

**How and Why Science Influenced the Founding of Modern Freemasonry and
its Role as a Microcosm of the Impact of Science on the Upper Echelons of
British Society at that Time**

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Outline of Research Question

Freemasonry's rituals place great emphasis on understanding the science that underpins its basic philosophy and insists that Masons must strive to understand the implications of science. However, this scientific injunction only remained for the initial years of Freemasonry, while the Founders, such as George Payne, John Theophilus Desagulier and American Benjamin Franklin, were still active in the 18th century.¹ Subsequent Freemasons and historians of Freemasonry have since ignored the contribution of science. This published work seeks to address this gap in knowledge.

Literature Review

History of science books contribute facts and developments in thinking, related to social, political and economic evolutions. The reception of knowledge and the importance of science and the influence of those we currently consider to be 'scientists' has changed over centuries. Texts relating details about astronomy, geology and other specifics of the science itself contextualise the journal articles and discussion of my book. Texts such as those listed under 'History of Freemasonry' contributed greatly to the understanding, while particular articles in the AQC are both debated and supported in my research. Primary texts such as Jones' *Freemasons's Book of the Royal Arch* and Carpenter's biography of Desagulier that provided essential insight into this influential figure are seminal texts.

Current literature about Freemasonry emphasises the mystery and esoteric practices. Robert Lund's book, *The Secret Code of Freemasonry; Finding Light Through Esoteric Interpretation of Masonic Ritual* (Self-Published, 2016) for example, emphasises esoteric interpretations of 'truth'. The majority of books on Freemasonry are subsumed under 'Body Mind and Spirit'. A seminal text of Freemasonry is John Fellows' *Mysteries of Freemasonry or: An Exposition of the Religious Dogmas and Customs of the Ancient Egyptians*, first published in the 19th century and since reprinted many times, has been described as: culturally important, and is part of the knowledge base of civilization as we know it, which emphasises Freemasonry's positioning itself in the

¹ A. Carpenter. 2011. *John Theophilus Desagulier; a Natural Philosopher, Engineer, and Freemason in Newtonian England*. London: Continuum.

world of knowledge and Western culture, but skirts around the issues of Freemasonry's scientific origins. Another publication, Richard Carlile's *Manual of Freemasonry*, originally published in 1825 and frequently reproduced since, is the handbook for rituals, and one of several that purport to reveal all the rituals, secrets and passwords of Freemasonry. None of these delve into the scientific origins of Freemasonry. Basically, current research on Freemasonry focuses on the esoteric, spiritual and cabalistic aspects while the origins were scientific and related to actual stone masonry. This research returns the history of Freemasonry to its origins and demonstrates geological, structural, and geometrical connections. Each of the articles chosen for the submissions represents a stage in the development of this research.

The application of scientific and mathematical methods to analyse historical facts about the founders and about the nature of the building materials, returns the research into Freemasonry to facts from its previous situation within mythologizing of Freemasonry. It is important to point out that while Freemasonry may be a group with some secrets, it is not a 'secret society'. The historical analysis demonstrates that with the adaptation of building methods that the nature of the society adapted and adjusted its members. With the growth of trades such as carpentry and glaziers, as well as stone masons, the cross-section of the Lodges increased and the sociability and common interests within the trades motivated the growth of Lodges. It is hoped that researchers into the history of freemasonry, into the history of brick construction, and into the history and philosophy of science (in particular the relation between the Reformation and the increase of use of brick) will find this research helpful.

Current State of Research on Masonry Construction in Freemasonry

Current research is mainly populist books on Freemasonry and the proceedings of the AQC, neither of which convey an accurate account of the connection between Freemasonry and actual masonry construction. This research completes this information as well as explaining the connection between the English upper classes and the development of Freemasonry as being for 'everyman'. In addition, research into geology in the UK demonstrates disposition of rock and stone and how this influenced the choice of building materials in the British Isles. My research clearly presents the evolution of building from stone to brick showing how some kinds of stone in different parts of the country may be exploited for building materials while in other

parts of the country it is not suitable for use. The place that best exemplifies these studies is Compton Wynyates.

Introductory Remarks

All those years ago I realized that a fundamental understanding of the Modern Freemasonry currently practiced by millions throughout the world was seriously flawed. My research has only ever been concerned with taking a clinical cold-headed study of the fundamental core of tenets upon which Premier Grand Lodge Freemasonry was founded and to show how that was lost after circa five years and why it has remained so ever since; despite this core being in plain sight. The research however has been plagued with stubborn quasi-religious concept of Freemasonry in the minds of seemingly every Mason's, but precious few that were consistent with my findings, or for that matter those between each other.

I began by looking through all the proceedings of the Quatuor Coronati of the past 120 years. Quatuor Coronati takes its name from the Four Crowned Martyrs or Four Crowned Ones – the traditional patron saints of stonemasons, and the building trades more generally, who were venerated in medieval times. The story refers to four stone masons who were asked to carve the image of Æsculapius for Emperor Diocletian but refused because as Christian converts, they were forbidden to produce an image of a pagan god. Diocletian consequently ordered their execution.

Established in the late 19th century, the Quatuor Coronati is the world's premier Masonic research lodge. It presents an evidence based approach to Masonic history that replaced the previous myths and legends of Freemasonry. Lectures, research papers, and 'notes & queries', are published in *Ars Quatuor Coronatorum*, the annual Transactions of the Lodge. There was no information relevant to dating when Freemasonry evolved from an engineering, technical or scientific study to a social reform prior to the publications of the AQC, except one single article from 1890.

Next I looked through history of science books. Having examined the history of Freemasonry, in such publications as *The Perfect Peremonies of the Supreme Order of the Holy Royal Arch* published in the 1920s anonymously, as appropriate for a so-called secret society where member's identities were often confidential; another 1920s text, *The Origins of Freemasonry – the 1717 theory exploded* and a nineteenth century description of the rituals of Freemasonry entitled *The Ceremonies etc. of the Holy Royal Arch* and a contemporary biography of Desagulier, among others, I then looked

at the history of science for information regarding Freemasonry and the move from stone masonry to brick construction. Publications I examined include texts on 18th century London, general histories of the beginnings of modern science and the history of mathematics, and the developments of science, technology and philosophy in the Enlightenment. Finding no new or relevant information, I then applied my own unique methodology of using quantitative analysis such as Set Theory and Venn Diagrams to determine which of the founders of Freemasonry knew what, and what their basis for understanding was. Since Freemasonry arose with the dissolution of the monasteries of Henry VIII's era, and the abandonment of Stone Masonry as means of construction and the introduction of brick as a structural material, the 'mystery' of Stone Masonry was transferred to Freemasonry. Brick (with the availability of clay) replaced stone as a building material. Brick components were dictated by the geography of the area of the country in which the bricks were made. Therefore geology and scientific understanding is relevant to building with brick and the primacy of Compton Wynyates in this research.

Field work included explorations of stone masonry within St Paul's Cathedral, to examine the dome and the structure. Research included use of Infrared X-Ray spectrometry through Queen Mary University, and contacts with archivists of the guilds, such as the Goldsmiths guild to determine hallmarking and dating of artefacts associated with Freemasonry such as the Jewel (each officer has a symbolic jewel of office).

This research had begun as a routine enquiry into the current wisdom with regard to the 'science' of Masonic Ritual. However after diligent search to my utter amazement nothing of substance came to light and so began this unique enquiry. Modern Freemasonry's ritual places great emphasis on understanding the science which underpins its basic philosophy and insists that Masons must strive to understand its implications. Unfortunately this scientific injunction only remained for the few years whilst its Founder's remained active and from then onwards science became an absolute no-go area to all subsequent freemasons and Masonic historians alike. Yet even today that same (crucial) insistence upon science still punctuates the ritual, suggesting that the Founder's imperative remains central to Freemasonry and life in general. Why then has science been ignored for the last c280 years? It posed the

further question why had nobody made any attempt to understand its presence, or even moot its fundamental importance and whether for good or bad, why had it not occasioned a response? I determined to seek my own understanding of what lay behind this enigma.

Caveat. This research began forty-seven years ago and remains of special interest to me. It ranges over a wide spectrum of the social involvement of a group of men involved in the institutionalisation of Freemasonry. Otherwise these men typified the complete range of men within the upper echelons of London society during the early 1700s. However, whilst their status and/or occupation were socially equivalent, they differed markedly in that they were uniquely consumed with the latest aspects of the new science and their plans for Freemasonry.

I had happened upon a completely new area of investigation, but more significantly that for c280 years nothing of fundamental significance had been investigated and what little that had been written was clichéd. If the prognosis of my intended research proved to be correct it would profoundly challenge the status quo. More especially unlike the inward looking Masonic research it would be obliged to enter the rapidly changing world outside. Another important factor was that it coincided with a watershed moment of both scientific change and exciting period of social history; specifically fundamental changes in architecture, philosophy, astronomical discovery, but to some degree all sectors of society. Of especial importance was that the men widely believed to be the Founders of Premier Grand Lodge were in the van of those instigating those changes. Sadly it necessitated restricting this research to just that narrow sector, taking scant account of the far greater majority of the population whose only concern was survival, or worse utter destitution. Even within this chosen sector, distinction still depended greatly upon a person's position, status and level of income. Indeed, apart from the very wealthy, even for the few men within our immediate concern, who arguably enjoyed a comparatively comfortable income; life was still far from easy in terms of health, transport, sanitation, surrounding squalor etc. In practice whatever the impact of any of the various facets of the burgeoning Enlightenment may have been, for the vast majority of the population they were merely prey to it.

Generally people in this upper echelon choose to congregate for specific reasons, but

socially in convivial gatherings such as coffee houses, clubs, hostelrys etc., which included the several hundred lodges in London c1717. However our small group (initially four), hereafter referred to as the Cohort came together for more complex reasons: first their otherwise daily occupations; second their extremely unusual involvement with science and technology and/or religion connotations; thirdly an affiliation with the Royal Society and lastly their determined commitment to institutionalising Freemasonry.

Whilst Freemasonry was/is a recognised area of research in many universities, research lodges and centres and individual interest, incredulously none had explored the intrinsic ramifications of how, why etc. science was introduced in the first place; or its role in the founding of Freemasonry and its amazingly success and which enable Freemasonry to survive the ravages of time. I asked why at some stage there has been nobody who has seriously researched into the ritual's insistence on science, nor provided a scenario which would reflect upon why the profound spiritual connotations of the science extant in c1716 had so influenced the Founders objectives.

The research needed to expand into parallel historical paths. Further once invited to present my findings, I instinctively needed to qualify and quantify the findings. An obvious place to begin was the library and museum at the headquarters of the United Grand Lodge of England (UGLE) at Great Queen Street, London. I sought the advice and discussed the nature of my findings with W Bro John Hamill its chief librarian and custodian. He was both the world's leading authority on Masonic history, but more importantly excited and intrigued with the uniqueness of my findings. He offered: that as a full member of *Quatuor Coronati* (QC) lodge of research (which incidentally is considered to be the world's leading research lodge) he would submit the Book to their board and in 2002 they accepted it as submitted for publication, allowing me to fully resume my research.

Major administrative difficulties within QC were then put a hold on all their publishing and commercial activities, which impacted badly on this research. Initially QC took the view that it was a mere a blip, which once resolved would allow to them resume their publishing and allied activities. They had asked senior members to 'voluntarily' undertake the proof reading, editing and indexing of the Book. Unfortunately its size

proved it to be an enormous commitment and combined with all else that was happening little progress was made. In order to preserve the integrity of the work they suggested I deliver what I refer to as a holding (eventually there were three) paper at *Quatuor Coronati*.² Finally their current editor, a man already heavily obligated with a full time occupation and other commitments agreed to undertake the editing. He and I spent many hours condensing this large book down to just over 500 pages. It was now ready for proof reading and W Bro Morris had already agreed to undertake the indexing. Unfortunately their 'problem' was not in fact trivial and it was not until 2009 that QC finally offered the Book to their members as a special edition and although it got a viable response, almost immediately and for other reasons they were 'obliged' to cease all the commercial side of their operations, returning their rights to the Book which was published elsewhere and continues to sell.

This inordinate delay did not prevent my research from expanding in many ways. However the schism within QC was to severely comprise the of placing and presenting papers articles in journals to some extent hampered field studies, correspondence with other workers etc.

Whilst the research was mainly concerned with matters relating to the Book's basic thesis, throughout this whole period there was other related work which forms a very important part of this submission. Further research revealed that there were many more exciting things to be discovered. I was now very aware of the subtleties of the research field I was entering; clearly indicated by the reaction to the holding paper QC had requested.

Full members of QC are sent a prior copy of the intended paper. To deliver a paper at QC is considered to be a distinct honour. The Master, Senior and Junior Wardens are

² Lawrence, "Within and Without: the Hidden Mysteries of Nature and Science", in AQC 118 (2005), Lawrence, "A brick by brick account of the metamorphosis of operative masonry to speculative Freemasonry", AQC 122 (2009) and Lawrence, "The Origins and Founding of Modern Freemasonry: independent of 'coincidence' or 'subjectivity' and relying only on a quasi-mathematical quantified data" Support paper to the QC tour of New York and New Jersey, 2006.

by convention obliged to give an obligatory '*Vote of Thanks*' to the speaker and it is then thrown open. In fairness each concluded by saying "*Nonetheless we offer the author a vote of thanks*". It is then thrown open for general questions. Their and any other comments have to be submitted in writing for inclusion in the proceedings, to which the author has the right to reply, both proved to be 'robust'.

Quo Vadis?

The controversial substance of my work asserted a completely new understanding of events leading up to and beyond the founding of Premier Grand Lodge. These findings will be of considerable interest to today's Masons. This research provides a unique insight and awareness with respect to many other familiar aspects of life such as architecture, astronomy, religion, commerce, philosophy and much else besides. For example at the time it encouraged the owning of scientific instruments, globes, books, attending public lectures, etc. and created a public awareness of people such as: Sir Christopher Wren, Sir Isaac Newton, leading philosophers like Hobbes and Descartes and a particularly cynical Press. Much of this study therefore concentrates of the consequences of this pronounced watershed in science and its connection with other aspects of the Enlightenment's which may have impacted on certain Masons and in various ways.

There have been millions of futile words written which claim to give a definitive account of Freemasonry's ancestry. As early as 1906 Ambrose Bierce was to lampoon Masonic historians in his satirical dictionary. Ordinarily this definition might, like the others have been considered humorous jibe, but sadly it is excruciatingly apposite. Indeed I have included it in several papers to caution against this plethora of scenarios and thereby reminded any reader to make a rational and quantified assessment.

'Freemason. n. An order with secret rites, grotesque ceremonies and fantastic costumes, which originated in the reign of Charles II, among working artisans of London, has been joined successively by the dead of past centuries in unbroken retrogression until now it embraces all the generations of man on the hither side of Adam and is drumming up distinguished recruits among the pre-Creational inhabitants of Chaos and the Formless Void. The order was founded at different times by Charlemagne, Julius Cæsar, Cyrus, Solomon, Zoroaster, Confucius, Thothmes, and Buddha. Its emblems and symbols have been found in the Catacombs of Paris and Rome, on the stones of the Parthenon and the Chinese Great wall, among the temples of Karnak and Palmyra and in the Egyptian Pyramids – always by a Mason.³

This research argues that a form of Freemasonry which would be recognisable today had become an established entity by c1716; that there were some 250 plus Lodges in London alone and *ipso facto* they must have evolved by some evolutionary process. As an engineer who had spent years in industry and a Mason I questioned the plausibility of this plethora of esotericism and instead assumed that Freemasonry was a pragmatic example of social evolution resulting from the demise of the powerful lodges of operative stonemasons. I was determined to test this hypothesis rigorously and to quantify its level of probability. Indeed, I now regret not dedicating a whole chapter in the Book to defining that method of assessment. This because I realised that where professed: these esoteric fantasies are as deeply ingrained as that of religious dogma.

Nonetheless even as I write this entry nobody has argued against my pragmatic scenario, or the quasi-mathematical method of analysis which reinforces it.

³ Bierce A., *The Devil's Dictionary*. (Bloomsbury Publishing PLC, London, 2003).

Alternatively they may have acted like their predecessors and simply closed their minds. Whilst of lesser historical impact, developing this evolutionary model of the growth in Freemasonry would appear to be like finding yet another equally '*bright pebble*' [Newton's analogy] *on the shore*. When writing one of the following papers it became necessary to quantify the likely probability of this 'evolution scenario' it proved to have over 95% certainty.

Methodology

The methodology includes an extensive survey literature relating to the field of study and nature of the research question about the scientific origins of Freemasonry, field work and archival work examining all the contents of the *Ars Quatuor Coronati*, personal interviews, and a literature survey. The literature is organised according to primary sources, such as Aristotle, John Theophilus Desagulier, Isaac Newton, and Plato, secondary sources that comment on the history, nature and practice of Freemasonry, texts on the history of Freemasonry, texts on the history of science and books and reports on geology. Literature was categorised according to scientific merit and development of contemporary scientific precepts.

The methodology included the application of mathematical set theory to establish specifics of founders using a set of questions such as: who were the Founders?; were they in the aristocracy?; were they interested in science?; and if so, what kinds of science? Through this set theory I established what the Founders had in common. First I established a list of the Founders, then determined who they were, what they did, what kinds of backgrounds and knowledge they had, what their beliefs were and other factors. Rather than emphasise the rituals, or esoteric practices or secrecy of Freemasonry, this application of a scientific methodology to a generally humanities based discipline allows my experience as an engineer to differentiate fact from fiction.

Organisation of portfolio of submissions

The articles were written in an order that progressively identified areas that needed strengthening. As I wrote the articles, I perceived more areas that showed gaps in knowledge.

The Key to Modern Freemasonry; The Hidden Mysteries of Nature and Science,
Lawrence, C. London: Hamilton House Publishing, 2013

Part I

The fundamental basis of the Masonic (symbolical) science of the early 1700s with due reference to modern concepts.

Given that space precludes any in-depth discussion of any of the Book's contents I have based the following on its own six parts résumé.

Abstract:

Initially there was a need to consider the nature of science and technology in question and the level of understanding which could reasonably be expected of an educated man in the early 1720s; but especially those people generally accepted as being influential in the founding of Premier Grand Lodge. At first the level of sophistication appeared to be somewhat naïve, but on closer inspection I realised that their grasp of the available knowledge was both profound and rounded; especially when coupled with their remarkable understanding of geometry and mathematics, which even by present day standards was exceptional and certainly considerably above that found in a modern schoolroom. From their independent writings related to aspects of the Nature and Science found within the ritual it was clearly their acceptance of reality and one which afforded them a cohesive, albeit challenging view of the physical world and its relationship with spiritual truth. They believed they were living at a time when all things were potentially within remit of a man's understanding making it possible for them to see how Nature and Science impacted upon their whole worldly and mental faculties and which in very great measure offered an explanation of their very existence and prospect of futurity.

There were effectively no specialisms, yet even at that early stage certain of them had quite specifically definable interests. These are described in terms of modern basic scientific specialism and are considered in much the same order as they appear in the Symbolical Lecture of the Royal Arch; which coincidentally considers architecture first and is particularly appropriate given architecture's symbolic importance to Freemasonry. It also showed that there had been a contemporary move toward analysis and physical demonstration. That such knowledge was now within the public domain in printed form and no longer dependent on the hitherto reclusive and painstaking process of handwritten or verbal transfer.

Chapter 1 (Masonic) symbolical science of the early 1700s;
Chapter 2 Architecture
Chapter 3 The two principal colours
Chapter 4 Geometry
Chapter 5 The five regular Platonic solids with respect to the four elements and the sphere of the Universe
Chapter 6 The four elements
Chapter 7 (Astronomy) Sphere of the Universe - a dodecahedron
Chapter 8 The science not included.

Part II

The case for claiming that the ethos of early Premier Grand Lodge was influenced by predominance of Nature and Science expressed within a humanitarian context and a description of an analytical approach that demonstrates such an assertion?

Abstract:

This Part showed that from the beginning there was strong evidence to support the claim that the essential precepts of Freemasonry have remained unchanged from when enshrined in the adopted/adapted ritual set down by individual founders at the founding of Premier Grand Lodge. That whilst Premier Grand Lodge was merely another example of the numerous clubs and societies being created at that time, it had the crucial distinction: that its potential affiliates were already members of long established local lodges; all ostensibly having the same basic tenets and very sophisticated ethos.

As with all analogous enterprises at that time the Cohort, had its own small nucleus of zealots. Like most things related to human behaviour they were disposed to fashion their new initiative after their own proclivities. The normal daily concerns of most of the influential members of the Cohort were in some way bound up with science, technology and religion, and it is therefore not surprisingly that it features largely in the ritual. Even so any in the Cohort, not intimately involved with science would have been very aware of its spiritual connotations. Just as today the rate of scientific revelation was astounding, each proclamation argued to be an irrefutable truth, only to then be

replaced by another set of findings asserting equal authority. However, allowing for such overstatement it is possible to glean from their writings, lectures and similar initiatives a clear understanding of the Founder's particular disposition towards science.

The Cohort was operating in a highly political environment which obliged them to exercise discretion and performed a balancing act between their view and the generally accepted religious dictates of that period; thereby avoiding what might appear to be an ungodly mechanistic interpretation of some of the physical implications of Nature and science. Their public image and perceived position on these matters with respect to their feedstock (principally current freemasons) was judiciously underplayed. As a consequence their preferred ritual was a somewhat anomalous and a cautionary mixture of mechanistic Newtonian science and an interpretation of Aristotelian philosophy which somehow accepted that all systems had their true being and origin in God's divinity and thereby acceptable to the established church. It is clearly much easier to claim that such a relationship pertained rather than demonstrating it. However it will be shown that by employing a technique which overlays all these otherwise disparate factors it is possible to construct a model that can claim a realistic interpretation.

Chapter 9

Introduction; The ramifications and implications of the science of Freemasonry

Chapter 10 Factors affecting the investigation & proposed analytical model

Chapter 11 *Raison d'être* of the Royal Arch, its content and its relationship to Craft Masonry

Chapter 12 Sociological factors behind the formation of Grand Lodge and the Royal Arch

Chapter 13 Education

Part III

Influential Figures sufficiently well placed to have a marked effect on the evolution of the Premier Grand Lodge.

Abstract:

Anderson's second 1738 Book of Constitution provides effectively the only archival evidence which purports to name those who occupied the important offices in the formative years of Premier Grand Lodge. However because it was compiled twenty-one years after the event, it suggested that some 'judicious' licence had been used with respect to at least the names of the early lesser officers. Incidental evidence indicates that by 1721 there could have been others who were potentially capable and sufficiently well placed to influence the protocols and ethos of the fledgling Premier Grand Lodge and thus needed to be considered. It will become clear that it is somewhat artificial to consider these as somehow separate entities, but to avoid unnecessary complication in the first instance each are considered to be so.

It is also evident that from the very start that whilst the initial four claimed by most to be 'the Founders' were implicitly of equal status, research showed that in practice they were far from equal. Indeed two appear to only have a passive bearing on that which was to follow. Although one did occupy several ostensibly important positions, closer analysis suggests he was ineffectual. The contribution of the unnamed individual remains a mystery; however a likely scenario is discussed. Whereas the fourth (Desaguliers) was to have a massive impact and engineered the ultimate structure of Premier Grand Lodge. This section is predicated on the proposition that the evolution of formalised Freemasonry remained in a state of flux until the pivotal election for the Deputy Grand Master in 1723. However, for completeness a brief outline is given of all those who occupied the important office of Grand Master, lesser offices, or otherwise could have exerted influence over the crucial twenty-four years.

Chapter 14 Persona of the Founders

Chapter 15 Bibliographies of the first three Grand Masters: 1717, 1718/21, 1719;

Chapter 16 Grand Masters 1720-1724;

Chapter 17 Concurrent men of influence;

Chapter 18 Grand Masters: 1726-1730;

Chapter 19 Grand Masters: 1731-1739 and the Duke of Chandos.

Part IV

The lineage of the aristocratic families of the Grand Masters from 2nd Duke of Montagu, 1721, until 1st Viscount Dudley and Ward, 1742

Abstract:

The appointment of the 2nd duke of Montagu marked the adoption of the (unwritten, yet seemingly mandatory) policy that henceforth no person would be appointed to the position of Grand Master unless he could be numbered among the titled aristocracy; which makes it important when considering their brief lineage. This because it is clear that status has ever been the driving factor when determining the nature and motivation of those desirous of attaining higher rank, at whatever level of Freemasonry. In the Founders' case however, because of the complex interaction between many of them, it is only possible to study in detail the manner in which the titles of the Grand Masters were inherited/transferred and correlated with current behavioural patterns to speculate on the lesser ranks. Further to observe the subtle, but surprisingly close interrelationship between many of them irrespective of the clear class divide, showing that the desire to get their project through went beyond the protocols of class. Other significant people who were not known to be Masons, but who could have been serious players in the formative years of Premier Grand Lodge's upper echelons are also considered. Further it shows that all high ranking aristocracies were decimated by the Tudors, especially Elizabeth I, leaving effectively none above the rank of Baron (the historic titles conferred later were not related). Consequently the titles of interest here stem from the explosion in aristocracy following the ascension of James I in 1603, which ensured an extremely strong Scottish (Stuart) influence. Under Cromwell's surprisingly tolerant influence, the Civil War, had little impact on these families and other than fines, many emerged much as they had begun and quickly regained royal patronage. However, the greatest impact on our story comes from the many noble families created by the largess of Charles II, especially towards his mistresses and illegitimate offspring who in many ways were interlaced with the early Grand Masters.

The associated Tables show how many of the titles recorded in Masonic publications were conferred after they had already served as Grand Master and to some extent explain why, as comparatively minor aristocracy, they may have been keen to accept the nomination of high Masonic office.

Chapter 20 An introduction to a potted history of the preceding 130 years and the watershed of the death of Elizabeth I (1558-1603).

Chapter 21 James I (England) and VI (Scotland), (1566-1625).

Chapter 22 Charles I (1600-1649);

Chapter 23 Commonwealth Oliver Cromwell;

Chapter 24 Charles II (1630-1685);

Chapter 25 James II (1633-1701);

Chapter 26 William III (1650-1702) and Mary (1662-1695);

Chapter 27 Queen Anne (1665-1714); Chapter 28 George I (1660-1727); Chapter 29 George II (1683-1760).

Part V

Those factors of the sociological climate and contemporary issues that surrounded and impacted upon the instigation and subsequent structure of Premier Grand Lodge.

Abstract:

The character, dexterity and wisdom of those people involved, coupled with a slice of good fortune played a part in the eventual outstanding success of Formalised (Grand Lodge type) Freemasonry. Further the fact that it came into existence at all was in great measure due to the favourable conditions within the social climate at that time. Tested here was the presumption that these peripheral (incidental) social activities, in this instance Freemasonry, can only flourish if there is a buoyant economy, underpinned by general social, religious, political stability and a disposition within the community towards any such enterprise. This research discusses the nature of London's upper echelon of society, its social infrastructure and the circumstances which had brought it about, which made it an ideal location, complying with all those requirements.

In particular it provided further evidence that these favourable conditions prevailed by showing that it was part of the wider expansion of many other extraneous social (leisure) activities, such as: clubs, societies, coffee houses, taking tea, etc. Of especially social interest and a matter of considerable importance here was the public's thirst for knowledge; notably in the form of public and private lectures and publications on scientific discovery. It was particularly controversial at this time because of its potential contradictions with established religious thought, especially in respect to the contemporary (deemed ungodly by some) upsurge of

scientific/technological explanation of cause and effect. It is argued that Newtonianism was of compelling interest to certain of the Founders and so this aspect of the contemporary thought is given specific consideration.

Chapter 30 Social factors and their influence on Masonry;

Chapter 31 Political changes prior to and during the founding of Grand Lodge;

Chapter 32 Sociological changes from Elizabeth I to the foundation of Grand Lodge;

Chapter 33 Religion;

Chapter 34 Progression of the (Masonic) sciences;

Chapter 35 The science not embraced in the Ritual;

Chapter 36 Newton, Newtonians and Newtonianism;

Part VI

A consideration of the Liberal Arts and Sciences, the Hidden Mysteries of Nature and Science, their place in Freemasonry and the conclusions which may be drawn from this research.

Abstract:

Up to this point the facets that purport to justify, or at least offer some explanation for the repeated scientific reference throughout Masonic ritual were considered under discreet headings. This was also deemed especially true of the above topics given the many injunctions for freemasons to study and understand them and to show their importance to the Founders who formulated the early ritual. Again, in reality they are all interrelated and considering them as unique entities was somewhat artificial so they are here considered collectively. This is particularly true of the moral imperatives, which the Founders considered were consistent with what at first glance appeared to contradict innate religious truths. That in Nature and Science there was an undoubted, yet complex connection with the absolute perfection of the Deity. The discussion here was to gain some further understanding of what precisely those people believed to be the status of Nature and Science at that time and its impact upon them.

Secondly to extend the discussion into the many social factors that surrounded this new initiative and to consider why these many aspects made it possible for Freemasonry to not only survive, but flourish. Finally it proposed certain 'conclusions'.

Whilst this work may appear to be extensive, it was still only a distillation of numerous aspects that needed to be considered more fully.

Chapter 37 The 'Seven Liberal Arts and Sciences' and the 'Hidden Mysteries of Nature and Science'

Chapter 38 The Whys and Wherefores;

Chapter 39 General discussion of findings; Chapter 40 In the final analysis.

Appendix 1. Desaguliers' Poem.

A more easily readable transcription of Desaguliers' poem and explanatory notes.

Abstract:

Many believe that poets reveal their inner selves through verse and a study of this example of Desaguliers' poetry in conjunction with the published versions of say *Emulation* ritual and juxtaposing their intrinsic philosophy one can appreciate their remarkable interrelationship. Its value therefore in terms of this research is further indication of Desaguliers' influence.

Appendix 2. Lexicography

Abstract: Definitions taken from dictionaries that date from before, during and somewhat later than the 1720s, of significant words used in relation to the science of Masonic ritual.

Appendix 3. Further explanation of a 'Set Theory' approach.

The Intervening Seventeen Years of Research

The Book's content had been condensed in order to be a commercially viable publication, but in doing so it left some matters simply outlined and suggesting that there was much more to be found. The Book's publication was justified on the basis of its originality and its greatly enhanced level of probability. Clearly each aspect of that research had different levels of confidence leaving the need to improve upon all data wherever possible, but in addition there were implicit priorities with respect to the various levels of uncertainty and compatibility. The major papers précised below reflect that approach. Papers 2 to 6 are suggested since they reflect the overall evolutionary research which related to the founding of Premier Grand Lodge and

shortly after a ceremony, that later became the Royal Arch was introduced.

Tables of Membership

Up to writing the Book I had used W.J. Songhurst et al's (1913) work, but to progress I now needed to gain a more detailed understanding of London's early 1700s Masonic demography, especially those Masons who affiliated to form Premier Grand Lodge.⁴ 4 W Bro John Hamill had actually cautioned that there had been some suggestions of tampering, but since Songhurst et al's paper was the only direct data related to membership I had no option and accepted that caution was necessary when apportioning accuracy. These tables were to prove an important tool when assessing the human component in relation to other aspects of the research. Further when viewed holistically they highlighted a whole catalogue of items such as why did their meeting places change frequently? Why did the number of completed returns progressively decrease over the first seven years? They showed the varying size and demographic of the respective lodges. Why important brethren known to be Masons were not in the returns? Given the number of lodges in London could possibly have exceeded 300, why had only half become affiliated? The list goes on, but in terms of science two items were also of immediate interest: who of these men were also members of the Royal Society and/or possibly publishers or subscribers to *Chambers Cyclopaedia of the Liberal Arts and Science*? I therefore compiled and correlated two further tables. All three were collected in a file⁵ containing the details of over 3,000 Masons and much else besides, which explains why the first piece of major work I have listed is the re-presented Songhurst's Minutes.⁵

Besides the mechanics of constructing the tables, there were many other problems; most contingent on their compatibility when cross referencing. Further complications were matters such as: actually identifying importance scientists, their relationship towards Chambers' Cyclopaedia and claimed membership of the Royal Society found

⁴ W.J Songhurst et al's (*Quatuor Coronatorum Antigrapha*, Masonic Reprints. Vol. X, (1913). pp 4-47, 148-193).

⁵ Lawrence C., *Tables and Associated Notes Derived from the Minutes and Membership lists of Premier Grand Lodge. Songhurst et al.* Deposited in the Library of United Grand Lodge of England.

in Masonic literature. Two major concerns were; 1/ only some affiliated lodges were given numbers, but their lodge names were the places they met. Unfortunately lodges often moved, others dropped out altogether, whilst others joined. 2/ member's details were contingent on the recorders e.g. verification of titles; the spelling of names; ambiguity in assigning names; common names; absentees; discrepancies; ambiguity between Mr and Esq; membership of other lodges; men conspicuous by their absence etc. Whilst these factors may appear prohibitive there is a great deal to be gleaned from these tables, which when integrated with respect to other factors throughout this research showed important links. Especially helpful where there was no obvious ambiguity, re the lodges of our men of science where these tables proved extremely valuable.

Paper 1

'Within and Without': the Hidden Mysteries of Nature and Science, Lawrence, C., AQC 118 (2005)

This paper had two troubling factors: first the novelty of the thesis was controversial and likely to invite challenge. Next because the Book was already a *précis* of the research, it now needed to be compressed even further. However the paper's broad-brush approach gave an overview of this new understanding of the origins of Modern Freemasonry. It received some favourable responses, but more importantly it brought into sharp focus the ominous possibility of future objections that I must now expect from the established body of Masonic researchers. This paper was being presented at the highest possible level, but its atypical thesis was one of unromantic pragmatism. It was based on the presumption that modern Freemasonry did not date from 'time immemorial' (however defined), but simply the demise of the erstwhile powerful stonemasons' lodges and notable changes in the few major religious centres which survived. That this metamorphosis was aided and abetted by an inevitable change in architectural demand away from stone structures, which was both evident and potentially unstoppable by the late 1400s. That this desire to create an overarching concept of Freemasonry had perchance been orchestrated by a small group of scientifically based technologists, who not only had close secular interests, but were disposed towards a Protestant, quasi-Deistic-Newtonian set of beliefs. That this initiative had chanced to coincided with a time of unprecedented in society and the presence of an exceptional man. In effect it challenged all preconceptions.

Paper 2

A Brick by Brick Account of the Metamorphosis of Operative to Speculative Masonry, Lawrence, C. (AQC Vol. 122. 2009). pp 121-184.

Having presumed that popularity of brick was influential in the demise of the large stonemason's lodges, it required further justification. This research considered the nationwide distribution and staggering number of religious buildings, the construction of which was to a large extent governed by their surrounding geology and intrinsic cost of construction. It showed that by 1500s there was an emerging demand for alternative forms of construction. Unfortunately, in terms of this research in every case there were arguably overriding pragmatic constraints and whilst brick was becoming increasingly popular, to what extent was the final choice always one of expediency? Fortuitously whilst pursuing another aspect of the research the significance of a Tudor house: Compton Wynyates and its former owner suddenly emerged.

Paper 3 How the Extension to Compton Wynyates, Completed in the Early 1520s etc. Lawrence C., Presented to Chingford Masonic Research Centre. June 2016

The house was extended by Sir William Compton in (completed 1518) and was the perfect exemplar of a building which would reconcile any lingering doubts as to whether in the end it was always expediency which drove this propensity towards brick with such momentum. Following the premature death of his father Sir Edmund Compton's in 1493, the young orphaned Sir William was taken into the Royal household as a companion of Prince Henry. He became closer to Henry VIII than any other man would ever be. He enclosed his father's house in brick making it distinctly unfortified, clearly sharing the King's liking for brick. Indeed his relationship was such that he made one wing of this comparatively small house with the sole intent of privately entertaining the King and Queen – Catherine of Aragon. However, in terms of this research his estate already had a quarry for extracting the eminently suitable Horton Stone. There was the clay pit his father's used for brickmaking when rebuilding the original moated farmhouse and the hill above the house was an atypical outcrop of limestone perfect for manufacturing 'hydraulic' mortar, with ample surrounding woodland. Thanks to largesse of Henry VII towards his father and Henry VIII's towards Sir William he was a wealthy man and thus not constrained by cost; his choice of materials unfettered; already a trend setter at Court and the stunning beauty of the house explained why he

chose brick.

Paper 4 *Hell-fire or Applied Science: the Origins and Personalities etc.* Lawrence, C. Transactions 2010-11, Lodge of Research No. 2429. Leicester, UK. pp 31-64

It was clearly necessary to reinforce the intrinsic claim: that Desaguliers' played a central role. His reported showdown with the Duke of Wharton exemplified his intricate political manoeuvring in a delicate environment. This paper illustrates the differences and interaction between these two men. Initially I had accepted the reported reason for Wharton stormy departure was due to Desaguliers' casting vote in favour of the adoption of the Cohort's candidate. However when recently revisiting this event with W Bro Currie who shared the same understanding, on closer examination we realised that Wharton's candidate was in fact the same person as the Cohort's would have most likely chosen. Clearly the established view was flawed. Reappraising this event only made sense if Wharton's displeasure was not over the appointment of the next Grand Master, but that of his deputy; who as a result of the vote was his *bête noire* Desaguliers. Wharton had mistakenly presumed that the innate leanings of his closet Jacobite nominee the Earl of Dalkeith (who did later become the 2nd Duke of Buccleuch) would support his ambitions. Typically the impetuous Wharton had failed to appreciate that the scientifically involved Dalkeith already had close ties to the tight-knit scientific Cohort and like his mother (Henrietta Hyde) was politically astute enough to not '*put his head above the parapet*'. With that apologetic *volte-face* I will consider the next jointly linked paper. This paper reiterates the massive part played by the socially disadvantaged, but otherwise scientific and technological genius Desaguliers. Having skilfully engineered his plans and poised to create an overriding body when in 1722 the '*larger than life*' charismatic socialite: the young Phillip Duke of Wharton appeared on the scene. This paper shows the social, aspirational and mental differences between these two men and suggests why they had gravely underestimated the intent of each other, only ending in victory for Desaguliers by the narrowest of margins.

The contrast between the two men was in every respect truly staggering:

Moral rectitude: Wharton was a charismatic yet extremely amoral inept dilettante; treating all others with utter disregard, not least his wives. Desaguliers whilst a somewhat overzealous '*wheeler and dealer*' with respect to his ambitious plans

for Masonic advancement, did in all other respects appears to have been, by the standards of the age an upright and pious person, had mistakenly considering Wharton to be inconsequential.

Financial status: Wharton dissipated a vast fortune in his short (32 years) life and died as a destitute traitor to his country, leaving a vast trail of debt. Desaguliers was never in a comfortable financial position, but nonetheless died modestly well-placed and clearly mourned.

Intellect: Wharton is perhaps best summed up by the poet (his claimed friend) Alexander Pope: *'A fool with more a wit than half mankind'*- but his public persona was such that the public and media loved him and his antics, but in truth everything he touched turned to dross. Desaguliers, boarded on, or may justly be regarded as a genius; a brilliant scientist, engineer, and mathematician.

Fate brought them together in June 1723, but it was only by sheer luck and Desaguliers' circumvention of protocol that he triumphed over Wharton, allowing Premier Grand Lodge to come into being.

Paper 5

***The role of Hierarchy in Modern Freemasonry*, Lawrence, C. Presented to Essex Masters Lodge June 2014.**

Freemasonry claims to be founded on 'charity', but in Masonic ritual there is the phrase: '*As it is the hope of reward that sweetens labour*'. It is most certainly true that Masons lay great emphasis on supporting good causes. Its members do not seek monetary gain, what then is their 'reward'? For most members it is being part of the extremely friendly and exclusive society of men with laudable intent, but that alone would not have guaranteed its survival. Very cleverly Desaguliers recognised that in every society there are those who strive to make social advancement. In Freemasonry it is for status and/or acclaim and it is that motivation which is central to its overall control, all under the guise of protocol. This paper discusses how and why that relationship was/is fundamental to Modern Freemasonry's success.

Paper 6

***Damp, Noxious Vapours, or Other Unforeseen Causes, with respect to 'health and Safety' etc.* Conference Proceedings, Lawrence, C. Roll Book and Annual recorder for 2014. Supreme Grand Royal Arch Chapter of Scotland Edinburgh**

This paper is a further indication of Desaguliers claimed (again contentious) role in the founding the sub-degree which was, or would become the Royal Arch. This paper described the research which showed to high degree of probability based upon his activities outside of Freemasonry and that he was instrumental throughout in founding this unique ceremony and its basic structure.

Paper 7

***The Liberalisation of the Arts and Sciences with respect to the Founding of Modern Freemasonry.* Lawrence C., Presentation to: LGR Assoc UGLE London May 2016**

I became aware that the word 'liberal' in relation to the topic of the Arts and Sciences in the late 17th and early 18th Centuries differed from modern understanding. I realised if that proved correct it would shed new light on the ritual of Premier Grand Lodge. Research on contemporary dictionaries of that period revealed that for circa fifty years when 'liberal' was used in this context it meant 'freely available' to anyone sufficiently educated and able to afford books. In consequence this different

understanding meant that knowledge could no longer be proscribed by the Church. It was clearly another aspect of the multi-faceted Enlightenment and that science was merely an element and only of importance to some. My paper was intended to merely discuss the implications of the ritual's use of the word liberal, when another's book, *The Foundations of Modern Freemasonry*, was published which indirectly challenged my basic thesis.⁶ Clearly the paper I refer to as a 'holding paper' had been challenged which involved a massive detour to address this potential dichotomy.

Paper 8

***The God of Premier Grand Lodge and the Holy Trinity.* Lawrence, C. Presented to the Crossed Keys Rose Croix Chapter June 2016**

In *'The Charge after Initiation'*, the Candidate is admonished that he must abstain from *'every topic of political or religious discussion'*. Unfortunately the circumstances surrounding the founding of Premier Grand Lodge require constant reference to many religious and political factors. Most Masonic historians who have given the matter serious thought have presented their own, usually quite unique interpretation, which could be levelled at the veracity of this work. Since religious connotations play a very important overall role in this research, this paper expands on 'why' the widely accepted Trinitarian Faith of then established Church was not incorporated in the ritual of Premier Grand Lodge. The actions and rationality of Dr John Desaguliers are discussed in relation to the vast amount of literature which relates to the role of religion on events during that short period. Of considerable interest is that effectively most sources which recount Desaguliers' activities do so in abstraction and fail to probe the subtleties of his motivation, or that of those about him. This is typified in the comparatively recent book by Dr Audrey Carpenter which comprehensively catalogues Desaguliers' actions and whilst most helpful and supportive of this study, for the most part it fails to answering the important question of why, what, which etc? The next three papers address further aspects of those questions.

⁶ R. Berman, *The Foundations of Modern Freemasonry: The Grand Architect of Political Change and the Scientific Enlightenment 1714-1740*. Brighton Sussex Academic Press, 2012.

Paper 9

Inception of the Now Holy Royal Arch; The Questions of Why, Where, What, Who, How Etc., but More Especially When the Inception of the Now Holy Royal Arch Took Place. Presented to Edward the Confessor Chapter 2010. (2017)

I was equally convinced there was much more to gain by researching the complex relationship between Newton and Desaguliers. As everything was clearly consistent with the finding in the original paper I chose the 2014 paper as the basis of the 2017 addition. The significant changes in this version 2017 are those related to the Desaguliers/Newton interrelationship.

Paper 10

Dating of the Founding of Premier Grand Lodge Lawrence C.C., AQC 131 (2018) Quatuor Coronati Lodge June 2019.

The Premier Grand Lodge's Symposium's Chairman W Bro Professor Aubrey Newman was aware that this subject was a crucial element of my work and invited me to submit response to Andrew Prescott and Susan Mitchell Sommer's contribution on this subject at *Quatuor Coronati's* Cambridge (2016) Conference.

Paper 11

The Geometry of the Master's Jewel and its Significance with Respect to the Founding of Premier Grand Lodge and Modern Freemasonry. Southchurch Masonic Research Circle. March 2014.

This subject was a crucial element of my work and invited me to respond to the contribution of the respective Speakers. However this is the full response as recorded in the *Quatuor Coronati* Proceedings for 2016. The Past Master's Jewel was of great significance with respect to Desaguliers and the Cohort, albeit lacking any actual evidence of timing. However they raised the question of 'altars' since they The paper dealt with the original (English) form and inserted an explanation of the ceremony's science based iconography, with sketches of the floor furniture. As a result of my recent research on Sisson's jewel and the Constitution's Frontispiece it is now possible to assign the most probable accurate date. The 2014 paper relates to details of early earlier findings, 2016 paper added further clarification. Again the 2019 paper added further evidence, but in particular the significance of Sisson's Jewel, its dating and physical characteristics.

Paper 12

***The core structure of modern Freemasonry: independent of 'coincidence'.
Quatuor Coronati Tour. New York. Dec 2006.***

This paper was presented in New York within the programmed tour by *Quatuor Coronati* Lodge. This paper tests the concept using the analytical approach as I was aware of the difficulty of some with respect to this quasi-mathematical approach.

Paper 13

Desaguliers' Science and the Origin & Date of Premier Grand Lodge and the fledgling Holy Royal Arch. Quatuor Coronati Symposium on the Dating of the Founding of Premier Grand Lodge. UGLE, London. February 2018.

In the days of actual stone masonry, the knowledge of how to build an arch differentiated the stone mason from the simple craftsman. The Royal Arch, not a particular piece of masonry, but an arch of zodiac symbols, dates from Spring Solstice to Autumn Equinox and was a high degree of Masonry and then a high level lodge.

Published papers, peer reviewed and invited talks

The above papers represent research undertaken to address particular aspects of the basic quest. There are other secondary aspects of the research that I have applied throughout this investigation, by way of illustration I used just one example. As part of my enquiry into the metamorphosis of operative masonry to Speculative Freemasonry I considered the possibility of the new St Paul's being constructed of stone and the possibility of operative masons undertaking its reconstruction. In the event it went to an architect as presently understood. Martin Fletcher St Pauls' current Clerk-of-work allowed me to range over the building and on its upper level is Sir Christopher Wren's winning model which unlike its predecessor has a dome, much like those on his Royal Naval College at Greenwich, but architecturally analogous to the Pantheon in Rome, or *Filippo Brunelleschi's* on Florence Cathedral. Namely their functionality and intrinsic stability relies on their sheer solidity. It is reported that to Wren's eyes they appeared cumbersome. Little regard is accredited to the genius Robert Hooke who already London's surveyor after the Great Fire was to form a close relationship with Wren. Hooke's mathematical and technical brilliance enabled Wren to reconfigure his concept by employing two elegant slender brick based inner domes, supporting a

substantial lantern, all mounted on an equally slender stone faced drum, each strategically reinforced with iron. Pre-dating the technique which is the very basis of modern architecture, but at the same time it was the final nail in the coffin of the erstwhile all powerful master stonemasons. This factor was mentioned in the associated paper, but did not convey the extent of the work undertaken to evaluate it, or the additional features such as the Cathedral's magnificent self-supporting Geometric Stairwell (The Dean's Staircase) extremely wide cantilevered stone steps, no doubt modelled on Inigo Jones's c1625 beautiful 'Tulip' stairs in the Queen House in Greenwich.

Similarly an in-depth study of *Brunelleschi* showed him to be the very epitome of the symbiotic relationship that existed between the Cathedral's large stonemason's lodge and the good and the great of the local community and the eminence and indeed wealth of its master mason. Interestingly the 'secrets' (Masonic connotations!) attached to the helical construction of the Dome's brick fabrication are still a matter of speculation.

Talks, Investigations, Field Studies

Field Studies: The time spent clambering over the more obscure parts of St Paul's and working around the various sites to retrieving and evaluating the materials used at Compton Wynyates etc. may be considered 'field work' and examples of where incidental aspects have been used in talks, but similarly the most recent work related to the Past Master's Jewel is a further example of where these enquiries have required contacting many outside bodies, such as the Gold and Silversmiths Guilds, and the Victoria and Albert Museum which can only be resolved by engaging their physical involvement; which given the Jewel's importance I will use as an illustration.

Initially there appeared to be little doubt that it was made in c1726, but uncertainty from where that confidence came. Not only was the jewel not hallmarked it was suggested further that its two components parts may not be of the same date. However my research indicated that c1726 was the only viable date and so I needed to investigate this uncertainty; but where to begin? Hallmarking predated 1726, why not this jewel? What were the implication of the appendage's date and were the two parts were made at different times? I tried various guilds, museums and whilst everyone

was most helpful they were unable to provide definitive advice, until the I approached the Victoria and Albert Museum. They said although still not conclusive, it would help if there was significant correspondence and recommended I request its custodians to have the Jewel assayed. Unfortunately conventional assaying involves taking 'scrapings' and the custodians feared harmful damage. Professionally I knew that Queen Mary College had a Near Infrared X-Ray spectrometer and they agreed to help. After protracted interchanges the chief curator sanctioned the work, but later said he would get it done at the London's Wallace Collection. Still concerned over the lack of hallmark I telephoned the Goldsmiths guild, who were similarly helpful and said that hallmarking was first introduced into England by Henry III in 1327. On further investigation I found that coincidentally in 1719 the hallmarking of sterling silver was changed for 55 years, which only required hallmarking the blank slab of metal. The assay results were consistent with the jewel being made in the mid 1720s, but did not conclusively rule out a later date. However when all the recorded circumstances of subsequent career, international trading ventures and later health problems, the earlier date has much the greater probability. But by far more significant was the unlikely depiction of Euclid's 47th Proposition (*in a right angled triangle the square on the side opposite the right angle equals the sum of the squares on the side containing the right angle*) after 1730 in the Probability 'Sets' related to that aspect of the work. This Euclidian proposition is an emblem associated with the Past Master.

Presentation of talks: Masonry differs from most clubs and societies and meetings are commonly limited to just a few per year. Their preoccupation is to enact various stages of Masonic ceremonial advancement, which once completed those Masons are themselves encouraged to participate in these historic ceremonies. For any breaks in that process a speaker may be engaged, indeed there are a small number of special lodges (e.g. *Quatuor Coronati*) which only receive papers with minimal ceremony. Thus their audiences vary and the degree of individual commitment is wide. The field study cited above is a classic example. I had researched into Newton's impact throughout the Nation, but more particularly Desaguliers' and his intimate concern with Euclid's 47th Proposition, but been unable to find physical evidence. However, whilst attending such a specialist meeting that a throwaway comment by the speaker pointed to where I might find that missing link. But whilst in the process of preparing the talk for the London Grand Rank Association lectures the Jewel's lack of hallmarking was

still troubling, hence the research cited above.

Conclusions

This investigation has broken completely new ground and demonstrated that Eighteenth Century science was/is in fact a central factor in the intrinsic philosophy of Modern Freemasonry. Using a novel quasi-mathematical approach it has allowed the veracity of this claim to have a uniquely high degree of certainty. Without validated contemporary evidence there will always be some room for doubt, but this research confidently shows that the institution most people acknowledge as Modern (Premier Grand Lodge type) Freemasonry came into being following the critical Quarterly Meeting in June 1723. That crucially, albeit by chance it was instigated and influenced by a Cohort of practicing scientists, masterminded by Dr John Desaguliers. That of necessity and personal intent the Cohort shortly afterwards introduced a ceremony, exclusive to Premier Grand Lodge which at some stage was, or would become that which is now known as the Holy Royal Arch.

That its feedstock came from the large number of freemasons lodges in London at that time which had evolved by natural process following the sequestration of the monasteries and like entities by Henry VIII. That this transformation from operative to Speculative Masonry was facilitated greatly by the suitability and popularity of the humble brick and the rapidly changing hierarchal, social, commercial and technological climate during those intervening years.

By 1715 there were many individual 'Freemasons' lodges in the upper/middle class of local communities in England, but especially in London who were involved in what to them was a pleasant activity. Typical of such cases each group would have had their own understanding of Freemasonry's merits and precepts, clearly dependent on their concept of appropriate behaviour. The tiny unique group of otherwise connected scientists sought to make contact with other Masons, which by a complex process was to evolve into the worldwide organisation of regularly constituted Modern Freemasonry. This Study explains how by reference to events within Freemasonry and throughout the wider society, but in particular the burgeoning science, brought about this remarkable result. Further that whilst currently science fails to excite the minds of effectively every active Freemason it is nonetheless still the original Scientist's basic

concept which they religiously practice.

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