannatyne, and Craigie; thought that the right of the owner of a storey over the walls below him, was not properly either a servitude or a right of common property, but a common interest, such as to entitle him to object to any material alteration in the fabric, which might occasion even the apprehension of danger; and that the alterations proposed in this case ought not to he allowed.

The Lord Justice-Clerk also thought that the right was neither a common property nor a servitude; and that the owner of a storey had such an interest as to entitle him to object to any alteration which created the slightest real or reasonable cause of fear; but, adverting particularly to the case of Robertson, thought that he did not enjoy a negative, founded merely upon a whimsical apprehension of his own; and observed, that the practice of this city had long allowed alterations much greater than those here proposed, notwithstanding opposition, where it was ascertained, by persons qualified to judge of it, that there was no real cause to apprehend danger; but thought that there might be room for farther inquiry as to the danger in this case.

Lord Glenlee observed, That this was an extreme case, the alterations proposed being so very material, such as might excite apprehension, but that a party might not be entitled to object to small alterations. The Court advocated the cause, and refused the petition which had been presented to the Dean of Guild. [*Decisions of the Court of Session: From the Beginning of February 1815, to November 1819* [1825] (Edinburgh 1817) No. LXIX, pp. 202-5] http://www.buildinghistory.org/regulations.shtml

History of Building Regulations

The British Isles has a long history of legal controls on building construction, which have generated records of interest for building historians. This outline aims to explain the types of building control record and where to find them.

It all began in London. The densely-packed housing of the capital created problems which could only be tackled communally. A house could block the light from its neighbours. Thin party walls and badly-sited privies and gutters were other nuisances. These issues were tackled in a set of building regulations usually dated to 1189, and certainly earlier than 1216.[1] The greatest hazard was fire. After a major fire in 1212, thatched roofs were banned in London by the city's first mayor, Henry Fitzailwin.[2] Complaints about building nuisances could be brought by one neighbour against another. The mayor and aldermen settled such cases in a court called the Assize of Nuisance. Their judgements survive from 1301 to 1431.[3] They were advised by masons and carpenters appointed as viewers, whose reports are preserved for 1509 to c.1554 and 1623 to 1691.[4]

Other British cities gradually followed London's lead. As early as 1391 Bristol had a viewer who inspected buildings for encroachments onto the street.[5] Worcester's ordinances of 1467 showed concern for the dangers of fire. Thatched houses and timber chimneys were not allowed within the walls.[6] Stone, brick and tile were safer materials within urban areas. Yet timber-framing remained popular for centuries. As the population grew, space was at a premium within city walls. Storey was piled on storey. By the end of the Middle Ages tall, jettied timber houses overhung narrow streets in many a town and city.

It was this pattern that fueled the Great Fire of London in 1666, which wiped out 80% of the city. That disaster led to the London Building Act of 1667, the first to provide for surveyors to enforce its regulations. It laid down that all houses were to be built in brick or stone. The number of storeys and width of walls were carefully specified. Streets should be wide enough to act as a fire break. This first Act applied to the walled City of London.[7] The Building Acts of 1707 and 1709 extended that control to Westminster. They added a prohibition on timber cornices and required brick parapets to rise two and half feet above the garret floor. A comprehensive Act in 1774 covered the whole built-up area. Its detailed set of regulations included the stipulation that doors and windows should be recessed at least four inches from the front of the building. (The statute set a fashion which was soon emulated outside London.)[8] The returns of the District Surveyors survive from 1774.[9]

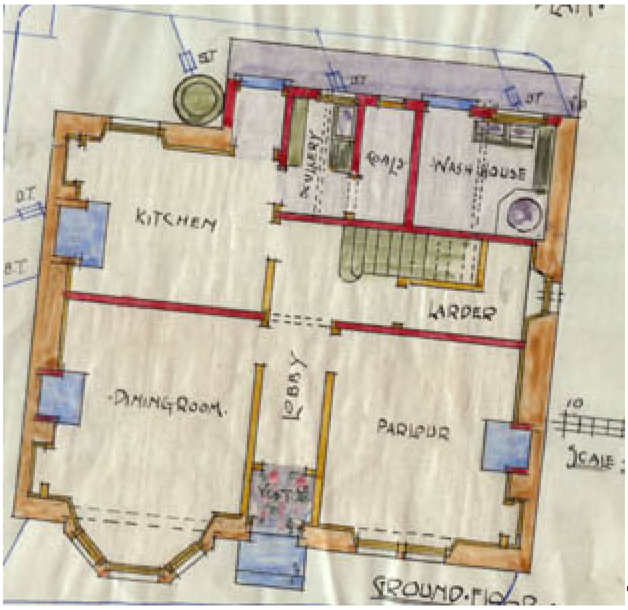
By the 18th century some kind of building control had been established in many British cities. In Scotland each medieval burgh operated a Dean of Guild Court, which dealt with rights of access and nuisances. So when the burghs began to develop building regulations in the 17th century, they fell within the remit of the Dean of Guild Court. Surviving Court records are usually in local archives, but some are in the National Archives of Scotland.[10] After Edinburgh suffered a series of fires, an Act of the City Council in 1674 gave the Court authority to enforce new building regulations, ratified in 1698 by an Act of the Scottish Parliament. Among other things it restricted buildings to five storeys.[11]

The London Building Acts provided prototypes for provincial towns. When Warwick was destroyed by fire in 1694, it was rebuilt under an Act of Parliament modelled on that of 1667 for London.[12] Later Building Acts were passed for Bristol (1778 and 1840) and Liverpool (1825 and 1842).[13]The returns of Bristol's surveyors survive from 1788.[14]

More commonly though towns sought to tackle a variety of problems through local improvement Acts. An Act of Parliament in 1757 established the Wide Streets Commission for Dublin. It operated until 1851, generating minute books, architectural drawings and maps, which are held by Dublin City Archives. Between 1800 and 1845 nearly 400 improvement Acts were passed for 208 towns in England and Wales. They might be concerned with street cleaning and lighting, or more ambitious. Acts for creating new streets and widening old ones gave the local authority at least a limited degree of building control.[15] Building regulation was a patchwork of different provisions in different places.

In the early Victorian period central government became concerned about the conditions of the urban poor. Outbreaks of cholera created alarm. A series of government inquiries identified problems of overcrowding, lack of water and sanitation. Home Secretary Lord Normanby proposed a national building Act in 1841, to apply to all borough councils in the British Isles. The bill failed. However some of its proposals were incorporated into the Metropolitan Building Act of 1844, which once again extended the area covered by London's building control.[16]

It was a series of Public Health Acts that established a more consistent apparatus for controlling the urban fabric. The first such Act in 1848 had limited impact on buildings, but laid out the framework of local authority in England and Wales, known initially as boards of health. The Local Government Act of 1858 extended the powers of these local authorities to regulate the structure of buildings through bye-laws. The government issued a set of guidelines called the Form of Bye-laws, which were followed quite closely by most English and Welsh urban authorities in the 1860s. The Public Health Act of 1875 and associated Model Bye-laws consolidated building control.[17] A similar Act was passed for Ireland in 1878 and one for Scotland in 1897.



This burst of Victorian regulation generated records of great value for the historian. The Act of 1858 permitted local boards in England and Wales to require the deposit of plans for any new buildings or alterations.[18] In Scotland the Dean of Guild Courts became almost exclusively concerned with building regulation in the Victorian era and continued in that role until their abolition in 1975. After 1897 they too required plans to be submitted to them.

Many of these plans survive in local record offices. The catalogue of Cardiff's impressive collection is online at Cardiff: The building of a capital. Over 20,000 Dean of Guild plans for the Royal Burgh of Dumfries are being entered into an online database. Details of plans for some 17,000 Plymouth properties are included in Plymouth and West Devon Record Office's online catalogue and many plans for other places in England and Wales can be traced though Access to Archives, but many other building control plans are not catalogued online, so it is worth checking in the appropriate archive.

The Public Health Act in 1936 brought in new model bye-laws, but as before they were simply guidelines. So requirements could vary from one authority to another.

Scotland was the first country in the United Kingdom to adopt national regulations. The Building (Scotland) Act in 1959 created the power to do so. The first set of Building Regulations was published in 1963 and came into force in 1964. England and Wales followed suit. The Public Health Act of 1961 was the statutory instrument and the first regulations were published in 1965. They came into operation in February 1966 throughout England and Wales, apart from the Inner London Boroughs. The Building Regulations (Northern Ireland) Order of 1972 established regulations for Northern Ireland modelled closely on those for England. There have been several revisions of the various regulations subsequently.

The Republic of Ireland has followed a separate but nearly parallel path since independence. The Town and Regional Planning Act of 1934 created local planning authorities. This was replaced by the Local Government (Planning and Development) Act of 1963, which included the power to create national building regulations. The more comprehensive Building Control Act 1990 established building control authorities. Building regulations were published under that Act and have been revised periodically.

Under the present system, planning applications, complete with plans, are deposited with the planning departments of local councils. They are held in council offices, where they can be viewed on request. Older plans may be deposited in local archives.

For current legislation and regulations for England and Wales see the government's Planning Portal.

Notes: If you are using a browser with up-to-date support for W3C standards e.g. Firefox, Google Chrome, IE 8 or Opera, hover over the superscript numbers to see footnotes online. If you are using another browser, select the note, then right-click, then on the menu click View Selection Source. If you print the article out, or look at print preview online, the footnotes will appear here.

An abstract of the Act of Parliament made in the fourteenth year of the reign of ... King George III. intitled, an Act for the further and better regulation of buildings and party-walls, and for the more effectually preventing mischief by fire, within the cities of London, and Westminster ... By John Matthews, surveyor Great Britain#

Current location	EW: For a full description of this work see Volume II of Early Printed Books (shelved 017 - BRITISH ARCHITECTURAL LIBRARY)
Shelved at:	E.h.65#
Corporate main entry	Great Britain#
EPB catalogue no.	EW Catalogue No 1285#
Uniform title	[Laws, statutes, &c. 1774; 14 Geo.III.c.78. Abstract. 1774]
Title	An abstract of the Act of Parliament made in the fourteenth year of the reign of ... King George III. intitled, an Act for the further and better regulation of buildings and party-walls, and for the more effectually preventing mischief by fire, within the cities of London, and Westminster ... By John Matthews, surveyor.
Imprint	London : printed for the author, by W. Strahan, and M. Woodfall; and sold by W. Owen; and by the author, at Mr. Mylne's, 1774. -
Physical description	viii, 76, [12] p., 3 engr. pl. ; 18.5 cm. (8_)#
General note	Abstract of `The Building Act' of 1774.#
Lit. references	Harris 94#
Subject	Building: law / Walls: party walls: law: Great Britain: England: London
Subject	Fireproof construction, fire resistance
Person added entry	Matthews, John, b. 1748#
Copy notes	C20th calf. Orig. fly-leaf inscribed `J:G:Jun{PN}r{PF}. 1774.' Ownership inscription on top right of titlepage torn out with some loss of title. P.iii inscribed `J Gregory', and early manuscript annotation to the list of surveyors, p.[84]. With presentation ALs from J.D. Crace dated 5 March 1900, stating that the book belonged to his great-grandfather, John Gregory, treasurer of Fox's Whig Club.#

The Building Act, passed in the fourteenth year of George III. ... Shewing the proper thickness of party-walls, external-walls, and chimnies. With a complete index

Great Britain#

Current location	EW: For a full description of this work see Volume II of Early Printed Books (shelved 017 - BRITISH ARCHITECTURAL LIBRARY)
Shelved at:	E.h.62#
Corporate main entry	Great Britain#
EPB catalogue no.	EW Catalogue No 1282#
Uniform title	[Laws, statutes, &c. 1774; 14 Geo.III.c.78. 1787]
Title	The Building Act, passed in the fourteenth year of George III. ... Shewing the proper thickness of party-walls, external-walls, and chimnies. With a complete index ...
Imprint	Cambridge : printed by J. Archdeacon, and sold at Taylor's Architectural Library, 1787. -
Physical description	[2], ii, 74, [2] p., [3] engr. pl. ; 17.3 cm. (8_)#
Lit. references	Harris 91#
Subject	Building: law / Walls: party walls: law: Great Britain: England: London
Subject	Fireproof construction, fire resistance
Copy notes	C20th half green morocco. Contemporary ownership inscription of Thomas Hardwick (1752-1829) on titlepage, with his(?) manuscript note on front free endleaf.#

ANEXO E

BASES DE LA INVESTIGACIÓN

1. Objetivo y justificación
2. Primera aproximación al objeto de estudio
3. Estado de la cuestión
3.1.-Estudios sobre los tratados ingleses y su entorno
3.2. Estudios sobre tratadística europea
3.3. Tesina de Máster propia
3.4. Cuestiones clave.
4. Hipótesis
5. Metodología
5.1. Fase 1. Caracterización y concreción del objeto de estudio
5.2. Fase 2. Selección y evaluación de contenidos según los principios prestacionales
5.3. Fase 3. Elaboración de contrastes con la realidad construida
6. Referencias bibliográficas.

1. Objetivo y justificación de la tesis

El objetivo inicial/principal de este estudio es comprobar si, los tratados o libros de construcción británicos que se escribieron en los siglos XVII y XVIII, pueden llegar a ser una herramienta útil en el momento de realizar un estudio histórico de un edificio de Reino Unido, con motivo de su rehabilitación.

La protección del patrimonio histórico pasa por intervenir en edificios que son parte del mismo. Y el punto de partida para una rehabilitación o restauración es "entender el edificio", hay que saber por qué es como es; pero el edificio no va a contestar directamente, de hecho es difícil encontrar una respuesta a esa pregunta y los documentos escritos que nos pueden dar una orientación son los tratados históricos; son ellos los que van a dar una comprensión de la construcción histórica británica, que permitirá poder actuar con cierta base.

Evidentemente hay otros métodos de investigación, ya que los tratados son una herramienta más que se puede tener en cuenta, cuando se anda por un camino oscuro, cualquier tipo de chispa por pequeña que sea te ayuda a seguirlo; esa es la idea de este estudio dar un poco más de luz a la comprensión de los edificios a través de la lectura de los tratados.

Pero concretamente, lo que busca esta tesis es conseguir entender a través de la lectura de los tratados las técnicas de construcción antiguas, que en su mayor parte se transmitían de forma oral, y por lo tanto se han perdido, lo que permitiría entrar en la restauración de edificios antiguos con más garantías.

Hasta ahora, como se verá en el estado de la cuestión, ese punto de vista no se ha buscado en los diferentes estudios sobre tratados, con la excepción de las cubiertas y forjados, cuyos sistemas de construcción se han tratado en varios estudios, pero la edificación tiene otros elementos constructivos que merecen consideración (Yeomens, 1986).

El periodo estudiado no es casual. Se empieza en 1624, siglo XVII porque es el momento en el que se escribe el que se considera primer tratado de construcción ingles "original" (Wotton, 1624), aunque no olvidaremos mencionar algunas obras anteriores, éstas no se pueden considerar dentro de esta tesis porque no tienen en cuenta los objetivos de la misma. Ésta se da por finalizada a finales del siglo XVIII, porque es un momento en que hay un cambio de mentalidad, en relación a la construcción. El tratado pasa a tener una mínima base científica. Para constatar esta diferencia se ha escogido el tratado escrito por Nicholson en 1812, que será el último a analizar. La elección de éste tratado no es casual, ya que se dedica a retomar el de Moxon de 1703 y ponerlo al día, lo que ayuda a completar la visión general de los tratados.

No sólo es conveniente ver si los tratados hablan de las técnicas constructivas, sino que también habría que comprobar si éstos se corresponden con la realidad, por lo que se va a intentar hacer una correspondencia entre algunos parámetros contenidos en los libros y la realidad.

Desde el principio de la investigación en Londres, (durante el proceso de lectura/consulta de los diferentes volúmenes), al pasear por la ciudad, se observó que las descripciones leídas cobraban vida en la realidad; aquí y allí, se veía que los edificios seguían las descripciones de los libros.

Esa sensación, es evidente en la ciudad de Londres ya que es la ciudad para la que se han escrito los tratados; pero, ¿se da esa sensación en algún otro lugar? Para responder a esa pregunta, se decidió no sólo considerar la ciudad de Londres como ejemplo, sino que se ha escogido la ciudad de Edimburgo, en la que se comprobó el alcance de la influencia de dichos tratados, la elección no es casual.

Edimburgo es una ciudad que tiene una historia sino igual con paralelismos con Londres, y en relación a Londres tiene dos ventajas prácticas: por un lado, es más pequeña, lo que la hace más asequible a nivel de búsqueda; y por otro, que, a pesar de haber sufrido varios incendios aún conserva edificios anteriores a la redacción de los tratados, lo que te permite ver con más facilidad si han influido en la construcción de la ciudad, o si por el contrario se han mantenido las construcciones tradicionales, o quizás un poco de ambos. Eso sin tener en cuenta que la época que se estudia coincide con la anexión de Escocia a Inglaterra.

2. Primera aproximación al objeto de estudio

El proceso de desarrollo de la tesina llevó a una primera lista la que se citaban unos 40 autores, algunos de los cuales habían escrito más de un libro, llegando a 70 volúmenes aproximadamente.

Como en ese momento el objetivo era realizar una tesina de final de máster el número de volúmenes consultados se limitaba a 27. Esa limitación se hizo de siguiendo lo que se comentaba de ellos en dos tratados generalistas: uno de Hanno Walter Kruft (1990), otro de Dora Wiebenson (1980), y en un curioso artículo de D.T. Yeomens (1986) sobre carpintería.

Las fichas de estos libros contienen los comentarios de las obras anteriormente mencionadas y una serie de primeras impresiones sobre los mismos. Las conclusiones de la tesina forman parte del Estado de la Cuestión en el apartado siguiente.

AUTOR	TÍTULO	1a Ed.	Ed. consultada
WOTTON	Elements of Architecture	1624	1624
WILLSFORD	Architectonice. The art of building…	1659	1659
GERBIER	The first and second part of Counsel and advice to all builders: for their choice of their surveyors, clerks of their works, bricklayers, masons, carpenters	1664	1664
PRIMATT	The city and country purchaser & builder	1667	1667
RICHARDS	The first book of architecture/ by Andrea Palladio	1668	1668
MOXON	Mechanick Exercises: or The doctrine of handy-works: applied to the arts of smithing, joinery, carpentry, turning, bricklayery	1677	1703
NEVE	The city and country purchaser's and builder's dictionary:	1703	1736
HALFPENNY	The art of sound building, demonstrated in geometrical problems	1725	1725
KENT	The Designs of Inigo Jones, consisting on plans and elevations for publick and private buildings	1727	1727
PRICE	The British Carpenter: or, A treatrise on carpentry	1733	1735
BUILDER'S DICTIONARY		1734	1734
SALMON	Palladio Londinensis: or, the London art of building. In three parts…	1734	1734
HOPPUS	Practical measuring made easy to the meanest capacity by a new set of tables …	1736	1777
SMITH	A Specimen of ancient carpentry: consisting of variety of designs for roofs	1736	1736

LANGLEY	A sure guide to builders; or, The principles and practice of architecture geometrically demonstrated.	1729	1747
LANGLEY	The city and country builder's, and workman's treasury of designs: or, the art of drawing, and working the ornamental parts of architecture. …	1741	1741
LANGLEY	The builder's jewel … explaining short and easy rules … for drawing and working	1741	1741
SWAN	The British architect: or, the builder's treasure of stair-cases	1745	1750
LANGLEY	The builder's bench-mate: or, inestimable pocket companion	1747	1747
PRICE	A series of particular and useful observations, made with great diligence and care, upon that admirable structure, the cathedral church of Salisbury	1753	1753
PAIN	The builder's companion, and workman's general assistant	1758	1762
PAIN	The builder's pocket treasure; or Palladiodelineated	1763	1763
OAKLEY	Every man a compleat builder: or easy rules an proportions for drawing and working the several parts of architecture	1766	1766
PAIN	Pain's British Palladio: or, The builder's general assistant	1786	1786
NICHOLSON	The student's instructor in drawing and working the five orders of architecture	1795	1795
NICHOLSON	The carpenters and joiner's assistant; cointaining practical rules	1797	1797
TREDGOLD	Elementary principles of carpentry… to which is added, an essay on the nature and properties of timber	1820	1820

A posteriori, se realizó el análisis de todos los volúmenes, de la lista que se disponía, en la biblioteca del "Royal Institute of British Architects" (RIBA en adelante) donde se pueden consultar ediciones originales, por desgracia, no siempre la primera edición pero en ocasiones, incluso varias ediciones.

A su vez la lectura de los mismos, hacía referencia a otros autores que en algún caso escribieron más de un texto, lo que nos lleva al estudio de aproximadamente 100 volúmenes sobre construcción histórica británica. De los que se hablará ampliamente más adelante.

3. Estado de la cuestión.

Antes y después de la elaboración de la tesina, se ha procedido a la revisión de todas las obras que hablaban sobre este tema que se encuentran en el RIBA, en la "Main Library of University of Edinburgh" o en la "National Library of Scotland" de Edimburgo, así como las de la ETSAB y ETSAV y se han hecho todas las búsquedas en internet posibles para comprobar que se ha escrito sobre este tema.

3.1.-Estudios sobre los tratados ingleses y su entorno

El orden de exposición considera en primer lugar los libros que analizan específicamente uno o algunos casos concretos, continúa con los que abordan el estudio del conjunto de los tratados o también de su entorno arquitectónico cultural, y finaliza con dos artículos en revistas

Antonio Agüera Ruiz *"Los Elementos Arquitectónicos por Sir Henry Wotton. Un texto crítico"* de la Universidad de Valladolid escrito en 1996.

Es un texto en el que se analiza el libro de Wotton desde la perspectiva del vocabulario utilizado en él. Enfatiza la importancia que tiene Wotton ya que es el primero que traduce el vocabulario de construcción italiano al inglés y porque habla de técnicas de construcción aunque sea de forma muy parca. Estudia la vida del autor y de dónde proceden sus conocimientos para llevar a cabo el libro. Además transcribe una traducción del libro al castellano a partir de una edición holandesa. Por lo tanto este estudio complementa la presente tesis, ya que habla del que se considera el primer tratado de construcción inglés, pero al ser el mismo algo pobre en contenidos de técnicas de construcción no va más allá.

Frederick Hard, *"The Elements of Architecture, Collected by Henry Wotton kt, from the best authors and examples"* por "The Folger Shakespeare Library (the University Press of Virginia) en 1968

Edición comentada del libro de Wotton, pero los comentarios extra se limitan a la vida del autor. No hay comentarios sobre la obra, solo transcripción.

Almudena Herrero Rey, *"Tratados Ingleses de Arquitectura 1563-1663",* tesis doctoral realizada de la Universidad de Valladolid.

Como se puede ver el título es prácticamente calcado al de la presente tesis, con la diferencia que el presente estudio llega un siglo y medio más lejos. Herrero tiene en cuenta únicamente 5 obras, de las que 3 aunque desde cierto punto de vista pueden ser interesantes no contienen las técnicas de construcción que se están buscando. El punto en el coincide totalmente con esta tesis es en el hecho de que analiza los 2 libros que escribió Balthasar Gerbier, pero se limita a describir punto por punto lo que dice y que es importante pero no porqué.

Es obligatorio comentar, que el análisis histórico de los personajes es impecable y que el esfuerzo a la hora de realizar la traducción de los textos es muy loable pero le falta cierto rigor desde el punto de vista de técnicas de construcción.

Howard Colvin // John Newman, *"Roger North's writings on architecture"* editado por Claredon Press-Oxford en 1981,

Es una monografía sobre Roger North, que escribió en 1695-6 "Of Building". Básicamente explica la vida del autor y transcribe el libro que éste escribió. Está muy bien como libro de consulta. La imposibilidad de consultar el original, lo hace muy útil, pero no analiza la importancia de lo que dice el autor (North) a nivel de técnicas de construcción, solo se transcribe el original.

Terence M. Rusell, *"The Encyclopedic Dictionary in the Eighteen century, architecture, arts and crafts (Vol III) The Builder's Dictionary"*editado en GB en la University Press, Cambridge en 1996.

Libro encontrado en la sección de libros antiguos. Es un libro que te introduce en el momento histórico en el que fue escrito el Builder'sDictionary. En ese momento, ya se habían publicado el libro de Moxon y el diccionario de Neve. Sólo transcribe una parte del libro, sorprendentemente, se salta los materiales y no hay ni mediciones, ni precios, ni diseños. Se vuelve a describir el momento histórico, pero no se hace hincapié en los contenidos.

Eileen Harris *"British Architecture books and Writers (1556-1785)"*ed. por Cambridge Universitypress, 1990.

Consiste en un diccionario de escritores que hablan sobre arquitectura a lo largo de 1556-1785. En las descripciones de los autores consultados básicamente comenta la vida de los mismos, si a parte de escribir habían realizado alguna obra arquitectónica, sus influencias y su bibliografía. En algunos casos llega incluso a contar anécdotas sobre los escritores y sus riñas; pero poco sobre los contenidos de los libros, solo referencias. En realidad es un libro de consulta, y como tal, es muy completo, una inestimable ayuda para cualquiera que quiera introducirse en este tema porque está todo muy bien documentado: los libros, las diferentes ediciones, y donde se pueden consultar, a ese nivel es impagable.

Daniel D.Reiff, *"Houses from books: treatises, patternbooks, and catalogs in americanarchitecture 1738-1950: a History Guide"* editado por la Pensylvania State University en 2000.

Libro consultado en RIBA, habla a nivel formal de cómo ha influido en la arquitectura Americana los tratados históricos de construcción, y posteriormente los "journal" sobre arquitectura. Se estudia a nivel formal una serie de edificios que siguen las ilustraciones de los tratados, no se habla de las técnicas pero si de los órdenes. Se podría considerar un complemento de los ejemplos de construcción que se buscan en Londres y Edimburgo.

Rudolf Wittkover/Margot Wittkover, *"Palladio and English Palladianism",* editado en Londres en 1974, aunque su primera edición en papel es de 1983.

Es una compilación de artículos escritos por Rudolf Wittkover y recopilados por su mujer, te hace una descripción de todos los autores ingleses que escribieron sobre los órdenes. Teniendo en cuenta que casi todos los autores escribieron sobre ellos, es muy buen libro de consulta para comprobar que tratados existen, pero no entra en las técnicas de construcción.

Joseph Rykwert*"The First Moderns",*The MIT Press Cambridge, Massachussets and London England 1980.

Es un libro en el que se hace un repaso de las artes en general pero siempre como complemento al arte de la arquitectura, sin olvidar apuntes históricos sobre el tema, pero desde el punto de vista de composición y órdenes. En el capítulo 6 llamado "Initiates to Amateurs" hace un repaso a las principales figuras de la arquitectura británica, Inigo Jones, Sir Christopher Wren e incluye a algunos tratadistas como John Shute, Sir Henry Wotton, Morris o Langley. Pero no entra a hablar de técnicas de construcción, sino de composición y ordenes o qué significan estas obras en la historia.

Carlos Montes Serrano, *"Presentación de "Los Elementos de la Arquitectura por Sir Henry Wotton, un texto crítico"*, editado en 1997.

En realidad es la introducción al libro antes citado, pero hace una serie de referencias muy interesantes en torno a los arquitectos de la época y porque escribían estos tratados.

D.T. Yeomens, el artículo *"Earlycarpenter'smanuals 1592-1820"* que escribió en la revista *ConstructionHistory*, en el volumen 2 de la colección que pertenece al "*Journal of the Construction History Society*" 1986 ed by Mark Swenaron Barlett School of Architecture and Planning University College London.

En este artículo se hacen breves descripciones puntuales de varias obras, desde el punto de vista de la carpintería en la arquitectura, de mediciones y de geometría. Resulta muy útil porque además a lo largo del artículo compruebas varios puntos de vista. Por un lado unos tratados iniciales, muy influenciados por los italianos, muy teóricos. Por otro lado otros más eminentemente prácticos sobre cómo construir, ilustrándolos para lectores con un nivel cultural menos elevado.

3.2.- Estudios sobre tratadística europea

Se incluyen en este apartado los estudios que abordan la tratadista arquitectónica más allá de la inglesa, o también incluyéndola, desde una óptica específica sobre las características propias de un tratado y sus posibles influencias sobre las teorías arquitectónicas generales. El orden de exposición da prioridad a los dos estudios que abarcan toda la tratadística y sigue con aquellos más concretos.

Dora Wiebenson, *“Los tratados de Arquitectura de Alberti a Ledoux”* cuya primera edición española es de 1980

Es un volumen cuando menos curioso, el índice es:

- Agradecimientos.
- Introducción
- Introducción a la edición española.
    - I.-Descubrimiento de Vitrubio.
    - II.- Arquitectos y aficionados.
    - III.- Los elementos de la arquitectura.
        - A.- LOS ÓRDENES.
        - B.- GEOMETRÍA Y PERSPECTIVA
        - C.- TECNOLOGÍA
        - D.- ARQUITECTURA PÚBLICA Y PRIVADA.
- Bibliografía
- Índice alfabético

Aquí, realmente se ha de leer todo el libro para encontrar lo que buscas, ya que, a excepción del primer punto, va saltando de autor en autor (y no sólo contempla los autores ingleses), aunque bien es verdad que el índice alfabético puede resultar muy útil. En cualquier caso te da un par de reseñas sobre la vida del autor y sus obras y si ha sido influenciado o ha influenciado a autores posteriores.

Hanno-Walter Kruft, *“Historia de la teoría de la Arquitectura”*la traducción consultada es la editada en 1990;

Es un estudio generalista de todos los autores que han tocado el tema de la arquitectura, divide el estudio en dos volúmenes, el que afecta al desarrollo de esta tesis es el volumen 1 “desde la antigüedad hasta el siglo XVIII”. En el capítulo 19 “el desarrollo en Inglaterra durante los siglos XVI al XVIII” nombra a unos 70 autores ingleses de los que te indica los títulos y la influencia de otros autores pero no en qué. Sí que es cierto que, en algunos casos te indica los motivos por los que se había escrito el tratado.

José Luís González Moreno-Navarro *"El legado oculto de Vitrubio"* editado en 1993

Un completo análisis del tema desde la época de Vitrubio hasta principios del siglo XX pero contempla autores italianos, franceses y españoles.

Libro muy importante por tres motivos: es la clara inspiración de esta tesis (como ya se ha comentado); por otro lado a lo largo del mismo se proponen métodos de análisis que permiten determinar variables que ayudan a clasificar los tratados útiles para alcanzar el objetivo planteado, es decir, la utilización de éstos en el proceso de restauración o rehabilitación: y por último en él, se destaca la importancia de algo que no parece ocurrir tanto en Gran Bretaña, la influencia decisiva de "Los diez libros" de Vitrubio.

Ana Belén Onecha Pérez, "Una nueva aproximación al De re aedificatoria de LeonBattista Alberti. Los conocimientos constructivos y sus fuentes", memoria de tesis doctoral de 2012 de la Universidad Politécnica de Cataluña.

Si bien es un estudio específico sobre un único tratado, el de Alberti, presenta un notabilísimo interés por dos razones: el método de estudio desarrollado, es un complemento, o casi una puesta al día del método desarrollado en la tesis anterior de José Luis González, lo cual ayuda a desarrollar los contenidos de esta tesis; por otro, el hecho de que se estén buscando las técnicas construidas contenidas en los tratados de construcción británicos, "a priori" podría verse como un punto de vista de la forma de construir más albertiano que vitruviano, y esta tesis ayuda a complementar ese punto de vista.

Mª Isabel Gómez Sánchez "Las estructuras de madera en los tratados de arquitectura (1500-1810)" editado en 2006

Es un completo análisis del tema pero contempla todos los autores europeos y siempre desde el punto de vista de las estructuras de madera, así que sí se consideran los escritores británicos, pero sólo desde el punto de vista de las estructuras de madera.

3.3. Tesina de Máster propia

Sonsoles Puntos Pérez, *"Primera aproximación al estudio de tratados de construcción ingleses (S.XVII-S.XIX)",* Trabajo Final de Máster de, de l'EscolaTècnica Superior d'Arquitectura de Barcelona. 20012

Las conclusiones a las que se llega son:

> *GENERALES.*
>
> *Después de la visión lo más al detalle posible (dentro de las circunstancias) de los tratados consultados podemos llegar a varias*

conclusiones que ya había apuntado en la introducción y que siguen un poco las conclusiones del artículo de Yeomens pero que él se queda en el tema de la carpintería y realmente se pueden llevar mucho más allí.

Aunque este estudio lo he empezado con el tratado de Wotton anterior a él podemos encontrar una adaptación del libro IV de Serlio por parte de John Shutes, nombrada por Kruft en su recopilatorio. El caso es que no es el primer libro que encontramos sobre construcción, pero si el primero que tiene forma de manual y no se considera una copia/adaptación de, aunque recoge la trilogía de Alberti: con un vocabulario llano con ganas de divulgar las teorías de la arquitectura, quizás un punto demasiado filosófico pero básicamente práctico.

Seguidamente nos encontramos con Willsford y Gerbier, que dan una serie de indicaciones razonadas de cómo se ha de llevar la obra: desde los cimientos hasta la cubierta, pasando por la necesidad de saber y proteger todos los oficios, toda la gente de la obra es importante y ha de conocer su oficio, y cuanto más alto estás en la escala más has de saber de cada uno de los oficios, porque tienes que controlar que lo hagan bien y para poder controlarlo has de saber cuando algo está mal o bien.

En este momento histórico se produce el incendio de Londres y de pronto las necesidades cambian.

Primatt es un autor curioso, su condición de abogado, le lleva a escribir sobre las valoraciones del terreno, un tema muy importante en aquel momento, se ha quemado Londres y hay que valorar lo que queda, y no sólo eso sino que además hay que unificar precios para que no se produzcan abusos por parte de los proveedores, o por parte de los trabajadores, ya que al escasear aumenta el valor de su trabajo.

Por otro lado al escasear trabajadores hay que intentar de alguna manera formar nuevos para poder asumir el problema, si todos se van a Londres, en el campo ¿Quién enseña a construir o construye por sí mismo? Neve y Moxon, desde su condición de profesores, conscientes del poder que de alguna manera tiene la palabra escrita, a parte, de que te permite que llegue más lejos (y teniendo en cuenta las limitaciones en las comunicaciones en el momento) escriben sendos manuales que permiten tener una conciencia de los que es el proceso constructivo. Uno siguiendo el orden de los tipos de trabajo de obra, y el otro realizando un diccionario de términos.

Esa forma de transmitir conocimientos mediante diccionario de términos por orden alfabético, es algo que se repite a lo largo de la historia hasta llegar a nuestros días, una de mis fuentes generales es un Diccionario de Escritores de Libros de construcción.

Y es a partir de este momento en que nos empezamos a encontrar tratados/manuales de construcción escritos por gente que se dedica al mundo de la construcción, que no extrae sus conocimientos sólo de libros antiguos, si no que complementa los mismo con su práctica diaria.

Que es lo que los hace totalmente accesibles al público más general, se enfrentan a problemas de construcción reales, que han "sufrido" en el día a día.

El tema, como ya apunté en la introducción es que estos escritores, no dominan todo el saber arquitectónico, algunos como Price se limita a escribir de lo que sabe, que es de carpintería, y realmente consigue que sus manuales sean auténticos y populares, porque enfrenta los problemas reales a los que le da una solución contrastada con la experiencia profesional. O Hoppus, que sencillamente da una serie de tablas para contar tanto en mediciones como en presupuestos, que son básicamente útiles.

Smith, en cambio es un poco más fantasioso, lo que lo hace menos popular, pero por otro lado, consigue recapitular la forma de construcción de cubiertas anterior al momento en el que nos encontramos, lo cual le da valor como historiador que sabe de construcción.

Otro que también se preocupa por la historia es Price en su estudio de la catedral de Salisbury, aunque no llega a realizar un descenso de cargas es un estudio histórico desde el punto de vista constructivo muy a tener en cuenta. A partir del estudio histórico dictamina que la catedral es resistente.

A los que se ha de tener un respeto, aunque no sean enteramente originales (ya que en realidad originales hay muy pocos) son Halfpenny, Langley, Salmon, Pain y Oackley, los cuales con mayor o menor fortuna, realizaron el esfuerzo de recopilar todo el saber arquitectónico del momento, tal y como habían hecho antes, Wotton y Gerbier, pero de forma más profesional y compilarlo en un volumen, que además tenía que ser útil, que se ha de poder llevar de un lado a otro fácilmente. Eso tiene mérito, y no sólo eso sino que encima mejoraban el aspecto en el que ellos tenían mayor conocimiento.

Aunque a diferencia Wotton y Gerbier, estos autores dejan de dar importancia al valor de la construcción, cada vez se ven menos estados de mediciones o presupuestos, supongo que por ello el tratado específico de mediciones de Hoppus es tan popular, porque ya no hay "alternativas". También se nota una disminución del énfasis en el proceso de obra.

También quiero hacer notar que el hecho de que se acaben este tipo de tratados a principios del XIX no es casual, ya en los dos últimos estudiados (Nicholson y Tredgold) hemos observado que el tono es más científico, es una forma de decir que la ciencia entra en la construcción.

Hasta aquí más o menos es un resumen de las conclusiones a las que he llegado a través tanto de las lecturas de los diferentes libros como de los generales.

<u>PROPIAS/PARTICULARES</u>

El primer pensamiento que se me cruzó cuando empecé a leer los originales es que la literatura que habían creado era específica para arquitectos técnicos, sobre todo en el caso de las primera obras, en todo los momentos en el que estuve leyendo los diferentes tratados me iban recordando lecciones aprendidas en la universidad en las diferentes asignaturas de construcción y materiales y luego mi práctica en obra.

De alguna manera los manuales siempre me llevaban a compararlos con normas tecnológicas de la edificación: como se ha de construir un cimiento dependiendo del tipo de terreno; que gruesos han de tener las paredes; formas de unión de paredes y forjados; la construcción de cubiertas y sus diferentes detalles; las escaleras, como se diseñan de forma cómoda;…

También hablan de dosificaciones de morteros y yesos, de la colocación correcta de los ladrillos (aparejos), cuando se han de hacer los ladrillos y cuando se han de utilizar, como saber por su aspecto si son buenos o malos.

Sin contar que uno de los capítulos que se observa repetidamente es el cómo contar lo que se ha colocando en obra, directrices para realizar estados de mediciones, y presupuestos, como contabilizar el desvío en el presupuesto que puede suponer un cambio en la obra.

Y a parte incluso se apunta la seguridad y salud en obra.

La palabra “surveyor” aparece repetidamente, seguida de lo que ha de saber en obra y sobre construcción, y realmente no se corresponde con el topógrafo que tenemos aquí o perito, casi siempre habla de trabajos propios del aparejador o arquitecto técnico.

Sí que hay comentarios al diseño, a las proporciones para que la arquitectura sea armoniosa, muchos. Pero no es lo único que cuenta, lo que prima es la comodidad de los espacios que se habitan, la comodidad para sus habitantes. Desde el punto de vista de la ubicación, como la distribución, como la solidez de sus cimientos, como el aprovechamiento de la luz y del sol.

Realmente sería fantástico poder coger todos los conocimientos de los tratados y ejemplos de construcciones del momento en que habían sido escritos y ver si la realidad constructiva del momento se corresponde con lo que estos personajes trataron de transmitir a través de sus tratados de construcción.

Un posible trabajo sería la realización de un estudio de los edificios que quedan construidos en la época y ver si siguen los requisitos de los manuales.

Aunque también sería interesante seguir ampliando el campo de trabajo con los tratados y ver a que otras conclusiones llego.

En resumen, a la conclusión que se llega en este trabajo es que está justificada una tesis doctoral que analice en profundidad los contenidos de los tratados porque a pesar de que se dan pistas de lo que se puede encontrar, en ningún momento entra en detalle de lo que se dice ni analiza la construcción histórica inglesa.

3.4.- Cuestiones clave.

En resumen el estado de la cuestión es el siguiente: hay muchos libros que hablan de forma generalizada sobre el tema de los tratados de construcción históricos ingleses pero ninguno (a excepción de los libros de Antonio Agüera, de Almudena Herrero y parcialmente Mª Isabel Gómez Sánchez) entra en las técnicas constructivas que contienen dichos tratados.

También, como hemos visto, hay monografías sobre los tratadistas o sobre tratados en concreto, pero se centran más en el aspecto humano, filosófico, en el entorno histórico o incluso en sus obras de arquitectura o construcción que en lo que contiene el tratado, y cuando entran en él sencillamente lo transcriben.

Pero no hay conclusiones de los contenidos de esos tratados, ¿son tratados que describen el proceso constructivo para llevar a cabo una obra? ¿O teorizan sobre la arquitectura como un "arte" y no como algo que ha de ser útil? Es importante contestar esas preguntas.

4. Hipótesis.

Las hipótesis que ha de demostrar el trabajo de investigación son:

Hipótesis 1

Los autores británicos describen con rigor los procedimientos con los que se construía en las épocas en que fueron escritos. La experiencia derivada de otras investigaciones ya realizadas, como la de José Luis González, indican que en muchos casos, al menos en el continente esto no ha sido así, como se puede comprobar en los tratados de italiano Francesco Milizia o el español Benito Bails (González, 1993).

El contraste de esta hipótesis de una manera absoluta sólo se podría realizar mediante una comprobación total de que lo que afirman los tratados es exactamente el cómo se construía, lo cual es prácticamente imposible y si no fuera así, quedaría fuera del alcance de un trabajo como el presente.

El procedimiento de contraste tiene que basarse en el mismo estudio de los tratados mediante varias comprobaciones, entre las que podemos citar: el contraste entre los diferentes contenidos de los diferentes autores y de su lógica constructiva desde nuestra perspectiva, la intensidad de la presencia de autores foráneos en los diferentes textos ingleses así como la copia entre ellos mismos.

El contraste real con algunos edificios de Londres y Edimburgo que se ha podido realizar añadirá mayor certeza a estas conclusiones.

Ahora bien, para alcanzar el contraste de esta hipótesis principal es imprescindible formular las siguientes hipótesis, que a su vez habrá que contrastar también.

Hipótesis 2

A los escritores británicos les motiva ser útiles, y por ello son didácticos. Es una afirmación que tampoco es obvia ni evidente. En el Continente sólo se advierte esa ansia de transmitir saber en autores como Alberti y Fray Lorenzo. El primer tratado que se conserva es el de Vitrubio, recordemos que se escribió como instrumento para solicitar una pensión, no con ánimo de enseñar.

La forma que tienen los autores de explicar, será lo que nos da pistas reales sobre los motivos del escritor para escribir y a quien va dirigido el libro. Es decir, se procede a un análisis de la forma de escribir el libro.

Hipótesis 3

Sin que se pueda decir de una manera clara inicialmente, los tratadistas ingleses no se copian entre sí aunque aparecen bastantes indicios de que sí se influencian y se influencian mucho

El análisis directo de los contenidos, comparando lo que dicen unos escritores y otros sobre los mismos temas, te da una idea clara de las influencias y si se han copiado unos de otros.

Hipótesis 4

Los tratados incorporan elementos de tratados extranjeros pero matizados, adaptados a la realidad británica. A diferencia de autores como los ya citados Benito Bails, o Francesco Milizia, que extraen información de libros extranjeros sin contrastar si la realidad de ese momento en su país se corresponde con lo que se dice en ellos.

Se han analizado las referencias a otros escritores y luego se ha contrastado si esa referencia es cierta, leyendo en algunos casos, ediciones originales, en otros ediciones traducidas, bien al inglés, bien al castellano. Es el caso de Vitruvio (Howe, 1999), Alberti (1549), Palladio, Philibert de l’Orme (1561), Louis Savot (1585), Le Muet (1623), Gauger (1714), o Le Clerc (1714).

Hipótesis 5

A lo largo de la época estudiada el análisis del conjunto de tratados y de su contexto general, denota diferentes periodos de manera que los tratados escritos en un momento determinado tienen un carácter diferente de los de otro; el principal hecho que marca la división entre un período y el siguiente es el incendio de Londres en 1666.

Para la constatación de esta hipótesis, se usan los contenidos de los tratados pero viendo primero a quienes van dirigidos, luego se comprueba que aunque son contenidos que describen técnicas y materiales el público no es el mismo.

En el tema de los periodos en los tratados, hay una importante excepción, el tema de la carpintería desde el punto de vista de cubierta y forjado, pero ya se ha dicho que es un elemento que no se va a tratar en profundidad porque ya se ha tratado en otros estudios (Yeomens, 1986 / Gómez, 2006).

5. Método.

Si son ciertas todas las hipótesis será posible cumplir el objetivo principal planteado en la investigación según el cual el estudio de los textos históricos facilita la comprensión de la construcción histórica, para intervenir en procesos de rehabilitación o restauración. Puede ocurrir también, que las hipótesis no sean ciertas en todos los casos y sólo entonces las que las cumplan podrán ser útiles a tal fin

Para contrastar las hipótesis y cumplir los objetivos previstos se dispone de dos herramientas: por un lado los tratados, sus contenidos y su contexto y por otro lado el contraste de los contenidos sobre la realidad construida o la de otros tratados contemporáneos no ingleses. Sin embargo, del conjunto de todos los considerados hasta ahora se puede dudar de algunos de ellos a la hora de considerar si son útiles a nuestros fines. En consecuencia, es preciso hacer una selección de todos ellos estableciendo cuáles son las variables que tienen que abordar para ser considerados pertinentes. A ello se dedica a la Fase 1.

5.1. Fase 1. Caracterización y concreción del objeto de estudio

El conjunto de las conclusiones derivadas del trabajo de tesina y la revisión hecha en el estado de la cuestión lleva a que el proceso de investigación debe definirse a partir de:

1. Analizar la estructura del tratado, a partir del índice si hay, o directamente de los contenidos, a partir de ahí, valorar el papel de las técnicas de construcción dentro del libro,
2. Situación de técnicas de construcción y materiales, dentro del conjunto de los contenidos para llegar a los siguientes puntos:
    a. Descripción de los sistemas constructivos: cómo se diseñan los elementos de construcción.
    b. Cómo se realiza el proceso constructivo: diseño de elementos auxiliares para llevar a cabo el proceso y la organización de los diferentes oficios.

Siguiendo el criterio de aprovechar al máximo las tesis anteriores, especialmente las de José Luis González y Belén Onecha, se establece que las variables que nos van a poder determinar las principales características de los tratados y en consecuencia su posterior tipificación son las siguientes:

Tamaño, titulo, existencia de índice

Estructura de los tratados

a. Orden de ejecución/planteamiento de obra
b. Caos
c. Oficios
d. Diccionario

e. Mezcla de los anteriores
f. Monotemático con añadido

Prefacios: que motiva a los escritores a escribir.

Se procede a la lectura de los alrededor de 100 volúmenes de los que se habla en la primera aproximación del objeto de estudio, en esta primera lectura a parte de caracterizar los tratados siguiendo los parámetros anteriores se observa exactamente la temática del libro, procediendo a la primera lista de descartes, en este caso absolutos, porque los temas de los que se habla no entroncan con el objetivo de esta tesis.

Se separan los volúmenes que recogen los objetivos de la tesis, es decir, se consideran válidos todos los volúmenes que en algún momento hacen referencia a: el emplazamiento y distribución del edificio, la organización de la obra, los materiales y los diferentes sistemas constructivos; y se dejan de lado los volúmenes que hablan de:, los órdenes griegos y su utilización en la decoración del edificio, las piezas decorativas de chimeneas y escaleras, los techos decorados, y los volúmenes de tablas que permitían hacer los cálculos tanto para superficies como para realizar valoraciones y los monográficos sobre carpintería.

Como hemos dicho hay un proceso de eliminación de una serie de libros que no hablan del objetivo de la tesis, pero se pueden hacer dos grupos más los tratados que hablan parcialmente del objetivo de la tesis, y los tratados que contemplan una amplia parte del objetivo de la tesis.

Este último grupo, lo componen los tratados pertinentes, es decir, son los libros que contemplan la mayoría de los puntos descritos anteriormente.

5.2 Fase 2. Selección de contenidos y evaluación de los mismos según los principios prestacionales.

Para organizar los conocimientos sobre construcción de los diferentes tratados se ha decidido buscar una pauta la de la doctora Belén Onecha (2012), que en la redacción de su tesis sobre Alberti, decide escoger la definición de construcción arquitectónica como "la configuración de espacios arquitectónicos mediante la organización conveniente de la materia a su alrededor". Tal y como se contempla en "Las claves para construir la arquitectura" (Casals, Falcones & González, 2001) que además considera la arquitectura según principios y elementos.

Los principios son:

- Espacio, en cuanto adecuación del espacio a la actividad

- Ambiente, en cuanto adecuación ambiental de cada espacio a cada actividad
- Integridad del edificio a largo término de sí mismo y de sus ocupantes
- Producción, como eficiencia directa y medioambiental de sus procesos de materialización
- Estética, se refiere a la conveniencia privada y pública de sus cualidades estéticas y comunicativas.

Los elementos son las partes materiales del edificio:

- Espacio exterior
- Compartimentación
- Estructura
- Instalaciones
- Envolvente.

Por lo tanto los elementos que se van a tener en cuenta en este estudio son el espacio exterior, ya que la ubicación se contempla en los tratados; la compartimentación desde el punto de vista de la distribución interior; la estructura (cimientos, paredes de carga, escaleras); la envolvente ya que se contempla la ventana; y como instalación cuanto menos problemática la chimenea.

Todos estos elementos se estudiarán desde el punto de vista de los principios antes mencionados siempre que se pueda, no todos los elementos constructivos se pueden observar desde los mismos puntos de vista.

Como vemos dentro de los elementos se incluye los materiales con los que se ejecutan es algo muy importante y diferenciador. Ya que es mucho más práctico tratar los materiales desde el elemento constructivo, que tratarlos en otro apartado.

5.3. Fase 3.Elaboración de contrastes con la realidad construida.

El estudio de los casos se puede hacer desde dos puntos de vista: una perspectiva viva, es decir, basándonos en edificios que encontramos directamente por la calle, y desde una perspectiva de archivo y documentación. Uniendo ambas, la metodología seguida es la siguiente:

1. Lectura de libros generalistas actuales sobre la arquitectura de la época para tener una visión general.
2. Lectura de las normativas de la época en fuentes diferentes a los tratados.
3. Bibliografía sobre edificios de las ciudades en concreto:

   a. "HistoricBuildings in London", London architectural monographs, que te proporciona una serie de edificios históricos de la ciudad de Londres.
   b. "Edinburgh. An illustrated guide" de Charles McKean de 1992
4. A partir de estos dos libros, cotejando los datos con el archivo de "listed buildings" (edificios catalogados), se puede realizar una lista de edificios significativos de la época estudiada.
5. Comprobar el material gráfico existente sobre los edificios
6. Comprobar la posible accesibilidad a los edificios de la lista.
7. Realizar una visita física a los mismos y comprobar si coinciden con las pautas que dan los tratados de construcción históricos.
8. Los parámetros de comprobación van a ser, siempre que se pueda:
   a. Las características de los muros
   b. Las características de las ventanas
   c. Las características de las chimeneas
   d. Las características de las escaleras

En el caso de Edimburgo, al poder contar con la ayuda del Doctor Dimitris Theodosopoulos y del resto de académicos, el acceso a los edificios fue relativamente sencillo, a parte, algunos de los edificios datados de esa época pertenecen en la actualidad al campus de la Universidad de Edimburgo, por lo tanto el acceso a dichos edificios por parte de una estudiante es totalmente lógico. Dejando de lado que otros se pueden visitar por ser museos.

Londres por el contrario, al ser mucho más grande, la variedad de ejemplos es mucha sólo en la zona de Westminster hay catalogados unos ::::: edificios construidos en la época y que en algunos casos conservan características de la misma. La mayoría de estas edificaciones es privada y el acceso a los interiores ha sido imposible, pero sí existe algún edificio que se utiliza como museo, abierto al público y que por lo tanto se ha podido visitar el interior.

A pesar de todo se ha conseguido lo que se pretendía, ejemplos de ambas ciudades para ilustrar el hecho de que los tratados históricos de construcción ingleses no estaban desvinculados de la realidad que les rodeaba.

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ANEXO F

CONCLUSIONES

Introducción.

Al empezar esta tesis de investigación se planteó un objetivo principal que es:

> “Comprensión a través de los libros de las técnicas y materiales utilizados en la construcción histórica británica. Con el objetivo secundario de que éstos se conviertan en una herramienta más para llevar a cabo la rehabilitación de edificios”

Es necesario que no se pierda de vista este enfoque, pero relacionado con él, se plantearon una serie de hipótesis muy claras, derivadas del estudio de los tratados que en esencia son las siguientes:

1. Los autores de los textos en sus escritos, describen con rigor la manera en que se construía en aquel momento.
2. A los escritores británicos les motiva ser útiles, y por ello son didácticos.
3. Los tratadistas ingleses se influencian entre sí.
4. Los tratados incorporan elementos de tratados extranjeros pero matizados, adaptados a la realidad británica.
5. A lo largo de la época estudiada (siglos XVII y XVIII), el análisis del conjunto de tratados marca unos periodos: los tratados escritos en un momento determinado tienen un carácter diferente de los de otro, siendo la principal división el incendio de Londres.

Para llegar al contraste de la primera hipótesis es imprescindible contrastar previamente las sucesivas que se establecieron: iniciando este recorrido en la segunda hasta alcanzar la primera.

HIPOTESIS 2: **A los escritores británicos les motiva ser útiles, y por ello son didácticos.**

Ya desde el principio con Wotton, en los prefacios se nos está diciendo que el objetivo del libro es dar unas pautas para construir bien. Pero es que además es algo muy evidente cuando entras en sus contenidos:

Wotton (1624) escribe para gente culta; Gerbier (1662/39 y North (1695-6) está claro que hacen un tratado dirigido a los constructores, por un lado para que escojan bien a la gente que va a trabajar con ellos, y por otro lado que sean capaces de distinguir los buenos materiales de los malos. En definitiva pretenden que el resultado final sea una casa cómoda y sólida.

Luego nos encontramos que Willsford (1659), Primatt (1667) y Leybourn (1668), básicamente nos hablan de la descripción de materiales y precios, lo que ayuda a que nadie te engañe en el control de calidad. Pero la forma de explicarlo no es de advertencia sino de constatación de lo que hay. Estas enseñanzas no van dirigidas a un colectivo especial, se observa en el hecho de que Leybourn (1668) use el dialogo entre un maestro de obras y un juez para dar los datos, no hay acritud sólo se dicen las cosas como son.

Moxon (1703), es un caso algo excepcional venia de ser un artesano y acaba siendo miembro de la "Royal Society" e hidrógrafo del Rey. Fue el primero que viniendo de la clase artesana adquiere este honor y escribe para ellos: herreros, carpinteros, ebanistas, albañiles, yeseros, en general para los trabajadores. Es muy didáctico, con un discurso sencillo y totalmente práctico, es una ayuda porque las descripciones son claras. Aparte tiene diseños, lo cual le da un valor añadido. El hecho de que Nicholson un siglo después se decida a ponerlo al día es muy significativo (1812).

Aunque el libro de Nicholson esté editado en Londres él es escocés: a principios de siglo XIX hay un movimiento cuyo primer foco se encuentra en Edimburgo que pretende llevar la cultura a la gente trabajadora, y la puesta al día de un libro de esas características es algo muy de acuerdo con ese movimiento.

Los Diccionarios, (el de Neve, el "Builders Dictionary" y el "Builders Magazine") que hay quien considera como un conjunto aunque no lo son, se dedican a poner todo el conocimiento encontrado sobre construcción organizado por orden alfabético, que puede ser útil o no dependiendo de lo que estés buscando. Pero es una forma de ser didácticos, además lo reúnen todo, lo de Gran Bretaña y lo del extranjero: hay que poner al alcance de cualquiera todo el conocimiento necesario para llevar a término una edificación con garantías. Otra cosa es el objetivo pero la idea es similar.

Finalmente nos encontramos con "The Complete Body of Architecture" (Ware, 1756) y el "The Rudiments of Architecture" (Anónimo, 1773) que a lo largo de todo el volumen te va diciendo, “el estudiante ha de saber…” “el estudiante tendrá en cuenta…” y son ambos muy didácticos.

Pero la siguiente frase de Ware, referido a otros tratados es la clave:

(…)but they shew the necessity of an English body of Architecture for the use of English builder, a necessity which we shall very happy if we are as able to supply, as to discern.

(…) Pero nos enseñan la necesidad de un “Cuerpo de arquitectura inglés para el uso del constructor inglés, una necesidad que nos hará muy felices si sabemos suplirla y discernirla

Evidentemente el resto de libros también pretende ser didácticos y prácticos. Otra cosa es que proporcionen los datos que interesaban a esta tesis en concreto. No se puede dudar de la practicidad de unas tablas de cálculo tamaño de bolsillo para poder llevarlas a la obra; o de los múltiples listados de precios y medidas de los “Vademecum”; o que se realizaba el volumen con las proporciones correctas de los órdenes tanto en tamaño “de biblioteca” como en tamaño bolsillo para poder consultarlo en obra.

De la voluntad de enseñar de los tratadistas británicos no se puede dudar, otra cosa es a quién. Pero de ello se hablará en la 5ª hipótesis.

HIPÓTESIS 3: **Los tratadistas ingleses se influencian entre sí.**

A lo largo del capítulo 2 se ha estado diciendo que el escritor tal o cual dice lo mismo, por lo que no se pone. Es decir, que se copian entre ellos, es un hecho que se ha constatado a lo largo del estudio.

En cualquier caso es una copia *necesaria* el objetivo de los escritores es transmitir saber, como ya hemos constatado en la hipótesis anterior, por lo tanto "si hablo de morteros, y ya tengo una definición aunque sea desde otra fuente, la pondré, y añadiré más información si puedo, pero he de ponerla toda". Los ejemplos más evidentes son los dos diccionarios de la primera mitad del siglo XVIII, está claro que el "*Builders Dictionary*" (Gibbs, James & Hawksmore, 1734) coge el diccionario de Neve de 1703 y lo amplía y le añade diseños para hacerlo aún más accesible.

Evidentemente a los editores del diccionario de Neve no les hizo mucha gracia. Y también hay una crítica, que ya se ha comentado, por parte de Batty Langley. En general, el "*Builders Dictionary*" suele citar sus fuentes (con la clara excepción del diccionario de Neve, y el tratado de Moxon), y a lo largo de este estudio se han ido consultando dichas fuentes, en su defensa hay que decir que no son los únicos que copian.

Otro ejemplo flagrante de copia es el "*Builders Magazine*" en relación al libro de Ware, algunas entradas son una copia exacta de lo que dice pero sin que se vea por ninguna parte la fuente de la información. Este libro está editado por la Society of Architects, en 1779, Ware había fallecido en 1766. En el diccionario de Harris (única fuente conocida para saber este tipo de cosas) hay más preocupación por el origen de las láminas que por el origen de la información, y aunque da algún nombre para algunas definiciones, de Ware no dice nada.

Curiosamente, encontramos a dos autores que son ignorados, que son Gerbier y North, aunque Almudena Herreros en su tesis (2008) comente que Gerbier fue una influencia para los tratadistas en realidad es raramente nombrado, en cambio Wotton es nombrado y copiado en casi todos los tratados, no hay tratado que no lo nombre, y copiar parte de sus contenidos es bastante habitual aunque no norma, suelen ser la introducción a materia más completa, pero parece como de obligado cumplimiento nombrarlo. En cambio otros autores parecen bastante ignorados.

***HIIPÓTESIS 4:* Los tratados incorporan elementos de tratados extranjeros pero matizados, adaptados a la realidad británica.**

En la explicación anterior hay un corte al decir que el “*Builders Dictionary*” (Gibbs, James & Hawksmore, 1734) no es el único que copia, ya que en realidad empieza copiando Wotton (1624), y es el primero que va citando sus fuentes.

La dificultad de Wotton es que como no tiene a nadie británico a quien copiar (con la excepción de Shute, que en realidad se limita a hablar de órdenes) saca la información de los clásicos italianos y franceses. Es un caballero diplomático que ha viajado mucho y que por lo tanto ha estado en contacto con ese tipo de cultura lo que le ha proporcionado material para escribir el libro, perfectamente analizado por Agüera en su libro (1997).

Gerbier (1662/3) no copia excesivamente, se apoya en los clásicos, pero poco. Le preocupa que los arquitectos sólo piensen en diseñar según los órdenes de Vignola y no se preocupen por la obra en sí, de ahí sus recomendaciones. Nombra a los grandes, pero no se ve demasiado su influencia.

Al tener como referencia a Wotton, casi todos los tratadistas británicos copian, pero siempre adaptando a las características típicas de su construcción. Parte del libro de Leybourn de 1700 es una copia del libro de los órdenes de Scamozzi, el libro de Leoni (1715) es la traducción de Palladio (1570); los dos diccionarios hacen continuas referencias a otras fuentes. Dato curioso: ambos introducen unas medidas de las chimeneas cuya autoría según ellos es de Palladio; pero analizando el tratado de Palladio se observa que apenas si dice algo de las partes de la chimenea y de la inconveniencia del humo; por lo tanto la autoría de esas medidas debe surgir de otro lado. Lo que lleva a deducir que usaron una posible autoría de Palladio para darle más empaque a la definición.

Es también en la entrada de chimeneas del “*Builders Dictionary*” donde nos encontramos una copia exhaustiva de la traducción de un texto francés, pero aquí se sigue la pista sin problemas porque te dan el nombre del traductor y del autor original Gaugier. Neve no la tiene porque el texto es de 1713 y el diccionario de Neve fue publicado en 1703.

Lo sorprendente es que en algunos casos los diccionarios no nombran sus fuentes pero en otros te las describen sin problemas. Curiosamente se da el caso de que Wotton y Leybourn son autores británicos muy reconocidos, y en cambio a Moxon, otra de las fuentes hay una tendencia a dejarlo de lado probablemente porque procede de un ambiente más de “artesanos”. Pero para las definiciones de morteros bien se ayudan de éstas fuentes.

Luego tenemos a Ware (1756), el problema con él es que te habla de Wotton, de los antiguos, de los franceses pero no especifica, esto lo decía uno u otro, según

Harris, está influenciado por Perrault y Laugier aunque los contradice. Desde luego no los nombra en ningún momento, y si tiene razón Harris esa influencia se debe limitar a la parte estética y de los órdenes del libro. Porque a nivel de descripción de materiales de formación de cimientos, paredes y demás elementos constructivos, hay alguna reminiscencia a Palladio, pero mucho más completo, a un nivel de detalle que recuerda más a Alberti, sin ser Alberti tampoco. El motivo puede ser el siguiente:

Palladio could not judge of the differences of *Portland* and *Purbeck* stone; and it is impossible to learn from all *Vitruvius* has written concerning bricks, whether those he mentions were burn or dry’d in the sun.

Palladio no puede juzgar las diferencias entre la piedra Portland y la Purbeck; y es imposible aprender de todo lo que Vitruvius escribió sobre ladrillos, cuando los que menciona eran quemados o secados al sol.

Cuando Ware entra a hablar de los materiales, los introduce diciendo que Palladio no podía conocer las piedras de las que disponen; y lo que dice Vitrubio no siempre es útil, porque lo que escribe sobre ladrillos es impensable en Gran Bretaña. Añade que no se puede acusar de ignorancia a estos grandes hombres, ya que no tenían ningún medio de saber de estas realidades.

También se encuentran influencias en el resto de bibliografía: cuando se habla de órdenes se inspiran, (o como mínimo se nombran) el libro cuarto de Serlio, Vignola, el cuarto libro de Scamozzi y demás autores similares. Los que entran más en distribuciones con precios tienen como claros antecedentes los “pattern books” de Savot (1685)y Le Muet (1623).

Lo que está claro es que Vitruvio y Palladio, son el paradigma del saber construir. Siempre hay que nombrarlos, incluso en el título, aunque los contenidos no tengan nada que ver con los originales, ya que el “Vitruvius Britanicus” (Campbell, 1725) y el “Vitruvius Scotticus” (Adam, 1811), son una serie de plantas y alzados de casas existentes en la época, de Bretaña y Escocia, sin ningún tipo de explicación que no sea el prefacio. Por lo tanto el título es engañoso, pero da empaque.

HIPÓTESIS 5: **A lo largo de la época estudiada (siglos XVII y XVIII), el análisis del conjunto de tratados marca unos periodos: los tratados escritos en un momento determinado tienen un carácter diferente de los de otro, siendo la principal división el incendio de Londres.**

El incendio de Londres en 1666, aparte de todo lo dicho, por un lado, provoca un éxodo por parte de la mayoría de los trabajadores de construcción a la ciudad, lo que deja el campo sin profesionales (Yeomens, 1986); y por otro lado, un abuso de los precios tanto de materiales como de mano de obra.

Éste hecho afecta directamente a los tratados de construcción de tal suerte que se puede hablar de los tratados previos a 1666 y los posteriores.

1 Tratados anteriores al incendio.

Este grupo de tratados abarca temporalmente de 1563, que es cuando se escribe el primero de Shute a 1664 que es la fecha en la que se escribe el tratado de Evelyn, algo más de 100 años y encontramos unos 6 libros que se pueden considerar tratado de construcción, más o menos originales.

Se caracterizan porque en general no los escriben arquitectos, (con la excepción del tratado de Leybourn (1659) sobre topografía, que realmente sabe de lo que está hablando), en su mayoría son diplomáticos, que por el motivo que sea han entrado en contacto con la arquitectura. Lo hacen por ganar alguna posible contraprestación. En realidad siguen un poco el ejemplo de Vitrubio, que escribió su tratado de arquitectura para ganar el favor del emperador.

Siempre se apoyan en textos de otros, Vitrubio, Alberti, Palladio, De L'Orme, lo bueno, es que no esconden sus fuentes, e incluso se defienden diciendo que para escribir sobre arquitectura no hace falta ser arquitecto.

El tono suele ser relajado, aunque algo enrevesado, probablemente porque en realidad están acostumbrados a escribir otro tipo de documentos, y salpican los textos con anécdotas, sobretodo Gerbier, que no puede explicar un razonamiento sin contar una historia, sobre todo si versa sobre la realeza. Podemos considerar este tipo de comentarios como una pista que nos indica sus ganas de congraciarse con el rey y conseguir un puesto en la corte.

2 Tratados escritos "a posteriori" del incendio de Londres.

Después del incendio de Londres nos encontramos con un boom de libros, en los 100 años posteriores se puede afirmar que la publicación de libros sobre construcción se ha multiplicado por 10 como mínimo. Evidentemente, entre originales y reediciones, pero estamos hablando de un aumento del volumen de publicaciones considerable.

Un primer motivo directo, después del incendio de Londres, y básicamente porque así nos lo dicen los mismos escritores, es el ánimo de instruir nuevos profesionales de la construcción. Muchos han emigrado a la ciudad, aún se necesitan profesionales en el campo y no se puede contar con qué se va a transmitir el saber constructivo oralmente.

El hecho de que el "Mechanik Exercises" de Moxon (1703), se reedite durante todo el siglo hasta que a Nicholson al empezar el XIX se decida ponerlo al día, indica que hay por parte de los profesionales ganas de aprender (1812).

Otro motivo directo son los efectos que una situación extrema puede generar, como es el abuso por parte de suministradores y profesionales: el abuso en el aumento de precio de materiales y en la mano de obra; por ello proliferan los libros dedicados a "Purcharser" y los denominados "Vademecum" que no dejan de ser tablas de mediciones y precios que permiten un mínimo control de los mismos.

Es curioso ver, que a partir de la segunda mitad del siglo XVIII, salvo tres excepciones que son Salmon (una reedición de su Vademecum en 1755), Halfpenny y Pain, casi no se habla de los precios de materiales y mano de obra. Per sí que sigue habiendo tablas de mediciones, al fin y al cabo aún no hay calculadoras.

a) El incendio o el boom de los tratados y la realidad constructiva.

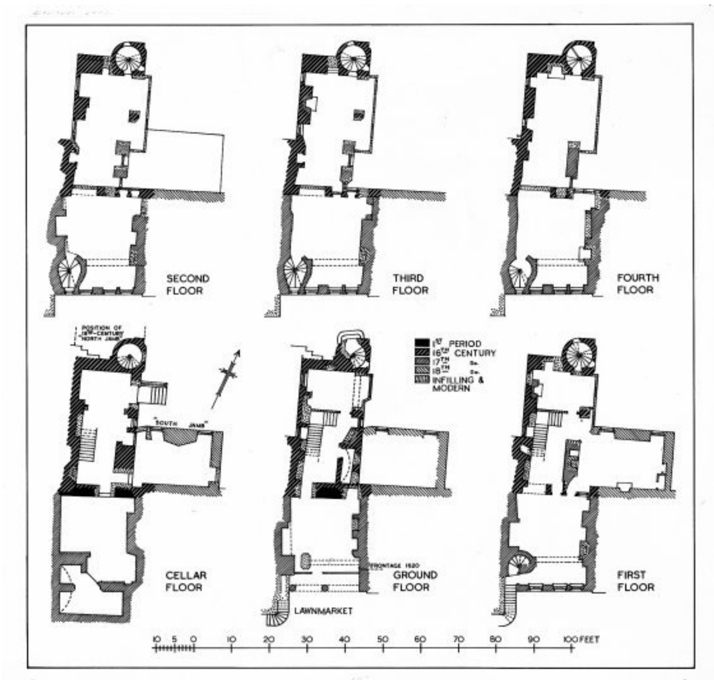
Como hemos visto en el apartado anterior, el incendio provoca un antes y un después a nivel de tratados. Con relación a la realidad construida, en Londres, lo único que se sabe es que la madera en fachada se limita a las ventanas, que además se han de separar de la línea de fachada 4 pulgadas, para que el fuego no les llegue con tanta facilidad y se prohíbe la madera en medianeras o que existan huecos en ellas.

Por desgracia eso es algo difícilmente comprobable. Pero en Edimburgo, al no quemarse totalmente la ciudad podemos observar algún ejemplo anterior al periodo del boom de los tratados de construcción y nos encontramos con esto:

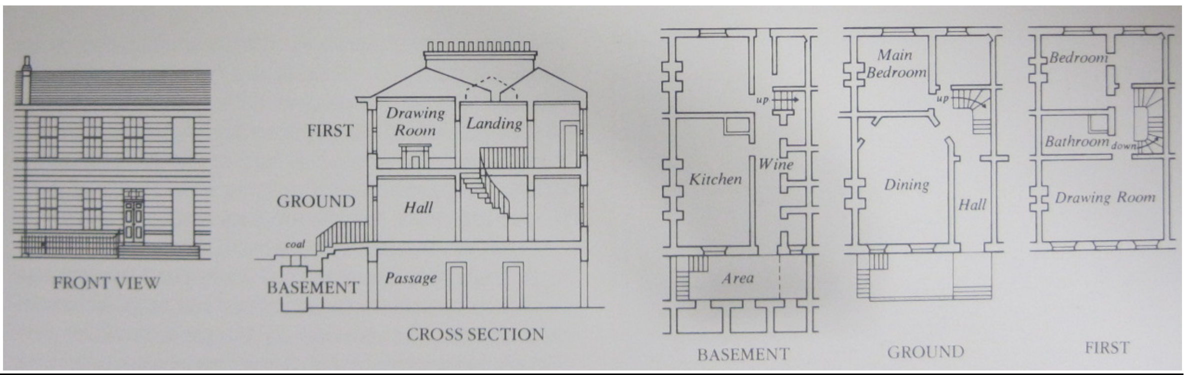
3 vistas de casa de principios del SXVII, sita en Cramond, población perteneciente a Edimburgo.

New Hailes, casa sita en el Lothian, cerca de Edimburgo, de mediados del siglo XVIII

Lo que es evidente, es que hay una diferencia compositiva, tienen la particularidad de mantener la torre, que era muy común en la arquitectura de la época. Además es curioso observar, que se producen cambios orgánicos que también se pueden comprobar en la siguiente planta.



Gladstone’s land, edificio sito en la Royal Mile de Edimburgo, de principios de siglo XVII, como se puede ver tiene una planta especial.



Extracto de “Edinburgh Newtown Guide, the Story of the Georgian New Town por Coline McWilliam

NOTA: La “Newtown” es la ampliación de la ciudad de Edimburgo que se realiza durante el siglo XVIII

3 El tercer periodo en los tratados.

Pero no solo el incendio de Londres marca un antes y un después, aunque sea de forma algo más sutil hay otro periodo cuyo momento se podría ubicar a mediados del siglo XVIII.

Cuando los efectos del incendio de Londres han pasado, parece que ya no es tan necesario hablar de la construcción en general, los libros se vuelven más monotemáticos, y parece más importante hablar de álgebra, geometría y la composición de los órdenes que de materiales y precios, con excepciones pero aun así, el tono es diferente. Es más fácil verlo a partir de la siguiente recapitulación.

1.- Características de los tratados anteriores al incendio de Londres, encontramos dos tipos de escritores

- Escritores que trasladan la aritmética a los trabajadores, el “Tectonicum” de Digges (Yeomens 1986), ampliamente editado porque se necesitaba para hacer los cálculos. Hay varios, son necesarios en obra por lo que el tamaño es pequeño, pero son libros de cálculo: no transmiten técnicas.
- Escritores son diletantes, no se dedican a la construcción por lo que extraen el saber “de los antiguos” lo hacen por necesidad, pero siempre adaptando al clima inglés; en ocasiones también se basan en observaciones, pero más por haberlas sufrido como propietarios/promotores que como constructores, el objetivo es enseñar a las clases altas. Y en general buscan el favor del rey o algún cargo que necesite publicación.

2.- Desde el incendio de Londres hasta mediados del siglo XVIII, se ha producido un estado de excepción.

- Hay mezcla, los escritores pueden ser diletantes o gente que ha construido: pueden buscar un público más dedicado a la parte artesanal del trabajo de construcción, por lo tanto trasladan experiencia y son técnicos; o bien se apoyan en el saber de los antiguos; o bien lo mezclan todo: las influencias de contemporáneos, antiguos, extranjeras y las normativas generadas debido a los incendios
- Se busca claramente: “sustituir provisionalmente” la enseñanza tradicional de forma oral de maestro a alumno por enseñanza a través de libros, debido al estado de excepción. Se pone todo, todo vale, hay que transmitir conocimiento es primordial, como se ha dicho antes, si hay que copiar se copia.

3.- Mediados de siglo XVIII a finales

- Los escritores o son arquitectos o se han dedicado a algún aspecto de la construcción

- Se apoyan en los antiguos para explicar sus opiniones, el nombrar a los antiguos da empaque o solera al texto.
- Se busca lucimiento personal, enseñanza pero no tanto constructiva como compositiva, y con la excepción del "Edinburgh Smoky Doctor" (1757), los volúmenes están más enfocados a propietarios, arquitectos o estudiantes de arquitectura. Es muy importante decirlo: se llega a niveles de descripción muy profundos, pero no tanto para artesanos como para arquitectos o estudiantes de arquitectura.

Para ilustrar la comparación entre los dos últimos periodos descritos, nos fijaremos en el elemento ventana: en la descripción de ventana de Moxon (1703) te dice cómo se va a preparar la pared y colocar el marco y cómo se ha de ir subiendo la pared para que quede encajada; en cambio, en los tratados de Ware (1756) o de Chambers (1759), la preocupación con relación a la ventana es si entra más o menos luz, está proporcionada con el resto de la habitación, y las decoraciones. Es decir, en el primero se está hablando al trabajador, en el segundo al estudiante de arquitectura o al arquitecto.

Se acaba el estudio con el tratado de Nicholson (1812), porque retoma el punto de vista de Moxon (1812). A principios del siglo XIX hay una doble preocupación: por un lado, en usar un vocabulario más científico, por otro, hacer llegar a la gente sencilla la cultura. Es significativo que se quiera poner al día este tratado precisamente en este momento histórico.

No es que a partir de mediados del siglo XVIII los tratados ignoraran totalmente a los artesanos, sino que los dirigidos a ellos hablan de carpintería (cubiertas y forjados) y no de cómo hacer un buen cimiento o una buena pared. También hay textos sobre álgebra, aritmética y perspectiva, pero como ya dijimos al principio, no se han tenido en cuenta en este estudio.

HIPÓTESIS 1. Los autores de los textos en sus escritos, describen con rigor la manera que se construía en aquel momento.

Como se ha visto a lo largo del capítulo 2 las descripciones sobre métodos constructivos y materiales son exhaustivas, no todos los libros hablan de todo, pero juntando los conocimientos podemos llevar a cabo, desde la elección del lugar como la colocación correcta de la cubierta, que aunque no se haya incluido en este estudio, se describe totalmente en otras fuentes (Yeomens 1986, Gómez, 2006).

Además se ha procedido a contrastar parte de los parámetros dados por los textos con la realidad. Dicho contraste se ha realizado en base a cuatro elementos: el muro, la ventana, la escalera y la chimenea, y de una manera estética. Con el objetivo de completar estas conclusiones se ha echado mano de ejemplos reales de otros elementos constructivos.

Retomando el esquema de los principios constructivos nos encontramos con lo siguiente.

1 Espacio. La adecuación del espacio al uso.

En los tratados la adecuación del espacio al uso es fundamental: como se ha visto desde el momento en que se plantea la ubicación del edificio, se piensa en que esta ubicación favorezca las necesidades del propietario. Pero esta necesidad de adecuar el espacio a los diferentes usos es todavía más manifiesta cuando entran a comentar la posible distribución de las casas.

“The place of every part is to be determined by the use” (Wotton, 1624)

“El lugar de cada parte viene determinado por el uso”

El elemento exterior o ubicación.

En los tratados indican que sea adecuado a su futuro uso, son muy claros, la zona ha de tener agua y madera, estar bien comunicada con la ciudad, ni demasiado cerca, ni demasiado lejos: y teniendo en cuenta a quien tienes de vecino.

Al estudiar los casos, se ha visto que parte de las condiciones de los tratados en cuanto a la situación se dan:

(307)

Inverleith, uno de los ejemplos es una casa muy bien comunicada con Edimburgo


(308)

Como se puede ver Londres no queda muy alejada de Kenwood House.

El elemento compartimentación o distribución.

Se recomienda plantear cada parte en función de su uso, empezando por lo más necesario: una colocación estratégica de la servidumbre evitando provocar molestias, o bien que los dormitorios estén lo más alejados del ruido posible. Morris y Ware al describir las casas de ciudad, llegan a decirte casi exactamente donde ha de ir cada estancia en función de su uso. Las casas de campo siempre dan más libertad a la hora de diseñar los espacios.

El elemento estructura: el cimiento

Elemento que con relación al espacio se ha de unir a la adecuación al suelo, por ello los tratados entran en una serie de consejos para realizar el análisis del terreno, para asegurarse de que el terreno es firme. Hay una gran conciencia de que la firmeza del terreno es fundamental para la durabilidad del edificio, y conocerlo es primordial. También es cierto que entran en la necesidad de que el arquitecto use su ingenio si el terreno no es lo suficientemente bueno. Además hay que tener en cuenta lo que dicen las normativas al respecto, ya que no se puede empezar a construir hasta que no hayan pasado los inspectores y comprobado que los cimientos que no perjudican a los vecinos.

El elemento estructura-envolvente: el muro

El espacio se refleja en todas las definiciones encontradas, algunas son más completas que otras, ya que en algunos casos sólo se contempla su función de cerramiento y en otras también su función estructural: *"lo que contiene la casa entera, o habitaciones particulares y soportar tejado y forjados"*. No son unas definiciones muy elaboradas pero son correctas. El muro es un elemento evidente, es tan importante y tan común, que definirlo mejor parece poco necesario.

El elemento envolvente: la ventana

Al entrar en las definiciones se deja muy claro que la ventana es una "debilidad" del muro, necesaria porque ha de entrar aire y luz en el edificio. Pero al ser una debilidad se ha de delimitar su número, y evitar colocarlas cerca de las esquinas (recordemos la importancia que se da en el muro al refuerzo de ángulos). La recomendación de hueco sobre hueco, macizo sobre macizo también va ligada a esta circunstancia.

La instalación: la chimenea

Dentro de su definición ya se dice que es para hacer fuego, luego se analizan las partes y hay una que tiene una importancia grande porque afecta a todo el edificio y es el "funnel" o cámara de humos.

La estructura: la escalera

Se tiene en cuenta para que sirve: subir y bajar de un piso a otro y la necesidad que tiene esta de tener tres "aberturas", zona por la cual se accede a ella, la zona por la que se deja y la abertura que le dará luz, para que sea útil.

Por lo tanto está claro que los tratados plantean esta necesidad de que el edificio en general y sus diferentes elementos tengan esta correspondencia entre espacio y uso.

2 Ambiente. Adecuación ambiental de cada espacio a cada actividad.

Los tratados consideran el ambiente como algo primordial, ya comenta Wotton (1624):

“… being a perpetual ambient, and ingredient, and the defects thereof, incorregible…”

“…siendo el ambiente el ingrediente perpetuo, y los defectos son incorregibles…”

El elemento exterior o ubicación.

Se recomienda que este sea saludable, que no haya agua estancada y que las personas y animales que lo habiten tengan buen color.

El elemento compartimentación o distribución.

Con relación al ambiente, se recomienda hacia donde ha de estar orientada cada estancia con la idea de que la actividad que se realice allí sea de forma confortable. Algunas de estas recomendaciones se pueden considerar prestadas de los antiguos, aun así algunas de las casas estudiadas las siguen.

El elemento estructura: el cimiento

Existe una circunstancia ideal, que permite que éste no exista, lo que se ha dado en llamar “la cimentación natural” que no es otra cosa que cimentar directamente sobre la roca. Se considera que si se dan las circunstancias favorables es lo mejor, pero eso es algo que no se da muy frecuentemente.

El elemento estructura-envolvente: el muro.

Con relación a este principio, en el muro no hay ninguna alusión directa.

El elemento envolvente: la ventana.

Se recupera la necesidad de entrada de aire y luz pero además se añaden las vistas, que es algo muy valorado ya en el punto de ubicación. No recomiendan una sobre iluminación de los espacios, más bien un punto medio, porque además por la ventana puede entrar frio y no interesa. Se valora el papel de la luz cenital en la iluminación de escaleras, o en caso de que no se pueda, que haya una ventana grande: la escalera ha de estar iluminada.

La instalación: la chimenea

Al relacionar la chimenea con el ambiente, lo primero que se marca es que es la fuente calorífica del edificio: no sólo se usa para dar calor, también para cocinar alimentos.

Se han de tener en cuenta los exteriores, la salida de humo de la chimenea depende de los vientos y de que no haya elementos en el exterior que impidan esa salida; por otro lado, en el interior la situación de puertas y ventanas será vital para ayudar en la expulsión de humos. Es imposible dejar de comentar la importancia a nivel social que se da a la chimenea por parte de Chambers, que dice que se ha de situar a la vista desde la entrada de cualquier habitación porque así la gente que esté buscando compañía al primer lugar que se dirigirá hacía allí (habiendo visto las dimensiones de alguna de las habitaciones diseñadas en esta época es un consejo muy práctico).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El elemento estructura: la escalera

La escalera y el ambiente son algo muy significativo porque de alguna forma es la que marca las necesidades del edificio. El número de cajas de escalera y su lugar son los que marcaran el tipo de vivienda y sus necesidades. Es algo que ha quedado muy reflejado en los ejemplos, cuando se veían las plantas de los edificios era un reflejo de las necesidades de la vivienda.

El ambiente es un principios que dependiendo del elemento se trata más o menos, pero queda muy marcada esa idea de que sea saludable. Queda muy definido cuando se habla de la distribución, porque interesa crear zonas saludables, adaptadas al uso, "las bibliotecas quedan al este porque la mañana es la hora de las musas" hay que propiciar un buen ambiente de trabajo. Este hecho hace que con relación a este principio el cimiento y la pared den poco juego. Diferente es el caso de la ventana, el tipo de luz y la cantidad que proporciona es importante; y no hablemos de la chimenea, que no solo da calor sino que además se convierte en el punto de socialización; o de las escaleras que se diseñan en función de las necesidades de la casa.

3 Integridad. Integridad del edificio a largo término de sí mismo y de sus ocupantes.

Con este principio los tratados son muy estrictos. Nos hablan de las propiedades del suelo y de tener en cuenta la salubridad de las personas que lo habitan y del edificio: un mal ambiente puede ser perjudicial para la integridad de la construcción. Ware (1756) cuando nos introduce los materiales hace esta reflexión:

Strength is so great a consideration in all buildings; that their elegance and convenience are of no consequence without it;	La fuerza es una gran consideración en todos los edificios, que su elegancia y conveniencia no tienen importancia sin ella;

El elemento exterior o ubicación

Como ya hemos comentado, los tratados mezclan este principio con el de ambiente, porque recomiendan que sean favorables a la integridad de la salud de las personas que habitan el edificio. Hay que tener en cuenta que la humedad también afecta a los elementos estructurales.

El elemento compartimentación o distribución.

Con relación a la integridad hay diferentes pautas: distribución de puertas y ventanas que no provoquen corrientes de aire que imposibiliten la utilización de la chimenea o de los espacios. Ware (1756) considera que hay que plantear correctamente la distribución de las escaleras, de forma que no moleste y que nada interfiera en su uso. A partir de este elemento se replantea lo demás. Idea que se observa en los casos: la distribución de espacios está muy estudiada.

El elemento estructural: el cimiento.

Cuando en el cimiento se habla de integridad, los tratados nos dicen que lo ideal es realizar una buena preparación del terreno para evitar futuros problemas: recomendando que durante la realización de las excavaciones para las canalizaciones subterráneas, se estudie el terreno y se observe su compacidad y su humedad; evitando la humedad por capilaridad, apisonando la arcilla cercana a la pared, lo que evitara que ésta la alcance; la no conveniencia de uso de mortero de cal en cimentaciones; compactando con barra de hierro y apisonando el terreno; llegando a terreno firme en caso de que haya limos.

El elemento estructural-envolvente: el muro.

Los textos tratan la integridad del muro desde diversas perspectivas. Su estabilidad depende a varios factores. Uno de los principales es el grosor, muy analizado por casi todos los tratados y por las normativas, donde se incluye la regla de disminución, que pretende mejorar la capacidad portante el muro. Cuando se habla del cálculo del grosor, se subraya tener en cuenta las cargas de cubierta, forjados y en caso de que hubiere, arcos. Otros factores de los que depende la capacidad portante del muro son: la verticalidad, el hecho de que las paredes se levanten a plomo; la necesidad de reforzar ángulos; las técnicas que ayudan a mejorar el mismo muro, como los aparejos; y la importancia de la situación de huecos y chimeneas. Alguno de éstos parámetros que afectan a la integridad del muro se han podido comprobar en los casos prácticos como:


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Que los ángulos sean fuertes o el grosor de las paredes: el folio que se ve es un DIN-A4 y sobra por todos lados.

El elemento envolvente: la ventana.

En los tratados con relación a la integridad de la ventana, aparte de comentar el tamaño más cómodo para su uso y los materiales para que no entre el viento, entran en juego las normativas, marcando pautas muy claras de la situación de los marcos de las ventanas para evitar la propagación de fuegos. Cosa también visible en los casos.


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La instalación: la chimenea

La integridad del elemento chimenea depende de las normativas, recordemos que están especialmente redactadas para evitar incendios y el foco directo de incendio de cualquier casa es la chimenea. Pero no solo las normativas marcan niveles de seguridad, antes del incendio de Londres, Gerbier (1662) ya nos indica que hay que ir con cuidado con la altura de los fustes de la chimenea, porque si son muy exagerados un fuerte viento los puede hacer caer y "*matarte en tu propia cama*". La chimenea es el elemento que se ha de trabajar con más grado de seguridad, y no solo a nivel de fuego o de tamaño sino también por la problemática del humo, algo que hay que tratar de evitar a toda costa. Los tratados te dan algunos consejos de como contrarrestar el humo si este se produce en una habitación. Pero es curioso ver que existen un par de tratados especializados en el tema, la traducción de un tratado francés y el “*Edinburgh Smoky Doctor*” (Brownlie & Carmichael, 1757). Éste segundo está especializado en cómo evitar el problema del humo. Que haya una publicación de estas características escrita por canteros, y no por arquitectos (estamos hablando de mediados del siglo XVIII que ya la figura del arquitecto es popular), es algo muy remarcable. Además hay que valorar el nivel de detalle al que se llega para intentar solucionar esta problemática.

El elemento estructura: la escalera

La integridad del elemento escalera es visible en el hecho de que prima como elemento organizador de espacios, y además como dice Morris (1734), como elemento de salida en caso de incendio. Papel que adquiere más importancia si cabe en casas situadas en la ciudad.

Enlazando con el tema de incendios, no hay que olvidar que todos los elementos de construcción han de seguir las normativas contraincendios, contempladas en muchos de los tratados directamente o indirectamente a lo largo de prácticamente todo el periodo estudiado.

Dentro de las normativas la seguridad de las paredes, de las ventanas y de las cubiertas es primordial; el no colocar madera en zonas susceptibles de ser incendiadas; pero el verdadero elemento protagonista, como se ha visto, es la chimenea, la cual no es solo un problema para la integridad del edificio desde el punto de vista del fuego sino que también es un problema para la integridad de las personas desde el punto de vista del humo, ya que si este no se expulsa correctamente puede ser muy incómodo para los habitantes del edificio.

Como vemos con respecto a la integridad, desde el punto de vista de la ubicación se contempla la necesidad de salubridad del lugar, tanto para beneficio de las personas que habitan la casa, como para beneficio del propio edificio: los materiales se corrompen antes en ambientes poco saludables; en el tema de la situación de los espacios es curioso constatar la necesidad de organizar los elementos de la casa de forma que todos ellos funcionen correctamente, como que las puertas y ventanas, se distribuyan adecuadamente para evitar corrientes de aire que impidan el correcto uso de la chimenea, o la situación de la escalera de forma que no estorbe ni sea estorbada. Cuando se habla del cimiento que depende directamente del terreno, se recomienda un estudio intensivo del mismo; y con relación a las paredes no sólo se contempla desde el diseño de la pared sino desde los elementos que contiene, como las ventanas, evitando que estén cerca de los ángulos.

4 Producción. Eficiencia directa y medioambiental de sus procesos de realización.

Se ha podido comprobar que aunque no todos sí hay una serie de tratados: Gerbier (1663), North (1695-6), Moxon (1703), Neve (1703/1736), "Builder's Dictionary" (Gibbs, James & Hawksmore, 1734), Ware (1756), "Builder's Magazine" (Society of Architects, 1779) y Nicholson (1812), (y en el caso de las chimeneas tenemos que añadir el "Edinburgh Smoky Doctor"), que tienen mucho que decir, tanto de las técnicas de construcción de los diferentes elementos, como de los materiales que se han de usar para ello.

Fourthly, if you lay brick in hot dry weather, and be it some small piece of work that you would have very strong, dip every brick you lay, all over a pale of water, which will make the wall much stronger than if the bricks were laid dry..

Cuarto, si colocas un ladrillo en tiempo cálido y seco, y ser que esa pequeña pieza de trabajo sea fuerte, sumerge cada ladrillo que vayas a colocar, todos sobre un cubo de agua, lo que hará que las paredes sean mucho más fuertes que si los ladrillos se colocan en seco.

Ya se ha comentado antes, esto era algo observado en las cubiertas y forjados, pero no se había analizado desde el punto de vista de otros elementos, y al fin y al cabo las cubiertas y los forjados se apoyan en algún sitio.

El elemento exterior: la ubicación.

La ubicación cumple con este principio, desde la perspectiva de los tratados, teniendo en cuenta que es recomendable tener arboles cerca, que su madera pueda servir como combustible y como material de construcción, y agua corriente, porque es un gasto enorme el acarrearla desde demasiado lejos.


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Exteriores de Kenwood House, como se puede ver hay agua y árboles.

El elemento compartimentación o distribución.

Con relación a la distribución de la vivienda, desde los tratados se recomienda realizar todas las maquetas y planos necesarios antes de empezar a construir; no empezar la obra hasta que se sepa que se va a hacer, para evitar pérdidas de dinero y material.

El elemento estructura: el cimiento.

Con relación al elemento cimiento pasa un poco como con la distribución de espacios, el principio producción y el principio estético se entrecruzan en las descripciones dadas por los tratados. Nos encontramos en que nos dan pautas de cómo se ha de hacer un cimiento. Wotton (1624) no recomienda el mortero de cal si se han de poner riostras de madera porque los morteros pudren la madera; North, tampoco lo recomienda porque ha observado que endurece superficialmente, por lo que no da la estabilidad que requiere un cimiento. Otra advertencia que además también es contemplada por las normativas es que el ancho del cimiento sea como mínimo el doble de la pared proyectada. Y un último dato, colocar los materiales en la misma postura en que han salido de la cantera, que en realidad es algo que se hace hoy en día porque las rocas sedimentarias y metamórficas trabajan mejor.

Además hay una descripción detallada, sobre todo por Moxon (1703), de las técnicas que se han de llevar a cabo en función de los diferentes terrenos. Para que la cimentación trabaje de la forma que se espera de ella, empezando por la situación más favorable y acabando por la más desfavorable.

Que el terreno es un elemento que no podemos controlar, ya eran conscientes en aquella época (porque les venía de herencia de épocas anteriores, recordemos que en muchos casos se dedican a recopilar lo dicho por autores anteriores a ellos), y dentro de las limitaciones técnicas de la época intentaban sobrellevarlas. En cualquier caso, debido al nivel de detalle, podemos concluir, que casi podríamos llevar a cabo una cimentación de la época hoy en día.

El elemento estructura-envolvente: el muro

Aquí pasa lo mismo que con el cimiento: el caudal de información que proporcionan los tratados es difícil de abarcar, y es remarcable el grado de detalle al que se llega, tanto de las paredes como de todos los materiales que se necesitan para su construcción. Se describe: las medidas y los tipos de aparejo; los tipos de mortero en función de los elementos que se van a unir; la cocción de la piedra para la formación de cal; y la forma de extraer la arcilla y trabajarla para hacer el ladrillo. Sin olvidar un control de calidad, evidentemente, sencillo pero había una conciencia de que el trabajo tenía que estar bien hecho.

Pero no sólo se habla de los materiales, también se habla de las prácticas de buena construcción: como cubrir lo ejecutado durante la noche para evitar la lluvia, o no realizar paredes durante el invierno para evitar que se hiele el mortero fresco lo cual perjudica la resistencia de la fábrica. Los diferentes tipos de aparejo, que se ha de evitar a la hora de construir un muro. La necesidad de controlar asientos.

El elemento envolvente: la ventana.

La producción de la ventana sólo viene tratada por Moxon (1703) y Nicholson (1812), los cuales hablan de sus técnicas de construcción. Aunque solo sean descritas en 2 de los tratados, se dispone de una explicación. Al hablar de los materiales, se habla de los materiales que las componen, del vidrio y el plomo, como se vio ya en el caso de los ladrillos y los morteros, las explicaciones son muy detalladas, quizás algo obsoletas hoy en día, pero en cualquier caso, ahí están.

La instalación: la chimenea

Al hablar de la producción de la chimenea se contemplan por un lado las descripciones de las normativas de principios de siglo XVII, y por otro, la construcción de la cámara de humos y las diferentes descripciones de sus partes y de su ejecución. Ello es muy claro en el "*Builders dictionary*" (Gibbs, James & Hawksmore, 1734) se hace eco de las explicaciones de Gaugier (1714) y en el "Edinburgh Smoky Doctor", que no sólo habla de cómo reparar las chimeneas, sino que también da unas instrucciones precisas y una serie de esquemas de cómo han de ser las chimeneas. Además contamos con las normativas de finales de siglo que son descritas tanto el "*Builders Magazine*" (Society of Architects, 1779) como por Nicholson (1812). Curiosamente sobre la producción de chimeneas no hemos encontrado explicaciones ni en Moxon (1703) ni en Nicholson (1812), ya que se limitan a poner lo que dicen las normativas. Sí que se han encontrado las partes de la chimenea y qué había que evitar, pero no cómo construirlas.

El elemento estructura: la escalera

Básicamente nos indican como calcularlas, y dimensionarlas para que cumplan adecuadamente con su cometido, de subir y bajar lo más cómodamente, indicándonos como calcular el número de escalones y su altura.

Es en este apartado es más visible lo que se comentaba sobre los periodos en los tratados: si vemos los contenidos de los tratados en general con relación a la producción en el caso de Moxon (1703) y Nicholson (1812), y el "*Edinburgh Smoky Doctor*" (Brownlie & Carmichael, 1757): se ponen en la piel del trabajador, del operario de obra, las recomendaciones son claramente para que realicen un buen trabajo y se sientan orgullosos de él, que sea duradero que la obra no dé problemas, son muy didácticos. Tienen en cuenta la climatología y las estaciones a la hora de construir y hablan de la extracción de los materiales.

Los diccionarios tanto de Neve (1703/1736) como el "*Builders Dictionary*" (Gibbs, James & Hawksmore, 1734), como ya hemos dicho, no tienen un público demasiado definido, porque se puede leer tanto desde el punto de vista del industrial, del arquitecto, o del propietario. Como son diccionarios, el tono es neutro, los detalles a nivel de materiales se parecen mucho a los de Moxon (1703), pero, no se puede criticar demasiado, al fin y al cabo es un diccionario.

En cambio, Gerbier (1663) y North (1695-6), están muy pensados para el propietario, el primero es algo difuso en sus descripciones, el conocimiento que transmite es algo más generalista; pero el segundo hace las descripciones claras para que el propietario no se vea engañado. Es uno de los que más hincapié hace en el control de calidad de los materiales, sobretodo de los ladrillos.

Ware (1756), es bastante didáctico pero se dirige al joven arquitecto, es muy completo, porque también llega a detallar muchas cosas, pero se nota que no está dirigido a los operarios porque el nivel de detalle al que llega, por ejemplo, en el caso de la ventana Moxon, no es el mismo de Ware que se preocupa más de las proporciones. Donde llega a un gran nivel de detalle es en el tema de los materiales. Considera que el arquitecto ha de conocerlos y saber cómo se trabajan, lógicamente, porque el material es muy importante a la hora de diseñar; o del cálculo de cargas a la hora de diseñar las paredes, no te los define pero al menos advierte de lo que se ha de tener en cuenta.

El "*Builder's Magazine*" parece que está dirigido a arquitectos, muchas de las descripciones de las técnicas y materiales las saca del libro de Ware (1756), y está escrito por la Society of Architects (1779), la diferencia con Ware es que incluye las normativas del momento, lo cual es importante.

Otro libro que define técnicas, aunque de una forma más somera, y que está directamente dirigido a los estudiantes de arquitectura es el "*Rudiments of Architecture*" (Anónimo, 1773); el hecho de que las contenga es importante, pero no tienen la entidad que tienen en el resto de tratados en realidad son una copia simplificada de los anteriores.

Es decir, tenemos una descripción de técnicas de construcción, que llega a un detalle bastante sorprendente y no solo eso, sino que desde varios puntos de vista diferentes.

Evidentemente esto no se hubiera dado sino llega a ser por el incendio: Moxon (1703) a partir del incendio se pone en la piel de los operarios y les describe las técnicas en los libros, recordemos que los "Mechaniks" al principio eran una serie de revistas temáticas, los diccionarios prácticamente las copian, y Nicholson (1812) las adecua al nuevo siglo. Quizás la visión de un sólo personaje no sea justificación pero, sí sólo hubiesen sido una sarta de tonterías, si no hubieran sido útiles, los libros no se hubieran reeditado durante todo el siglo hasta llegar a Nicholson que como profesor se ve en la necesidad de ponerlo al día.

North (1695-6), tampoco contradice lo dicho por Moxon (1703): su libro es anterior, eso sí, da el punto de vista del constructor, de alguna forma el siglo empieza con dos tratados complementarios a cuanto a punto de vista sobre el mismo tema.

Otro caso aparte es Ware (1756), ya que los conocimientos sobre materiales llegan a unos límites sorprendentes. Pero es obvio que el objetivo es ilustrar al arquitecto, o bien, al que quiera entender la arquitectura.

5 Estética. Conveniencia privada y pública de sus cualidades estéticas y comunicativas.

De la estética como conveniencia privada y pública de sus cualidades estéticas, también se considera en los tratados, desde el momento en que se dice que las ornamentaciones en la fachada, que no han de ser muchas para no cargarlas de peso, han de significar el estatus social de la familia que vive en el edificio, como menciona Ware (1756).

Here is a space to be covered with buildings: and the great consideration is its division into parts, for different uses; and their distribution. In this regard is to be had to two things, the convenience of the inhabitant, and the beauty and proportion of the fabric. Neither of these should be considered independently of the other, because if it be, the other will not sail to be sacrificed to it; and this, which should be very disagreeable, is never absolutely necessary

Aquí tenemos un espacio que cubrir con edificios: y la gran consideración es la división en partes, para diferentes usos; y su distribución. En este cuidado se ha de tener en cuenta dos cosas, la conveniencia del habitante, y la belleza y proporción de la fábrica. Pero ninguna de las dos se puede considerar independientemente de la otra, porque si así fuera, la otra no dicha ha de ser sacrificada a ello; y esto lo que ha de ser muy desagradable, no es nunca absolutamente necesario.

Además las pautas estéticas del edificio son las que más se han podido contrastar con la realidad (aunque no han sido las únicas, como ya se ha visto), resulta más fácil interconectar lo dicho en los tratados con lo que se ha visto en los ejemplos.

El elemento exterior o ubicación.

Desde los tratados se recomienda, unas buenas vistas, cada autor, según gustos da una serie de pautas para ello, pero parece que están de acuerdo en que el ojo humano no puede abarcar una visión demasiado amplia, y que una vista muy limitada es muy aburrida, un término medio es lo mejor, aunque quizás si se ha de escoger, es más fácil solucionar lo primero plantando una serie de árboles.

Una de las cosas que más evidentemente se observa en las mansiones es que se podía disfrutar de unas vistas excepcionales, por lo tanto es un aspecto en el que se entrecruza teoría y realidad.

El elemento compartimentación o distribución.

Es complicado diferenciar la estética de la producción, como ya hemos comentado. Los tratados recomiendan realizar los diseños a la conveniencia del futuro propietario, pensando en todas las actividades que se han de llevar a cabo en la casa. Pero qué parte de eso pertenece a la estética por el diseño, o a la producción porque un buen diseño mejora la calidad de la construcción y la abarata: es difícil.

Un ejemplo de la realidad que puede ilustrar, el mantenimiento de la distribución de espacios con la estética es "Newhailes" en la zona del Lothian de Edimburgo, mansión que no se ha usado dentro de los casos por no poder disponer de fotos interiores pero que presenta una curiosidad:

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Las ventanas del lado este de la fachada son falsas. La explicación es que esa es el ala este de la casa, y el propietario, las planteo falsas desde el principio porque es donde estas contenida la biblioteca, las ventanas del lado este son auténticas pero las de norte y sur no, es donde se sitúan en el interior las estanterías de la biblioteca.

Es decir, se mantiene la estética general de la casa, la fachada es continua, pero se adapta a la utilidad interior, que es tener una biblioteca con la luz que entra del este.

El elemento estructura: el cimiento.

Como ya se ha mencionado, el diseño del elemento cimiento forma parte de su producción.

El elemento estructura-envolvente: el muro.

Se habla de su estética pero ligada a la de las ventanas y demás elementos de protección. En este principio están íntimamente ligados porque forman la fachada, la cual se ha analizado con bastante detalle en todos los casos tratados ya que es la parte del edificio más accesible.

El elemento envolvente: la ventana.

Al hablar de la estética de las ventanas, los tratados también entran en las dimensiones que éstas han de tener para iluminar correctamente, y esa proporción no sólo depende de la luz que haya de entrar sino de la situación de la ventana en el conjunto del edificio. Tienen diferentes alturas, las de la planta baja, qué las de las plantas más altas. Esto también tiene su origen en que la distancia entre plantas disminuye a medida que se eleva el edificio. No sólo se habla de las proporciones que ha de tener la ventana para que entre suficiente luz sin ser demasiado perjudiciales para la pared, sino que también se habla de las decoraciones de las mismas: que aspecto han de tener. De hecho en este tema aparece algún otro escritor como Sir William Chambers (1759), que en otros temas no ha tenido demasiado que comentar pero si en el aspecto de las ventanas.

Esto es algo muy evidente en los casos, las fachadas de los edificios situados en el Soho, barrio más popular, son más sencillas que las fachadas de los edificios situados en Cavendish Square o Saint James Square, que son zonas de más prestigio.

Esta relación estética del muro y la ventana, como elementos envolventes y los parámetros que indican los tratados y las normativas que se han de seguir, han sido los que han dado las pautas a la hora de estudiar los casos. Este principio en estos elementos en concreto es uno de los más visibles.

Aparte de la función decorativa y de marcar rango, también cuando se habla de la composición de la fachada la estética, el diseño de huecos obedece a las normativas, hay que tener en cuenta una serie de normas que enlazan directamente con la integridad del edificio. El tamaño de las ventanas no es arbitrario, obedece a unas normas, las escaleras también, su diseño esta cumple una serie de requisitos mínimos, luego se pueden complicar los diseños de las mismas, pero sin olvidar para que han de servir.

Hay que ser realistas, aunque se mantienen los huecos y las proporciones e incluso las decoraciones de las ventanas, en casi ninguno de los ejemplos se ha visto la ventana del siglo XVIII. Como bien apuntan los tratados la ventana es una debilidad, no solo a nivel estructural sino también es un punto por el que se escapa la energía calorífica del edificio. Lo que lleva a que en la actualidad, básicamente por la necesidad medio ambiental de ahorrar energía, haya la tendencia de sustituir dichas ventanas por otras de similar aspecto. Podría ser que un estudio en profundidad de las descripciones de cómo hacer una ventana nos permitiera encontrar los puntos débiles y repararlos para poder mantenerlas.

La instalación: la chimenea.

En la estética de las chimeneas hay mucho que decir empezando por las proporciones que han de tener, que dependen directamente de las dimensiones de los espacios en las que están situadas. Como se ha visto en los casos de forma clara.

La chimenea es la instalación más controvertida en este periodo, es la calefacción de la casa, teniendo en cuenta que se llega a temperaturas muy bajas en Gran Bretaña. No es de extrañar que se tenga presente su diseño, en cada estancia de la casa, y su tamaño en función de la localización y del uso de la habitación.

Lo que lleva a que actualmente las chimeneas estén obsoletas, al llevar a cabo el estudio de casos, nos encontramos con el mismo problema que las ventanas, a nivel energético es un elemento muy poco sostenible, además el mantener los conductos abiertos, provoca enfermedades por lo que en la mayoría de edificios se han clausurado, aunque en algunos se mantiene la forma se elimina su uso porque es un foco de infecciones y un desperdicio energético.

Aunque recientes aspectos de la restauración recomiendan que solo se clausure parcialmente, porque si se aísla térmicamente el edificio a nivel de ventanas y paredes, se puede llegar a un sobrecalentamiento, que una rejilla de ventilación estratégicamente situada en el antiguo conducto de la chimenea puede solucionar.

El elemento estructura: la escalera

La escalera y la estética, van de la mano, se nos dan normas precisas de su diseño y además de su importancia a nivel social, la escalera marca el rango, la situación social del propietario de la casa, pero es curioso que a pesar de todo, la escalera ha de cumplir unos mínimos de utilidad siempre.

Es algo que se ha observado sobradamente en los ejemplos, las escaleras en función del tipo de vivienda eran de una manera o de otra.

En general cuando se habla de la construcción en Gran Bretaña la estética marca clase social en la fachada, en la escalera, las decoraciones de las chimeneas, en función de la parte de la casa en la que estén situadas son más o menos sencillas. Nunca se pierde la utilidad de los elementos, todos los elementos sencillos o más recargados cumplen sus funciones, pero debido a su situación dentro de la casa tienen una estética u otra.

Recapitulación

Si nuestro principal objetivo es usar los tratados como una herramienta para la restauración de edificios de la época, tenemos los parámetros que han de seguir los edificios para definir su situación y su distribución, lo que nos capacita para identificar los de una época determinada.

La caracterización del edificio, saber cuándo se ha construido es uno de los primeros pasos para poder llevar a cabo la rehabilitación del mismo. Evidentemente existen listas de edificios catalogados, pero no siempre, y tener un conocimiento de las particularidades constructivas de un periodo determinado, ayuda a orientar la posible restauración.

Lo siguiente seria ver en qué tipo de terreno nos movemos, porque sabiéndolo definiremos el cimiento según los tratados. Además el grosor de la pared en planta baja, nos dará la dimensión de la cimentación, porque ha de ser el doble. Pero si tiene riostras de madera o pilotaje nos lo dirá el tipo de terreno.

El tipo de piedra o ladrillo nos dará las proporciones del mortero de cal usado. Si el muro es de mampostería, probablemente, la cal procederá de la calcinación de la misma piedra utilizada. Y la situación geográfica del edificio nos proporcionará el tipo de mortero.

Los ángulos de las esquinas se habrán reforzado, siguiendo diferentes indicaciones, o con hiladas cruzadas o con otro material más resistente.

El grosor de la pared será algo inferior a medida que subamos en altura y es maciza, en ningún lugar se habla de doble pared. Solo para comentar las de los antiguos, pero ya nos han dicho que en Gran Bretaña no se usan.

Las fascias están unidas con elementos metálicos, y están situadas en la fachada, lo que seguro las ha dañado, conjuntamente con las lluvias. El mismo problema tienen los elementos decorativos de fachada.

Otro punto débil es la ventana, porque el marco es de madera, material higrométrico por excelencia, y está unida a la pared a través de ganchos metálicos. Los cristales serán sencillos, probablemente son fuente de puentes térmicos.

Los conductos de las chimeneas llegan hasta la cubierta es una ventilación natural, quizás demasiado exagerada, aunque si vamos a disponernos a aislar térmicamente el edificio podemos usar esos conductos para evitar el sobrecalentamiento, anulando parte, dejando alguna rejilla o instalando algún sistema para que ayuden a la ventilación.

Última reflexión.

Como se ha podido ver en el desarrollo de esta última hipótesis, se ha necesitado de todo el material que se ha estado recopilando a lo largo de toda la tesis, más las hipótesis anteriores.

A parte se ha podido contrastar algunas de las reflexiones con la realidad del momento porque los tratados no son ajenos a la realidad construida. Desgraciadamente sólo se ha podido comprobar la parte estética de los edificios pero, un objetivo de una futura tesis podría ser por ejemplo, intentar contrastar la veracidad sobre los morteros de cal a partir de algunos estudios que se están realizando en la actualidad.

Durante todo el proceso, para organizar contenidos de alguna forma se han separado los mismos, se ha hablado de elementos, de principios, pero hay una característica remarcable en los tratados: es que es muy difícil hablar de unos sin hablar de los otros.

Se ha visto que en muchas ocasiones repetíamos de nuevo las mismas cosas, porque lo que se decía era de aplicación en dos elementos a la vez, no se puede hablar de cimientos sin hablar de muro, hablar de muro sin hablar de ventana y chimeneas; hablar de ventanas sin mencionar, que se han de situar de forma propicia para que la chimenea tire; y cuando se habla de escalera, esta se articula alrededor de todos los espacios. Lo que ha llevado, a repetirse quizás más de lo deseable. Pero resulta inevitable.

Lo que nos lleva a concluir que en los tratados prácticamente desde el principio la construcción se considera un TODO, el único tratadista que cumple con esta “totalidad” de los conocimientos constructivos es Alberti.

Ya Agüera (1997), apunta que Wotton es albertiano en su manera de plantear el tratado y se ha constatado la influencia que causa en el resto de tratadistas.

Por otro lado los contenidos se han podido clasificar sin dificultad siguiendo las claves del saber constructivo. Que a su vez siguen la frase de Alberti (1546) de:

> *“De todo ello resulta que el objetivo de la edificación se articula mediante seis partes: el ambiente, el área, la subdivisión, la pared el techo y la abertura”*

Si a todo ello unimos el hecho de que a pesar de tener en cuenta hasta el mínimo detalle, la finalidad del edificio es ser útil al habitante del mismo: se constata que los escritores británicos estudiados se pueden considerar Albertianos.