THE AMERICAN ARCHITECT AND BUILDING NEWS.

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Entered at the Post-Office at Boston as second-class matter.

MAY 28, 1898.

CONTENTS

SUMMARY: —

The Decoration of School-rooms with Works of Art. — The Cornell Travelling-Scholarship in Architecture. — Post-Graduate Courses in Architecture. — Special Course in Architecture at Cornell. — An Illustration of the Efficiency of Automatic Sprinklers. — Absence of Automatic Sprinklers and unprotected Metal-work at the Washburn & Moen Fire. — Annual Meeting of the Archæological Institute of America. — Incorporation of the Municipal Art Society of New York. — Building Accident in Harlem, New York. — The Bond required on Works of Art imported only for Exhibition. 65

THE EVOLUTION OF DECORATIVE MOTIVES. — V. 67

PRESERVATION OF FRENCH HISTORICAL MONUMENTS. 68

BOOKS AND PAPERS. 69

SOCIETIES. 70

ILLUSTRATIONS: —

House of Frederic B. Pratt, Esq., 229 Clinton Ave., Brooklyn, N. Y. — Plan of House of Frederic B. Pratt, Esq., Brooklyn, N. Y. — Upper Staircase Hall in House of F. B. Pratt, Esq., Brooklyn, N. Y. — Bronze Door designed for the Palais de Justice, Brussels, Belgium. — School-house, Southbridge, Mass. — Trinity Church, Torrington, Conn.

Greek Church, Paris, France. — Interior of the Greek Church, Paris, France.

Additional: Lower Staircase Hall: House of F. B. Pratt, Esq., Brooklyn, N. Y. — Detail of the Same Staircase. — Business Premises and Offices, Reading, Eng. — Jessop's Building, Nottingham, Eng. 71

COMMUNICATIONS: —

English *vs.* American Bond. — Imperfectly stated Receipts. . 71

NOTES AND CLIPPINGS. 72

IT is interesting to observe the steady progress of the movement for decorating school-rooms, which has been the logical consequence of the modern revolution in the treatment of the young. It is not very many years since anything was thought good enough for children. Rough benches, bad air, foul water, steep stairs, and the cheapest location available, were considered suitable for school purposes. Even in the files of this journal can be found an announcement of the taking of an abandoned cemetery, in a Massachusetts town, for a school lot; and all books on hygiene of the last quarter-century refer to "school-room air" as the type of the worst variety of atmosphere. It is hardly necessary to say how great has been the change in these respects. In most of our older States, a generous supply of pure air to school-rooms is made compulsory; inspectors are provided to see that the law is complied with, and a school in which the ventilation is inefficient may be summarily closed. The purity of school water-supply is not so strictly looked after, but public opinion would no longer tolerate the use of well-water for city schools, which was not unusual two decades ago; and school furniture is now comparatively comfortable for children. The consequence of these reforms is already seen in the superior health and strength of young Americans, and it is not strange that people who understand the very great influence of outside surroundings on the minds of children have thought of providing for their æsthetic cultivation by surrounding them with objects of art. Many school-rooms are now ornamented with photographs of buildings or pictures, and it is becoming rather common for the architects of school-buildings to arrange places where casts of statuary can be put, and for casts to be furnished, at the expense of benevolent people, or by subscription among alumni of the school. One public-school building that we know has a full-size cast of Donatello's "Saint-George," procured in this way, in a conspicuous position in its assembly-hall. It would be hard to find a better subject for such a purpose, and the influence of the beautiful statue upon the seven hundred children who see it every day must be incalculable. In the same room, four or five Della Robbia casts are hung on the walls, and places are ready for other works, which, it is to be hoped, may be selected with as much discretion as those already there. In fact, judicious selection is likely soon to be an important consideration in these matters, and architects will probably be called upon for the advice which they are, as a rule, well qualified to give. The taste of school-committees and superintendents is, in such cases, apt to be warped in a literary direction, and busts of Shakespeare, or Whittier, or Longfellow are likely, unless watch is kept, to be chosen instead of works of real æsthetic value.

THE scheme for the Cornell University Travelling-Scholarship in Architecture turns out to be a very interesting one.

The scholarship is, for the present, to be awarded only every second year, but it is for two years, the income being a thousand dollars a year. Instead of spending all his time in Europe, the holder is required to begin his work with a full academic year, of eight months, devoted to advanced design in the Architectural Department at the University. At the close of the academic year, he is sent to Europe, to spend four months in sketching and making measured drawings, and, returning in the autumn, he must devote another academic year to advanced design, and a second four months' vacation to drawing in Europe. If he is able to do so from his own resources, he is advised to extend this last period. In laying out this novel course, the Faculty of the College of Architecture have had in mind the observations familiar to the profession,— that the time of travelling-students in Europe is far too apt to be frittered away in wandering about, making pretty sketches, with, perhaps, measured drawings of indifferent buildings, which do little to prepare them for what the Faculty declares to be the proper goal of the student of architecture, that is, composition. On the other hand, the men who know, and wish to avoid, the distractions of aimless study, have, as a rule, no resource but to enter the Paris School of Fine-Arts, and in this case, after passing, usually with some delay, the examinations, they find themselves obliged to spend two years in solving problems in design not more advanced than the work of the Senior year at the University. It is true that the artistic atmosphere of the *ateliers*, each with its candidates for the Prize of Rome, who help the younger men with suggestions, in return for the enthusiastic assistance which they receive from them in rendering their drawings, is of great value to students, particularly to those from America, where such an atmosphere is practically unknown; but the Cornell Faculty hope that their prize scholars will, by their advanced work, excite the interest of the younger members of the Department, and will be useful to them in return; so that something of the advantages of artistic sympathy and ambition may be secured for the whole Department, as well as for the prize scholars, while the latter will be able to continue their systematic study of composition, without returning to the rudimentary problems of the first two years at Paris; and the four best months of the year will still be available for definite and well-directed research in Europe.

THE profession will take great interest in the working of this plan. Already, something is to be seen in the great architectural schools in this country of the advantage of keeping accomplished students at work by the side of the beginners. At the Massachusetts Institute of Technology an advanced, or post-graduate, course was established a few years ago, and has proved very useful to the whole Department; and at Columbia and the other schools something of the kind exists; while, in all, the annual scholarship competitions, which are often worked out in the Department rooms, excite great interest among the younger students, who are often allowed, much to their satisfaction, to help in rendering the drawings. All this must tend, surely, if slowly, to the creation of an artistic element in architectural education, and an artistic atmosphere about architectural practice, which will be of great value.

IN addition to the regular four-year course in Architecture at Cornell University, it has been decided to establish, beginning with the next academic year, a two-year special course, open to persons not less than twenty-one years of age, who can show a satisfactory degree of skill in projections and freehand drawing, and a general knowledge of the Greek and Roman orders of architecture, and who have had at least three years' experience in some good office, or have in some other way

gained what the Faculty may regard as an equivalent experience. The special course includes two years of practice in design, together with the study of the history of architecture, descriptive geometry, stereotomy, shades and shadows and perspective, and drawing from the antique and modelling. Students who pass through this course, as well as graduates in the regular course, are entitled to participate in the competitions for the travelling-scholarships.

A FIRE occurred in a factory in Baltimore a few days ago, which shows in a striking manner the efficiency of automatic sprinklers. The building injured was a one-story structure, used for enamelling metal-ware. The enamelling-ovens were fed with oil as fuel, and were heated only at night, the goods being removed, and fresh ones put in, during the daytime; but a force of men was always on duty during the night. A valve on one of the oil-pipes leaked, and a pan was put under it to catch the drippings. Probably, this pan was overturned, for the oil took fire, and blazed up to the roof, which was framed with wooden trusses, and covered with boards. About three weeks previously automatic sprinklers had been put in, under the roof, by order of the mill-insurance company, and twenty-three of the sprinklers opened. A space directly over the fire, in which were six sprinklers, was burned through, and a door and a window-frame in the wall near by were totally destroyed, but no further effect was produced by the fire, the roof not being even scorched outside of the area covered by the six sprinklers. The mill hands soon had hose at work, and when the city fire-engines arrived, a few minutes after the fire was discovered, there was nothing for them to do. The total loss, including that caused by water, was less than two hundred dollars.

WHERE is something startling in the idea that a building with brick walls, steel columns, steel floor-beams and steel window-frames, used only for manufacturing metal springs, could be almost completely destroyed by a conflagration in the space of an hour or so, at a time, too, when there was no fire in the building, and there had been none for more than sixteen hours; yet that is the story of the burning of the Washburn & Moen spring factory at Worcester, which took place some time ago. As buildings of brick and iron do not commonly take fire spontaneously, it is worth while to recall the circumstances of this case, which we find described in some stray insurance reports. Although the structural portions of the building were mostly incombustible, it was furnished with a flat roof of plank, supported by heavy timbers, which, in turn, rested on built-up steel columns; and a portion of the first floor, with all the second floor, was framed with plank, laid on the steel beams, and covered with a hardwood upper floor. The steel beams and columns were unprotected, and to this fact seems to have been mainly due the rapid destruction of the building. It appears that the work done in the factory consisted principally in the japanning, tempering and annealing of springs. The tempering and annealing were done by dipping the springs in hot fish-oil, and petroleum was used as fuel for the tempering and japanning ovens. The petroleum was not stored in the building, but was kept in tanks outside, and brought in pipes to the ovens by means of pumps, so arranged that when the pumps stopped the oil would run back to the tanks. The fish-oil was kept in tanks in the building during the week, but was removed on Saturday afternoons. The fire occurred about nine o'clock on Sunday morning. It seems that some repairs were being made on the pipes which conducted petroleum into the furnaces under the ovens. When the pipes were disconnected, a little oil left in them ran down into the furnaces, and, although these were extinguished, and the pumps stopped, more than sixteen hours before, there was still heat enough in them to vaporize the petroleum, while, in all probability, some particles of incandescent carbon remaining in the corners set the vapor on fire. The flames from the burning vapor reached the ceiling, which is said to have been covered with a gummy deposit, apparently derived from the condensation of vaporized fish-oil, and ran along it, while other flames ran along the floor, which was also oily, and perhaps along the brick walls, which were more or less saturated with oil. In all these ways the fire, notwithstanding the division of the ceiling into eight-foot bays by steel beams fifteen inches deep, was carried almost in a moment through the whole length of the building. The plank floor was soon burned through, and the steel columns supporting the roof then collapsed, letting the roof fall, and piling an immense mass of additional fuel directly upon the flames. Under these circumstances, it was not long before the steel beams of the second floor, and the columns supporting them, twisted and gave way, and the building was soon a wreck. It seems altogether likely that if the metal columns and beams had been protected the building could have been saved, for the heavy roof-timbers were only charred to the depth of an inch or so, and the oil would give a short-lived fire, although a fierce one.

THE Council of the Archæological Institute of America held its fourteenth annual meeting in New York last Saturday, and definite arrangements were made for the long-delayed publication of the volume of plates, illustrating the work of the Assos Expedition, the first, and one of the most successful, of the scientific undertakings of the Institute, which were prepared, after the return of the expedition, by Mr. Francis H. Bacon. It was also announced that the results of the excavations made by the Athens School on the site of the Heræum at Argos were to be published, in two volumes of text, and one of plates, under the care of Dr. Waldstein and Dr. J. C. Hoppin.

THE Municipal Art Society of New York, after five years of existence as a voluntary association, has been incorporated, and, under its new and official constitution, is enabled to institute and control competitions for works of art to adorn the city, for the execution of which the Society itself does not pay. In pursuance of these new powers, it proposes to invite at once a competition for designs for a city street-lamp, awarding prizes from its own funds, but leaving the execution of the successful design to the municipal street-lighting department, which has expressed its interest in the matter. This competition is to be followed by others, for park benches, drinking fountains and so on; and it is hoped that a great deal of good may be accomplished in this way.

MR. BRADY, the New York Commissioner of Buildings, has made a characteristically straightforward and business-like report on the fall of two buildings in Harlem, by which five men were killed. In his judgment, the catastrophe was not due to the bad quality of the brickwork of the walls, but to the fact that the stone foundation-walls of a portion of the buildings were laid on a mass of bouiders and filling, instead of solid ground, and that they were built with inferior mortar, and not properly bonded or bedded. He mentions that certain bricklayers who were, or had been, employed in the buildings, together with the business agent of the Bricklayers' Union, who visited them just before the accident, agreed in saying that the brickwork was of inferior material, and badly executed, but he does not regard this as the original cause of the collapse. As a consequence, the inspector in charge of the district was dismissed from the service, and placed under arrest, together with the owner and the contractors for both superstructure and foundation.

A REVENUE decision of much importance to persons interested in the fine-arts has just been announced. Under the law, works of art can be imported for permanent exhibition in public galleries, free of duty, if a bond is given to secure the Treasury against their sale or removal from the gallery. Although the law does not expressly require that the bond shall have sureties, it has been customary to require them. Recently, however, Mr. John W. Beatty, the Director of the Carnegie Art Galleries in Pittsburgh, appealed to the Treasury authorities for a different interpretation of the law, pointing out that it was practically impossible to induce a private individual to bind his estate, and his heirs and assigns after him forever, as security for such a bond, and that, even supposing that a surety or trust company would assume the guaranty, the annual charge for the service would constitute a perpetual burden on the funds of the institution, which would increase as its collections were enlarged. The force of these observations was evident, and the Assistant Secretary of the Treasury, acting on the advice of the Solicitor of the Treasury, decided that, as the law did not expressly require sureties, and "the safety of the Treasury would be in nowise impaired" if the bond of the Carnegie Institute were given without sureties, he could exercise his discretion in accepting such a bond.

THE EVOLUTION OF DECORATIVE MOTIVES.[1] — V.

THE EGYPTIAN LOTUS AND EGG-AND-DART.— II.

Fig. 59. Voluted Lotus from Karnak.

THE tendency illustrated in these last few figures is towards the emphasizing of the ovoid form which alternates with the lotus. In Figure 56 the designer has reversed the relative importance of the two elements of his design. A U-shaped line, the decorative echo of the two side-sepals which flank the bud, now encloses the bunch of grapes which has taken the bud's place, and the two together have become the chief elements in the design: the lotus crowded between them is quite subordinate. This is not a common treatment of the pattern; but it shows that in Egyptian art the first step had been taken towards the development of the egg-and-dart ornament out of the lotus-and-bud. Figures 57, 58 give additional examples of the purely decorative treatment of the spaces between the flowers. The first is a detail from an "ægis" of jewelry (a small fan-shaped amulet with an animal's head, and evidently copied from the breast-collars to which reference has already been made): the lotuses in the upper row are decoratively doubled one upon the other, — an unusual treatment, — and the spaces between them occupied by dots or circles. In the lower row a hardly recognizable bud and two dots occupy the space. In Figure 58, from a painting of a canopy-hanging, horizontal ovals fill the upper part of the space.

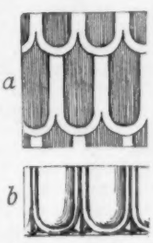


Fig. 60. Imbricated Patterns: *a* Enamelled Assyrian Tile from Khorsabad; *b* Persian Carved Ornament from Persepolis.

In the carved egg-and-dart ornament the tongue or dart is relatively inconspicuous and rests between or behind the adjacent "eggs." The first step towards this treatment is recognizable in certain carved three-leaved lotuses, like those on the well-known stele at Karnak (Fig. 59). Some writers see in this ovoid middle leaf a lotus-bud taking the place of the suppressed middle sepal, and certain details painted on campaniform capitals tend to confirm this view. The question is, however, unimportant for our study: the essential point is the appearance of the leaf, bud, or tongue, as if emerging from behind the two very prominent voluted side-sepals. This is a noticeable departure from the usual practice of showing the middle sepal overlapping the side-sepals, and in Egyptian ornament it appears to be wholly confined to lotuses with voluted side-leaves (See Fig. 61*b*), which the investigations of Clarke, Goodyear and others have shown to be at least one of the origins of the Ionic volute.

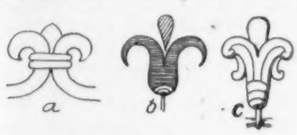


Fig. 61. Assyrian Linked Scrolls and Egyptian Voluted Lotuses: *a* from a Painted Tile; *b* Detail from Painting on Campaniform Capital of Rameseum; *c* Egyptian Jewelry.

These various forms and ideas passed through countless modifications in the art of the Mediterranean islands, of Greece and of Assyria and Asia Minor. In Assyrian metal-work and Persian carved detail an imbricated or scale ornament is common, which in some cases shows a narrow tongue between the scales (Fig. 60). It is open to question whether this scale ornament was derived from lotus-bands; it may have been, though I am quite inclined to associate it with the imbricated feather patterns shown on Egyptian monuments.[2] But the pointed tongues are of lotus origin, at least indirectly. Wherever the Assyrian artist linked two of his scroll-bands together he nested between them a point or nucleus for the palmette or flower that sprung from it (Fig. 61*a*). This seems to have been derived from Egyptian voluted lotuses (Fig. 61 *b*, *c*), which were familiar objects of Phœnician commerce and imitation, in the form of amulets and jewelry. The imbricated scale-ornament and the egg-and-dart pattern converge in Persian and Greek art, and survive

Fig. 62. From Roman Bronze Jar, Berlin Museum (after Kachel).

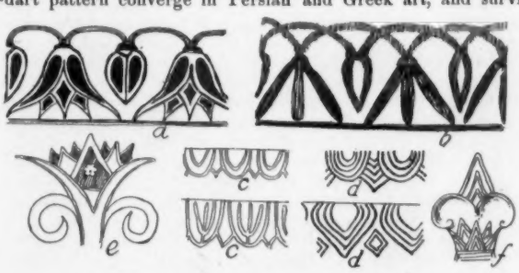


Fig. 63. Early Greek and Asiatic Lotus Forms.

even in Roman laurel-wreath carvings and in Roman metal-work, as in the example in Figure 62, from a bronze hanging jar in the Berlin Museum.

But the Greek egg-and-dart did not come from Assyrian or Persian imbricated scale-patterns, but through the islands and colonies of the Mediterranean and Ægean, and chiefly through the medium of pottery. The oldest is probably the Mycenæan, belonging to a culture partly antedating the Trojan War. Cyprus, Rhodes and Melos each produced pottery of types generally recognizable as peculiar to it alone; this pottery dates mostly between the eighth and sixth centuries, B. C. The lotus occurs with great frequency on this pottery in various forms, not, probably, because of any purposed symbolism but rather because Egyptian art was the supreme art which inspired all these nascent developments of design in the Mediterranean islands, and because the lotus was the most familiar form in Egyptian design. Figure 63 illustrates some of these early Asiatic and Greek lotus motives, transitional between the original Egyptian form and the derived motives of Greek art. The first (*a*) is from a Rhodian vase figured in Collignon ("*La Céramique Grecque*"), in which it will be observed that the middle sepal of the Egyptian trident-lotus is replaced by a petal, only two sepals being shown. This is a radical departure from the Egyptian tradition. The double curve of the outline of the flower is also alien to the Egyptian practice. At *b* is a band-pattern from a Cypriote vase in the Cesnola collection of the Metropolitan Museum at New York. Here the petals have disappeared, the bud has become a loop, the connecting stems interlace, and the whole treatment bears the impress of a crude but original art, feeling its way in new uses of familiar materials. At *e* and *f* are voluted lotuses, the first from a Cypriote painted vase, the second from an Assyrian ivory-carving, showing the central petal replacing the sepal of Egyptian art, and exaggerated into a preposterous magnitude; *c c* are primitive egg-and-dart motives from Phœnician ivories, *d d* are from early Greek Mediterranean pottery.

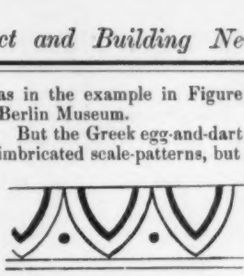


Fig. 64. Greek Vase-borders (repeated from Figure 8, No. 1153 of *American Architect*).

Fig. 65. Greek Vase-borders (repeated from Figure 9, No. 1153 of *American Architect*).

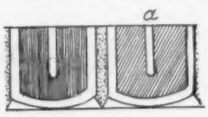


Fig. 66. Painted Greek Moulding (Hittorff "*Architecture Polychrome chez les Grecs*," Plate IX, Figure X).

The decorative intuition of the early Greek artists led them to a quick perception of the suitability of the lotus-and-bud combination either in its original or in its more simplified forms, for the decoration of the lips and bases or other spreading and convex forms of their pottery. In their hands its conventionalized version as a series of U's separated by tongues or dots was widely applied as a purely arbitrary decoration. Its relation to the lotus had completely disappeared. It no longer possessed symbolic significance, but was adopted for its intrinsic beauty and decorative value (Figs. 64, 65). From pottery it passed to the mouldings of terra-cotta on minor buildings and thence to those of stone and marble, where it was treated with brilliant colors — green, blue, red and gold. It was confined to convex mouldings, in accordance with an important principle first clearly recognized by the Greeks and universally observed by them — that a moulding is most effectively embellished by forms which repeat the profile (Figs. 66, 67).

Fig. 67. Painted Greek Moulding (after Hittorff).

Fig. 68. Egg-and-dart, from Erechtheum (repeated from Figure 10, No. 1153 of *American Architect*).

In these painted moulding-ornaments there is much variety of treatment,[3] but in all the variations there is a semi-ovoid space enclosed by a line or frame sometimes called the "shell," between every pair of which appears the "dart" or "tongue." The original trident-lotus survives in the tongue and two adjacent half-shells. The filling of the shell is of a different color, and represents the bunch of grapes or other ovoid object which replaced the lotus-bud in many Egyptian borders. With this is also in many cases blended, in one and the same pattern, a reminiscence of the more slender form of the original bud, which is superimposed upon the green or blue filling of the egg or ove, in the centre (*a* Figs. 66, 67). This is an interesting example of that frequently

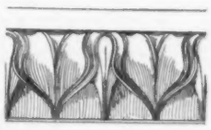


Fig. 69. Heart-leaf Moulding, Temple of Athena Polias, Priene.

[1] Continued from No. 1167, page 45.

[2] Flinders Petrie, "*Egyptian Decorative Art*," pp. 52-55.

[3] Durm, "Baukunst der Griechen" (in the Darmstadt Handbuch der Architektur) Plates III and IX; Hittorff, "*L'Architecture Polychrome*," Plates IX, XII; Owen Jones, "*Grammar of Ornament*," Plate XIV; Racinet, "*Ornement Polychrome*," Plates VI, VII.

recurring phenomenon, the persistent reappearance of forms in ornament long after their function has been lost or forgotten, and their combination with the later developments which might be supposed to have superseded them.

Fig. 70. Late Roman Moulding, Arch of Septimius Severus.

In the fifth century the Ionic style was developed into a highly organized architectural form. The whole spirit of the new style was one of ornate elegance, not to say magnificence, and it depended for effect largely upon its carved details. The mouldings in particular were enriched by carving, in patterns derived from the painted mouldings of the Doric style. It is interesting to observe in the carved egg-and-dart how completely the egg has become the decorative unit, and the tongue — originally the central sepal of a lotus-blossom — a mere accessory in the pattern. The egg was carved as a convex ovoid mass, set in its enwrapping frame and shell, and thus preserving the tradition of the ovoid element from which it was derived (Fig. 68). The beauty and vigor of the execution of this moulding in Attic Ionic monuments are truly remarkable.

Fig. 71. Romanesque Moulding, Cathedral of Arles.

When it came to the decoration of the cyma or ogee, the decorative principle of repeating the profile in the pattern on the moulding led to a modification of the outline of the oves, by which they were converted into leaf-like units, separated by "eyes" from which the tongues were made to start. The tongue or dart was spread out between the leaves in the semblance of a subordinate leaf; while on the latter a central mark or line, recalling those in the painted mouldings in which we noted the survival of the primitive lotus-bud, was deeply cut, like a mid-rib or mid-crease (Fig. 68). This mid-line had been omitted in carving the convex oves of the egg-and-dart; it is not clear whether its reappearance in the "heart-leaf" or cyma ornament is actually a revival of the degenerate bud-motive, as contended by Professor Goodyear, or is a purely decorative expedient suggested by the leaf-like form of the units of the modified design.

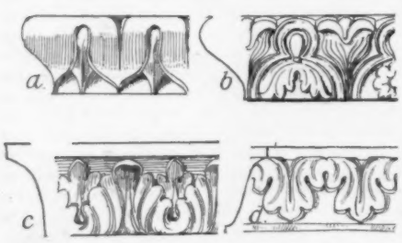


Fig. 72. Mediæval Italian Leaf-mouldings: *a*, *b* from Pulpit in Cathedral of Ferentino; *c* from Rocca di Botte; *d* from Ravello.

Certainly we have by this time got far away from the lotus, and it is hardly conceivable that the Greeks of the time of Pericles attached the slightest significance, magical or symbolic, to these beautiful moulding patterns which had taken shape under the dominance of the Greek passion for pure beauty and grace of form and movement. But it is curious to notice how this highly artificial and conventional heart-leaf pattern is suggested by, or suggests in its turn, certain patterns on very early vases like the last one (*d*) in Figure 63. The carved heart-leaf came by way of the egg-and-dart and not directly from any variant of the lotus-and-bud.

Fig. 73. Egg-and-dart from Pulpit by Nicolo Pisano in Sienna Cathedral.

The later history of the egg-and-dart and heart-leaf ornaments covers the whole period from Greek art to that of our own day. In Roman hands both patterns underwent modifications in the direction of splendor and complexity. The tongue was made into a barbed dart or arrow-head: the ove and its shell were made much broader than in Greek examples, and the heart-leaf was replaced in many instances by an elaborate acanthus leaf. Sometimes a flower or a small caulicolus took the place of the subordinate leaf between the "frames" of acanthus-like heart-leaves. Some examples of this trefoil flower (which belongs to the later style of the Empire) revert curiously towards the three-leaved lotus of the Karnak stele, although they are obviously derived from the caulicolus of the Corinthian capital, which was in turn derived from the acanthus-nests wrapping the branchings of carved scrolls or rinceaux in Greek art of the late fifth and early fourth centuries B. C. (Fig. 70).

Fig. 74. Detail from Hispano-moresque Vase, South Kensington Museum.

The egg-and-dart and heart-leaf, but especially the former, were used in Byzantine architecture, passed into Romanesque art by way of the Byzantine tradition in the East, and directly from Roman practice in the West, particularly in Southern France, as in the Cathedral of Notre Dame des Doms at Avignon, or the Cathedral of Arles, in which occurs the version of the egg-and-dart ornament shown in Figure 71. Here the egg and its shell have been made into complete ovals instead of being cut in two by the top of the moulding.

During the Middle Ages Gothic naturalistic carving of leaves and flowers took the place of Classic motives in the decoration of mouldings generally except in Italy, where the Roman tradition persisted throughout the whole period between the fall of Rome and the Renaissance. Italian Romanesque and Gothic monuments are full of examples of this persistence in the form of egg-and-dart, heart-leaf, acanthus-leaf and other Roman moulding ornaments. The examples in Figure 72 are taken from mediæval pulpits, mostly of the twelfth century, in Ferentino (*a* and *b*), Rocca di Botte (*c*), and Ravello (*d*); and *b* is an almost literal copy of the moulding of Figure 70. Figure 73 is from the crowning moulding of the pulpit by Nicolo Pisano in Sienna Cathedral and recalls the best Roman examples. It is hardly worth our while to multiply examples of this kind, either from Italian mediæval buildings or from the Renaissance, which simply revived, enriched and developed the whole Roman apparatus of decorative forms.

Fig. 75. Japanese Border, from Modern Earthenware.

But the use of these motives of lotiform origin — the egg-and-dart, heart-leaf and the Roman loop-ornament of Figure 70 — is not confined to the European developments of decorative style. The conquests of Alexander carried Greek art to the gates of India, and in Northwestern India the traces of this artistic influence are abundant.

Fig. 76. Japanese Border, from Modern Earthenware.

The extensive commerce carried on between the Chinese Empire and the Byzantine Empire in the early Middle Ages, as well as between Byzantium and India, no doubt contributed to further the dissemination of western motives in those Eastern lands; and the Sassanian Empire transmitted to the Persian art of the Middle Ages a curious mixture of Classic, Byzantine, ancient Persian and Assyrian motives and traditions. By all these and, doubtless, also, by many other means, the derivatives of the lotus-and-bud spread across Asia, meeting in many places, but notably in India, with other survivals of the same lotus-originals, and undergoing new variations and modifications. Some of these appear like reversions to very ancient types; compare Figure 74, for instance, from a mediæval Hispano-Moresque vase at South Kensington, with the Cypriote pattern *b* in Figure 63; or the Japanese border in Figure 75 (from the base of a Japanese vase in the author's possession) with Figure 64; or, again, the design of Figure 76, from a Japanese platter, with Figures 70 and 72*b*. The half-trefoils containing a rosette appear in both, and between them rests a flower, which in the Japanese example has two lateral blades, apparently meaningless until we observe the spreading lips of the nestled flower in the Roman and Ferentine examples. Yet it is not demonstrated that the modern example is imitated from any ancient prototype, and we may have here only one of the cases, so frequent in ornament, of a purely accidental reversion brought about by wholly independent efforts to solve like problems or use like materials.

A. D. F. Hamlin.

(To be continued.)

PRESERVATION OF FRENCH HISTORICAL MONUMENTS.

THE following law for the preservation of monuments and objects of art possessing historical and artistic interest in France was promulgated in 1887: —

I. — IMMOVABLE AND HISTORICAL OR MEGALITHIC MONUMENTS.

Article 1. Immovable monuments by nature or by destination, having a national interest from an historical or artistic point-of-view, shall be scheduled either in whole or in part under the direction of the Minister of Public Instruction and Fine-Arts.

Art. 2. Buildings belonging to the State shall be scheduled by decree of the Minister of Public Instruction and Fine-Arts acting in accord with the minister under whose administration the building happens to be. In the contrary event the classification shall be pronounced in a decree issued in the form of regulations of public administration. Buildings belonging to a department, a commune, a vestry or any other public body, shall be scheduled by decree of the Minister of Public Instruction and Fine-arts, if the proprietary body gives its consent, and if the opinion of the minister under whose authority this body is placed is likewise favorable. In case of disagreement, classification shall be pronounced in a decree issued according to the forms of rules of public administration.

Art. 3. Buildings belonging to an individual shall be scheduled by decree of the Minister of Public Instruction, but only with the owner's consent. The decree shall determine the conditions of the classification. If any dispute arises as to the interpretation or execution of this Act, it shall be decided by the Minister of Public Instruction and Fine-Arts, with appeal to the Tribunal of the Council of State.

Art. 4. Buildings thus scheduled may not be destroyed, even partially, and may not be subjected to works of restoration, repair or alteration of any sort without the consent of the Minister of Public Instruction and Fine-Arts. The expropriation on grounds of public

utility of scheduled immovable monuments may not be proceeded with until the Minister of Public Instruction and Fine-Arts has been called upon to present his observations on the matter. Legal servitudes of alignment or others which might prove detrimental to monuments are not applicable to scheduled buildings. The effects of classification shall follow the building scheduled into whatever hands the building may pass.

ART. 5. The Minister of Public Instruction and Fine-Arts, in conformity with the prescriptions of the law of May 3, 1841, is empowered to take steps for the expropriation of monuments which are either scheduled or the classification of which has been rejected by a private owner. On the same conditions, he is empowered to proceed to the expropriation of megalithic monuments, as also of the sites on which they stand.

ART. 6. The minister under whose administration a scheduled monument stands, or the department, or commune, or vestry, or public body, or individual owner of the monument may demand its total or partial withdrawal from classification. Such withdrawal from classification shall ensue according to the same forms and on the same conditions as the classification. Nevertheless, in case of alienation to an individual of a scheduled monument belonging to a department, commune, chapter or any other public body, withdrawal from classification can only occur in conformity with paragraph 2 of Article 2.

ART. 7. The dispositions of the present law are applicable to historical monuments classified in due form before its promulgation. Nevertheless, when the State shall have incurred no expense for a monument which belongs to an individual, for the space of one year from the promulgation of the present law, the owner shall have the right to obtain the withdrawal of the monument from classification within six months after sending in a request to this effect to the Minister of Public Instruction and Fine-Arts.

In 1889 a decree for the execution of the law of March 30, 1897, was made: —

1. The duties of the Commission of Historical Monuments, instituted under control of the Ministry of Public Instruction and Fine-Arts (as in foregoing decree), shall be to draw up a list of monuments and objects having a historic and artistic interest, to designate those which it is desirable to restore, to examine the plans of restoration presented, and to propose to the minister the allocation of the grant for the preservation of classified monuments.

The Minister of Public Instruction and Fine-Arts shall be President of the Commission of Historic Monuments. The director of fine-arts shall be the senior vice-president, *ex officio*. The second vice-president shall be nominated by the minister. In absence of the president and vice-presidents the oldest member present shall take the chair.

ART. 3. The Commission of Historical Monuments shall be composed of *ex-officio* members, and members nominated by the Minister of Public Instruction and Fine-Arts.

ART. 4. The *ex-officio* members shall be: The director of fine-arts, the director of civil buildings and national palaces, the director of public worship, the director of national museums, the prefect of the Seine, the prefect of police, the inspectors-general of historic monuments, the controller of works on historic monuments, the director of the Museum des Thermes and of the Hôtel de Cluny, the keeper of the museum of comparative sculpture.

ART. 5. The members nominated by the Minister of Public Instruction and Fine-Arts shall be designated by ministerial decision. When a vacancy occurs, the Commission shall be invited to present a list of three candidates to the minister.

ART. 6. The Commission shall have power to appoint committees to prepare the questions submitted to it, and to make a report on the same.

ART. 7. The *chef* and *sous-chef* of the bureau of historic monuments shall perform the duties of secretary and assistant-secretary to the Commission.—*The Architect.*

BOOKS AND PAPERS

THE method of taking bids and of making up estimates in this country differs so widely from that practised in England that it is a question whether many of the methods and courses of procedure advocated would be acceptable to American builders and estimators in the particular form presented.

Before referring in detail to a few points concerning Mr. Leming's volume,[1] than which no better on the subject has been published, it may be well, in order that the subject may be more clearly understood, to bear in mind in just what way the American and English systems of taking bids differ. It will be unnecessary to say much in regard to our own methods. Here, many contractors frequently take chances, and have to bear probably more than a fair share of responsibility, when it comes to estimating the cost of large structures, but judging from the work under discussion that is evidently not the case with their contracting brethren across the water. When bidders are about to estimate in England they are all usually furnished with a printed or lithographed document called a "Bill of Quantities," which is in reality an accurate and complete list with full descriptions of every kind of labor and materials, in fact *everything* which can have the slightest possible money value, either in or appertaining to the proposed building, completely set forth in black and white. The owner pays all the expenses incurred in furnishing these detailed lists to bidders, the amount being placed at the end of the list in such a way that every bidder must include it in footing-up his final total.

One reason (one which appears to be a very valid one) for furnishing this information is, that it is not considered fair, or even honest, for an owner to put a number of contractors, whose time and brains represent capital, to the trouble of figuring-up the "quantities," as well as the "money value," of a building, which may, or may not ever, be built, depending perhaps upon the owner's caprice or depth of pocket. The English owner, by paying for the quantities, bears his share of the burden of estimating, and says to the builder practically: "For how much money will you furnish the labor and materials called for by this document, put up in the form of a building, as illustrated by the drawings, and I want *no more*, and *no less*, than what is stated in this document?" Such is the building contractor's position in England to-day, and nine-tenths of them decline to bid upon work unless the owner *does* say, in the definite form described, exactly *how much* work he requires, and this practice is supported and endorsed by all the builders' associations.

The preparation of such complete documents describing in an intelligent and practical manner all the work required calls for a special knowledge and training, indeed it is an entirely separate process from estimating "cost" or *money* value, and the quantity-surveyors' profession in England is as essential as that of the architect.

The opening chapter of this book contains one statement at least which will commend itself to many of us. The author says, "If work is to be done well quantities are absolutely essential, as there is no more fruitful source of bad work than is found in the attempts of builders to recoup themselves for losses from error." This is probably true, the obvious inference being that the quantities of a professional surveyor are prepared with greater care than could be expected from the average builder in the limited time he could afford to devote to the matter, especially when in open competition his chance of getting the job is limited. Omissions to figure this or that item are often heard of with us, and many a contractor will be able to recall some job in which he left out this, or that; but such losses would seem to be impossible under the system advocated by Mr. Leming, and evidently the English contractor does not believe in taking chances, so far as the furnishing of materials and labor is concerned, and in all fairness we cannot blame him. It is a simple business proposition of furnishing a definite quantity of work for so much money, no more and no less.

In the preliminary chapter on "General Directions" we find given a list of the necessary qualifications for an efficient quantity-surveyor, and they are manifold: the best courses of procedure are outlined, and many points are brought out which are always useful, if remembered. We are told that three distinct operations are necessary: first, "Taking," or measuring from the drawings; second, "Abstracting," which consists in collecting under the same descriptive headings the same kinds of work found in different parts of the building, and third, "Billing," which consists of writing, in a certain order, and in as condensed a form as possible, consistent with clearness, all the items in the structure. This last document is then printed or lithographed, so that all the copies are exactly alike, and one copy is sent to each bidder. Great stress is laid upon the necessity of adopting one *uniform* method or system, and of adhering to it strictly. All this detailed work means, of course, the employment of much time and labor, and it is a no uncommon thing for a quantity-surveyor to be occupied early and late for a month, or even more, in preparing quantities alone for such a job as the American contractor would probably be allowed a couple of days or so in which to put in a complete figure.

In Chapter II is found a long list of items intended as a convenient reminder, in the process of taking off, and which, in a less extended form, may be found in many American works on building. American estimators would, however, if they took the time to carefully examine the work, discover many points of interest, and would be surprised at the great number of items which Mr. Leming considers necessary in a perfect Bill of Quantities. Indeed, no better illustration can be found probably of the care and elaboration with which the quantity system of estimating is conducted than occurs in a set of quantities for some municipal work at Huddersfield, Yorkshire, which happens to be now in the possession of the writer. The preparation of this document fully occupied a quantity-surveyor and his clerk for three months, and the finished bill or list consists of no less than about 300 pages of lithographed matter, foolscap size.

All this is, of course, foreign to American practice, but it is a question well worth considering, whether it is not possible to still further improve upon the methods we have hitherto used. Mr. Leming's work does not contain what some persons may expect to find, viz. short cuts, or lightning methods of estimating quantities: the author is too practical, and too much in earnest, to recommend any other course than that of actual measurement and steady, patient work for the accomplishment of the object in view — probably the only true and reliable method after all.

[1] "*Quantity Surveying*" for the use of Surveyors, Architects, Engineers and Builders, by W. J. Leming. 647 pp. 8vo. London: E. & F. N. Spon. 1898.

On page 49 may be noticed an illustration of the exactness with which measurements are taken. This is an item of digging, in which the trench is taken at 1′ 10½″ wide. Strictly accurate, no doubt, but, in "American" practice, life is too short to figure excavating down to half inches. Under "Bricklayer," on page 63, is a separation of work which, in one sense, the writer has always advocated in this country, *i. e.*, a proper segregation of the different kinds of brickwork. With us a common practice seems to be to figure, say, so many M bricks in a building, regardless of what proportion of the number is to be used in thin walls, of ten to twelve stories high, or whether they be packed away in footings, etc., below the ground-level. The location in the building must affect the labor value — always an important element. Mr. Leming's work contains many suggestions for classifying such work in this way. Instead of saying so many M bricks in a building, the English contractor gets his quantity of brickwork in the form of so many "rods," the standard rod consisting of 272 square feet of 1½ brick, or 14″ work. It would appear, however, that a better plan than either of these methods would be the adoption of the "square yard" as a national standard, giving the thickness of wall in each instance as so many square yards of ½ brick, one brick, etc. This would give a bidder better information for pricing than either of the before-stated methods. It may be interesting to notice an item which occurs on page 71, viz, "202 linear feet of ¾ x 6 asphalt skirting (base)," and this is followed immediately by another item of "84 mitres to same." Now imagine in this country counting up the mitres on such a small piece of work. It may be, and probably is, perfectly correct to take such an item, but it would be a bold estimator indeed in the United States who would spend his employer's time in such extreme detail — the temptation, even if it were done, to price the item at so much a linear foot, mitres included, would be great.

Rough cutting to brickwork is another kind of work which, we are told, should be measured by the square foot. Rightly or wrongly, we usually ignore rough cutting, the price per M being usually inclusive of all such matters. Brick facings are to be measured by the square foot and described as "Extra" on common brick. This description means that a superficial measurement of the external facing (including reveals and soffits) has been taken, and that now, in addition to the item of ordinary brickwork, the contractor has to figure, *not* the number of face bricks but the "difference only," or extra cost per square foot of *face* brick, over the common brick, and which would have been already priced. It follows, of course, that the *kind* of brick, nature of the bond, style of pointing, etc., would always be stated, without which no one of course could price the item accurately.

Then follow a number of items in the bricklayers' trade, for which we should, in the United States, include probably a "lump" sum. Lump sums and their first cousin, "guesswork," form no part of the doctrine taught by Mr. Leming in his book: everything in his work, however small, is brought down to the one basis of actual measurement, all denoting practical knowledge, great care, and a desire to have everything in a building made so plain that it may be grasped, and be perfectly understood in a moment. It would be impossible in such a notice as this to enumerate one-hundredth part of the good points of Mr. Leming's labors, as already stated, from the standpoint of "English" practice, but there are, naturally, many cases in which the methods advocated differ from our ideas on the subject. In the trade of "Mason," and also "Mill-work," this is quite noticeable. In the former, for example, Mr. Leming would not be content to say simply that a stone building contained only so many cubic feet of stone, as is frequently done by even some of our largest masonry firms and contractors, but we are told that in surveyors' quantities there should also appear so many square feet of labor on beds and joints, rough sunk work, sunk beds and joints, circular ditto, moulded work, and many other kinds of labor on stone, each and every such item being collected, and so described in the bill. On page 99 is a list of no less than thirteen different kinds of moulded work alone, and exclusive of mitres, which appear in other items.

The custom, on the part of contractors, of taking sub-bids from material men is not followed in Great Britain to the same extent it is with us, and the general contractor posts himself very closely upon the value of labor in all trades, and having the quantities of each material before him, the cost of the building is estimated without any outside assistance. In American practice the conditions are somewhat different, and it is found easier and quicker for some general contractors to get figures from mills, from stone and iron men, from plumbers, etc. Whether our methods are, or are not, the best that can be adopted is a question which might well be considered by leading contractors and architects.

Now let us glance at the work under "Carpenter," and we find the same methods and system prevail, and every item, however small, having a different value, is segregated. It is also recommended to keep separate the following: Plates and lintels, ground or first-story joists, timber in upper floors, roofs, studding, etc. Although there is not a great deal in this trade of assistance to builders in this country it will well repay a student to look through this part of the work. In the "Joiners" trade, or mill-work as we are accustomed to call it, we find "floors" included, but for our work it would seem more fitting to have included this under "Carpenter," as it does not require a high-class bench hand to lay a floor, nor is there any mill-work on the flooring itself, in the ordinary sense. In taking off, chimney projections should be deducted, says Mr. Leming; and glued and mitred borders to hearths should be measured and be given separate, as "Extra," above price of floor.

On page 155 occurs a further illustration of the exactness of the quantity-surveyor's methods, but one which could scarcely be appreciated with us, viz, "110 feet linear 1 x 7 forms skirting (base)"; then comes "No. 12 mitres," "No. 10 fitted ends," "No. 15 housings," all of them labor items, which the majority of men would include with the price per linear foot. If these labors *must* be referred to, one would think a clause in the preamble of the trade stating that the prices must include for all mitres, etc., would be amply explicit — it would at any rate satisfy all practical requirements in this country.

A well-arranged, and very complete, index forms a fitting conclusion to a volume, which is the best book ever published upon the subject of Quantities.

Mr. Leming says it is unfair to builders to expect them to give their time and experience to a prospective owner, in figuring up the quantities (in addition to the prices) just for the "chance" of getting work, and doubtless there are many persons in this country who will agree with him. Here, the owner occupies a pretty safe position. It is a case of "Heads I win, tails you lose."

SOCIETIES

AMERICAN INSTITUTE OF ARCHITECTS.

A MEETING of the Executive Committee was held at the office of Mr. George B. Post, 33 East 17th Street, New York City, May 4th.

Present: President George B. Post, Messrs. R. D. Andrews, John M. Carrère and the Secretary.

The Secretary reported that the committee appointed for leasing the Octagon House have secured the house for three years at an annual rental of $360 per year. The house is now undergoing repairs, under the direction of the committee, and it is expected that it will be formally opened with a reception on one of the evenings during the 1898 convention. The lease of the rooms of the New York Chapter expired April 30th and consequently the Institute has no habitation, and its property has been stored in New York awaiting its shipment to Washington, which should not be made until the Octagon House is ready, or nearly ready, for occupation.

A communication has been received from Mr. J. F. Harder, Secretary of Conference upon a "Code of Competition in Design," asking the Institute to appoint delegates to act with delegates from the Architectural League of New York, the National Sculpture Society, the National Society of Mural Painters, the Boston Architectural Club and the Philadelphia T-Square Club, with a view of taking concerted action, to the end that a uniform, wholesome and beneficent Code of Competitions in Design may be generally promulgated, and requesting their attendance at a conference to be held in New York April 5th, but the President did not feel warranted to name delegates without the authority of the Board of the Executive Committee.

The Central Ohio Chapter ask that the territory of the Chapter cover the entire State of Ohio outside of Cleveland and Cincinnati, and that its headquarters be at Columbus.

Notice has been received of the death of Mr. Alfred Smith of Chicago, Ill., March 10, 1898, and Mr. Elbridge Boyden of Worcester, Mass., March 25, 1898.

The President has appointed Mr. J. C. Hornblower, Washington, D. C., Mr. A. J. Boyden, Philadelphia, Pa., and the Secretary, a committee on the part of the Institute to arrange, in co-operation with a committee of the Washington Chapter, for the next annual convention. The date suggested by the Washington Chapter, November 1–3, has been accepted as the date for the convention. The headquarters will be at the Arlington, and the following speakers have been secured to address the convention:—

B. E. Fernow, Chief of the Division of Forestry, of the Agricultural Department, on ———

Mr. G. P. Merrill, on Building Stones.

Dr. Cyrus Adler, of the Smithsonian Institution, on the Place to be assigned to the Jewish People in Architectural History.

Professor Sabine of Harvard, on Acoustics.

One evening will be given up to a reception at the Octagon House, and a portion of the time to the consideration of the Constitution and By-Laws.

Mr. Andrews, Chairman of the Committee on the Amendment of the Constitution and By-Laws, reported that the committee would soon place its report in the hands of the Secretary in order that the Constitution may be submitted to a letter-ballot.

The plans for the Washington Convention, reported by the Secretary, met with the approval of the Executive Committee, and, in addition, it was suggested that the Committee arrange, if possible, for a dinner at which proper recognition should be made of the reform in the matter of obtaining designs for the Government buildings inaugurated by Secretary Gage of the Treasury Department.

The Secretary was requested to communicate with the officers of the Cincinnati and Cleveland Chapters to learn their views as to

granting to the Central Ohio Chapter all of the State of Ohio, except the cities of Cleveland and Cincinnati, as the territory to be covered by the Chapter, with headquarters at Columbus, and to grant the same if approved by the two Chapters.

The application made to the Institute to appoint a conference committee on a Code of Competition in Design to act with a joint committee from other societies, as set forth in the report of the Secretary, was considered. It was voted that the matter more properly belonged to the Chapters of the Institute, and that action upon the part of the Institute should be taken only upon request of the Chapters.

Applications for membership were considered and the Secretary was directed to issue a letter-ballot containing the names of Benj. Howard Marshall, Chicago, Ill., Charles I. Berg, New York City, Albert Leverett Brockway, New York City, Herbert W. Foltz, Indianapolis, Ind., William H. Conway, Springfield, Ill., — the four latter being approved at this meeting, — and Francis W. Crosby of Hartford, Ct. The application of Mr. J. Edward Campbell of the City of Mexico, Mexico, was continued for further consideration, pending decision as to the amended Constitution and By-Laws.

ALFRED STONE, *Secretary.*

ILLUSTRATIONS

[*Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.*]

HOUSE OF FREDERIC B. PRATT, ESQ., 229 CLINTON AVE., BROOKLYN, N. Y. MESSRS. BABB, COOK & WILLARD, ARCHITECTS, NEW YORK, N. Y.

[Gelatine Print, issued with the International and Imperial Editions only.]

PLAN OF HOUSE OF FREDERIC B. PRATT, ESQ., 229 CLINTON AVE., BROOKLYN, N. Y.

THIS diagram shows the reason for the odd lay-out of the house and grounds. The problem was a difficult one. The house of Mr. Pratt's brother, Mr. C. M. Pratt, on the adjoining lot south, was built fifty feet back from the street. This was also true of all the houses to the south in the block. On the north side of Mr. Pratt's property a block of houses with a rough brick side-wall was built out to the street-line. In order not to cut-off the brother's view, the new house was kept fifty feet back from the street, and placed on the north line of the lot. The rough-brick side-wall of the houses on the north was concealed by a porch surmounted by a trellis and screen wall of the same brick as the house. In this way was secured a large lawn and the advantage of plenty of sunlight for the best rooms in the house. The materials of the house are Milford granite to water-table; above, gray St. Louis brick with black spots, and trimmings of South Dover marble. The roof is of brown Spanish tiles and the *chéneau* of copper, finished verde-antique.

UPPER STAIRCASE HALL IN HOUSE OF F. B. PRATT, ESQ., BROOKLYN, N. Y.

BRONZE DOOR DESIGNED BY M. J. VAN MANSFELD, ARCHITECT, FOR THE PALAIS DE JUSTICE, BRUSSELS, BELGIUM.

SCHOOL-HOUSE, SOUTHBRIDGE, MASS. MR. PENN VARNEY, ARCHITECT, LYNN, MASS.

TRINITY CHURCH, TORRINGTON, CONN. MR. H. M. CONGDON, ARCHITECT, NEW YORK, N. Y.

THIS church, now nearing completion, is built of native granite, with buff brick trimmings. The lay of the land provides for a crypt chapel at east end, and a parish-building is included in the design, but partly built at present. The cost of church as built now is about $30,000.

[The following named illustrations may be found by reference to our advertising pages.]

GREEK CHURCH, PARIS, FRANCE. M. EMILE VAUDREMER, ARCHITECT.

INTERIOR OF THE GREEK CHURCH, PARIS, FRANCE. M. EMILE VAUDREMER, ARCHITECT.

THIS and the preceding plate are copied from *La Construction Moderne.*

[Additional Illustrations in the International Edition.]

LOWER STAIRCASE HALL: HOUSE OF F. B. PRATT, ESQ., BROOKLYN, N. Y. MESSRS. BABB, COOK & WILLARD, ARCHITECTS, NEW YORK, N. Y.

[Gelatine Print.]

DETAIL OF SAME STAIRCASE.

[Gelatine Print.]

BUSINESS PREMISES AND OFFICES, READING, ENG. MR. G. W. WEBB, ARCHITECT.

JESSOP'S BUILDING, NOTTINGHAM, ENG. MR. WATSON FOTHERGILL, ARCHITECT.

COMMUNICATIONS

[*The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.*]

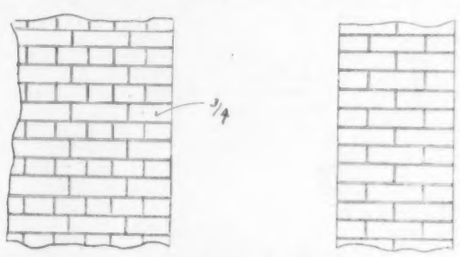
ENGLISH *VS.* AMERICAN BOND.

SAN FRANCISCO, CAL., May 9, 1898.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs, — May I venture to ask you to extend to me a little professional courtesy? The question is one of "*bond*" of brickwork.

I am taking estimates on three large brick factory buildings of "mill" construction, and call for the brickwork to be built as per



enclosed tracing. Builders figuring claim: *First*, that the bond shown will *not* make such a "*strong*" wall as if the usual one course of headers to five courses of stretchers be employed. *Second*, that my walls will cost from 30 per cent to 50 per cent more to build.

The principal object I have in view is to obtain "*strength*" and not appearance.

If, at your convenience, you could kindly favor me with an opinion on these points, I shall esteem it a kindness.

Do you happen to recall any buildings in which this bond was employed?

Trusting you will pardon the inquiry, I am,

Very truly yours, G. A.

[THE builders are right. The bond you show, which is known generally as the "old English bond," and is used in thousands of buildings, old and new, in England, France, Germany and this country, does not resist a longitudinal strain so well as the ordinary American bond, of one course of headers to five, six, seven or eight courses of stretchers. It is evident from the diagram that in the American bond the stretchers lap about twice as far over the bricks below as in the English bond, and the friction between them, which gives the resistance to separation, is correspondingly increased; while, as there is little tendency to splitting in a brick wall, one course of headers in five or six will counteract this sufficiently. As to the cost, much depends on the method of laying. Where the wall is "slushed," the American bond is much more rapidly and cheaply built than the English. Where each brick is laid in a bed of mortar, as is the practice in the Eastern cities, there is little difference in the cost, but the American bond is used because it is better. — EDS. AMERICAN ARCHITECT.]

IMPERFECTLY STATED RECEIPTS.

FLUSHING, L. I., N. Y., May 21, 1898.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs, — May I call your attention to a very tantalizing and sometimes annoying shortcoming in the above publication, the correction of which will not entail any extra expense in compiling?

You often print receipts which might be very valuable to your readers if they were sufficiently definite in their terms. I have several times been put to much trouble and loss through waste of material in making experiments before I could get your receipts to give perfect results. For instance, on page 63, issue May 21st, you give directions for plaster flooring but don't say what quantity of water is best, or, rather, if mixture is best stiff as in hard-finish, or more liquid as in flushing-work. You do not say what strengths of

sulphate solution of oil and litharge, and if latter should be mixed and applied at boiling-heat.

Again, in receipt for removing old paint you do not say what *strength* of ammonia is best — and you are aware that ammonia is sold at all strengths.

I think you will readily see how much more valuable to your readers these various receipts would be if, by giving definite and exact instructions, you saved them the necessity of experimenting, and will, therefore, excuse the liberty of this communication,

And oblige yours respectfully, Walter C. Gilbert.

[Our correspondent overlooks the fact that the formulas and receipts of which he complains are mere quotations extracted by us from various publications, and that we invariably give credit to the original source of publication. We do not ourselves vouch for the accuracy of the statements made in these extracts and we obviously cannot invent the details of a formula when we have nothing to go upon. They are printed merely for what they are (or may be) worth, and our object is to put interested people, like our correspondent, "on their inquiry." — Eds. American Architect.]

NOTES & CLIPPINGS

Bell Ringings. — According to Durandus bells were commonly rung for divine offices not fewer than twelve times a day. In a verse quoted by Mr. Cocks seven of these were thus recorded in allusive rhymes: —

> At Matins bound; at Prime revil'd; condemn'd to Death at Tierce;
> Nail'd to the Cross at Sexts; at Nones His Blessed Side they Pierce:
> They take Him down at Vesper-tide; in Grave at Compline lay:
> Who thenceforth bids His Church to keep Her sevenfold Hours alway.

Besides the sermon bell, to which the Reformation gave unprecedented importance, there was the "Pancake Bell," thus named because it was rung on the forenoon of Shrove Tuesday, and was originally intended to call the faithful to confession before Lent began. It is still rung in Buckinghamshire, at the county town, at Tingewick, High Wycombe, and five other places, and within living memory it was in use at several villages, among them at Granborough, where it was rung by women, who were paid a halfpenny each. At Thornborough, too, women ring the Pancake Bell. One wonders why. Antiquaries have often told us that the old adage, "Nine tailors make a man," is a mere corruption of that dictum of the belfry, "Nine tellers mark a man," as usually three blows, repeated three times, were given to indicate that the deceased was a man. We have never been able to persuade ourselves that this explanation is not much too apt to be true. — *The Athenæum.*

A Wind-built Dyke of Sand. — An interesting illustration of natural engineering is the well-known heavy dyke on the Holland coast, which was built by the winds themselves. The sand formed between the jetties becoming dry in sunny weather, and the surface blown ashore on the wind blowing in that direction, it was desired to build a strong dyke to connect with the sand dunes, and this was accomplished by settling in the sand, in rows about one foot apart, tufts of dune sea grass near by. The tufts thus placed, consisting simply of little handfuls of grass, were put, each one, into a cavity dug out with the hands, the tuft being set into this and the sand pressed around. The whole surface of the dry, sandy beach above high-tide was covered with this plantation, and just back of it, at the highest point of the existing sandy area, one or two rows of reeds were set in the sand, their tops cut off and the stalks left standing about four feet above the sand — the latter drifting along over the surface, catching and in one day almost burying the tufts of grass and standing up one foot along the row of reeds; then another plantation being made, and another, a massive dyke was thus built up to the height of the adjoining dyke. In high storm-tides the waves eat into the top of the slope and pull down the sand, but by the same process of building the dyke is again restored to its former size. — *Invention.*

Important Discoveries in Greece. — Dr. Hogarth, who has been directing the excavations in the Island of Milo, made under the auspices of the English School of Archæology, has recently published the result of his work. The first ruins brought to light were those of a very ancient Acropolis; there were also discovered the structures of three towns, each built over the other, and two of them, as indicated by the style of the fragments and vases, belonging to the Mycenæan era. The third is understood to lie next to the rock. The Acropolis belongs to the island epoch, before the introduction and development of Mycenæan art. The excavations are regarded as very important in relation to the origin and extension of Mycenæan art in modern Greece. Professor Mardner, ex-director of the School, accompanied by about twenty students from University College, London, lately arrived in Athens, and will at once repair to Milo to visit the excavations.—*Exchange.*

The Dome of St. Paul's. — We do not believe there is any truth in the alarming rumor that there is some uneasiness in expert quarters in regard to the stability of the dome of St. Paul's. We imagine that the only substratum of fact is this: It is known that a huge iron chain is embedded in the stone-work of the drum of the dome. An eminent architect some time since amused himself by describing the consequences which might ensue if the water were to reach this chain. There is no reason to suppose that such a thing has occurred, or is likely to occur; and the newly appointed surveyors, Messrs. Somers Clarke and J. T. Middlethwaite, are fully alive to the desirability of finding and examining the chain. The first difficulty appears to be that its exact locality is somewhat uncertain; the second will be to get at it effectively when it is discovered. — *London Saturday Review.*

The Size of the Tideland Spruce. — A section of a tideland spruce secured by A. J. Johnson of the United States Forestry Department for the Omaha Exposition was brought up from Astoria on the "*Telephone*" and landed in Portland, Or., recently. The block measures eleven feet across, is nearly two feet thick and weighs between four and five tons. It was cut from a tree found on the Necanicum, about three miles from Seaside. The tree was about two hundred feet in height, and by counting the annular growths was found to be 235 years old. It took two men a day and a half to cut down the tree, and two days to make the cuts necessary to saw off the block. It was floated down to the seaside and taken to Astoria on a flat car, and transferred to the "*Telephone*" and brought to Portland without charge. There was a much larger tree of the same kind growing near, but it was not sound, and Mr. Johnson chose the small one because it was perfectly sound all the way through, and he thinks it bears evidence of the productiveness of the soil and climate of Oregon, as to produce such a tree in almost any other part of the temperate zone would take at least from 600 to 700 years. The block is as large as can be shipped conveniently, as it projects a foot beyond the sides of the largest flat car. Although only two feet in length, the block contains nearly 2,500 feet of lumber, and its weight is so great that the wheels of the trucks on which it was being put ashore from the "*Telephone*" cut through the gangway planks as if they were of cardboard. The Oregon spruce has become quite a valuable timber tree of late years, as, owing to the wood being free from pitch or any disagreeable odor or taste, it is largely used in the manufacture of boxes, tubs, pails, berry-baskets, etc.—*Portland Oregonian.*

The New Central Passenger Railway-Station at Dresden. — That a new central station and a complete regulation of the railway traffic were much needed in Dresden has been universally admitted for two or three decades, but the authorities in question preferred to bide their time until the problem could be solved in a thoroughly adequate and rational manner. The fact of the State becoming possessed of an important line tended to simplify matters, and in 1891 the matter was taken in hand in earnest, plans were passed, and the handsome grant of 34,870,000 marks, or about 1,750,000*l.*, voted. The necessary extensions in various directions soon proved the insufficiency of this figure, and in 1896 the vote was increased to an aggregate of 58,080,000 marks, or within 100,000*l.* of 3,000,000*l.* As a result of this generous expenditure, Dresden now boasts a magnificent railway-station and admirable railway accommodation in all directions. The interior arrangements of the railway-station are in many ways on similar lines to the famous Frankfort station, which is still looked upon as difficult to improve upon. The Dresden railway-station comprises three sections: a large central hall on the level of the street, and two side halls at a level of 15 feet above the level of the street. The central hall is 200 feet wide and 620 feet long, and is intended for the traffic in the direction of Breslau, Munich, and all suburban traffic in the same direction. The southern elevated side hall will have the traffic in the direction of Vienna, Leipsic, and Berlin, including the suburban, while the north side hall takes the traffic in the opposite direction. The appearance of the station is light and pleasing, the iron structure being painted in light suitable colors, and the artistic decoration and ornamentation is stylish and appropriate. Coats-of-arms have been used for decorative purposes to a considerable extent. The arrangements are excellent; the waiting-rooms are spacious and elaborate in finish, and there are refreshment-bars both inside and outside the barriers. There are toilet and bath rooms, etc., and elevators are used for getting from one story to the next. — *Engineering.*

Compressing Marble. — Considerable interest has attached to some experiments lately made at McGill College, Montreal, which go to show that a substance as hard and brittle as marble may, by the use of certain conditions and appliances, be moulded, not, it is true, as easily as clay, but yet, by reason of long-continued pressure, may be greatly altered in shape, size and appearance and yet remain in as solid a condition as before the alteration took place. The experiments consisted in placing miniature columns of Carrara marble in sheaths of iron and submitting them to graduated but long-continued pressure, with the result that the marble shortened and thickened and bulged so as to swell the iron sheath. The iron then being cut away, the marble, no longer cylindrical, but greatly altered in shape, remained solid and brittle as before. No increase of temperature or other agency than the pressure was applied in producing the above change. These experiments may be rich in the light they throw on our knowledge of geology as going to prove that, under the conditions of pressure existing deep in the earth, stone may have been moulded into new shapes without having been melted. It is stated that the moulded marble of these experiments, when examined under the microscope, presents many striking resemblances to certain natural rocks whose peculiar cleavage has heretofore been difficult to explain. The recent discovery at McGill, however, shows that however brittle a rock may seem to be, it is in reality a plastic substance, capable of flowing into new shapes as assuredly if not as readily as putty or dough is moulded. In commencing these experiments three years ago, Professors Adams and Nicholson took into consideration the three factors which combined to bring about the conditions to which rocks are subjected in the deeper parts of the earth's crust: 1. Great pressure from every direction; 2. High temperatures; 3. The high action of percolating water. In the several experiments which have taken place at McGill the attempt has been made to reproduce only the first of these conditions. In subsequent experiments the endeavor will be made to reproduce all three of them, and the professors are sanguine of success. In one experiment, the column of marble was reduced from 40 to 21 millimetres in height. — *Providence Journal.*

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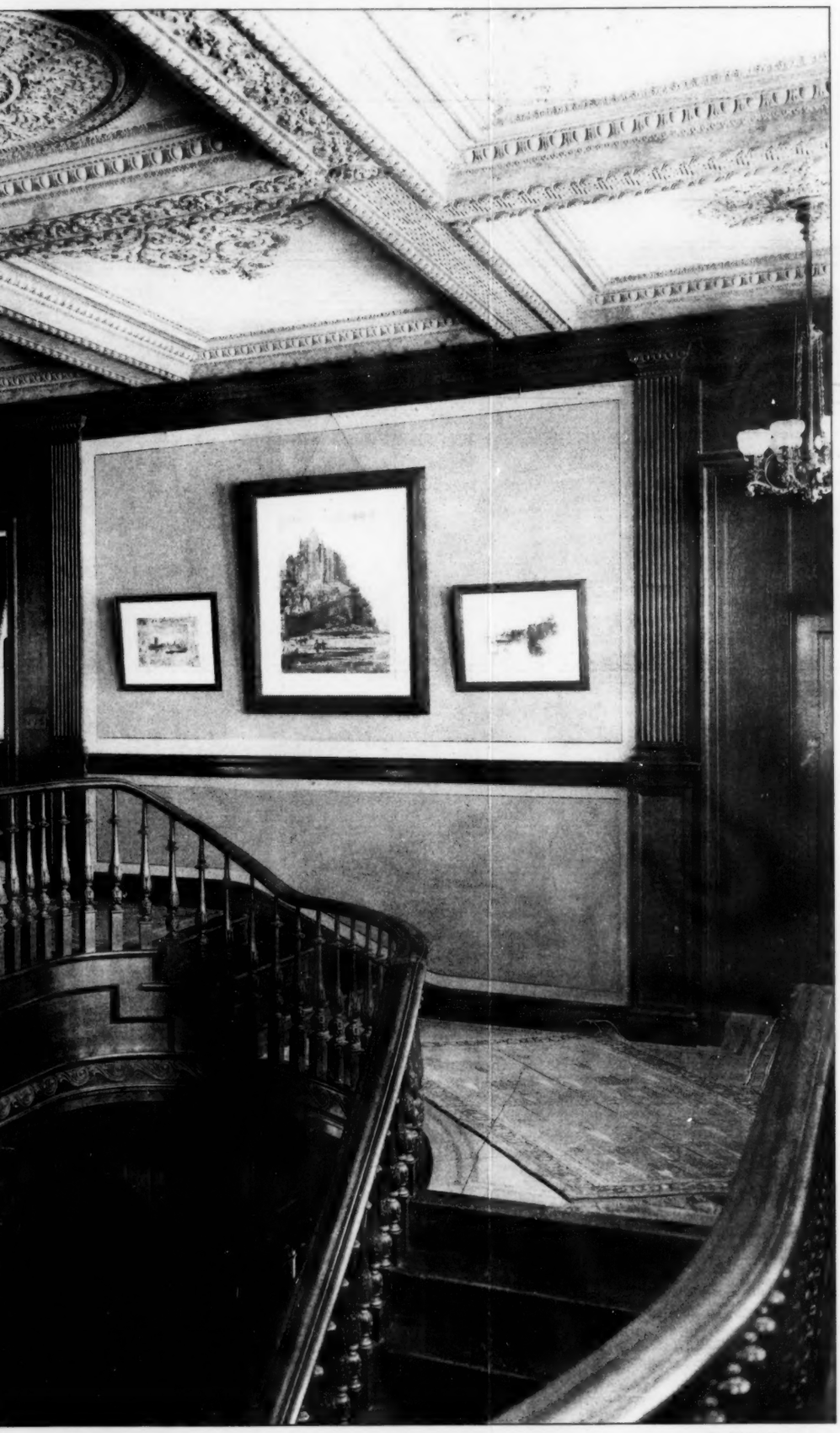

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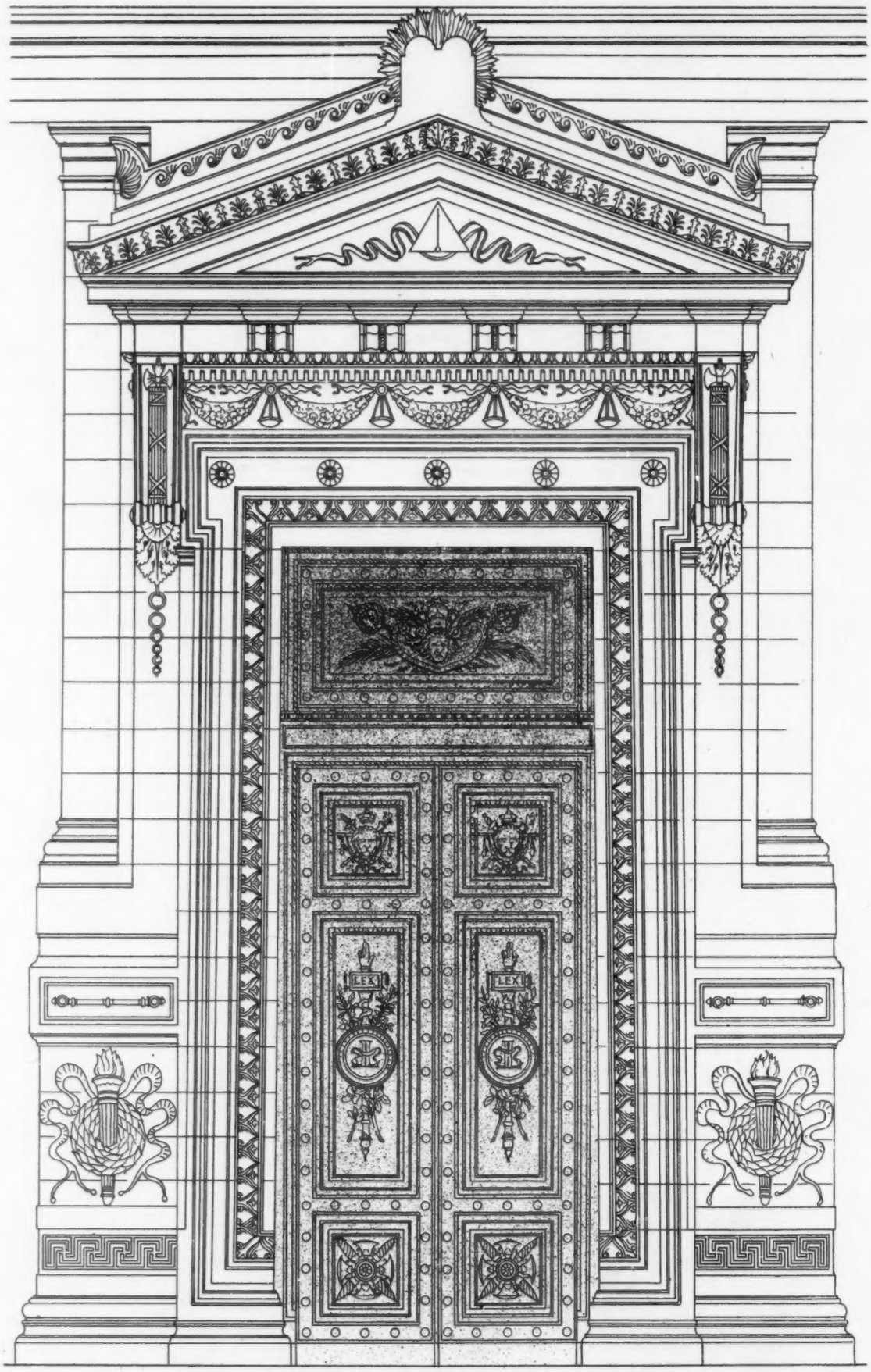

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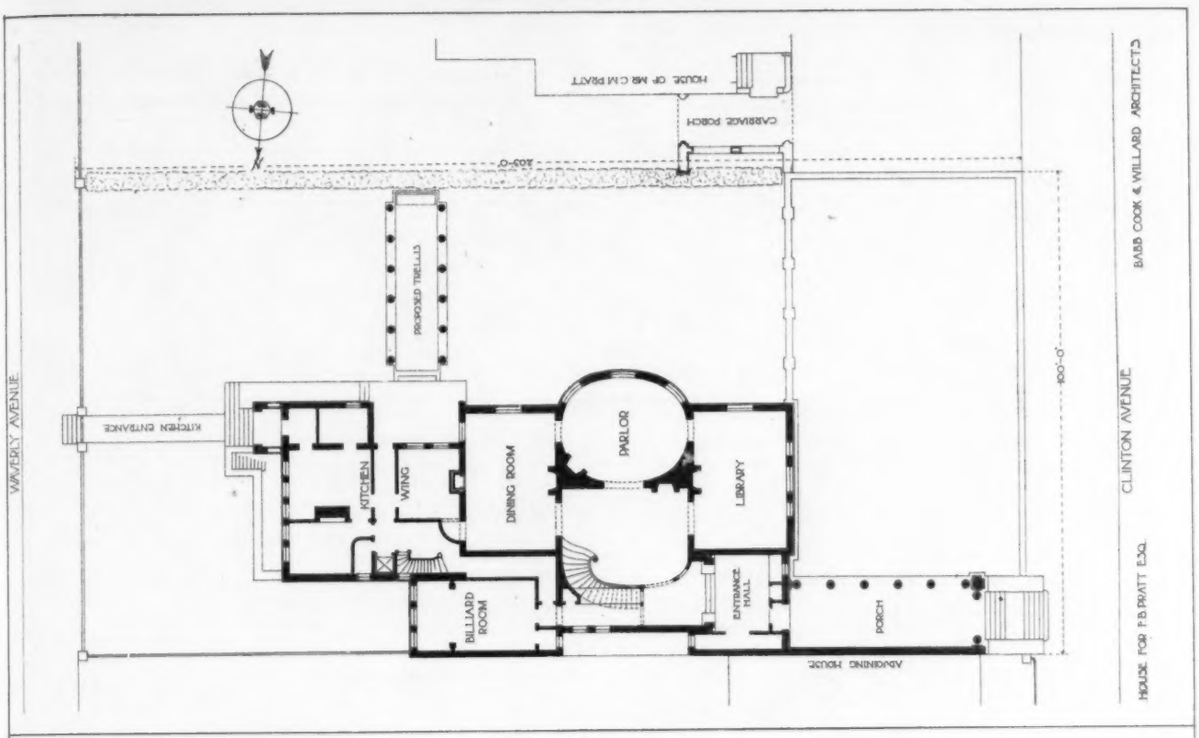

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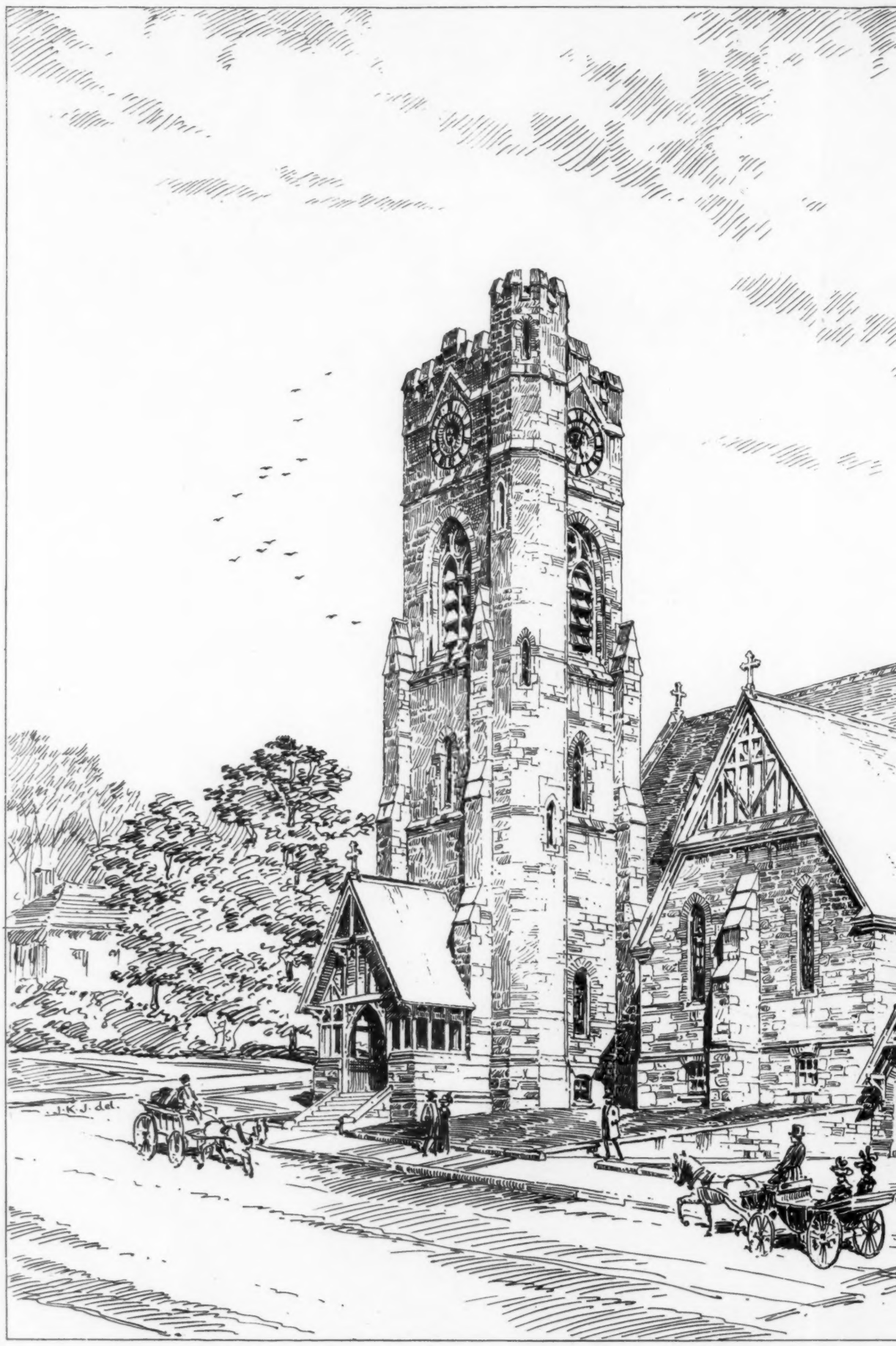

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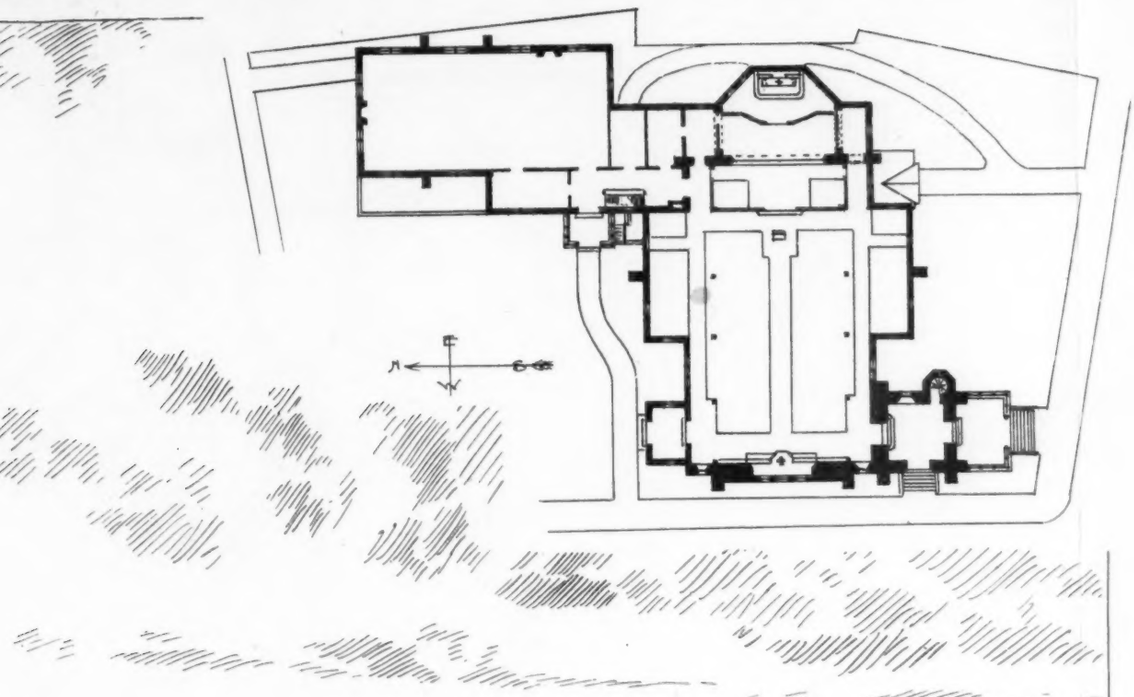

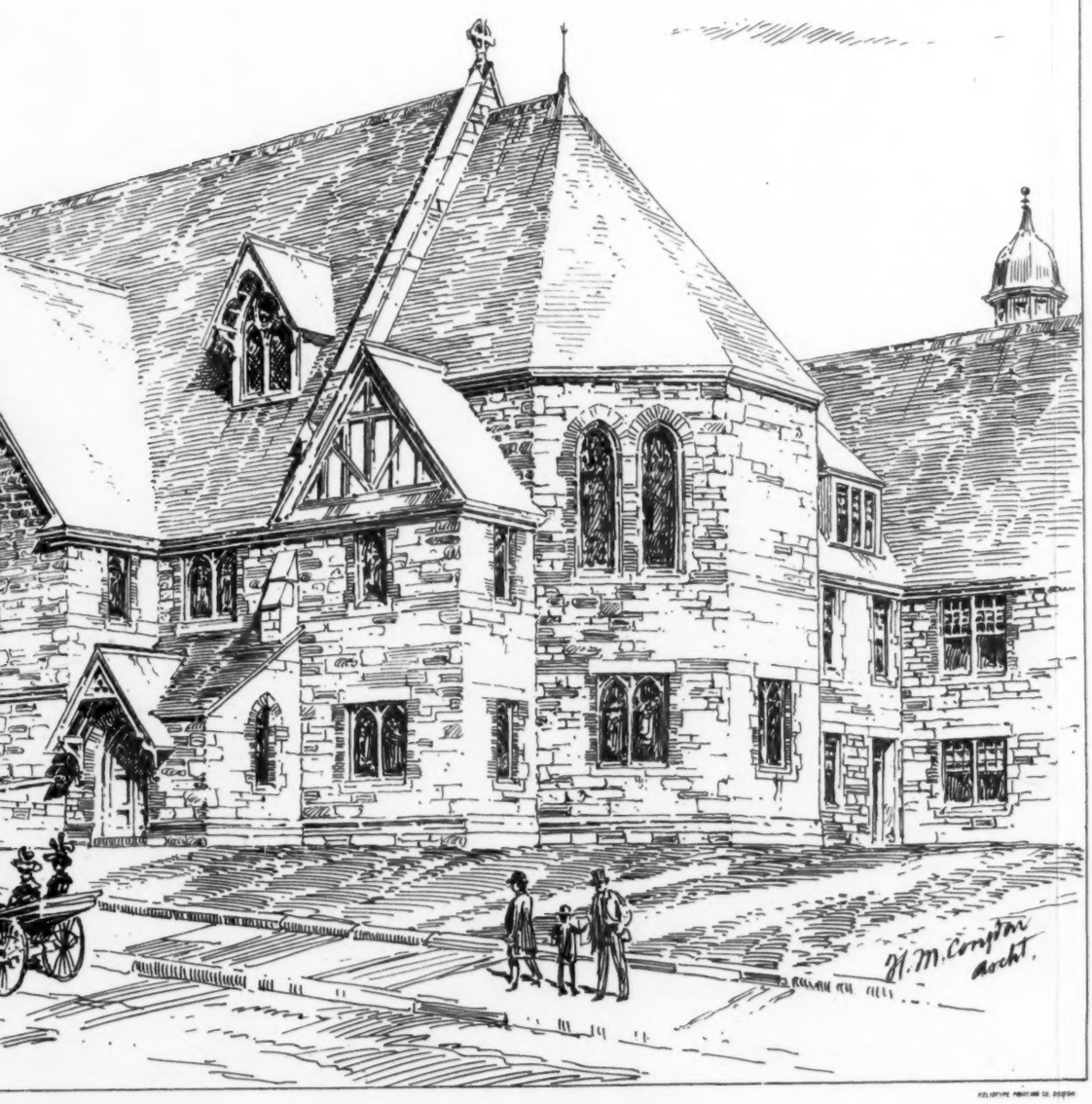

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