

THESIS.

for master's degree in architecture

THE DEVELOPMENT OF THE ROMANESQUE STYLE OF ARCHITECTURE

.. BY ..

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STYLE OF ARCHITECTURE.

General History.

The last few years preceding the year 1000 A. D. were practically spent in feasts by the so-called Christian world. This was due to a prophecy made during the early history of the Church, that the world would end at that time and that there would be a new heaven and a new earth.

The Church had interpreted this as the time when the world would come to an end and had encouraged the people to give up all their wealth to the High Priests, to atone for their misdeeds on this earth and secure a place in Paradise. They had, therefore, only to take care of their present needs, give up all their money, lands and cattle to the Church, and await with fear and trembling the coming of the Lord.

The year 1000 came. The dead remained in peace in their graves. A terrible famine came on, due alike to the giving up of all wealth and the abandonment of cultivation. People lived, or rather existed, in cruel misery, the Church guarding carefully her treasures. For the time being a satisfactory explanation was found in the belief that Jesus Christ died in his 33rd year and that the 1000 years would date from his death. The famine was more and more felt as the year 1033 drew near, but the dreaded time came and passed, as had the

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year 1000. And when the fatal day had passed without the fulfillment of the terrible prophecy humanity felt itself invigorated and filled with new life, its first sentiment being love and gratitude towards God who had not destroyed the race. People gained hope and confidence and proceeded to work again with more vigor than before. This resulted in a so-called "second birth" which clearly marks the stepping forth of Romanesque architecture.

The Church, having a large amount of wealth accumulated, set about renewing her edifices and building new ones. Churches vied with one another for the possession of lands and the most remarkable temples. The world was aroused to shake off age and deck itself with beautiful edifices.

The Architecture in General.

The word Romanesque, as used by the people of the Romanesque period, meant Roman-like. According to Quicherat: "Romanesque architecture is that which has ceased to be Roman although it contains much that is Roman, and though not yet Gothic contains much that is Gothic." It was inspired mainly by the monuments of Rome which then covered the land and were repaired under the Byzantine influence to suit the new customs and forms of religion. The Byzantine certainly took its elementary details and its fundamental forms of building from Rome, as on the other hand we can discover in the Romanesque style elementary details coming from Byzantium; but in reality the two styles are different in their general character. The Byzantine

was more special, while the Romanesque was used by the then so-called Christian (or Catholic) world.

Languages formed from the old Roman were simple national transformations from the original language. Likewise did the style of building which was developed or derived from the forms of heathen Rome, and named with true analogy "Romanesque," receive many modifications among different nationalities. In the middle ages, under the kings of the first dynasty, and therefore much before Charlemagne and the pilgrimages in the year 1000, relations existed between the east and west, while Byzantium exercised such powerful attractions that France, Germany and Italy sent ambassadors there. People were constantly visiting the Holy Land and as they passed through Constantinople and other important places of the Byzantine Empire they received many inspirations to rival the east in art, in consequence of which their designs were spread into Italy, France and Germany. Greek monks who had established themselves in southern Italy, France and Germany, also did much in developing this influence.

For several years the south of Italy was connected by religion, administration and language, to the Empire of Constantinople. Venice, to the north of Italy, maintained her independence, but her merchants continually carried on trade with the Byzantine Empire and brought back many ideas.

The style varied considerably in different countries, being more like the Roman in the vicinity of Rome, having more of the

Byzantine influence in the vicinity of Venice, and showing more originality farther from Rome, as in Germany and France.

The ancient Christian Basilica (Fig.1) is the starting point for all the Christian architecture of the middle ages, which in turn was derived from the old heathen Roman Basilica (The Roman Market and Judgment Hall). I do not intend, however, to trace out each step of the development and alteration of the simple, primitive form, or to prove that it had an independent origin, but accept them as we find them in the Romanesque edifices from the 11th to the 13th century. It certainly would be of no use to go farther back than the 10th century to study this style, as the first buildings were made only of wood, or with wooden ceilings, and were from the nature of the material early destroyed. It is true history tells us of Basilicas of a much earlier date, but we can only study with certainty the buildings themselves belonging in the period from the 11th to the 13th century.

Plan.

The typical Basilica is similar to the Latin cross in plan, the short arms being called the transept and the long arm the nave, with an aisle on either side. The part lying beyond the transept is called the choir. The nave extends from east to west and the transept from north to south, which brings the choir facing the east. This orientation has been invariably followed from the Romanesque period. The nave is broad and high, the side aisles half as broad and half as high, with the transept of the same breadth and height as the nave.

These relations were retained, with few exceptions, in all the buildings of the Romanesque period. Rows or columns or piers separated each aisle from the nave, being spaced apart a distance equal to or half the width of the nave. Semi-circular arches united every two adjacent columns which supported the side walls of the nave, these in turn supporting the roof. Churches with two aisles on either side were sometimes used, but much less frequently than formerly.

The east end of the nave and side aisles were terminated by three semi-circular arches, that of the nave being a much larger span and called the Triumphal Arch. Each side of the square space formed by the intersection of the nave and transept is bounded by arches of the same span as the Triumphal Arch and supported by piers at the four angles, over which is placed some form of a tower. The clear-story walls of the nave and transept are supported by these arches and are visible on the exterior. On the right and left, or north and south of this square, is a similar square of the same height and enclosed by three walls and one of the large arches.

The choir is generally raised several steps above the level of the nave and side aisles, and sometimes this elevation extends farther, including all of the transept, as in the cathedral of Parma which was built in the 11th century. In the rear of the choir and in front of the apse was placed the altar, the priest standing behind it with his face turned towards the congregation. The choir, which frequently extended forward into the square space formed by the

intersection of nave and transept, was enclosed by a screen or balustrade. Behind this was placed two pulpits from which the Gospels were read.

This is the plan of the simplest Basilica as we find it in the earliest stages of its development, but it received many changes before it was superseded by the Gothic style in the 13th century, especially in the choir end of the church. The first was the addition of a small apse (Fig.2) to the east side of each arm of the transept, as well as at the ends (Fig.2), intended for side altars. Sometimes the side aisles were continued beyond the transept (Fig.3) on each side of the choir and terminated in a small apse. This continuation of the aisles was used for side chapels. In a few cases we find a simplified form of this plan by the omission of the apses, especially the side ones. There are also small apses for small altars, the one on the east side of the transept being next to the side chapel (Fig.4).

A very pleasing arrangement of the choir is where the side aisles are continued as corridors around the choir and apse, the walls of the apse being supported by columns or piers, the ceiling being vaulted. A still more pleasing plan, and one which was very common in the Gothic period, was the addition of small, semi-circular radiating chapels, extending out from the corridor around the main apse (Fig.5). Another deviation from the simple plan of the Basilica, which is found chiefly in the Rhine districts of Germany, is where

another choir is added to the west end of the church, and sometimes another transept with chapels (Fig. 6). Towers were found on the exterior at each end of the church.

The crypt was a vaulted apartment constructed under the choir and main apse of the church and was used as a burial place for Bishops, abbots, and persons of high rank; also for the preservation of the relics of the saints; or, possibly retained as a remembrance of the catacombs in which the early Christians were obliged to secretly hold their meetings. The vaulted ceiling, supported by columns or piers, divided the plan up into aisles of the same height and an apse containing an altar. Sometimes the crypt extended farther than under the choir and apse and included all of the space under the transept. The entrance to the crypt was generally placed in front of the choir between the steps leading up to the same. We now see why the choir was placed several steps above the level of the nave.

In some of the larger churches the side aisles are surmounted by galleries opening into the broad, high central nave. This was brought about by the requirement for more space in the populous places. We also find a gallery, or loggia, at the west end of the nave resting on columns or piers, with a vaulted roof, occupied by either nuns or people of note. The space under it was generally used as a vestibule or entrance hall. In a few cases we find galleries in the north and south ends of the transept.

Vaults.

The vaulting of churches is one of the principal characteristics of the Romanesque style. Page after page has been written as to when and where the first vaults were used in Romanesque edifices, but it matters not to a practical architect so long as he is familiar with the vaults used from the 11th to the 13th century. History tells us that the vault was known to the Egyptians, the Assyrians, the Greeks, the Etruscans and the Romans. The cylindrical or barrel vault is the simplest, the most ancient, and was used at Rome from the time of the Tarquins. The conical vault was used in Greece, before the time of Homer, in the tombs and treasuries at Mycenia. We also find the groined vault, which is the intersection of two cylindrical vaults at right angles, used by the Romans in the Baths of Titus and Caracalla at the beginning of the 3rd century. The Baths of Caracalla were the last expression of Roman art when it arrived at its highest development, and were an inspiration to many of the early Christian architects.

The Greeks also knew of the dome constructed of horizontal layers in corbels, the true dome being perfectly developed later in the Pantheon at Rome.

The Basilicas were at first ceiled and roofed with wood, but, as history tells us, they were constantly being burned, thus destroying the walls and the Christian altars. They were either set on fire by the torches of the processions in the churches, or by lightning.

The Christians gradually became aware of the need to preserve the holy relics and Christian altars from these oft-recurring fires, and of a love for something novel and durable which was in keeping with the new born world, and they gradually developed the system of vaulting until we find it in its perfect form in the Gothic style. All attempts at vaulting were at first timidly made and did not at once come into use in the churches. First they used the old Roman system of vaulting, confining it in the beginning to the choir, apse and side aisles, including next the transept and finally the nave, which was not successfully accomplished until the close of the Romanesque period, or during the period of transition into the Gothic style. When it came to the nave the height and breadth were so great as to render the thrust of the vault especially dangerous. It was then necessary to reduce the width of the nave and strengthen the supporting walls and piers of the lower arcade. This was accomplished by increasing their size, thus enabling the walls to resist the thrust of the vault.

A very ingenious method of buttressing the barrel vault was employed in the abbey church of St. Savia. The nave was formed of two rows of cylindrical columns, these carrying the inside arch of the groined vault over the side aisles, which in turn supported the barrel vault of the central nave. The walls rise longitudinally above the haunches of the central vault, which tends to neutralize the thrust and support the roof. The cylindrical vault thus resting through its

entire length on the walls was found to be too heavy, and it was impossible to use the bays for lighting the interior. The groined vault, resting on four points of support, was then employed. A transverse rib was thrown across on the under surface of the vault from one engaged column or pier to another, to give a greater solidity to the vault. The next great step was the addition of side and diagonal ribs, each set supporting itself. By this system a frame work was obtained for the ceiling and this skeleton formed four spherical triangles which could easily be filled in with light material, thereby making a much lighter vault. The ribs could be made as heavy as desired, while the vaulting or filling could be light, as stated above, thus making the covering of larger areas possible. When once this system came into use it was necessary to buttress the points of support, which was done by lessening the width of the openings and increasing the thickness of the walls and piers. This gave a crowded appearance to the interior, the acoustic properties were bad, and lighting through such thick walls was practically impossible. Common sense called a halt. To oppose the thrust of the central vault in a certain measure half tunneled vaults were turned over the side aisles to the springing line of the central vault, the walls of the side aisles being buttressed on the exterior. It is quite probable that from this came the flying buttress. Up to the last few years of the period only the semi-circle had been employed, but a further development came in the use of the pointed arch. The groined vault had been

used mainly for covering square areas, the diagonal ribs being a semi-circle, but when the pointed arch came into use these diagonals could be either pointed or semi-circular in form, and a rectangular area could be vaulted by arches of the same radius, the diagonal rib having the same height at the apex as the arch spanning the greatest side.

A further development was made in the way of vaulting a square area by raising a dome over the middle square of the transept which appears outside in the form of an octagonal tower. The transmission from the square to the octagon was made by vault niches, that is, small arched pendentives in the four corners. The large apse and semi-circular niches were vaulted over with a half dome which was covered externally by a conical wooden roof.

In covering the outer aisle around the apse the groined vault was used, but this necessitated the stilting of the inner arches, or the use of segmental arches on the outside, to bring their crowns in the same horizontal plane. Neither of these looked well, but the former was preferable and most commonly employed.

The star vault was also conceived by the Romanesque architects, but more fully developed by those of the Gothic period. It is similar to the groined vault, except that two diverging arches spring from each angle of the bay instead of one, their ends intersecting the transverse and longitudinal ribs, thus forming a four pointed star on the plan.

All this being accomplished, the next step was to transfer the buttress from the interior to the exterior so as to clear from the interior the mass of masonry which was placed there by the Romanesque architects, placing it on the exterior in the form of a flying buttress.

General Mass of Exterior.

The exterior had at first a very heavy and massive appearance, becoming more majestic and refined until, at the close of the 12th century, we find it more harmonious, lighter and more delicate, as the transition period drew near. The horizontal lines, such as water tables, cornices, belt courses and friezes, diminished and gradually disappeared; while at the same time the vertical members, such as buttresses, pilasters, engaged columns and arcades, began to predominate and attract attention.

On the whole the general expression of the exterior was one of repose and satisfaction, although the windows were small in proportion to the size of the buildings, but the masses were well proportioned and treated. The principal facade of the Romanesque churches, and also those of the transept, were terminated by a gable whose inclination varied with the country and system of construction. The principal facade contained the main entrance and sometimes a porch. A round opening or bull's-eye window was also found in the gable, which served to light the nave and was the origin of the beautiful rose window of the Gothic style. A tower was nearly always attached to the church,

excepting in Italy, and it was composed of several stories of arcades or windows which were separated by string courses in various ways.

Slightly projecting pilasters were used to a considerable extent on the exteriors and were connected at each story by horizontal moulded string courses (Figs.14-15-16-25) or by rows of semi-circular arches supported by corbels of various forms (Figs.7-8-9) sometimes in the form of heads grotesquely treated (Figs.21-22-24). Sometimes half columns or pilasters, with capitals, were placed on the exterior wall and connected at the top by semi-circular arches forming blind arcades. The projecting pilaster strips supported by string courses were found mainly on the side walls, the arcades being found mostly on the facades and choir. The apse was generally covered externally by a conical or octagonal wooden roof.

A very nice feature is found in the way of open arcades or galleries formed in the frieze under the cornice and composed of detached columns connected by semi-circular arches. These galleries are not found all around the church, but in those places which are intended to be most highly ornamented, as the choir and transept when ending in a semi-circular or octagonal apse and in the octagonal over the intersection of the nave and transept. This feature is found mostly in upper Italy and along the Rhine in Germany.

The bays, which are formed by the pilaster strips or engaged columns, are pierced by semi-circular headed windows which are sometimes grouped in twos or threes, separated by small engaged columns.

Towers for the first time became an integral part of the church during the Romanesque period, but continued detached in Italy. It is thought by M. Viollet-le-Duc that the tower was at first a work of defense intended to protect the church from possible attack, but during this period we know of their being used as places to hang the bells for calling people from a distance to worship. Generally towers were square and were covered with pyramidal wooden roofs of different inclinations, varying with the country. Many different forms of towers are found in the Rhine districts of Germany, being sometimes round, as in the Worms cathedral; or octagonal, as in the Church of the Holy Apostles at Cologne; or square, changing to octagon, and then to round. In Germany the roofs covering the towers vary greatly.

Doorways.

The principal entrance was generally placed in the center of the west facade excepting in the double-ended churches, as in Germany. Owing to the very great thickness of the walls it was necessary to employ recessed doorways, placing tangent columns in the angles, the number increasing with the richness of the style.

The full semi-circular arch is always used in spanning the doorways and openings, its archivolt being ornamented by mouldings (Figs. 26 to 31 inclusive) and geometric trimmings. These doorways, therefore, give opportunity for the richest decoration. In the first part of the 11th century the arches were very simply treated, but became more and more ornamental as the style was developed. The semi-circular

space above the door was filled with a stone slab set flush with the inner surface of the wall and was called the tympanum. This space was nearly always ornamented with bas-reliefs of figures representing the patron saint of the church. The door was composed of heavy planks doweled together and sometimes covered with bronze panels and hung on large metal hinges in the form of scrolls.

Windows.

Window openings were usually semi-circular at the top and at first quite small, being only employed to allow the light to enter more easily. They became larger as the style was developed and were employed both on the inside and outside. We sometimes find small columns in the steps of the recessed jambs, as in the doorways, the arch mouldings springing from the capitals of these columns; or, where the columns are omitted, continuing down the sides stopping on the sill course. The windows are often grouped in twos or threes and separated by columns supporting the arches. In a later period when groups of threes were used the central one extended higher than the others.

The wheel window was a large circle placed over the front entrance way for the purpose of lighting the interior of the west end of the nave. They were at first simple bays, more or less ornamented, but towards the close of the 12th century they were divided into several parts, such as lobes, trilobes, quatrefoils, etc. We see that the Romanesque architects fully understood the decorative part

which the Gothic architects developed in the beautiful rose window. The windows were sometimes at first left entirely open, but later they were filled with circular or diamond-shaped glass leaded together and stayed with wrought iron bars. In a few cases, in the west, we find the openings filled with designs of intersecting circles in perforated stone.

Cornices.

When it came to the cornice the Romanesque architects broke away from the classical traditions, thinking the entablature was not necessary for each succession of orders, but they used a single entablature at the upper part of the building, employing only a plain belt course to separate the lower orders. It was this custom of suppressing the horizontal and accenting the vertical lines which gave such a powerful influence to the Gothic style.

The cornice was at first quite simple, being only a plain moulding (Figs.18-19-20), but to add to the effect an arched frieze or a row of corbels supporting a projecting table was employed. The arched frieze consisted of a row of semi-circular arches, arranged one after the other and connected continuously (Figs.7-8-9), receiving the greatest variety of treatment and refinement. The ends of each arch terminated in rectangular projections, or the single arches rested on a corbel of alternating designs. These arches were often formed of richly shaped mouldings. Sometimes there was added to each arched frieze another frieze (Figs.10-11-12-13) or broad hori-

zontal bands of square projections and hollows arranged like a checker-board; or, a band of scale-like ornaments; or, oftener, a zigzag band.

The Romanesque cornice is generally composed of a row of stone corbels supporting a projecting table (Figs.17-21-22-23). According to Viollet-le-Duc the sculptors of the 10th, 11th and 12th centuries understood that the corbel was the most proper place for displaying sculpture. These corbels were sometimes carved into heads grotesquely treated. Corbels were also employed to relieve the lintels of the doors. We also find a heavy projecting corbel (Fig.70) on which a column rests to support an arch.

In upper Italy and along the Rhine in Germany we frequently see an arcade gallery introduced instead of the corbel tables of the frieze. These galleries consist of small detached shafts connected by arches which make a dark shadow under the cornice and afford a pleasing effect. In Italy these arched friezes extend parallel to the inclined cornice of the gable, but are not always detached arcades.

The pier is employed to separate the aisles and support the vaults and roof. These piers exhibit a great variety of form. At first they were perfectly square and plain (Fig.49). Their angles were then chamfered off (Fig.50), becoming rectangular indentations ending in grooves a little distance from the top and base (Fig.81) or in a small three-quarter column inserted in the rectangular

groove (Fig.70). Half columns were sometimes attached to each face of the square pier (Fig.51), the square corners again receiving a square recess (Fig.53). A still more beautiful arrangement is where a small half column is introduced in place of the center projection (Fig.54). In this way the whole pier, instead of being plain in form, becomes moulded. The large column on the face of the pier towards the nave supports the transverse ribs of the vault, while the smaller shafts at the angles support the groin ribs.

Hand in hand with the development of the pier came that of the ribs of the vault, being at first perfectly plain, then grooved out and in at the angles. Three-quarter rounds were inserted which appeared to spring from the abacus of the column of the pier. (Plate 4 illustrates the different sections of the ribs.) In this connection we also find a wall pier or pilaster which is not isolated, but built into the wall, likewise serving as a support.

Column Shafts.

The Romanesque architects broke away from the proportions established by the Roman architects and proportioned their columns to suit the needs of their new construction. The proportions were more slender than those of the classical style, there being no fixed relation between the length and diameter of the shaft. The columns were usually built of small blocks of stone, rarely of drums or monoliths. The shaft was circular in section, never diminished and rarely fluted. The shafts were usually plain, but were sometimes

decorated in various ways, such as twisted rope mouldings, chevron or zigzag ornaments, or lozenge shaped panels (Figs.112,113-114-115-116). In order to avoid the heavy appearance of the column when required to support a great weight, clustered columns were employed which presented a much lighter appearance. We also find the middle of the shaft relieved by an annular band or moulding, especially when several columns are grouped together.

Capitals.

The capitals of the Romanesque period are quite varied. In the early times of Christian architecture the art of sculpture had declined and the capitals of the ancient heathen temples were borrowed, or new capitals were carved in rude imitation of the antique. After some time the Christians began to invent capitals, the first of any importance being the cubic or cushion (Figs.73-74-75-80). If we conceive of the lower corners of a cube being more or less rounded off so that each of its sides presents a semicircular form, we have the cushion capital (Figs.75-80-91). Along with this was introduced the bell-shaped capital (Figs.87-89), and towards the close of the 12th century a new but finer and richer transformation of the ancient capital occurs. The cushion and bell-shaped capitals, however, were used to the close of the Romanesque period. Another form is the scalloped capital (Figs.73-74) which was used in England more than elsewhere and appeared like a series of cushion capitals placed side by side. It was employed mostly for the capitals of clustered columns

and massive piers.

The capital really consists of two parts, the upper or square portion called the abacus, and the lower portion or bell. The necking is generally omitted in the Romanesque capitals, there being just a small ovolo or torus separating the shaft from the capital.

The ornamentation was at first similar to the Roman, Corinthian and Byzantine capitals (Figs.82-85). During the 12th century antique plant forms were introduced (Figs.83-84); also patterns of plaited ribbon work (Fig.87) and grotesquely treated animal forms (Fig.90). Towards the end of the 12th century antique forms were again imitated (Fig.86). In cases where they predominate the Corinthian style is often called to mind, although no exact imitations were intended. During the late period of the Romanesque style the bell-shaped capital is covered with foliage of a more natural and graceful character, the stems being covered with ornaments in imitation of jewels, pearls and small figures (Figs.77-83). The late Romanesque architects used many varieties of capitals, but still a certain similarity prevailed which was quite pleasing.

Often when two or more columns were placed side by side their capitals were cut out of one block of stone (Figs.78-79) the ornament continuing from one to another, or united by grotesques.

It would be well to note that the nature of the material had a considerable influence on the ornamentation of the capitals. Where the stone was fine and compact the carved work was more finely

treated, but where the stone was soft and coarse grained the carving was accordingly less finely treated.

The Abacus.

The abacus was at first quite simple, being merely a square slab or block with its lower edges beveled off (Fig.47b), but later decorated with mouldings, such as the inverted attic base (Figs.47a, c,d,e). One of the chief distinctions in the late Romanesque capitals is in the peculiar form of the abacus. It is much higher and less projecting than in the classical style, its mouldings consisting of alternate fillets and cavettos, or vertical side faces with decorations (Fig.108). When a column is connected to a pier the moulded abacus is continued around the pier.

Base.

The base of the column is mainly an imitation of the classic base resting on a square base or plinth (Figs.55-60-61-62). It consisted usually of a small upper torus and a larger lower one separated by fillets and a scotia. In order to render the transition from the square corners of the base to the round part of the torus the corners were rounded off and a claw-like ornament, head of an animal, or a leaf concealed the angle of the plinth (Figs.69-72a,b,c). This is a truly characteristic feature of the Romanesque style, although not always employed. Wherever we find the corners of the base rounded off it must be regarded as work of the early period, for it was only in the beginning of the 12th century that the spur ornament

first positively appeared. Sometimes the torus projects beyond the plinth (Fig.68) and the corners are left square, entirely omitting the spur ornament. The profile of the base is sometimes quite flat (Fig.65) and at other times nearly vertical, the torus and fillets being very simple and projecting scarcely beyond the line of the shaft of the column (Figs.63-64-66-67).

Mouldings, Ornamentation and Sculpture.

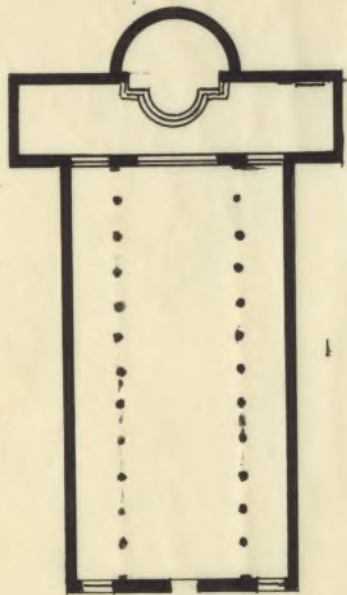
Romanesque ornamentation was in principal only a new interpretation of the Byzantine ornamentation. This origin is perfectly established, even by examining a few forms of capitals, decorated shafts, and the manner of employing alternating courses of materials of different colors. From the 12th century the architects depended upon the arrangement of materials as a means of decoration, similar to the Byzantine architects. In certain countries, as in Auvergne, materials of different colors, such as the brown and volcanic stones, composed large geometric mosaics on the faces of the walls. This checkered work was also applied to the ornamentation of certain other portions, as the tympanums, gables and string courses, in the form of lozenges, stars, polygons, equilateral triangles, serrate patterns and geometrically divided circles. This ornamentation is mainly found in countries where materials of suitable colors are easily obtained. Scale-like patterns are also found to a great extent in Romanesque architecture, as in the tiles of the roofs, the copings of the buttresses and the spires of the towers.

In southern France the roofs are constructed in patterns of stones and plain and enameled terra cotta of different colors.

The mouldings of the Romanesque style of architecture were generally composed of large hollows and rounds decorated by geometrical patterns, but rarely by plant forms. The ornamentation of the mouldings is for the most part simple and rectilinear, and calculated to produce a regular alteration of light and shade. The serrate ornament (Fig.102) is used to a great extent. The nail-head ornament (Fig.99) is used to decorate the bands of an arch, being placed one after the other. The fillet moulding (Fig.92) is obtained by cutting out a part of a round or square moulding at regular intervals. Sometimes two or more adjacent mouldings are treated in the same manner. The cable ornament (Fig.103) is similar to a rope and is used in the arch mouldings. The zig-zag ornament, angular, rectangular and triangular, is formed of a semi-circular moulding making angles with the direction in which the surface to be decorated extends.(Figs.95-96-98). The disc ornament is a circular figure, either projecting or sunken into the band. The button ornament is a small spherical bud (Fig.117) partly opened on the head and used in sunken panels (Fig. 118). Lozenge ornaments are usually formed on a flat surface by half rounds intersecting so as to form a panel (Fig.105) with opposite angles equal, in pairs. The chess-board ornament is formed by decorating a surface with small squares of stones of different colors arranged in checker-board pattern. Sometimes the courses are

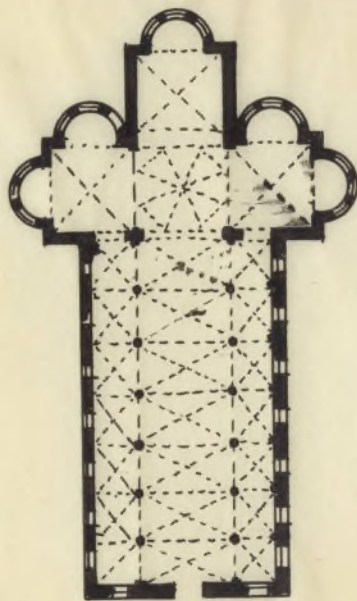
arranged horizontally (Fig.97) and sometimes diagonally. The star ornament (Fig.93) is a series of star-like forms produced by sinking inclined planes into a flat surface.

The sculptured ornament was very beautiful in the late period, there being greater liberty left to the sculptor, which resulted in a flood of strange compositions where strange animals and human figures interlaced with the foliage. After the Byzantine and even after the Saxon influence they commenced to imitate the floral ornament which soon resulted in its complete development. The fern leaf was considerably used in flowing ornament, the recurring of its leaves and the adding of bunches of grapes giving it decorative forms. From this modest flora the Romanesque artists composed some magnificent foliage which harmonized well with the recurring of the leaves, thereby producing beautiful shadows.

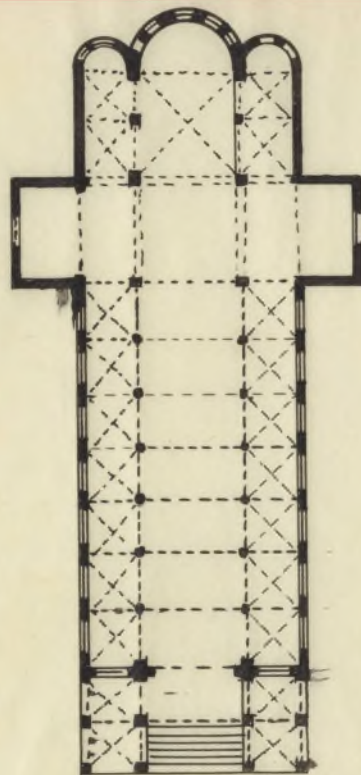


1.

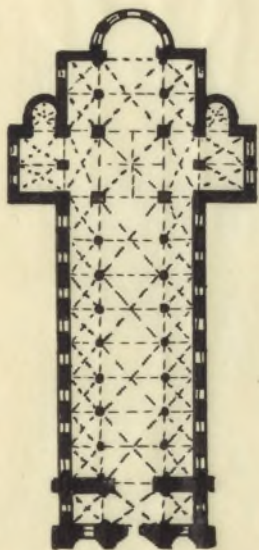
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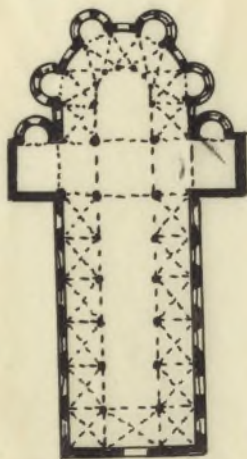
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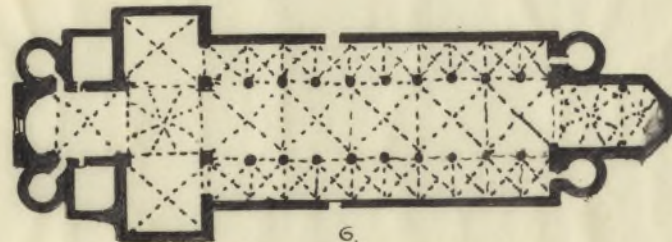
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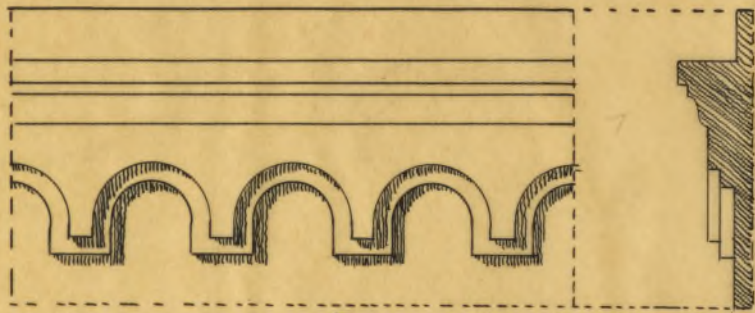
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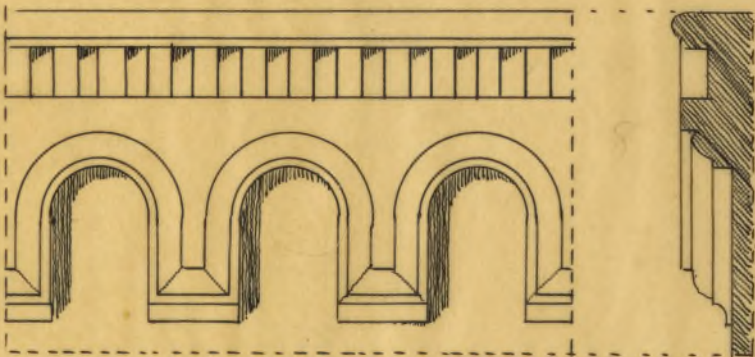
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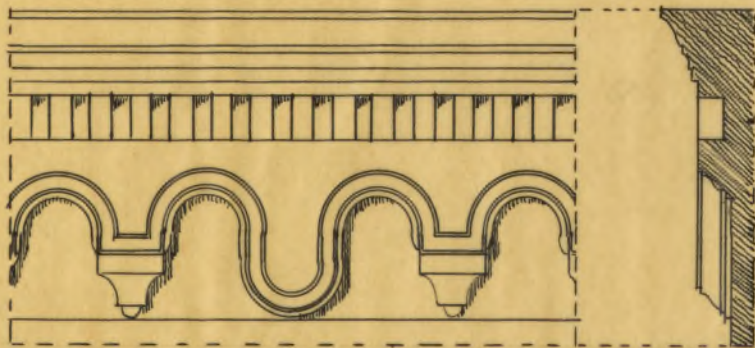
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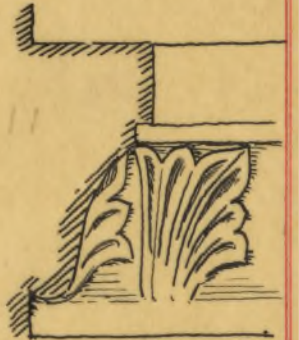
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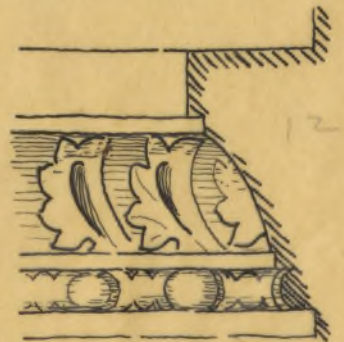
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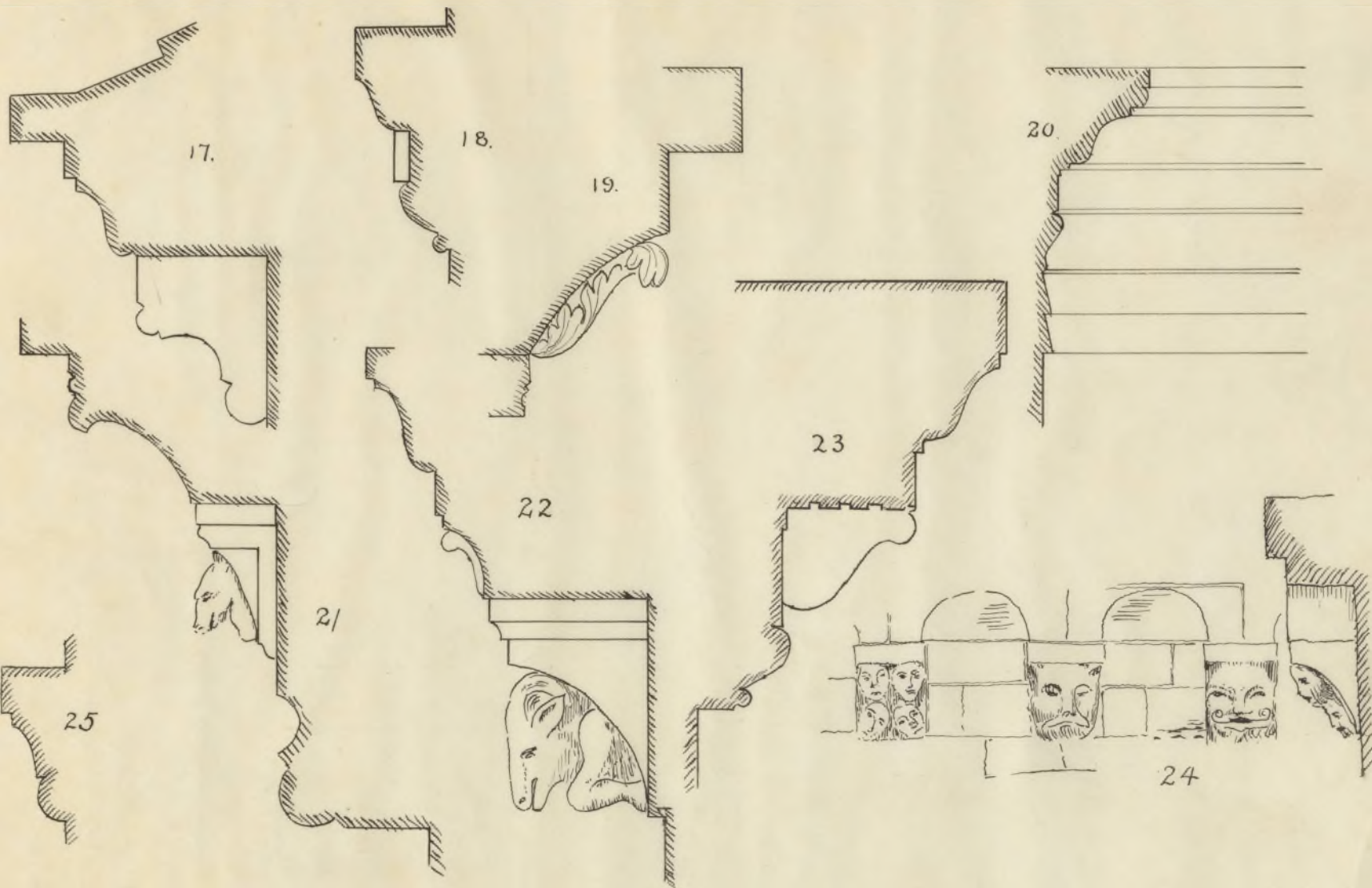
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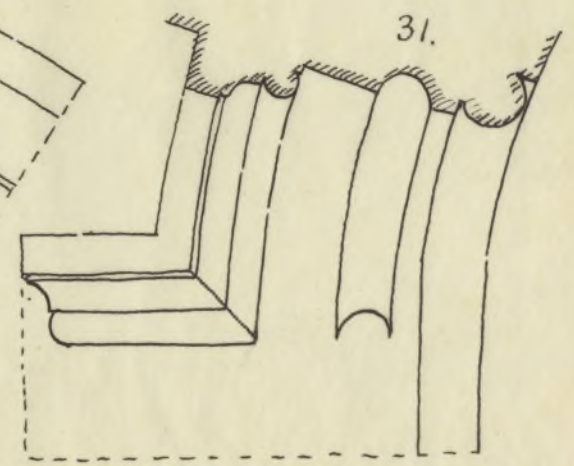
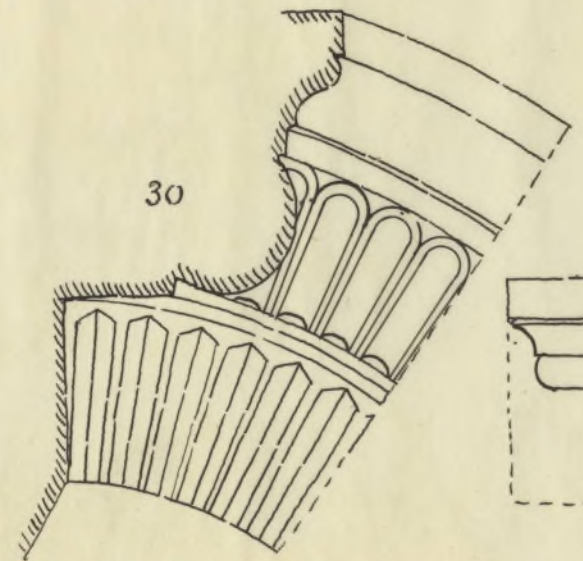
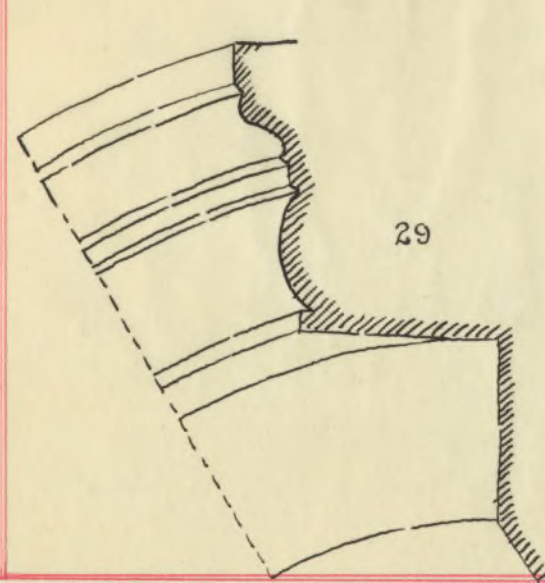
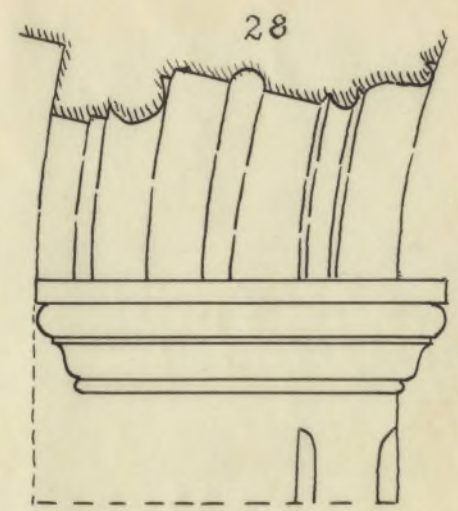
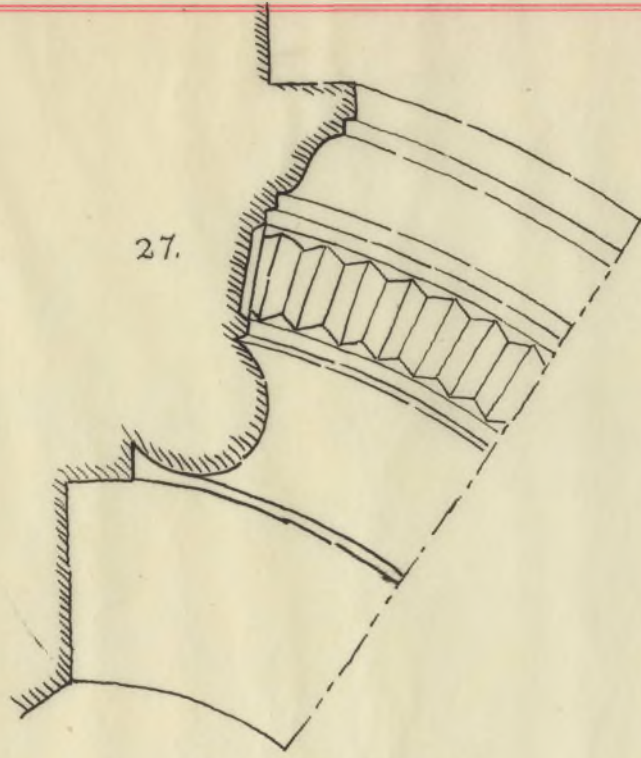
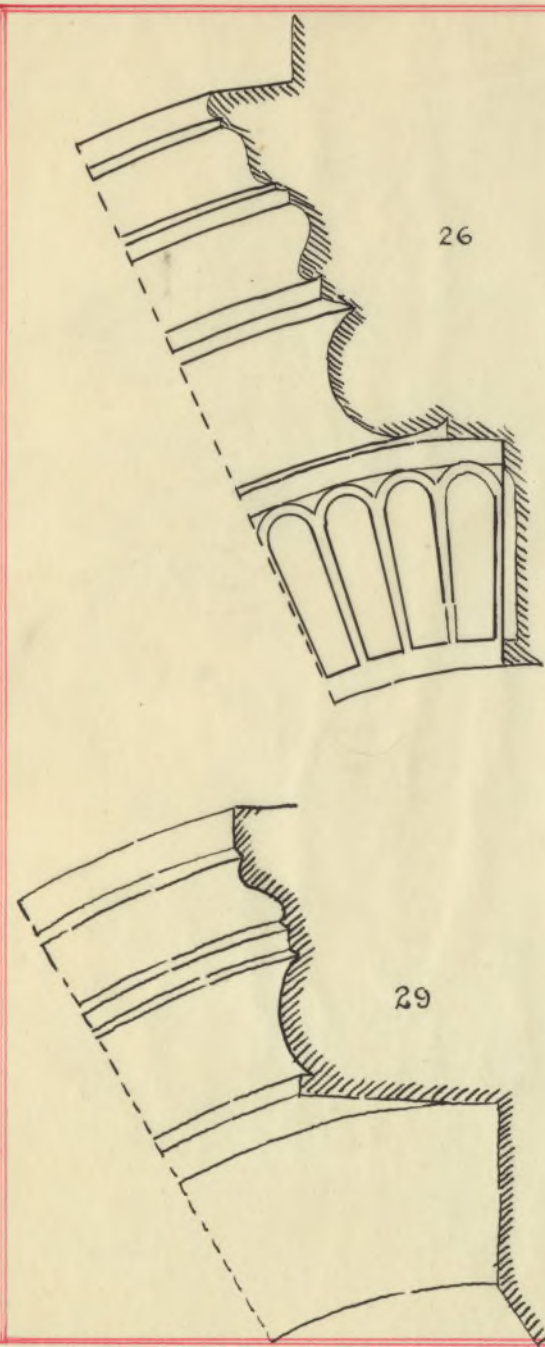


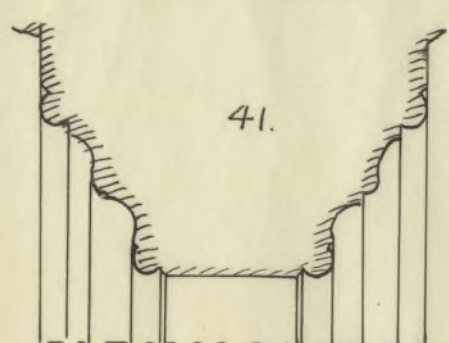
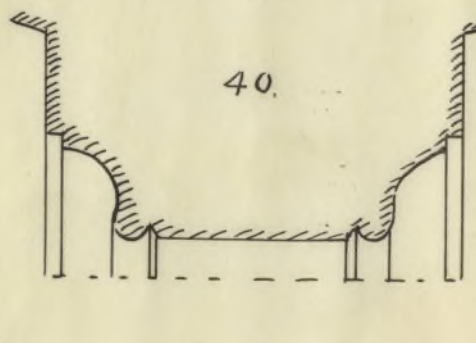
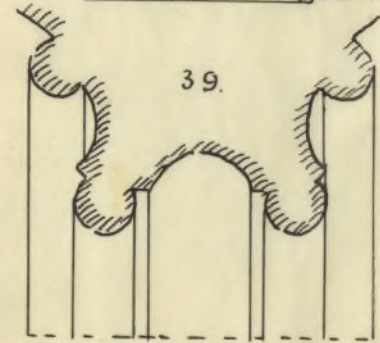
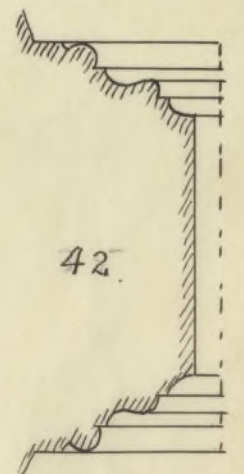
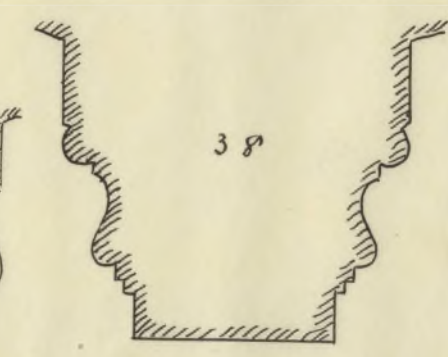
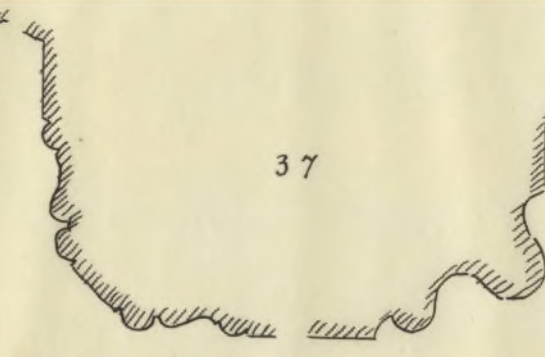
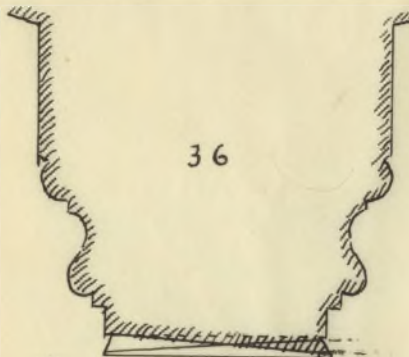
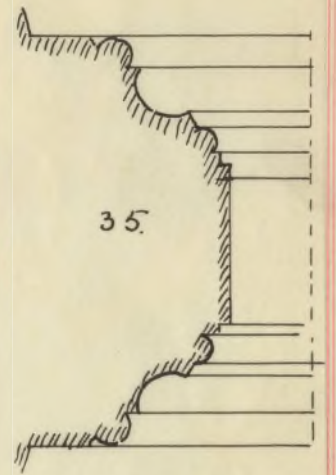
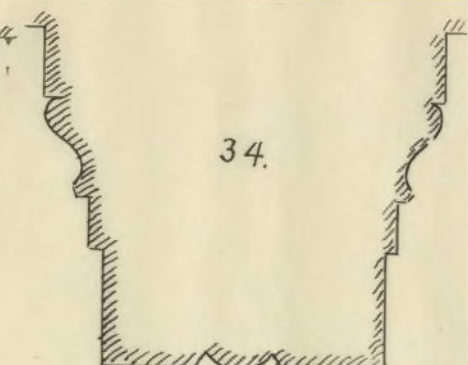
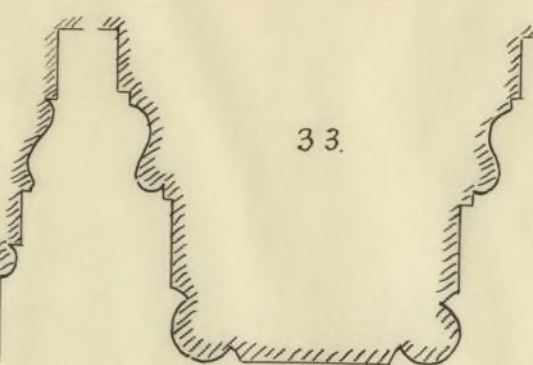
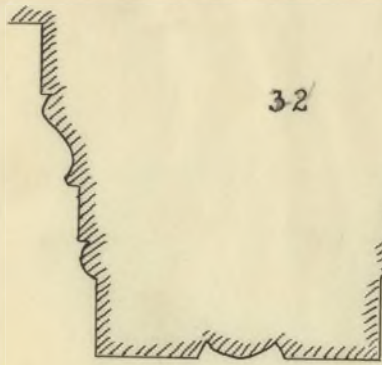
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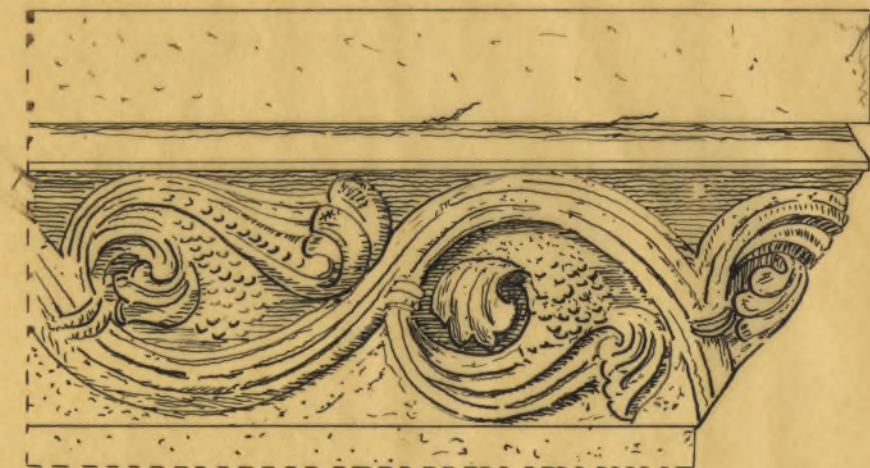


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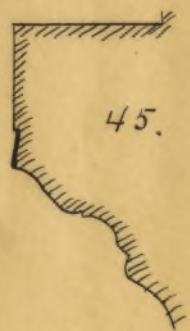




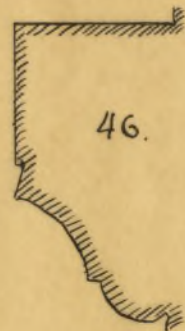




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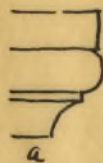
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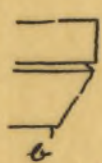
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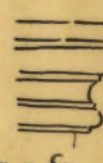
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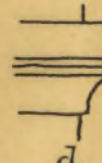
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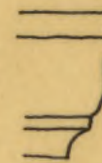
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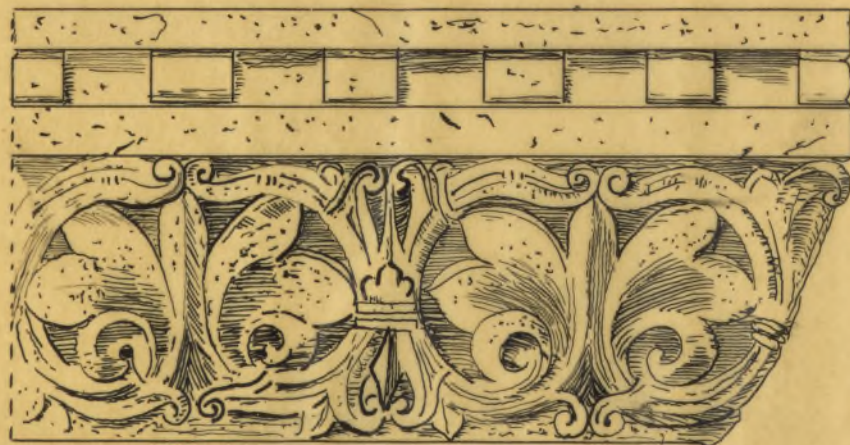


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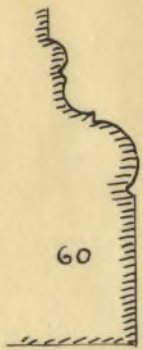
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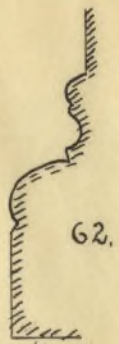
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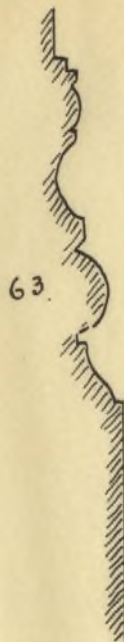
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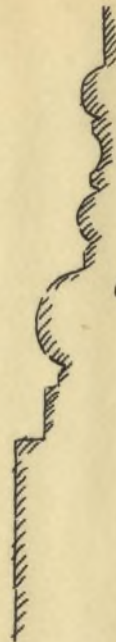
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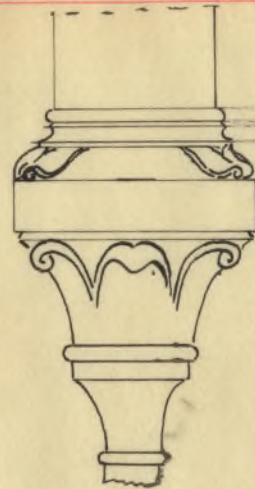
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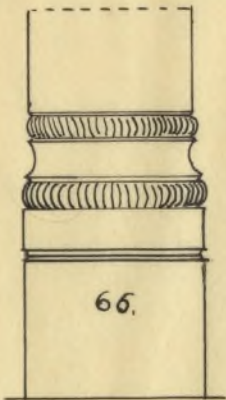
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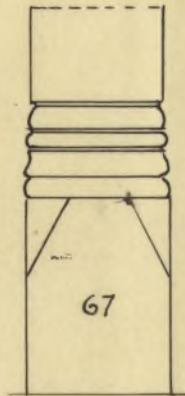
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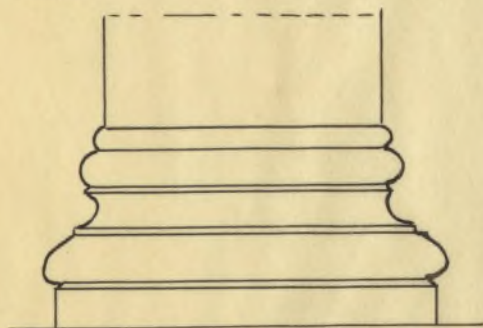
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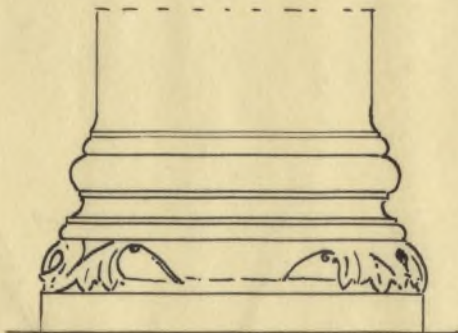
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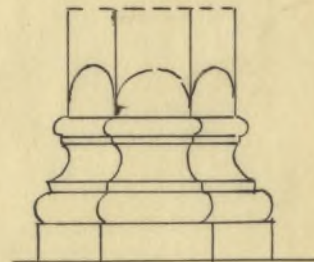
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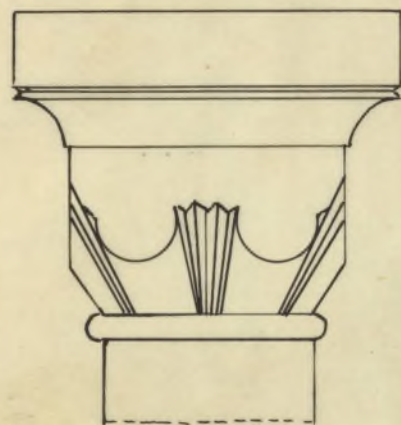


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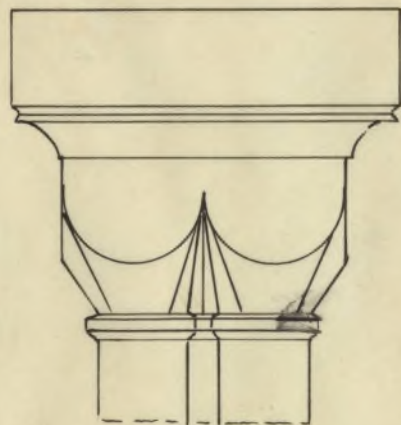


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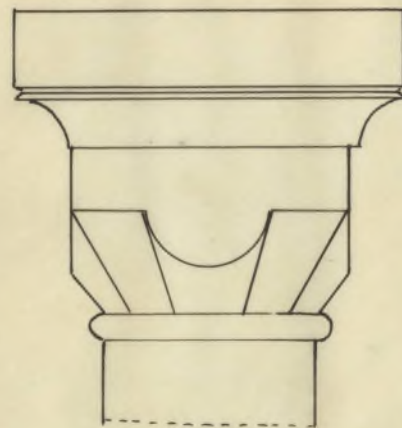
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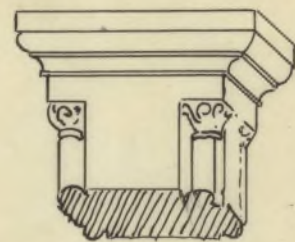
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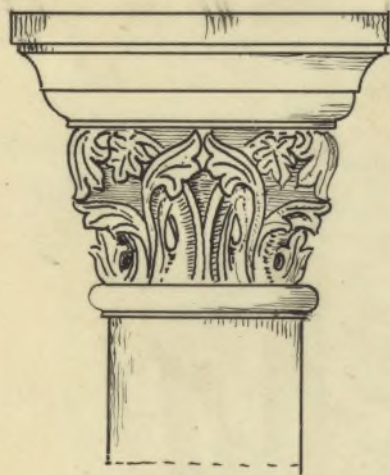
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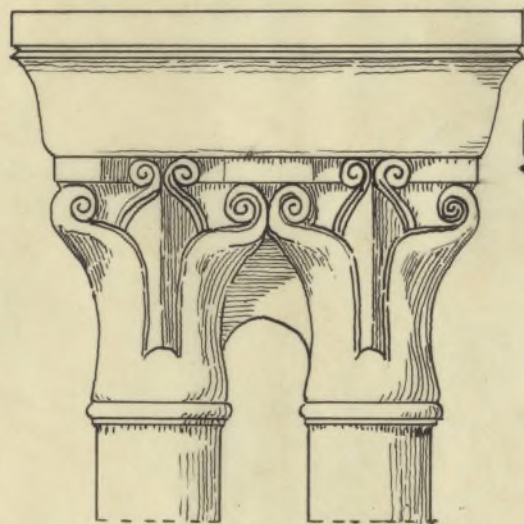
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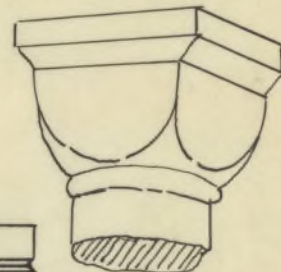
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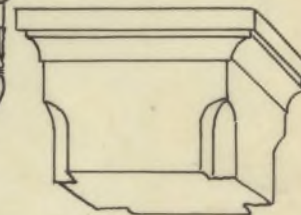
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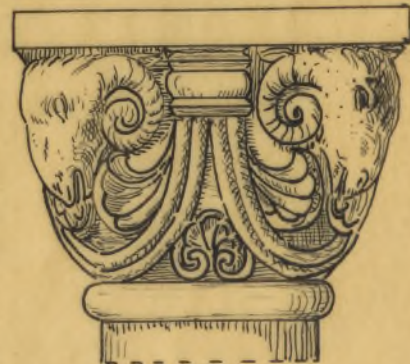
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