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DECORATION

TICKNOR & COMPANY

CONSTRUCTION

BOSTON MASS.

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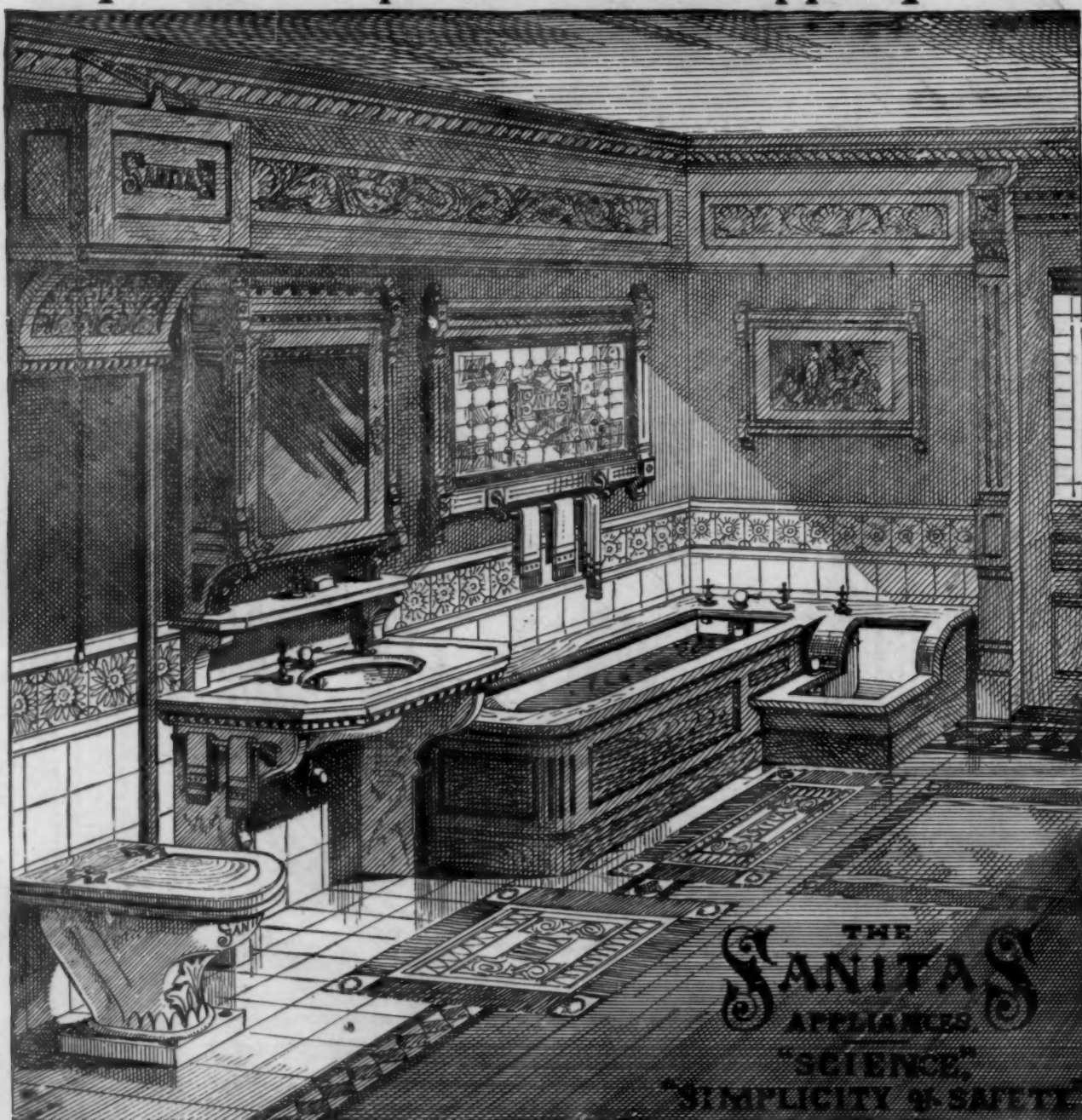
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## VIEW OF BATH-ROOM FITTED UP WITH THE SANITAS • PLUMBING • APPLIANCES



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THE Massachusetts Legislature, which is well known for its benevolent disposition, heard, in 1888, that children in school-houses did not have all the fresh air to breathe that would be good for them, and forthwith passed a law, commanding that "Every public building and every school-house shall be ventilated in such a proper manner that the air shall not become so exhausted as to be injurious to the health of the persons present therein." The enforcement of this decree was referred to the District Police, and the legislators, conscious that they had deserved well of their constituents, turned their attention again to more important business. Fortunately for the Massachusetts children, the Chief of the District Police is a man who conceives it to be his duty to enforce laws, instead of maintaining the urbane unwillingness to believe that any one could be thinking of violating them, which renders certain officials so popular, and, in enforcing them, he takes pains to learn something about the subject to which they relate, so as to be able to carry out his mission fairly and efficiently. Hence it came about that, instead of buying an interest in a "sewer-gas cremator" patent, and ordering that a three-quarter-inch pipe should be carried from each privy vault to the furnace-grate, he put his inspectors in the way of finding out what was the proper quantity of fresh air to be supplied per hour to school-children, and of applying anemometers and carbonic-acid tests to see whether they got it, and then sent them out to examine the school-houses throughout the State. As architects can well imagine, the result of the investigation would have been, in some cases, amusing, if it had not also been tragical. On the whole, the ventilation of the school-houses seems, from the printed report, to have been creditable to the State, and there are indications of a popular knowledge of the importance of fresh air, and a perception of the methods of getting it, which hardly existed ten years ago; but there are also plenty of illustrations of the stolid, brutal ignorance of the physical needs of children, and indifference to their sufferings, which have by no means yet died out among school-committees and town officers.

AMONG the examples of criminal ignorance and stupidity in school-building, the worst, perhaps, is furnished by a case in Salem, where a four-room school-house, accommodating one hundred and sixty pupils, was found to have been planned with privies in the basement, the vaults of which were "ventilated" by two galvanized-iron pipes, one four inches and the other six inches in diameter, carried to the chimney. The rooms above were also "ventilated" by means of registers at floor and ceiling, opening into the same chimney, and, appar-

ently, into the same flue. It is hardly necessary to say that even the teachers, who, it must be remembered, in most Massachusetts towns are elected annually, and know that their position depends upon the delightful perfection which they discover in everything that the school-committee provides for them, "perceived a foul atmosphere" at certain times in the rooms, but it was not until seven cases of diphtheria had occurred among the pupils, with four deaths, that attention began to be called to the injudiciousness of ventilating, by diffusion, the privy-vaults into the class-rooms, and the school was ordered closed until changes were made. In another large and important school-house, built in 1872, the inspector was apparently startled at finding the air in the basement charged with fifty parts in ten thousand of carbonic acid, and it turned out that the privies were in a building about thirty feet away from the main school-house, but that, not to lose entirely the charm of their presence, a well had been dug in the school-house cellar, which undoubtedly received the drainage from the vaults. For some time the children in the school were given water from this well to drink, but a few years ago the stench from it became insupportable, and it was filled up. Though lost to view, the well took care that it should not be forgotten, by sending forth an aroma, which pervaded, more or less, the building. The arrangements for getting rid of this healthful atmosphere were as judicious as those by which it was produced. Three "ventilating-ducts" were built in the brick walls, communicating, by tortuous wooden boxes, with the roof. There were openings from the top of the rooms into these "ducts," but, as they were not warmed, nor was any inducement offered them to exercise any "ductile" power, they declined to do so, just as any other "duct" of the kind does under similar circumstances. One is hardly surprised to find that boards were nailed over the "ventilating" outlets, to save fuel, as was the case in other instances. In several school-houses, the so-called "ventilators" opened from the rooms into a garret, or other entirely enclosed spaces, and, of course, there was no movement of air whatever through them; but even the pretence of ventilating openings was in several buildings boldly abandoned. In one large school-house, with an average attendance of more than three hundred children, there was absolutely no provision for ventilation except by the windows and doors. Even the furnaces, three of which were used, had no fresh-air supply, but gathered the air which descended from the upper stories to the cellar floor, warmed it up, and delivered it again to the rooms above. The cellar was used to store coal, wood, ashes and the sweepings from the school-rooms. The floor was flooded with water after all heavy rain-storms, and the wood-pile stood over a bed of wet, rotten rubbish, which had been accumulating for years. The same state of things was found in another large school-house in the same town, and the inspector ordered it remedied. Thereupon arose a storm of indignation in the town. "A leading medical practitioner" got up in town-meeting, and said that the two school-houses in question were "well ventilated"; that there "had been more sickness among school-children from too much ventilation than from too little," and that the requirements were "absurd."

IN the death of Mr. W. J. McAlpine, the country loses perhaps its most eminent civil engineer, as well as one whose name was particularly familiar to architects. Mr. McAlpine was born in New York, in 1812, and educated in the city schools. He seems to have had a remarkable turn for civil engineering, and, while very young for so responsible a post, was employed upon the Erie Canal as one of the chief engineers, remaining in charge of the eastern division of the canal till 1846, when he resigned, to design and carry out the dry-docks at the Brooklyn Navy Yard, for the United States Government. In 1852, he was elected State Engineer of New York, and, two years later, became State Railroad Commissioner. He was connected for a time with the Erie Railroad, as chief engineer, and acting President. During the war, he had charge, for the Federal Government, of the railroads under military occupation in the Southern States. By this time, he had attained a very high reputation in his profession, both at home and abroad, and was requested, in 1870, by the Emperor of Austria, to submit designs for the improvement of the cataracts of the Danube. According to the New York *Evening Post*, to which we are indebted for a very

interesting account of his life, his plans were accepted, but we think that they are not yet fully carried out. When the Capitol at Albany was begun, Mr. McAlpine was appointed consulting engineer and general superintendent, and made some very skilful and thorough tests of the foundation. Later, he was chief engineer of the unfortunate Arcade Railroad, and, nearly to the day of his death, was active in professional work. Naturally, his employment for the last ten or twelve years was mainly as a consulting engineer, and there was no one, perhaps, whose opinion was so highly valued, and so frequently sought. Although ardent in the pursuit of his profession, both in practice and theory, he cared little for mere money-making, and his reputation for perfect integrity and honesty was perhaps increased by the modesty of his fortune.

OUR readers probably know that Signor Brentano, the young winner of the great competition for the completion of the Cathedral of Milan, died recently in Milan, before anything had been done toward the execution of his design. In fact, he had only just begun the construction of a model in wood, intended to afford him better opportunity for studying the effects indicated by his sketches, when he was seized with typhoid fever, which soon proved fatal. Whether his design can be, or will be, carried out, seems now somewhat problematical. According to Signor Melani, who writes on the matter to the *Builder*, Brentano's model is now being completed, in accordance with the designer's drawings, and there would be no great difficulty in keeping closely to the outline and disposition already determined upon, but the Cathedral officials have, so far, only the Togni bequest, amounting to about one hundred and seventy thousand dollars, to go toward paying the bills for an undertaking, the cost of which is estimated at two millions; and the lack of Brentano's personal influence, with, perhaps, the jealousies which are sure to be excited by the appointment of his successor, may postpone indefinitely the carrying-out of the project. By the terms of the Togni bequest, which dates from 1884, the money must be wholly or partly used within twenty years for the work on the Cathedral façade, or the gift lapses to another charity, but some way may be found for retaining the sum, which is, after all, not large in proportion to the whole amount necessary. Personally, as Signor Melani writes, Brentano was a man of very modest disposition, irreproachable in character, and accustomed rather to the life of a fastidious and well-bred young man of rank, than to that of a professional artist. Notwithstanding his elegant and luxurious tastes, however, he was a devoted student. Even while a pupil at the Polytechnic School at Milan, he gained much credit by his sketches of architectural subjects; and when, much to his own surprise, he was selected to be one of the participants in the second competition for the Cathedral façade, instead of imagining himself to be the greatest artist living, he went immediately to Germany, to study Gothic architecture to the best advantage, and, after examining the best original examples, entered the office of Baron Hasenauer, the celebrated architect of the Museum of Fine Arts, and many other buildings, at Vienna, where he remained for several months, for the sake of gaining a knowledge of the principles of Gothic work from so competent a master. All this well-directed work bore fruit, and his final design immediately received the votes of twelve out of the fourteen judges. The excitement and anxiety of the contest appears to have been too much for a constitution naturally delicate, and his friends have for some time been dreading an event which has made the winner of the competition the fourth of the competitors, under thirty years of age, who has died since the first sketches were submitted. The first was the lamented Ciaghin, of Saint-Petersburg, who was selected for the second competition, but did not live to finish his plans. The next was Tabea, of Venice, a man of great ability, and the third was Raffaele Cattaneo, who will be remembered as one of the architects engaged upon Ongania's splendid publication on the church of S. Mark at Venice.

A CASE of an architect's responsibility is reported from Paris which has its moral for us. A certain Bautin built a small shop in that city. Bautin was a frugal soul, and, while his two brothers-in-law were digging the cellar, he got an architect, named S., to go with him to his father-in-law, Denis, who dealt in second-hand materials, to pick out some beams and girders suitable for the first floor. The beams were sent and put in position, and, after the floor was on, Bau-

tin engaged the architect to look after the rest of the work. The shop was finished, and rented for a "crêmerie." Soon afterward, the proprietress of the "crêmerie," Madame Dufrêche, with a customer, Mademoiselle Steller, fell through the floor, in consequence, as was proved, of the rottenness of the beams, and were severely bruised. Thereupon they brought suit for damages against the architect and the owner, and a criminal action was also commenced against the same parties. All the parties appeared before the court, and Denis, who sold the rotten sticks, explained that he furnished some cheap lumber to accommodate his son-in-law, but that neither the latter nor himself knew how to distinguish rotten timber; that, further, the architect and the contractor came to his place and picked out the sticks. Bautin, of course, protested that he knew nothing about construction, and left everything to his architect, under the well-known rule by which, if an owner chooses to use cheap and inferior material, the architect, unless he protests against it vigorously at the time, is bound to pay out of his own pocket, later, the difference in value between the bad material and that of good quality, which he ought to have insisted on having used. The contractor did not make his appearance at all, and the court condemned the wretched architect to pay twenty dollars, and Bautin ten dollars fine, on account of the rotten timber of the latter's father-in-law; and the two were ordered to pay "*solidairement*" three hundred and sixty dollars damages to the two injured ladies, besides costs.

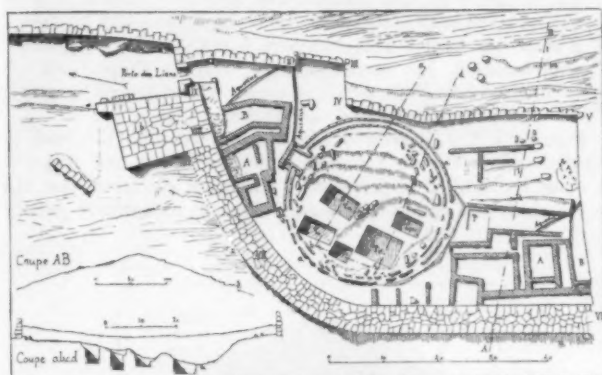
A NEW fashion has set in in Paris, which will probably soon be imported into this country, and consists of nothing less than the holding of bull-fights of a rather mild kind, but resembling those of Spain in everything except the sanguinary murder of half-a-dozen horses and two or three bulls, which usually give spice to such entertainments in the Peninsula. The French police supervision, which is, of course, very rigid in Paris, absolutely forbids the killing of either horses or bulls in the arena, and, although the most celebrated Spanish matadors, Lazartijo, Angel Pastor and the great Frascuelo himself, appear in the Parisian ring, they are obliged to content themselves with dexterous dodging of the bull's attacks and a pretended sword-thrust in the fatal spot, just back of the ears, which is, however, only allowed just to penetrate the skin. The other paraphernalia of the *plaza de toros* are, however, there. The bandarilleros chase the bull about, and plant little arrows in him, and vault nimbly over the fender when his horns get uncomfortably close, the picadors touch him with their lances, but the affair becomes, instead of a repulsive and cruel spectacle, rather an interesting gymnastic exhibition, and as such is highly appreciated by the Parisians. According to *La Semaine des Constructeurs*, a variety in the entertainment might be, and, some years ago, was introduced by a company of bull-fighters from the Camargue, the flat country on the Mediterranean coast, near Marseilles. These men, who often exhibit their performances in the ruined arenas of Nîmes and Arles, devote themselves to the athletic side of their profession, and acquire immense dexterity. One set, known as the "*écarteurs*," stand waiting for the bull, and, as he rushes upon them, dodge him by a dexterous pirouette. Another set, called "*sauteurs*," carry long poles, and stand, coolly leaning on the poles, awaiting the bull's attack. His dash is always made in a straight line, and, as he plunges at them, they seize the moment, just before he reaches them, to rise in the air by a dexterous vault with the pole, and, flying over his head, come down behind him, while he continues his furious course. Another set of "*sauteurs*," stronger and more skilful still, leap into the air, without any pole, and allow the bull to pass under them, descending neatly on the tips of their toes behind him. For variety, these acrobats often wrap their legs in their cloaks, or tie their ankles together with a handkerchief, before taking their jump.

FOR a long time it has seemed as if it were hardly possible to avoid this year a very serious struggle in the building trades. Masters and men have confronted the situation for months, and have on both sides taken steps to perfect their organizations, so, if the struggle does come, it may be long and serious. The success of the strike against Morton & Chesley in New York will make the freestone-cutters in Boston hopeful of gaining their point, while the attitude of the master stone-cutters promises to make the threatened lock-out an effective one—until the selfish interest of some individual puts an end to it.



# FUNERARY ARCHITECTURE.<sup>1</sup>—III.

## THE GREEKS.



Tombs at Mycenae.

MORE or less stately descriptions of the primitive Greek tombs have come down to us in the works of ancient authors.

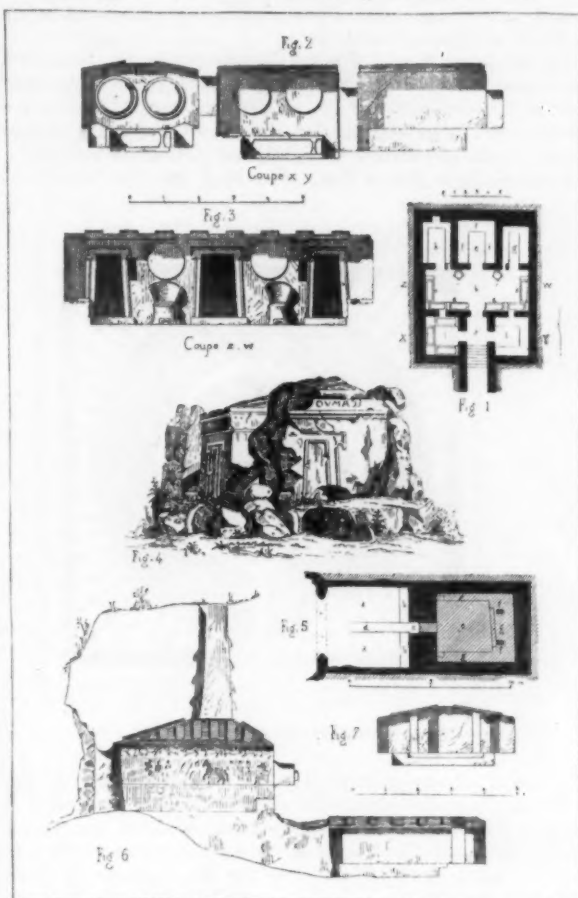
So far as can be determined, they were mainly tumuli, of greater or less importance, and more or less decorated, covering the bodies or the ashes of distinguished personages. The recent discoveries of Dr. Schliemann at Mycenæ have thrown much new light on questions concerning the burial-places of the heroic period. Whether or not the five tombs found by him at the centre of the Agora were the burial-places of Agamemnon and his family, they nevertheless possess peculiarities of exceptional interest. The Agora, the circular enclosure of which is formed by a double row of upright slabs, like the Celtic cromlechs, lies in the Acropolis near the Pelasgic walls and the Lion-Gate. It contains five tombs, which are nothing more than quadrangular openings hewn into the rock. The situation of the graves was indicated by stelæ, either plain or adorned with extraordinarily archaic sculptures, as well as by a funeral altar. The bodies seem to have been partially incinerated on the spot. The learned excavator had the good fortune to unearth near them an invaluable collection of gold ornaments of very beautiful workmanship, and notably several gold masks which were placed over the faces of the dead; all these articles are remarkable for the purity of their style.

Among the peninsular Greeks the tombs were greatly varied in form; usually, however, a simple stela, terminating above as an antefix, is found raised over the grave. Abundant examples of stelæ of this kind are to be seen in European museums; they are for the most part wonderful models of decorative carving [Various Stelæ, Figures 5, 6, 7, 8, 9, 10]. Certain other tombs terminate in a pediment and appear in low-relief; others still are nothing more than diminutive reductions of the façade of a temple.

Many of the tombs seem to have been adiculae composed of four columns supporting a roof, under which stood a statue. We believe that no example

of these now exists in Greece. Burials were always made outside of the cities. The few exceptions to the rule were in favor of especially distinguished citizens.

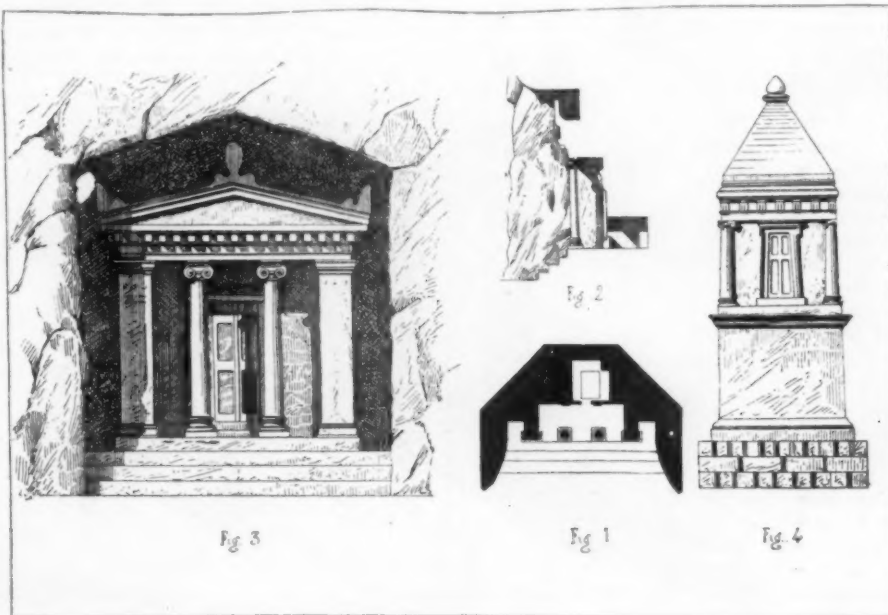
Very beautiful specimens of funerary architecture have come



Etruscan Tombs.

down to us from the Greek colonies or from the peoples subjected to Greek influence. We give, as examples, the well-known rock-cut tomb of Telmissus in Syria (Figures 1, 2, 3), and the no less celebrated Tomb of Theron in the neighborhood of Agri-

gentum, after the restoration of Hittorf (Figure 4). In the first of these, the cutting of the various details of the false door under the porch exhibits the same painstaking to imitate wood construction which we have already remarked among the Syrians: a similar attempt likewise appears in the unusual size of the dentils, which have the look of rafter-ends,



Tombs at Telmissus and Theron.

## THE ETRUSCANS.

The only architectural remains of the Etruscans are their tombs. The Romans, aided by time, swept away every other

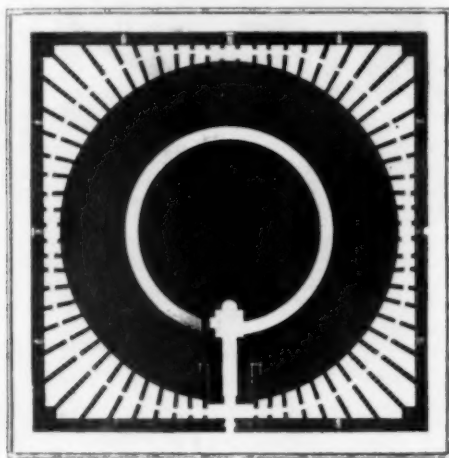
<sup>1</sup> From the French of Pierre Benouville in Planat's "Encyclopédie de l'Architecture et de la Construction." Continued from No. 739, page 116.

Etruscan construction. Although their sepulchres are all rock-hewn, they present a considerable variety of types. This fact is traceable not only to the varying character of the soil, but also to the Greek or Asiatic influences brought to bear upon the art of this people whose civilization went down before the waves of Roman invasion.

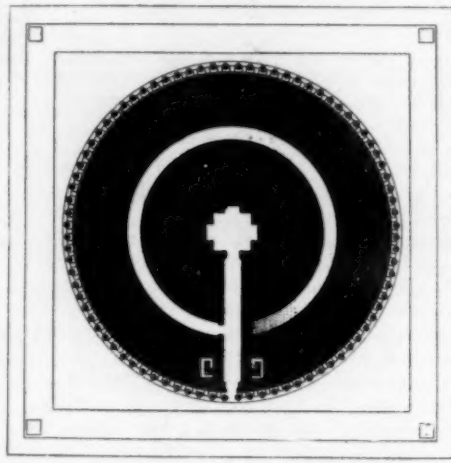
The tombs of Castel d'Asso, though cut in the limestone, form almost detached *ædiculæ*; they adhere to the rocky mass only by the posterior portion. The main part of the house-like structure is of rectangular shape, with strongly sloping walls; it terminates with a slightly projecting cornice and is surmounted by a pyramidion. (Nothing but the framework

were doubtless intended to accommodate the funeral furniture. At Corneto (Tarquinii) genuine conical tumuli with basements of masonry still exist. The entrance in all cases is through a door in the basement which communicates by means of a stairway with burial-chambers excavated in the ground. These chambers are rectangular or oval in shape, and are covered with ceilings or vaults of corbelled courses of masonry. The bodies were merely laid on benches.

Figures 5, 6, 7, borrowed like the others from the work of Gailhabaud, represent a tomb quite peculiar in one respect: the burial-chamber is preceded by another chamber, also cut in the rock, and doubtless designed for commemorative gather-



Tomb of Hadrian. Plan at Lower Level.



Tomb of Hadrian. Plan at a Higher Level.

now remains of the greater part of these crowns). On the anterior face is a false door with slanting jambs; the casing is formed by a simple moulding the *crossettes* of which are clearly marked. Beneath this door was the real entrance which was hidden by earth transported there for the purpose; it gave access to a circular or elliptical room, which contained the sarcophagi, or, more correctly speaking, a series of coffins hewn out of the rocky mass. Figure 4 [Etruscan Tombs] gives an idea of this kind of sepulchre.

At Cervetri (Cære) the tombs have no external decorations; a staircase leads down to one or several chambers, cut in the rock and containing sarcophagi or funerary couches. Such is the tomb known as the "Tomb of the Seats and Shields." Figures 1, 2 and 3 give the plan and sections of it. A stairway runs to a broad landing *a*, on which three rooms open. In the room *k*, to the right, there is a bench designed to seat persons assembled for the funeral ceremonies and the celebration of special rites; it may have been a sort of triclinium used for the same purpose as the one still to be seen at Pompeii in the Street of the Tombs. Room *l*, on the left, contains two sarcophagi and a funerary couch; whether the body was merely placed on this couch during the observance of certain forms, or whether it was left there for decomposition, we will not assume to decide. A door facing the stairs gives access to a large hall *b* which contains, besides six funeral couches *d*, the two seats *c*, with shields sculptured above them, from which the tomb is named. Three smaller rooms *e*, *g*, *h*, opened out of this large apartment; the benches *l* running around them

ings. The ceiling is hewn into the form of a trapezium sloping off from the centre, which is occupied by a square aperture, resembling a chimney and tapering up like a funnel to the surface of the ground. The same attempt to imitate woodwork that is observable in most of the tombs appears in this ceiling. Some of these imitations are on circular designs and bear witness to the progress which the Etruscan carpenters had already made in the art of building. The tombs were generally decorated with paintings. These, however, as well as the curious articles found in the tombs, do not come within the scope of this sketch. Suffice it to say that the cinerary urns



Tomb of Cecelia Metella.

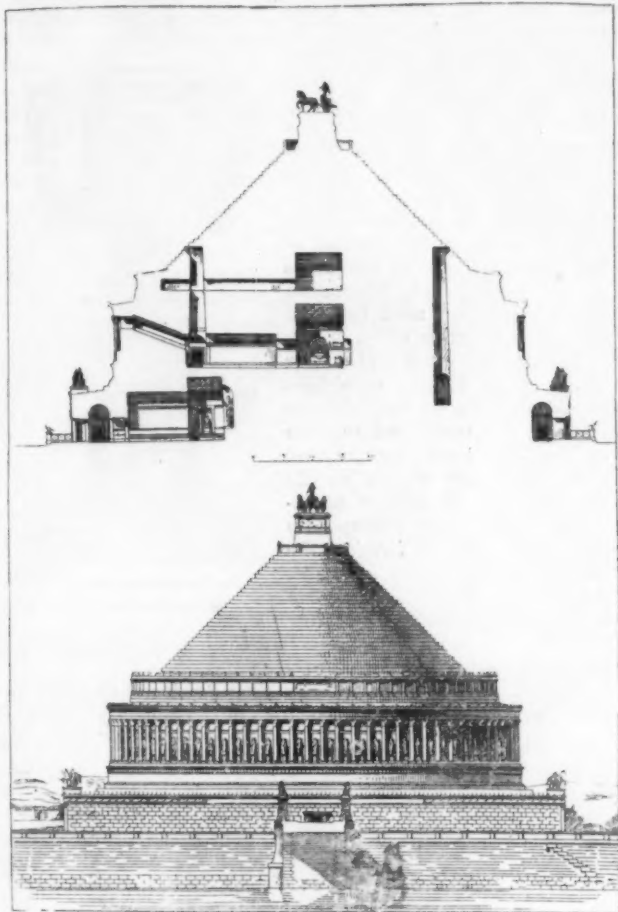
discovered prove that the custom of burning the dead was, if not universal, at least quite widespread.

At Vulci, the ground was in generally too flat to be well adapted for the construction of tombs like those described



above. Here, therefore, the Etruscans contented themselves with excavating subterranean chambers, the ceilings of which were supported on pillars left in the mass of tufa.

Raoul Rochette has made a restoration of the tomb of Porsena according to Pliny's description, which was itself



Tomb of Hadrian.

borrowed from some other source. Everything touching this assemblage of conical or pyramidal tumuli seems so supposititious that we prefer to treat it as a fancy resting on no authentic basis.

#### THE ROMANS.

Though the Romans reached the zenith of pomp and splendor in funerary constructions, they did little but appropriate and transform the styles of earlier races. Without ever attaining to the immortal ascendancy of Egyptian art, they built funerary monuments whose ruins give evidence of that same grandeur which they impressed on everything that came beneath their touch.

We have made no attempt to enumerate here the vast varieties of Roman tombs, we have merely sought to indicate in the plates and text those types which seem to us especially characteristic and noteworthy.

If an English-Latin dictionary be opened to the word "tomb," the words *Cenotaphium*, *Cepotaphium*, *Cippus*, *Columbarium*, *Conditivum* or *Conditorium*, *Mausoleum*, *Monumentum*, *Sepulcrum*, *Tumulus* and others will be found figuring there as translations. It must not be supposed, however, that these words are synonyms. Each, in reality, designates one of the different types of tombs adopted either simultaneously or successively by the Romans.

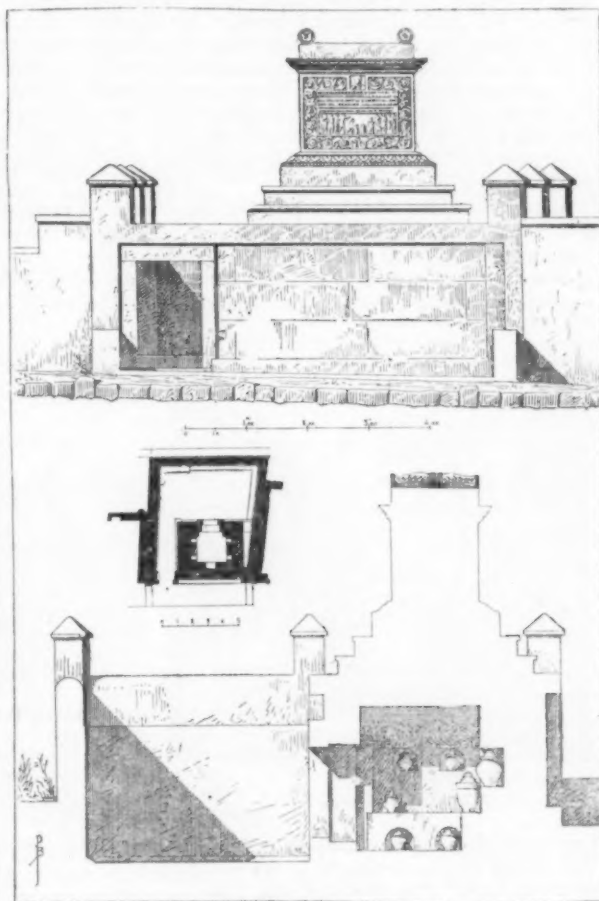
Their most ancient form of sepulchre seems to have been the *conditorium*. This term, in its exact signification, was applied, according to Rich, to underground vaults constructed to receive unburnt bodies; it was in use among the Romans at a very early period of their history. The *conditorium* is a genuine *hypogeum*. Such was the tomb of the Scipios between the Via Appia and the Via Latina. We may add, in

passing, that the word "*conditorium*" is often applied, by extension, to the sarcophagus itself.

The word "*cenotaphium*" was employed solely to designate a monument erected to a person whose body could not be recovered, or whose ashes had been deposited elsewhere. "*Cepotaphium*" meant a tomb surrounded by a garden, or a garden consecrated to a tomb.

The term "*monumentum*" was applied indifferently to a cenotaph or a real tomb.

*Mausoleum*, a word whose origin is to be sought in the legendary splendor of the sepulchre of Mausolus, King of Caria, served to denominate burial monuments of such gigantic proportions as the Tomb of Adrian, called, also, because of its immense size, "*Moles Hadriana*." This huge tomb, whose substructions, embattled and transformed into a fortress during the Middle Ages, to-day front the Pontus Ælius under the name of the Castle of S. Angelo, must have been an inconceivably imposing structure. We give [Adrian's Mausoleum] a restoration after M. Vaudremer. It has also been restored with two stories of colonnades. But this aspect of it is much less satisfactory. The forced reduction of the conical portion, which becomes in some sort a mere roof, destroys all its character. It is not at all probable that the bronze pine-cone, now in the Vatican Gardens, formed the crowning ornament of this colossal *tumulus*, as was long supposed: we say *tumulus*, for surely we cannot mistake the architect's source of inspiration. This source of inspiration is still more clearly recognizable in another great mausoleum which stood in the Campus Martius at Rome, the Mausoleum of Augustus. This monument, whose transformation into a circus has furnished the theme for many and varied reflections on the mutability of things here below, is, unfortunately, in a badly ruined condition; we believe, moreover, that it has never been the subject of very serious investigations. Like the Tomb of Adrian, it is a huge, cylindrical mass. The conical portion is supposed to have been covered



Tomb at Pompeii.

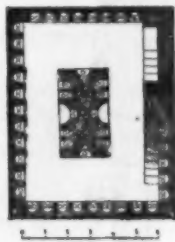
with earth and planted with trees. This would be a most significant reminder of the *tumulus*.

The tombs of the Plautian family on the Via Tiburtina, and of Cecilia Metella on the Via Appia, were designed in accordance with the same idea, though on a much smaller scale.

The latter [Tomb of Cecilia Metella] is one of the noblest and purest Roman sepulchral monuments now in existence. A substantial square basement, the marble coating of which has disappeared, and in which there are five chambers, supports the cylindrical part; this has a diameter of 93.96 feet, but, as the walls are 32.80 feet in thickness, the diameter of the central chamber is reduced to 28.36 feet. It was in this last-named chamber that, under the pontificate of Paul III, the beautiful sarcophagus was found, which may be seen to-day in the court of the Farnese Palace. The cylindrical portion is



A Roman Cippus.

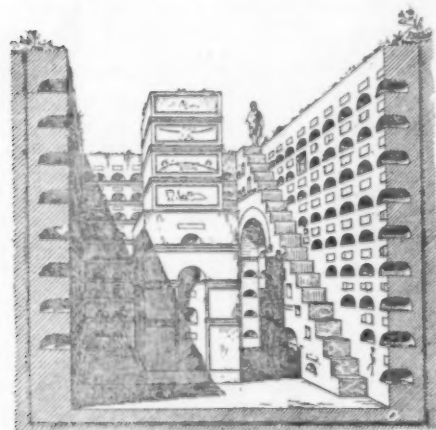


Plan of a Roman Columbarium.

built wholly of large blocks of travertine. It is crowned by an imposing cornice, with a frieze of ox-skulls joined by wreaths of bold design. On the frieze is the inscription which tells us that Cecilia Metella was the daughter of C. Cecilius Metellus, and the wife of the Triumvir Crassus. An attic above the cornice supports the battlement with which the structure was surmounted in the Middle Ages to transform it into a donjon for the castle of Boniface VIII. There was originally a conical roofing above the attic, which, judging from the thickness of the walls, may have been covered with earth for the planting of cypresses. The aspect of this monument is still extraordinarily impressive.

Many reductions of this type of tomb existed all along the Via Appia. They are likewise to be seen at Pompeii and in a large number of other places.

Since we have spoken of Pompeii, let us call attention to the sepulchres on the Street of the Tombs, several of which are



A Roman Columbarium.



Roman Funerary Urn.

very remarkable, notwithstanding their modest dimensions. The Tomb of the Garlands is too well-known to require description here. The greater part of these monuments resemble more or less closely the one represented in our cut [Tomb at Pompeii], which stands near the suburban villa known as the Villa of Diomedes, being separated from it by only the funeral triclinium. It comprises an enclosure, within which is a square basement bearing a sort of cubical pedestal; the latter is covered with inscriptions and bas-reliefs. A glance at our illustration shows that this is not a single tomb, but rather a

*sepulchrum familiare*, a veritable advance toward the *columbaria* of which we shall treat farther on.

The most widely dispersed of the Roman sepulchral monuments are the *cippi*. The *cippus* is always of modest proportions; it consists of a sort of pedestal bearing an inscription, and presenting surfaces which are sometimes adorned with the plainest mouldings, and sometimes laden with garlands of fruits and with decorations of every other kind. It was erected as a tombstone above the spot where a person was interred. During the period when the custom of incineration prevailed, there was a cavity in the interior of the *cippus* to receive the ashes of the dead. Our illustration shows one of the most beautiful specimens of ornate *cippi*.

Though the general character of the great Roman sepulchres was inspired, as we have hitherto seen, by the traditional *tumulus* of primitive races, certain ones exist which are almost servile reproductions of foreign monuments. Such, for example, is the great pyramid forming the tomb of Caius Sestius at Rome. An interior chamber, which can be reached only through a narrow corridor, and whose walls are of stucco covered with paintings, originally held the cinerary urn.

Though often content to copy their predecessors, as in the case just cited, it remained for this eminently practical



Roman Funerary Urn.



Tomb at Palmyra.

people to create a type of tomb wherein respect for the dead should be reconciled with the observance of the elementary laws of hygiene. From this double point-of-view, the *columbaria* around Rome may be said to furnish a most ingenious solution of a very serious problem; they prove, too, how widespread the custom of cremation was at certain periods. In



early times, incineration was resorted to only concurrently with the other methods of inhumation; later on the custom became universal, and the place assigned to the dead being reduced to the smallest proportions consistent with the respect due them, was no longer of a character to incommode the living. The *columbaria* furnish, then, a type of Roman tombs essentially different from the types of other peoples.

They were vaulted, underground, sepulchral chambers; in the walls there were rows of little niches quite like pigeon-coves, and it was from these that the name *columbarium* was derived. Each niche was large enough to hold two cinerary urns.

We copy from Campana's work the plan and the section in perspective of one of the *columbaria* which he unearthed during his excavations. The vaulting, which has disappeared, must have been a simple barrel arch. The walls exhibit many rows of pigeon-holes, and, as if these had proved inadequate, a mass of masonry was constructed in the centre of the chamber, with a large number of niches in its faces; the room is reached by a narrow staircase, the partition-wall of which contains still other niches. Beneath each of these openings is a marble plate, scarcely more than a label, inscribed with the family names and the *prænomena* of the dead. Our illustrations are of a *commune sepulcrum*; that is to say, a tomb designed for the use of several families. There were also *columbaria* reserved for the members of a single family, but in such cases the number of niches was considerably less. The ashes of unimportant persons were placed in simple terra-cotta jars covered with a lid. In the case of more distinguished personages, they were deposited in a sort of marble casket, which was more or less decorated, and sometimes assumed the proportions of a *cippus*. The urns, properly so called, exhibit a great variety of shapes; some of them are very richly sculptured, like the one shown in our illustration.

Is the huge sepulchral pylon now standing amid the ruins of Palmyra, and which figures among the illustrations of this article, to be considered as a specimen of a Roman tomb? We think not; yet, in spite of its originality, it seems to belong, in the details and mouldings, to Roman art. However this may be, the monument possesses a most impressive character.

Before finishing with the sepulchral architecture of those ancient civilizations which may be termed Classical, it seems desirable to sum up in a few words its general features.

The burial monuments belonging to these civilizations are placed, with rare exceptions, just outside of the cities, and, though more or less transformed, they all hold to the primordial types of *hypogeum*, *tumulus* and *stela*. The sepulchral style is characterized by general forms, which are nearly always the same. It is to the *ensemble* of the monument that we are to look to for its distinctive character, and not to the details or the ornamentation, which are perceptibly similar to those of contemporary civil and religious edifices. And, lastly, the aspect of these monuments seems to demonstrate that they were not intended to awaken among these ancient peoples any very dreadful idea of death. Nowhere do we find traces of that fear of punishment and, consequently, terror of death, which the Christian dogmas were destined to inspire. All that we can learn from the funeral rites goes to prove that every one was made familiar with that passage to a new existence which Christianity has enveloped with so many difficulties. The repulsion which the sight of death arouses in us seems to have been unknown to the ancients. They accustomed themselves to living among tombs, not merely because these often contained only ashes, and were, consequently, stripped of the horrors of decomposition, but also because there were none of those representations of corpses on them which, as we shall see, appear on the tombstones of the Middle Ages. And so the tombs are found ranged along the roadsides, just beyond the city gates. Is not the delightful villa we have mentioned at Pompeii surrounded by sepulchres? It does not appear that the proximity to the dead possessed any mournful associations for the living, or detracted from the charms of this lovely dwelling.

[To be continued.]

THE BRONZE GATES FOR COLOGNE CATHEDRAL.—The magnificent bronze gates for the Cologne Cathedral, which have been manufacturing for several years, are now nearly completed, and they will be placed in position and inaugurated in the course of next spring. They represent the four seasons, the four ages of man, and the wise and foolish virgins, and the elaborate ornaments are beautifully executed, consisting of groups of animals and plants and coats-of-arms.—*New York Commercial Advertiser*.

# SAFE BUILDING.<sup>1</sup>—XXXVIII.



THE full heavy curved lines in Tables XXXVIII, XXXIX and XL give the single and double shearing values for the same sized pins and rivets as in the previous three tables.

**Tables xxxviii, xxxix, xl.** The additional vertical columns to the left in these tables give the areas of cross sections in square inches, of the different sized pins and rivets, which multiplied by ten give their weights in pounds per yard of length for wrought-iron, (for steel add 2 per cent to the weight of wrought-iron). There are also full heavy curve lines giving the strength, in tension, of tie-rods of same diameter as pins or rivets. The values selected for these curves are those *always* used by the writer in calculating pins, rivets or tie-rods.

It sometimes becomes desirable, in temporary work to use higher values, or in very important permanent structures with moving loads to use lower values. But even in such cases the tables can be used, for, as all of these curves are directly dependent on the area (or double area), of cross section of the rivet or pin, they can, of course, be used interchangeably. That is, any one who wishes to figure the safe shearing

( $\frac{g}{f}$ ) for steel as = 15000 pounds, instead of 10000 pounds, can take the curve marked "15000 pounds—tension steel," in any of the three tables.

Or, if he wishes to figure his iron at only 10000 pounds safe stress for tension, that is ( $\frac{t}{f}$ ) = 10000 pounds, he will, instead of using the curve marked "12000 pounds—tension wrought-iron," take the curve marked "10000 pounds—single shear steel."

The writer, however, always sticks to the one set of values for tension, and for pins and rivets to those given in tables (also after Formula 115), as they are certainly *safe* values, and yet not low enough to make the work excessively costly. Iron contractors will frequently quote off-hand opinions of celebrated engineers saying these values are much too low and thus backing up their economical tendencies in trying to add lightness (and beauty) to roof trusses and plate girders, but as a rule the opinions are either not authentic, or else it is found that the celebrated engineer, when delivering the opinion, had a similar axe to grind, as had the contractor. Good engineers as well as good architects, will attempt to save their clients all they can, but hardly at the risk of taking chances in their most important constructive works. The figures along the *tops* of Tables XXXVIII to XL give the values of either iron or steel, according, of course, to which curve is used.

The dotted curved lines in the Tables XXXVIII to XL give the safe bending-moments for iron and steel pins and rivets, and for these the *lower* horizontal lines of figures are used.

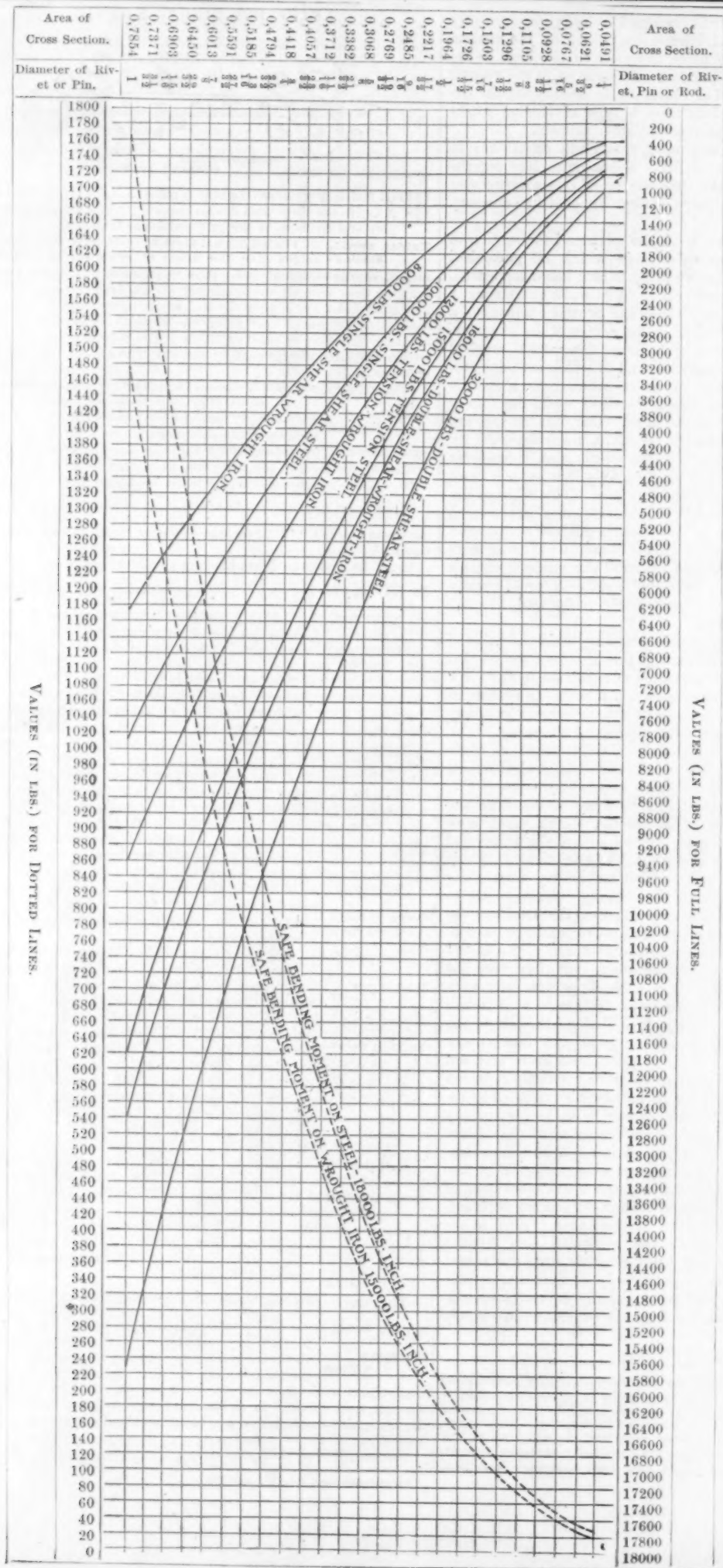
The use of the tables is simple, similar to the other tables with curves. Thus if we have a  $\frac{3}{4}$ " steel rivet bearing against a  $\frac{1}{4}$ " steel plate, we use Table XXXV and pass horizontally to the right from the vertical figure (or diameter marked)  $\frac{3}{4}$ " till we strike the (fourth) slanting full bearing line, marked  $\frac{1}{4}$ ". This is one-third way between the vertical lines marked (below for steel) 4000 and

the next vertical unmarked line to the right; as each vertical space at the bottom (steel) evidently is one-fourth of a thousand or 250 pounds, a third space will, of course, be 83 pounds, or a  $\frac{3}{4}$ " steel rivet bearing against a  $\frac{1}{4}$ " steel plate will resist safely 4083 pounds. Had we calculated arithmetically we should have had  $\frac{3}{4} \times 15000 = 4101$  pounds.

Had the rivet and plate been of wrought-iron we should have used the *upper* line of figures; here the intersection is one-third way between the second and third unmarked lines after 3000; as there are five spaces above between each thousand, each space evidently represents one-fifth of a 1000 or 200 pounds for iron, so that the bearing value for a  $\frac{3}{4}$ " iron rivet against a  $\frac{1}{4}$ " iron plate would be  $3000 + 200 + \frac{1}{5} \times 200 = 3267$  pounds. By calculation we should have had  $\frac{3}{4} \times 12000 = 3281$  pounds.

The single shearing value of a  $\frac{3}{4}$ " steel rivet at ( $\frac{g}{f}$ ) = 10000 pounds would be = 3067 pounds; for, the horizontal line  $\frac{3}{4}$ " in Table XXXVIII strikes the single shearing curve for steel about one-third way between vertical line marked at the top 3000 and the next unmarked line to the right. Each space evidently represents 200 pounds, so that we should have for the steel  $\frac{3}{4}$ " rivet in single shear  $3000 + \frac{1}{3} \times 200 = 3067$  pounds. By arithmetical calculation we should have had the area of a  $\frac{3}{4}$ " circle multiplied by 10000 pounds or  $0.3068 \times 10000 = 3068$  pounds.

<sup>1</sup> Continued from No. 739, page 123.





The double shearing value of a  $\frac{3}{4}$ " rivet would be double this, or = 6136 pounds, and this is confirmed by the Table (XXXVIII), as the horizontal line  $\frac{3}{4}$ " strikes the double shearing curve for steel 20000 pounds and its next unmarked line to the right, or  $6000 + \frac{2}{3} \cdot 200 = 6134$  pounds.

For the safe bending-moment we find the horizontal line  $\frac{3}{4}$ " strikes dotted curved line marked "safe bending-moment on steel at 18000 pounds" on the second vertical unmarked line to the left of the one

Or to illustrate further take the last Example (III). We had a Bending-moment Curve. 1" steel plate and 1" steel rivet. The actual bending-moment we found was

$$\frac{u \cdot l}{8} = \frac{135000 \cdot 1}{8} = 16875$$

From Table XXXVIII we see that the safe bending-moment on a 1" steel rivet is the intersection of horizontal line 1" being one-third way between third and fourth vertical unmarked lines to the left of  $1700 = 1700 + 3\frac{1}{3} \cdot 20 = 1767$  pounds-inch.

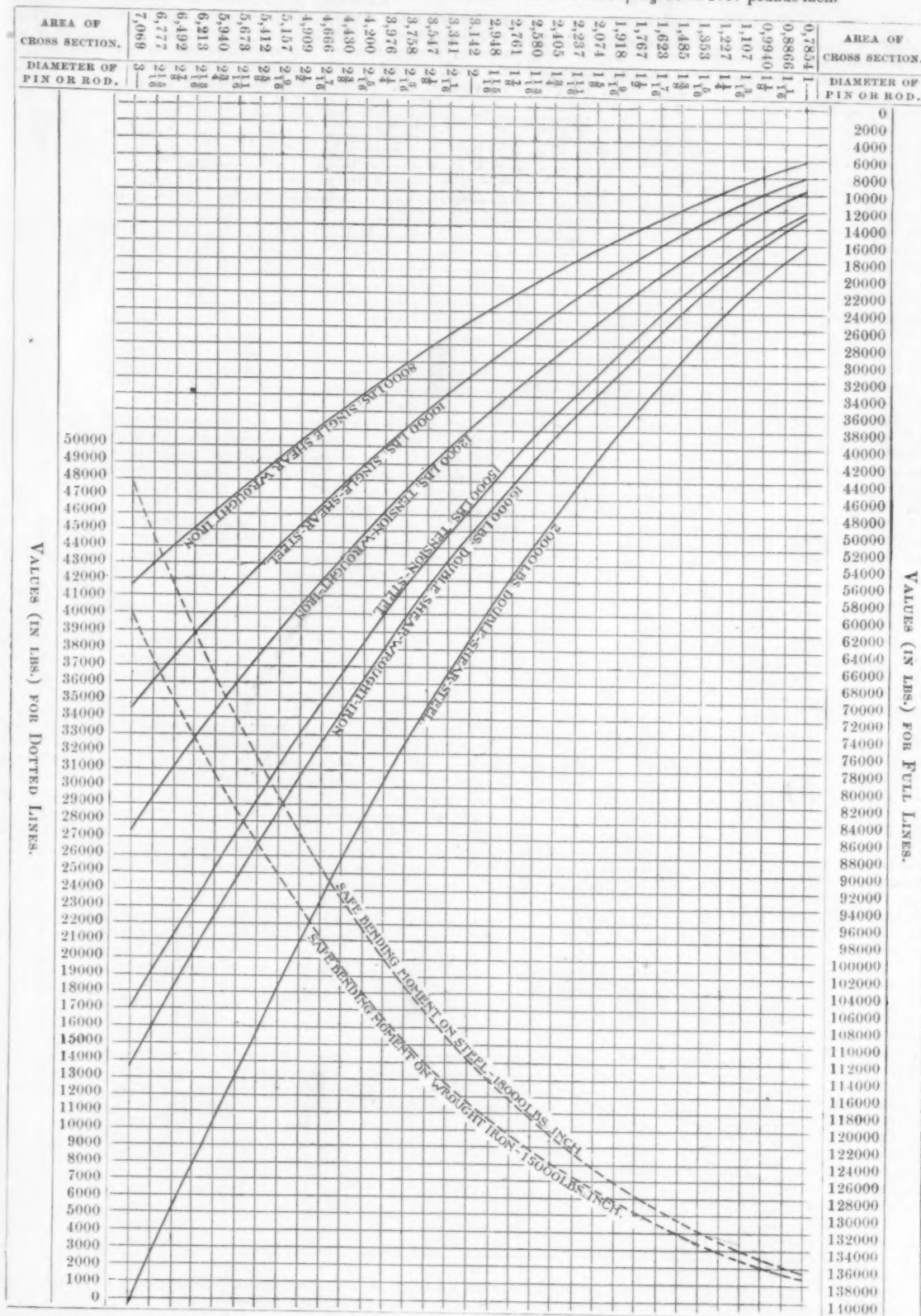


TABLE XXXIX.

SHEARING, BENDING AND TENSIONAL VALUES FOR IRON AND STEEL PINS AND RODS 1 TO 3 INCHES IN DIAMETER.

marked at the bottom 500; each space below is evidently 20 pounds, and as they increase to the left we must add the two spaces, or  $500 + 40 = 540$  pounds, which would be the safe bending-moment on a  $\frac{3}{4}$ " steel rivet or pin.

Dividing the actual bending-moment at the joint 16875 pounds-inch, by the safe bending-moment on each rivet, will, of course, give the number of rivets required, or

$$\frac{16875}{1767} = 9.55$$

being the same result as before, namely, 10 rivets. Take *Example II*, we had the same rivet, plate and strain, but there was but one cover-plate and the rivet was practically a cantilever.

The bending-moment was

$$\frac{u \cdot l}{2} = \frac{135000 \cdot 1}{2} = 62500 \text{ pounds-inch.}$$

This divided by the safe bending-moment on each rivet (1767 pounds-inch) as found in Table XXXVIII gives the number of rivets required, or

$$\frac{62500}{1767} = 35.4 \text{ or same as before.}$$

The use of Tables for pins or tie-rods, is, of course, exactly similar to use for rivets, as already described.

**Bearing on pins.** For instance, we have a 2" pin bearing against a 1½ inch thick eye-bar or head of a tie-rod. We use Table XXXVI, the 2 inch horizontal line, strikes the full slanting line marked 1½ inch exactly on one of the vertical lines. If both pin and eye-bar are wrought-iron — (or if either were wrought-iron we should use the smaller value) — we use the *top* line of figures, or we find our vertical line the third to the right of 24000 and as each space evidently represents 1000 pounds, the safe bearing value of our 2 inch pin against a 1½ inch thick eye-bar would be 27000 pounds, if one or both are of wrought-iron. Had both pin and eye-bar been of steel, we should have used the bottom line of figures, where each space evidently represents 1250 pounds, and we should have had 33750 pounds.

**Shearing of Pins.** The safe shearing value for a 2 inch wrought-iron pin, would be from Table XXXIX = 25000 pounds, and for steel 31670 pounds.

By calculation we should have had for iron = 25133 pounds and for steel = 31416 pounds.

**Tension on Rods.** If we had a 2 inch circular tie-rod its strength in tension from Table XXXIX would be, if of wrought-iron = 37600 pounds and if of steel = 47000 pounds.

By calculation we should have had for iron = 37752 pounds and for steel = 47190 pounds.

Pins are calculated similarly to rivets. The

**Calculation of Pins.** same formulae can be used

for bearing area (109) *h* being the thickness of head of eye-bar, in inches, and for single shear (110) and double shear (111).

For bending where there are but two eye-bars or rods, each pulling in opposite directions, Formula (112) could be used; using for *h* the thickness, in inches, of either rod; where there are two eye-bars or rods pulling in one direction with only one between them pulling in the opposite direction Formula (113) might be used; *h* in this case being the thickness, in inches, of the large (central) single rod, and twice the thickness of either of the smaller rods. In all of the formulae *x* should be = 1.

As a rule, however, there are several rods at each pin-connected

joint, and the bending-moment has to be carefully calculated for each special case. In designing pin-joints this should be borne in mind, and the pieces with largest strains brought as closely together, as possible, to avoid excessive bending-moments, which

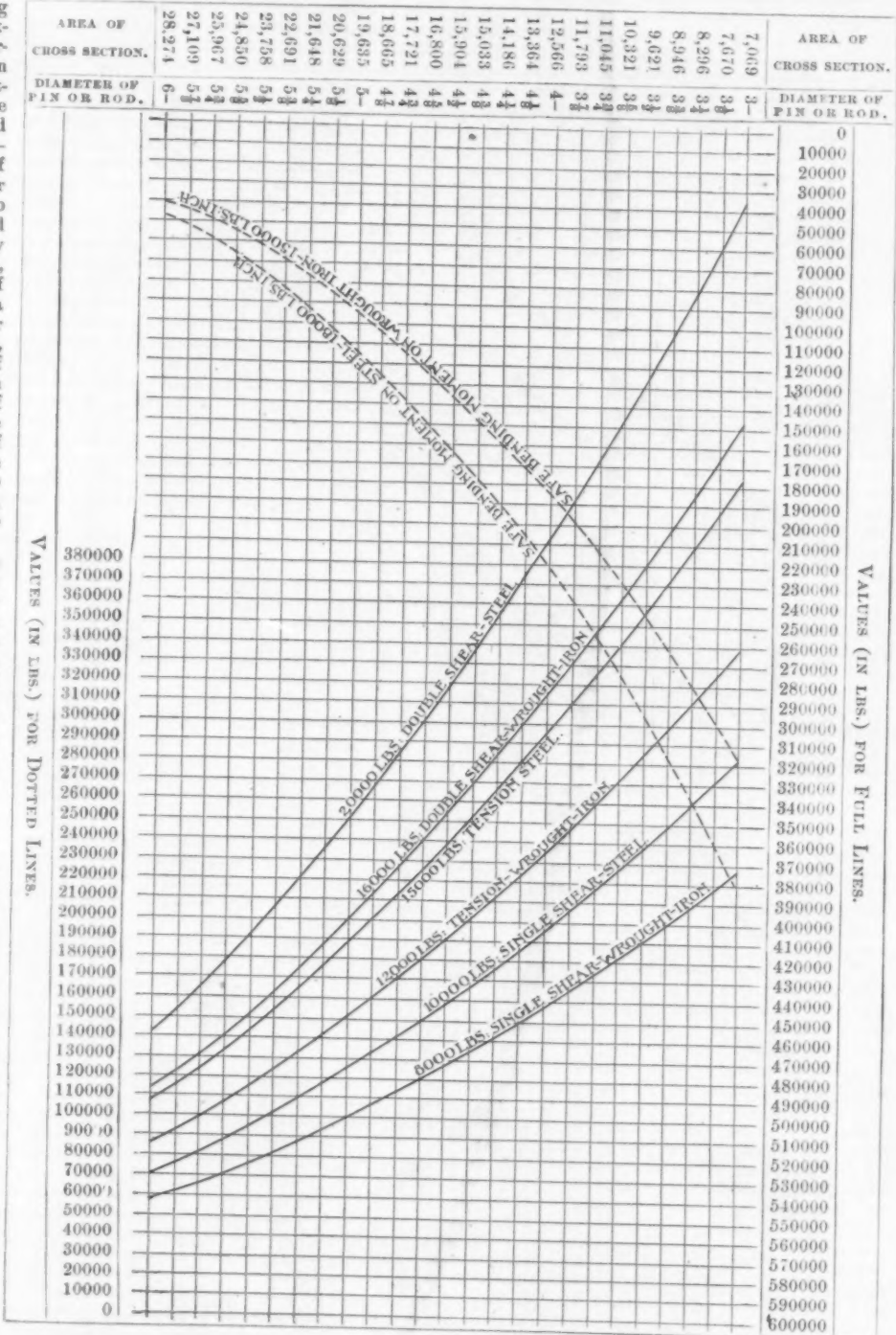
**Designing Pin-joint.**

will require very large pins, and necessitate large eyes and heads to the rods and bars, which means, of course, very great expense; pin-connections for small trusses are more expensive than riveted joints; for large trusses they are cheaper.

**Pin-joint best.**

They are very much better in both cases, more easy to transport and erect, and agree much nearer with the theoretical calculation, which assumes that all members around a joint are free to move, and not rigid, as is the case in riveted trusses. Then, too, in case of any movement in the truss, it can be readily adjusted by means of nuts, swivel-links, sleeve-nuts, etc. This cannot be done in a riveted truss, as the

TABLE XI.  
SHEARING, BENDING AND TENSIONAL VALUES FOR IRON AND STEEL PINS AND RODS 3 TO 6 INCHES IN DIAMETER.



joints not being flexible, the tightening of any one part might throw strains on some joint not able to bear it.

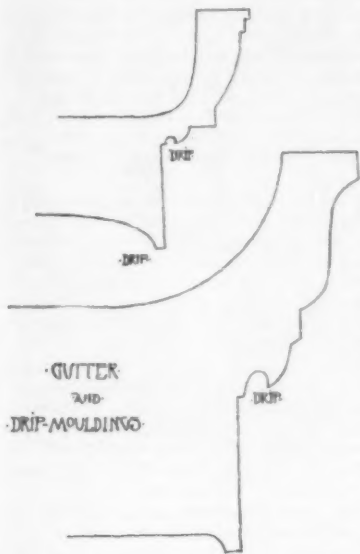
LOUIS DECOPPET BERG.

(To be continued.)

**CITY-HALL PARK SAFE.**—The New York Senate has passed Senator Ahearn's bill exempting City-Hall Park from use as the site of the proposed municipal buildings.



GREEK MOULDINGS AS CLASSIFIED CHARACTERISTICALLY.



THE human body has been called "The house we live in," and the comparisons which may be instituted between its construction and those of artificial architecture, are by no means mere exercises of fancy. The combination of beauty and convenience which this piece of Nature's work presents in its perfection, is that which architects are ever aiming at; and no less is the marvellous adjustment and arrangements of parts which are responsible for different services yet which are all bound to render their services in harmonious concert. The problems of determining the particular selection of services which are required to contribute to

the main ultimate purposes of use and enjoyment, and their relative masses and collocations, which exercise the ingenuity and invention of the architect, are all solved here as if for an exemplar. The grouping and distribution of the offices, apartments and adjuncts of a structure which is to accommodate a great national establishment and be at the same time a pride and a delight to a nation, involve efforts which share "with great creative nature."

Art like nature — and indeed it may be said, because art is portion of Nature — is wont to make distinction between Front, where liveliest expression culminates, and subordinated Rear; it groups its masses with reference to principal differences and dependences of functions, and at the same time compasses an outward symmetry by subjecting an unsymmetrical interior of most closely connected parts, to a uniform screen.

The exactness of bilateral symmetry about a central vertical line, is as conspicuous in most stately buildings as in the human body; but on the other hand, the grace and beauty of the human figure is not displayed to most advantage when it is posed full front and bolt upright, with feet together and shoulders square. Its true beauty becomes most apparent when this precise correspondence is exhibited as affected, and so far disturbed, by some obvious motive. This difference depends on mobility being the virtue of a living organism, and absolute immobility that of an architectural structure. Yet is the latter not precluded from some analogous variety, only its origin is transferred. If it is unchangeable relatively to a point of view, — the point of view may be changed. We give it motion when we ourselves move, and may feel much as Bassanio when he contemplates the portrait of Portia:

"Fair Portia's counterfeit! What demigod Hath come so near creation? Move these eyes? Or, whether riding on the orbs of mine, Seem they in motion?"

We may walk round Wells or Salisbury Cathedral and be affected very much as by a narrative poem. The majestic grace of St. Paul's seems to unfold itself as we see it with constantly varying effect from Watling Street or Ludgate Hill; or as we pass from Ludgate Hill to Cheapside. What but an effect of lifelessness, — of *rigor mortis* — is produced by an imposing structure which presents no view at the angle or on flank? Who in passing along the Grand Canal at Venice, has not felt vexation time after time at the inability of architectural embellishment to turn a corner, — at façades of pretension and of merit equal to pretension, which cannot be viewed at an angle without being betrayed as mere screens.

Much therefore might be written on the analogy between our bodily organization and a noble palace in respect of the due proportions, the groupings and distribution of offices and apartments according to the importance and dignity of the functions which they subserve and the requirements for communication between them. But there may be more novel interest in pursuing a comparison which illustrates the rationale of a characteristic profile. The profile of a Greek sacred structure is completely exhibited by a section through pediment, entablature, column, stylobate. Such a section makes manifest at once a rule of obedience to a governing principle of sheltering lower members by the projection of upper. Shelter may be sought either from downfall of rain or the rays of a burning sun, and more or less abso-

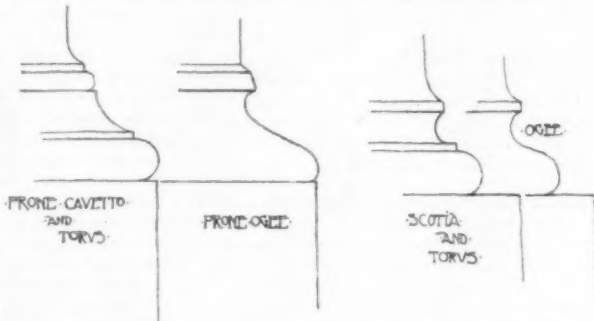
lutely, according to the balance of effect appropriate to a special occasion. On the one hand the utilitarian purpose may be strongly emphasized; sheltered passages may be made as wide as possible, and projecting ledges thrust as far forward as possible. On the other hand, when grace and beauty are to dominate without ignoring utility, the anxiety for protection may be deliberately removed from conspicuousness as an urgent purpose, while the suggestion of it is sufficiently retained to unite as with a pervading motive, the general treatment of the design. In an artistic composition as in a vital organism, it is of the nature of a motive of prime importance to assert itself all but universally and in a great diversity of degrees, but as if spontaneously not painfully and eagerly; most decisively where the function it sub-serves is most pronounced, only moderately where this need is less pronounced, but even by faint suggestion where there is no real need for it at all.

As regards any expression of shelter from heat of the sun's rays, there is no such breadth given to the ambulatory of the Greek temple and no such large projection to the cornice of the order as to convey that it entered here into consideration; the general roofing of both naos and ambulatory was, of course, effective in regard to such shelter and so declared itself, but by the inclination given to it it declared still more directly that its predominant purpose was shelter from water and to carry rainfall clear of the general building. The presentation of the roof to the sun's rays as an inclined plane, would rather enhance than mitigate their heating-power.

A vertical line from the fillet of the corona of the Parthenon shows a projection beyond the horizontal cornice below it of 0.593, about seven inches. A vertical from the cornice gives a projection beyond the abacus of the column which is in advance of frieze and architrave of 1.707 (Penrose, Pl. VII.) and beyond the stylobate of 1.454 or only well beyond the half of the step below it.

As the abacus of the column projected on the stylobate extends 0.237 beyond the circle of its base, it has the same covering relation to the shaft below it as the general cornice to both entablature and columns; the same motive is still apparent in the band which surmounts the architrave and in the capital of the triglyphs. In the earlier Doric of the Æginetan temple the sheltering character of the capital of the column is emphasized by a much more considerable difference of diameter beyond that of the base, and the title "cap" in its special sense seems more applicable to it than "capital."

To return to our analogy; the human countenance is the object which of all others is regarded by us not only with most interest,



but by far more frequently than any other; the interest with which it is regarded is enhanced by the widest range of associations and the most intimate personal sympathy, and it is impossible that its characteristics should not be so impressed upon our imaginations as to affect our sense of any combinations which are in any way correspondent. Even so much is implied in the very word façade as in the Greek *πρόσωπον* (Pindar, Pl. VI, 3) applied to the fore-front of a building, or in corona, as its crowning ornamental moulding.

It is not pretended that the architect has the relative human features in his mind when he designs a portico, but in such a design he employs art to meet the same contingences which marvellous spontaneity allows for in nature; and the analogy, however it may evade distinct recognition, must none the less contribute to appreciative apprehension of truth and propriety.

The protective hair of the head — it would be well to naturalize the graceful word "*chevelure*" — comes most directly into comparison with more primitive resources for roofing, as with humble thatch, but the suggestion is not lost even for the marble tiling of Ictinus. The principle of upper members giving cover and protection to those below, as traced in the eyebrows which intercept and divert the perspiration of the forehead, and protects the eyelid as the eyelid does the eye. The moustache again and even the curvature of the upper lip diverts moisture, or precludes the thought of possible annoying moisture from the nostril; and the point of the upper lip advances beyond the lower, as the lower, in a fine profile, advances slightly beyond the chin.

The outline of the human countenance as seen in profile or other varied presentations, combines a greater number and variety of beautiful curves harmoniously grouped and combined, than any other object whatever. This applies particularly to a single example and generally to an inexhaustible number. It may well have been in consequence of their refined sense and enthusiastic admiration of the beauty of the human features and forms, that the Greeks were

led to the study of elementary curvature as enrichment of crude architectural members.

An attempt has been made in a previous paper to define the variety of mouldings which were in most favor with the Greeks. We may arrange them in classes, as we may arrange well-studied mouldings of all styles, as gutter-mouldings and drip-mouldings on the one hand, and on the other bracket-mouldings and foot-mouldings.

Gutter-mouldings or let us call them more prettily, "brim-mouldings," represented by the section through the side of a bowl, have as their type the corona of a cornice. The corona of the Parthenon pediment is an erect ovolo, of Bassæ an erect cyma. So also is that of the Theseum, which was returned along the flanks. The bulge is appropriate expression of the function of intercepting water and conducting it to an outlet. Where, in accordance with our stated premise, do we find an analogy in the human countenance? Let us say in the hair which, as thrown back from the face and forehead, is in the same relation to the covering *chevelure* as the brim-moulding to the roof of marble tiles which it borders.

The drip-moulding is, of course, the under-cut or throated, sometimes called hawk's-beak, moulding, which prevents moisture drawing back and running down the face of the work: the term also includes the sharp upward notch from the vertical face of the cornice, and then also the grand cavetto of the raking cornice of the pediment.

The small curved-line drip, as often treated by the Greeks, affords peculiarly delicate effects of light and shade; the advanced curve receives light above which gradually dies into shadow, and the

shadow cast by it was received again on a convex surface. This moulding

was also susceptible of elegantly contrasted enrichment by alternated colored stripes above the same in reversed alternation underneath. This value recommended it for employment, not only in its most natural and properly serviceable position along the edge of the horizontal cornice, but also in sheltered positions where it was only suggestive of its specific function. Thus we find it in the nook of tympanum and raking cornice at Egina, the Theseum, Parthenon and Propylæ, but not at Bassæ. No less universally do we find it applied in such perfectly protected places as the

capitals of antæ and architraves of naos walls. What we trace here is not an architectural solecism, but an expression of the vigor of a leading motive which asserts itself irrepressibly at every suggestive opportunity. There is no moulding of equal delicacy and variety of curve which projects so independently, and in these respects it seems to be the true sign of solicitous finish and feeling treatment.

It was precisely with the adoption and due appreciation of this feature, the drip-moulding—to be endlessly modified—that graceful refinement accrued in the progress from Norman architecture to Early English.

The erect ogee may be adopted as the type of the class of what may be termed for want of a better title "bracket mouldings"—mouldings of which the specific function is less the manifest support of a superior member than expressive accentuation of the fact that such a point is responsible for support. This function is sometimes encroached upon as we have seen by the drip-moulding, which is, in fact, an under-cut ogee, but taken generally the distinction holds. The boldest expression of it is the echinus of the capital of the Doric column, but it is employed on a smaller scale and with beautiful variations in degree of erectness and proportion of the convex to the concave return, in a great variety of applications. These may be studied with interest and admiration in Cockerell's beautiful plates of the Temple of Bassæ. This temple was ascribed to the same architect as the Parthenon, and exemplifies the same theory of proportion; but its smaller size made a more detailed treatment appropriate, and in consequence it offers a far richer repertory of mouldings.

The ovolo is essentially a bracket-moulding and is susceptible of beautiful variation in the proportions of its curve, and its character is not lost when it is carved as what is called an egg-and-tongue moulding. This peculiar treatment of it is derived from the bead-and-reel string-moulding, which in its turn it seems as natural to derive from necklaces of round beads with alternate flattened ones, of which numerous ancient examples are in our museums, as from the customary sacred fillets of white wool tied at frequent regular intervals. Yet it can scarcely have been but from the sentiment of the appropriateness of a tzenia to a sacred building, that this moulding is carried all round the Parthenon immediately under the cornice and returned with each projection of a triglyph, yet so small that even if heightened by color it must have been at such

height from the ground and in shade also, absolutely undiscernible. However this may be, it will be seen at once that the egg-and-tongue moulding is only the lower half of the bead-and-reel.

The proper type of a foot-moulding, as having its lowest portion advanced beyond the upper, is the prone ogee. This simple curve is characteristic still of the base mouldings in which its compound line seems resolved into a prone cavetto and a torus; and still more positively into a scotia and torus. [See the illustrations in the article on the "Theory of the Mouldings," *American Architect* for Oct. 5, 1889.]

The duplication of this form gives us the compound profile which reappears so constantly, with whatever variations of proportion, in the Ionic base.

Of this combination so delicately and expressively emphasized, the earliest known example is on the column sculptured in relief between the two supporting lions on the gateway at Mycenæ. But there it appears as a capital—inverted in fact—and, therefore, analogous to a bracket-moulding. The association here is startling; it occurs as a single link between proper Hellenic architecture and a style which in its construction and ornament is so alien as to drive us to help ourselves with such a makeshift title as "Pelagian." Its later history is as remarkable: after giving in graceful modifications an ever-valued embellishment to Ionic and Corinthian monuments, it passed through many intermediate stages into Gothic. It reappears as a base for pier, pillar and pilaret, sometimes reminiscent of its Classic proportions, but usually subjected to that free experimental energy by which the Mediævals asserted their daring originality. The upper torus is often exceedingly reduced, and so also is the scotia which again is far less erect, sometimes, indeed, partly sunk into the plane of the lower torus and treated in a manner to secure a very positive shadow. Much the same variations are found in it when it is reversed to form a capital, reverting after ages to the primeval Mycæan type.

It is in this reversed position that it was adapted to the architraves of the pointed arch, and here it is that it receives its most multifarious and glorious treatment. The motive is distinctly present and recognized in sections of early English arch-mouldings of exquisite grace, and is continued through other styles. In this adaptation it was analogous to a member of a cornice, and the designers did not hesitate to get a further effect by combining with it suggestions of the drip-moulding.

It was not the manner of the Mediævals to keep within the same limit of chastened reserve as the Greeks. The models which came to them from Classic times received no more reverent usage than the inflexions of classic nouns and verbs. Both were broken up or obliterated as convenience or necessity dictated. Language passed through a period of marvellous jargon, and architecture was deprived of all its feeling and its charm till arts and manners reasserted themselves and reintroduced refinement of expression. Delicacy of outline in mouldings became again striven for, and to a very considerable extent achieved and also unity and dignity of proportions. Neither was a certain, however unconscious, analogy to humanity wanting in this latter case. The comparison of the changes which later architects introduced in the proportional distribution of Notre Dame at Paris and Winchester Cathedral is full of interest. In both cases the distribution of an elevation into three nearly equal parts was superseded by giving an importance to one part which decidedly subordinated the rest. Let us indulge ourselves by tracing one more analogy. Every draughtsman knows that lines drawn across a regular face on the upper and lower levels of ear and nose divide it very accurately into three equal parts. And yet is this division so far from being obtrusive as to be latent. The dignity of the composition, so to speak, results from the effect of a conjunction of proportionate unequals, of the face above the line of the brow and below it, as 1:2. When the face is seen in profile it is the line of forehead and nose which again compares with the space below, as 2:1. The continuousness of this line was insisted on by the Greeks in order to secure the beauty dependent on such proportion.

W. WATKISS LLOYD.

BERLIN TECHNICAL COLLEGE.—The official *Centralblatt der Bauverwaltung* publishes a notice showing that 1,043 matriculated and 414 non-matriculated students are this winter attending the lectures, classes and practical courses of the Royal Technical College at Berlin. Of the 1,043 matriculated students, 176 are non-German; of which number 58 fall to Russia, 31 to Norway, 17 to Austria and 10 to England. North America and Luxemburg each have 8, Holland 7, Roumania 6, Sweden and Switzerland each 5, Greece 4, the Brazilian Republic and Japan each 3, Italy, Chili and Servia each 2, whilst Spain, Turkey, the Argentine Republic, Mexico and Siam each have one representative. Of the ten Englishmen, two are studying architecture, two are attending the chemistry courses and the remaining six are working with the engineers. The educational staff of the college consists of 63 professors in ordinary, 20 visitors and 96 assistants. Professor Jacobsthal, of the Architectural Division, holds the title of "Rector" for the year 1889-90, and Professor Schlichting, of the Civil Engineering Division, who held the title for the year 1888-89, being "Pro-rector." The very popular Professor Ende, Hon. Corresponding Member of the R. I. B. A., has not been able to read this session on account of ill-health.—*The Architect*.



CLEOPATRA'S TOMB.



"All the Modern Improvements." — No. 2.

five crowns of laurel and four figures of children. Some of the latter are entirely nude, while others are draped. In the centre of each of the crowns a bunch of grapes is carved. At the time the message was dispatched the discoverers were awaiting the arrival of an Egyptian official, in order that the tomb might be formally opened.

The announcement has naturally been received with a great deal of interest by archaeologists in England. An article in the *Daily Telegraph* says of the announcement: "That it is, at any rate, the tomb of an Egyptian person of quality is evident enough from its imposing appearance. It is to be hoped that the permission, when granted, will extend no further than to the opening of the tomb, and that the remains of its occupant will undergo no more disturbance than is necessary for the purpose of authenticating their supposed identity with those of the famous Queen."

"Of late we have had much too many displays of that antiquarian zeal which, when unaccompanied by its due qualification from the feelings of common human piety and reverence, is apt to claim very unscrupulous indulgence. Within the last year or two we have seen, and, we are sorry to say, under high ecclesiastical sanction, violence done to the remains of a great English prelate, venerated by his countrymen of the Protestant persuasion, and actually canonized by the Catholic Church, and it may be fairly thought that, when this has been found possible in England within so recent a period, anything is within the bounds of possibility in Egypt. Cleopatra does not bear quite so revered a name as St. Thomas of Canterbury, but she has no less sacred a right to repose undisturbed in the sarcophagus in which she was 'quietly inurned,' and not to be condemned either to adorn a public museum or to enrich the private collection of some eminent Egyptologist."

"It is hardly probable, we fear, that the formal opening of the tomb will settle any question in which the world is keenly interested in connection with 'the Serpent of Old Nile'; for unless the Queen, if it be the Queen, should resemble that mysterious and, from the feminine point-of-view, fortunate tenant of the vaults of St. Mary Woolnoth, the explorers will not be in a position to pronounce any authoritative opinion on Cleopatra's beauty. Nineteen hundred and odd years of sojourn in an Egyptian sarcophagus are sure to have affected it for the worse, and it is, moreover, not at all improbable that, even in a perfect state of preservation, it might be found disappointing."

"The philosophic author of the dictum that, if Cleopatra's nose had been an eighth of an inch longer, the whole history of the world might have been changed, indulged, perhaps, in rather a gratuitous assumption. Such an observation presupposes that a departure from our ideas of facial symmetry would have been recognized and deplored as such by Mark Antony, whereas, for aught we know, it might have constituted, in his view, a positive addition to her charms. There is abundance of evidence — we need go no further back than two or three hundred years of our own history for proof — that the ideal of feminine beauty may vary greatly between one age and another, and if we now find Mary Stuart's attractions much overrated, so far as we are able to judge of them from her few authentic portraits, what probability is there that we should be satisfied with the graces of Cleopatra? Besides, it is by no means clear that the daughter of Ptolemy Auletes ever had any great reputation as a 'professional beauty.' More than one ancient writer denies her claim to any such distinction, and such of her medals as are extant appear — though here, again, the 'personal equation' of modern taste may come in — to confirm the belief that she was not remarkable for looks. All concur that she possessed great natural abilities, which she carefully cultivated; that she spoke with facility several languages besides her native Greek, and that she was able to make herself most 'agreeable in society.'"

"Probably there was something more about her than this — some-

thing which eluded Appian and Dion Cassius, and other respectable Dryasdusts of the time, but of which there are traces in Plutarch, and which Shakespeare, the careful student of Plutarch, seized upon with the true instinct of the poet. We cannot suppose that Cleopatra had no other weapons of attack, no other toils of captivity, than belong to any intelligent and vivacious young lady who has been 'well-grounded' in languages, and has enjoyed the advantages of a first-rate finishing school. It is difficult to doubt that she must have possessed a physical 'glamor' also — a 'beauté du diable,' which is well-known to be the most dangerous variety of feminine looks, and which, in all ages of the world, from the days of Clytemnestra down to those of Becky Sharp, who, it may be remembered, sustained the part of the Argive Queen on one occasion with much credit, has exercised greater power for the infatuation of the other sex than perhaps even the more orthodox and classical fascinations of the Helens of history."

"Cleopatra, at any rate, succeeded in demonstrating her possession of a more potent wand of enchantment — judging by those whom she captivated — than any other mythical or historical heroine of the past. Helen's conquests, after all, and for all their important consequences, will not bear a moment's comparison with those of the Egyptian Queen. Paris was a poor creature, in whatever way we consider him — not by any means remarkable either for bravery in the field or for ability in the council chamber; and, in fact, so far as can be ascertained, he was very much what an American would describe as a 'no-account man' among his peers of windy Troy. Menelaus — the petitioner — was, perhaps, hardly better. He certainly cuts no very conspicuous figure by the side either of Achilles or of his own brother; and the mere fact that the famous beauty contrived to ensnare two such very ordinary admirers proves but little as to her fascinations. Besides which, it must always be borne in mind that she was assisted by the gods, and thus enjoyed an unfair advantage over all competitors."

"With Cleopatra the case was very different. Mark Antony himself, though wanting in the sterner qualities of a leader, was certainly no inconsiderable man, and it must never be forgotten that a much greater personage than Antony fell a victim to the Egyptian's wiles. Julius Caesar was very 'hard hit' by her at their first meeting in Syria, after the battle of Pharsalia, and as she followed him to Rome with the apparent intention of retaining her ascendancy, there is no saying what future she might not have created for herself had not the daggers of Brutus and his fellow-conspirators cut short her ambitions."

"Nothing, however, so forcibly illustrates her mastery over men as the story of her relations with Antony. There is evidence that he saw her for the first time, and was smitten by her, in Egypt when she was barely fifteen years of age, and she was a woman verging upon thirty and charged with the crime of murdering her brother when she appeared before him again and bound him finally to her ear. Thenceforth his history became the 'leading case,' so to speak, in the infatuation of love, just as Cleopatra herself became the monumental example of the power of woman over man. 'The World Well Lost' is the second title of that great verse-tragedy of Dryden, which only does not shine out among the brightest lights of our dramatic literature because its rays are swallowed up and lost in the splendence of its Shakespearean rival, and the later drama has been well-named. A larger stake was never 'set' in history than that for which Antony and Octavius played at Actium; and, though it might be too much to say that the former could in any case have won the day, it is certain enough that all his chances of victory were as completely squandered in the arms of Cleopatra as the famous pearl was melted in the goblet of his paramour. Vast as the sacrifice was, however, it seems natural and plausible to this day. No more picturesque figure than that of the woman for whom it was made has appeared from her own time down to that of Mary Stuart, whom, indeed, she resembles in her bravery, her resource, her passionate temperament, her singular power over men, her dramatic and pathetic death, and, we must add also, in the associations of crime and violence which still cling to her name."



[Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.]

CAPITALS FROM THE CHAMBER OF COMMERCE, CINCINNATI, OHIO.  
MESSRS. H. H. RICHARDSON, AND SHEPLEY, RUTAN & COOLIDGE  
Successors, ARCHITECTS, BOSTON, MASS.

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

COMPETITIVE DESIGN FOR FIRST BAPTIST CHURCH, MALDEN,  
MASS. MESSRS. LEWIS & PHIPPS, ARCHITECTS, BOSTON, MASS.

HOUSE FOR JULIUS HOWELLS, ESQ., RIVERSIDE, CHICAGO, ILL.  
MR. W. H. PFAU, ARCHITECT, HAMILTON, O.

INTERIOR OF HALL IN HIS OWN HOUSE. MR. W. REDMORE RAY,  
ARCHITECT, LOS ANGELES, CAL.

PREMISES OF G. G. BOOTH, ESQ., DETROIT, MICH. MESSRS.  
MASON & RICE, ARCHITECTS, DETROIT, MICH.

THE CENTRAL DOME OF THE PARIS EXHIBITION BUILDING.

[Additional Illustrations in the International Edition.]

HOUSE OF E. D. PEARCE, ESQ., PROVIDENCE, R. I. MESSRS.  
ROTC & TILDEN, ARCHITECTS, BOSTON, MASS.

[Photogravure.]

THE materials used for this house are face-brick for the lower story while the upper story is covered with untinted rough-cast. The woodwork is painted in dark olive green and in spite of, or because of, the great contrast of color, the result in color as well as design is extremely satisfactory, far better than one would be led to expect from the glimpse of the north side which was shown in our issue for January 11.

HOUSE OF MR. MCKENNA, SANTIAGO, CHILI.

[Gelatin Plate.]

HOUSE OF SENOR CUDÁ, SANTIAGO, CHILI.

[Gelatin Print.]

LLOYDS, TRIESTE, AUSTRIA. BARON HEINRICH VON FERSTEL,  
ARCHITECT.

[Gelatin Print.]

THE magnificent Lloyd Building, at Trieste, is built in the style of the Italian Renaissance and fronts on a small park opposite the Palazzo Municipale. The rear façade is toward the sea. The lower part of the building is of massive Istrian stone and only the upper portion has been subjected to ornamentation. A finely-sculptured figure of Aphrodite is placed in the niche at one corner above a basin into which is introduced salt water. A companion-basin at the other corner, for fresh water, is surmounted by a statue of Hygieia.

THE VILLA BLANCA, NEAR INNSBRUCK, TYROL. HERR J. W.  
DEININGER, DIRECTOR OF THE BAUAKADEMIE, ARCHITECT.

[Gelatin Print.]

DESIGN FOR A VILLAGE CHURCH. MR. G. C. HORSLEY, ARCHITECT.

WINDOW IN GRISAILLE GLASS. MR. W. R. LETHABY, DESIGNER.

THE GABLES, FELIXSTOWE, ENG. MR. WILLIAM H. THORP, A. R.  
I. B. A., LEEDS, ENG., ARCHITECT.

THIS house was built by Mr. Thomas Maw as a seaside residence, and occupies one of the best sites on the cliff at Felixstowe, commanding extensive views seawards and across the estuary towards Harwich. Externally the house is faced with local bricks of a deep red color, and the roof is covered with Broseley tiles. The woodwork generally is painted ivory white, sage green being used for the veranda, which skirts two sides of the house. The ornamental features of the exterior, such as strings, cornices, apron panels, etc., are carried out in moulded, and cut and rubbed brickwork. Internally the house contains three reception-rooms, and the customary accommodation requisite for a gentleman's household.

HOUSE, CLEEVE, GORING-ON-THAMES, ENG. MR. GEO. W. WEBB,  
A. R. I. B. A., READING, ENG., ARCHITECT.

THIS house has recently been erected on a new building estate of seventy-six acres in course of development, and is beautifully situated on high ground overlooking the Thames Valley. It is proposed to allow an acre of ground or more to each house. The ground-plan is after a similar one published some years ago, and is convenient in arrangement for a small house. The elevation is picturesque in appearance, consisting of half-timber, rough-cast, dark bricks and tiles, the cost being exceedingly low for the size of the house.

SEMI-DETACHED HOUSE, RIFON, ENG.



COMMISSION ON A STANDING PARTY-WALL.

Question. Will you kindly inform us through your valuable columns the professional practice in the following instance?

We were employed as architects in the erection of a building to replace an old one standing between two taller buildings. To do so it was necessary to purchase additional party-walls on either side.

In this case the purchase of the party-walls was reserved from the general contract, and the negotiations were conducted directly by our clients, with our assistance. The measurer was engaged by us, and we used our best endeavors to get the adjacent property-owners to sell at a lower price than the valuation fixed by the measurer. In Philadelphia the measurer furnishes us only with the valuations of the party-wall to be used, and not with dimensions of wall-surface to be occupied. When we presented our bill to our clients, we included the price paid for additional party-wall in summing up the cost of the building on which our five per cent fee is based. Our clients object to our charging a fee for party-walls. Are we right? Yours respectfully, B. & D.

Answer. You would probably be able to satisfy a jury that a fair compensation for your services would be the usual commission charged upon the cost of the building including the price of the party-walls. There is no "custom" in the case, as architects sometimes seem to think. The whole question is for the jury in each case, and is simply one of fact and of expert testimony as to what is a fair remuneration for the work done. Architects generally could be relied upon to testify that a fair remuneration for drawing plans and supervising the erection of a building is five per cent upon the total cost including the cost of purchased walls; and the chances are that a jury would find a verdict in accordance with such testimony.

If, however, there should be any distinguishing circumstances indicating that the architect and his client agreed to leave the cost of the party-walls out, that would certainly estop the architect from claiming his commission on the cost of the walls. The common agreement, sometimes reduced to writing, that the architect is to have five per cent "of the cost of the work" would, we think, exclude a claim to a commission on the cost of party-walls already built; for the price that a man pays for the standing wall is no more a part of the "cost of the work" than the price he paid for his land, or for any privilege appurtenant to it afterwards utilized in building. We think that most of the disputes on this vexed question arise from failing to distinguish between the case where the architect has agreed to take five per cent of the actual cost of the work, and the case where he has made no specific agreement of this kind, and is entitled to recover a reasonable compensation for his services. In the latter case he would have little difficulty in satisfying a jury by means of the testimony of his fellow-architects that a reasonable compensation is five per cent on the cost of the entire building including party-walls.

We have sometimes thought that architects in discussing this question fail to appreciate the force of the reasoning that a party-wall which has already been assessed a commission to the architect of an adjoining house should not pay another commission to the architect of the new house. There is of course, in fact, a double commission; for the architect of the second building not only gets his commission on the cost of cutting and altering the old wall, but on the cost of the original construction of it. The whole trouble lies, we think, in treating the compensation of an architect as a "commission." When looked at as remuneration for services, the case wears a different aspect; and it is not very difficult to make a reasonable client understand that there is a good deal of labor involved in finding out about the thickness and character of the wall in its various parts which would not be compensated for if no commission were charged upon the cost of the alterations.

There is probably no case in building operations which gives rise to such frequent misunderstanding between architect and client as this question of a standing party-wall. Like many other disputes the difficulty seems to be due to a conception—justified by the language of the profession itself—of the architect's office as similar to a broker's. If architects are content to regulate their charges by "commissions" they must not be surprised if like insurance or real-estate brokers, they are sometimes regarded as nothing but business go-betweens. Is there any more reason for regarding the compensation of an architect as a "commission" than there would be for thus characterizing a lawyer's retainer or a physician's fee?



THE TORONTO ARCHITECTURAL SKETCH-CLUB.

THIS organization, which was formed last December, is in a prosperous condition. A large and comfortable club-room has been secured in the central part of the city, and it is now the recognized rendezvous of the older and younger members of the profession in Toronto.

The club is working on the lines usually followed by students' architectural improvement societies. Its meetings are all informal and social in their character, the lectures and debates being given in a conversational manner. Monthly competitions are held: already a water-color class has been established, and it is expected soon to start other classes.

The competitions are decided by vote of the members, after which a criticism is made on each design by the club critic, Mr. Frank Darling.



The officers for the year are as follows: *President*, Charles D. Lennox; *Secretary*, A. H. Gregg; *Treasurer*, Ernest Wilby; *Directors*, C. J. Gibson and Robert Dawson. These five form an Executive Committee for the transaction of the business of the club.



[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.]

## THE SOLDIERS' HOME BUILDING AT WASHINGTON.

CHICAGO, ILL., February 4, 1890.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—On pages 301-302 of your issue of December 28, your Washington Correspondent comments on the architecture of the U. S. Soldiers' Home buildings. The article contains much that is interesting and instructive, but there are several misstatements of fact, and as one of them is personal to myself, I trust you will accord space in your valued journal to this reply, for I am sure you would not knowingly mislead the public or give currency to an unjust criticism of any one.

In your correspondent's judgment the architectural work at the Home may be classed as *good, indifferent, and positively bad*. The first category embraces the "old main building designed by F. S. Alexander, an engineer and architect in 1853." With one exception it is said to be "pleasing . . . the massing of walls and grouping of windows having been well studied." The "rejuvenated" building—Poindexter's—is also described as "very pleasing, the treatment simple and refined." Smithmeyer's library "has been effectively done, the building being artistic and attractive."

Omitting a citation of remarks upon the indifferent designs—the gate-lodges, the chapel, the president's house, and the officers' quarters—we come to the last class—the "positively bad;" this comprises the hospital, and "Captain Davis's dormitory," but our critic does not give us the name of the culpable designer of the "non-descript" hospital. He learned, however, that the distinguished Army Surgeon, John S. Billings, directed the arrangements for heating and ventilation, which are commended. Why your contributor failed to give the name of the well-known architect in Washington who worked out all the architectural features of this structure that are visible to the passerby is perhaps accounted for—or at least suggested—by the following remarks which might well have appeared as the text of his article—"Here the hands of the Army Engineer is again seen in connection with Government Buildings." He thus goes on in regard to the reputed work of an Army Engineer: "Here we have a good contrast between the abilities of an architect and an engineer as a designer. Poindexter's main building dignified, simple, scholarly, and pleasing in all its outlines and details, Captain Davis's dormitory, a box with porches, fussy little details of cast-iron and jig-saw work, every part badly proportioned in itself and in connection with other portions of the building; the whole finished with an ill-looking mansard roof, that would truly have astonished Mansard. I always thought until I made inquiries that it was constructed by some of the carpenters on the place, probably making their designs as they went along. It never occurred to me that it was designed by one of our learned and scholarly Army Engineers, although it is a building of considerable cost and size."

Let us see if your correspondent has not misstated some of the facts in the case and awarded blame and credit where it is not due—we cannot do better than appeal to the written and public records.

On the 27th of July, 1852, the Commissioners of the Military Asylum (as the Home was then styled) contracted with Gilbert Cameron to erect the T-shaped structure which your contributor refers to as "the old main building . . . designed by F. S. Alexander." The contract referred to contains the following: "that the construction of said buildings and of their appurtenances shall be in every respect in accordance with the plans, specifications and directions of Lieutenant B. S. Alexander of the Corps of Engineers, the architect of said institution." It may seem cruel to metamorphose Mr. F. S. Alexander, Civil Engineer and Architect, into Lieutenant B. S. Alexander, Army Engineer and Architect, for the fabric of the vision was pleasing to your correspondent and consistent with his theory that no good to art ever came out of the military Nazareth—or shall I say Golgotha? Having awarded the design of the parent structure to Mr. Alexander, he proceeds to tell us how Mr. Poindexter "rejuvenated" it, and a little later on Alexander disappears and it becomes wholly Poindexter's.

Pursuing this metamorphosis in the light of the record we find that some ten years ago, the leg of the T of the original structure was extended some forty feet, the same pleasing Norman Gothic design being adhered to, and in 1884, a second extension of the same feature was made, and all in keeping. Before the last improvement was completed, the making of still another enlargement was under consideration by the Board—so rapid had been the increase in the number of inmates and the demand for increased accommodations.

All who were consulted as to the matter (and the writer was one whose opinion was asked) urged the addition upon the north of a wing similar in its general features to the old south front except the tower, and so convert the T into an H, adhering closely as to style of architecture to Alexander's general features. It appears that the Board have carried out this idea which was suggested, in a different form, in the plans prepared in 1852, and employed Mr. Poindexter to make the drawings. To whom should be awarded the credit of abolishing the "incongruous French roof, I do not know, but am willing to accord it to Mr. Poindexter, who is well-known as an agreeable, talented and modest gentleman. How a return to the examples of the feudal ages, by borrowing the crenellated battlements, can be said to rejuvenate a building, I fail to perceive. Would it not be more appropriate to say the product was an antique?

The general features throughout, the grouping of masses—lights and shades—fenestration—about all save the sky-line are Alexandrian, for which we are indebted to a young Army Engineer, who in later years became famous and achieved a world-wide reputation as the designer of some of the most notable works of engineering-construction in the world.

But the work which is the especial abomination of your correspondent is the dormitory situated just to the west of the library. I am denounced as the person responsible for this vile blight of the otherwise pleasing prospect. Let us again turn to the records and leave nothing to assertion or imagination.

I have before me a letter dated July 9, 1884, and signed by General Sheridan as President of the Board of Commissioners of the Soldiers' Home. The first paragraph is as follows: "The Commissioners of the Soldiers' Home have about completed the necessary arrangements to invite proposals for the erection of a building for occupation of inmates, which it is estimated will cost about \$70,000. They desire to obtain the services of a competent officer of practical experience as architect and superintendent, under whose direction the contractor shall erect the building"; and in a letter from the Treasurer of the Home he states that: "The Commissioners directed that the plans and drawings should be made for a building similar to the old annex," . . . which it was to adjoin on the north.

When I entered upon my duties I was handed several sheets of drawings, consisting of floor-plans and elevations, and estimates of cost that I was told had been previously prepared under direction of the Board by a Mr. Henderson, an architect and builder in Washington. The proposed site was pointed out to me and I immediately prepared working and detail drawings and specifications, all conformable to my instructions, and when about to advertise for proposals was notified that the Commissioners had decided to change the location of the dormitory to the prominent site west of the library. I called attention to the incongruous and unsatisfactory effect to be produced by giving the new annex so conspicuous a site, but the Board adhered to its last decision.

Had the building been placed as first proposed its style and appearance would not have been objectionable, as the first location was much lower and partially screened by tall trees and shrubs. I had no alternative but to proceed with the work. While the lower walls were going up, I submitted to the President of the Board my own design for a different roof, which I urged would somewhat ameliorate the ugliness of the structure, but the change was not approved, and the building was completed in accordance with the preliminary plans furnished me. Such is the true history of the designs of "Captain Davis's dormitory" which is cited as an illustration of the incompetency of Army Engineers as Architects.

The Treasurer of the Home in a recent letter writes as follows: "I never go by the building without regretting the change of site. The ventilation is perfect and the piazzas are the delight of the old men. It is the favorite building at the Home and is as solid as a rock, not a crack in it."

I think I have shown that about all that is good in architecture at the Soldiers' Home, was principally the work of one of that reprobated class of public servants, the Army Engineers, and that the responsibility for anything bad cannot be brought home to them by any fair-minded man: but the Corps of Engineers needs no defence at my hand, neither have I the honor to belong to it.

Yours very respectfully,  
GEO. W. DAVIS.  
(Capt. 14th Infantry.)

## MR. WARREN'S SKETCHES AT THE LEAGUE EXHIBITION.

NEW YORK, N. Y., February 8, 1890.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

Dear Sirs,—In a recent issue of your periodical your correspondent in this city, reviewing the late Exhibition of the Architectural League of New York, comments somewhat unfavorably upon two sets of sketches contributed by Whitney Warren. Will you kindly permit a dissenting opinion?

In the first place, it would seem to require more than the somewhat hasty and superficial examination vouchsafed by your correspondent to override the verdict passed upon those sketches by so important and responsible a jury as that of the *Paris Salon* (which was the "some French exhibition" to which your critic somewhat slightly alluded). But their highly complimentary verdict of a "Mention

honorable," is further borne out by a considerable number of highly favorable notices from leading architectural journals in France, from one of which I copy the paragraph appended to this letter.

That which really gives to these sketches their chief merit, and which your critic has apparently not perceived, is the fact that they are careful studies, measured and figured, drawn at least approximately to scale, and showing not merely the picturesque aspect of the objects they represent, but plans and sections at various levels. They are conscientious studies of design and construction, and not mere picturesque water-colors intended to afford a momentary pleasure and to attract the notice of the laymen in architecture. To many besides myself the drawing appeared spirited and yet delicate, and the rendering far from weak, but *de gustibus non est disputandum*. When merely picturesque drawing is so rife among our younger architects, it is rare and refreshing to find one instance of so conscientious and so permanently valuable a use being made of pencil and brush. One such study is worth a dozen picturesque sketches, both to its author and to those who study his work. What the distinguished French critic, M. de Rivoalen, thinks of them is shown by the following extract from the *Semaine des Constructeurs* of May 25, 1889.

Believe me, sirs, yours very truly,

A. D. F. HAMLIN.

"JAMAIS nous ne manquons de taquiner, à la fois, le jury et ses justiciables au sujet des pochades, plus ou moins colorées, qu'on étale au Salon d'architecture, à côté de travaux sérieux aux quels ces pétards font du tort, sans porter profit à personne, — même à leurs auteurs. Il nous paraît, par contre, lieu juste et raisonnable de signaler les rares croquis pouvant passer pour des études d'architecture: Voici par exemple, de M. Warren, — un Américain, — des *Croquis de voyage*, dessinés et lavés finement, consciencieusement (ils sont même cotés). Les *Ponts de Paris*, entr'autres, sont des aquarelles un peu trop pittoresques, encore, mais accompagnées, en marge, de croquis géométraux à peu près mis à l'échelle. Voilà une bonne petite récolte de touriste. . . . Ce sont là de charmants souvenirs, pouvant faire revivre, chez l'auteur la vision des choses aperçues trop rapidement." — (E. Rivoalen, in *La Semaine des Constructeurs*, May 25, 1889).

#### ABATTOIRS.

NEW YORK, N. Y., February 24, 1890.

TO THE EDITORS OF THE AMERICAN ARCHITECT:

Dear Sirs, — Allow me to suggest in the matter of abattoirs that the rating schedules for packing-houses, etc., which can be obtained from the Boards of Underwriters of St. Louis or Chicago, might be of service in showing points to be avoided. Insurance maps and surveys of Western packing-houses are probably available in the offices of the leading companies, from which a general idea might be had of the arrangements.

Respectfully yours,

B.

#### NOTES AND CLIPPINGS

FREDERICK THE GREAT'S TOMB. — Professor Sello, who was commissioned by the Emperor Frederick to examine the history of Potsdam and Sans Souci, gives the following reasons why it would still be well to lay the remains of Frederick the Great in the spot once chosen by himself, and place there a mausoleum worthy of his memory. When Frederick the Great died, in August, his body was hastily buried on account of the great heat in the Garnisonskirche, before his successor, Frederick William II, had been able to become acquainted with the contents of his will, which was not opened till the day after the burial. It was then found that Frederick the Great wrote: "Bury me in Sans Souci on the top of the terrace in a vault which I have had prepared for me," and "Should I die during war or on a journey, then bury my body in the next best place and let it be transferred to the above-mentioned place in Sans Souci in winter time." The wish to be buried there had been expressed by the King during his lifetime, and the fact that the terms of the will were afterward kept secret seems to show that their neglect by the Court had been disagreeably noticed, but explained away by "reasons of State." When, in 1791, an indiscretion betrayed the facts of the case, it was declared that a vault on the terrace did not seem dignified enough. The artistic marble coffin which Frederick the Great had wished for was never made. The vault on the east side of the uppermost terrace at Sans Souci actually exists, and is about twelve feet long by six wide, and more than six feet high. Above it there is a statue of Flora, by Adam, which was placed there in 1749. In a semicircle to the east stand copies from the antique of Cæsar, Augustus, Tiberius, Caligula, Claudius and Nero. Professor Sello thinks the place well adapted for a small domed mausoleum. — *New York Times*.

DR. SCHLIEMANN vs. DR. BOTTICHER. — The truly and in more senses than one Homeric combat about Hisarlik in the Troad between Drs. Schliemann and Botticher, has led to an arbitration. The questions whether Dr. Schliemann tampered with the excavated ground at Hisarlik and whether the site of a town discovered there is really a cemetery have been settled in the negative. These Doctors of Archeology have met on the *terrain* with their seconds, who are noted experts, and Dr. Botticher has withdrawn handsomely both of his aspersions on the intellect or the truthfulness of the great excavator of Troy and tombs. — *New York Times*.

#### TRADE SURVEYS

It is only a question of time for producing-capacity to overtake consumptive-capacity, and for an accumulation of stocks of all kinds to interfere with healthy trade conditions. For reasons frequently pointed out, the future fluctuations of production and of the volume of surplus products, will be less than heretofore, and the damage done thereby will be of shorter duration. Manufacturing and commercial interests have been preparing for this emergency, more through an instinctive knowledge of its coming, than through any intelligent conception of the causes which are quietly at work bringing it about. The hope has been entertained that we have seen our last commercial depression, and that hereafter improved methods of production and distribution and wider markets and a greater familiarity with the requirements of the world will make panics and depressions next to impossible, or at least make their periodic recurrence less frequent. It is very true that the agencies which have gained supremacy within the past ten or twenty years are working in that direction, and that for the future the ups and downs of trade will be more regular, and the disasters less disastrous. Much of the improvement grows out of a study of the world's wants. Trade has long since emerged from its feudal conditions, so to speak; organization after organization and defeat after defeat and mistake after mistake have cleared the way for an intelligent advance into the higher fields of commercial activity. The world's business men have put in a long apprenticeship in learning how to do business. Of late years the governments of the world have become the coadjutors of the merchant princes, and both have been acting in harmony in the way of extending commerce and building up colonies, and planting the seeds of empire in the forgotten corners of the world. The British Government is, to a very large extent, simply a police force to enable its business men to wage successful commercial warfare, and to enable its kings of finance to collect interest on bonds negotiated in England. This commercial spirit has seized the controlling powers in the Governments of Germany and France, and of little Belgium and of Portugal. These new efforts of the European governments to extend their control and establish new empires in new lands, are all a part and parcel of the great underlying agencies that are seeking to extend trade and commerce throughout the world. The United States has done very little in this direction. It has its own empire at home to develop, and its energies for thirty or forty years have been wholly absorbed in the grand work of developing and utilizing the extraordinary resources that genius and enterprise find on every hand. From the progress that the nations of the world are now making, it is clearly evident that still newer and wider fields must be found wherein the surplus energy and capital and enterprise can find working-room. The United States Government and its people have made more rapid progress than the other governments, simply because they could reach new territory and new resources on foot, by canal-boats, by rivers and by rail, while the outside nations of the earth had to equip navies and build up a merchant marine wherewith to reach the more remote fields for the planting of enterprise. Hence it is, that the progress which we have made within the past two or three decades, has been the wonder of the world. How long this grand progress can be kept up on the old lines, and by the old methods, is the query of the hour. We have borrowed our financial system from Europe; we have borrowed its trade-unionism, and we are in a certain sense adopting its land system and are not escaping the evils of enormous taxation; but for all that, with the unlimited resources at our command, we have made commendable progress in solving the great problem of how best to use the latent energies of man, to secure the highest and best and most immediate fruits.

The most careful students of our American systems of activity, and the most careful observers of the developments that we are making, all seem to think that there will be such gradual modifications from time to time of older methods and older machinery as will enable us to not only hold all the advantages which our activity has brought to us, but to gain still greater advantages. The immediate danger in front of us, according to the opinions of many who try to see a little farther ahead than others, is that the capacity to consume will not keep pace with the capacity to produce. On this point hinge the most mighty interests. To a very great extent, the outside world will be able to take care of itself. We may by persistence be able to find a foreign market for ten to twenty per cent of our products, but the great bulk of our productions must remain at home. No doubt this is as it should be, but the fact creates a probable difficulty which our present conceptions as to what our interests demand do not enable us to see our way through. These observations are particularly applicable to the present commercial conditions. We are threatened with over-production. Already, in a score of trades, the leaders are asking: "Whence will come our future markets?" The iron-makers have given us a ten-million-ton capacity per annum; the ten or twelve thousand new industrial establishments started last year have now their wheels turning, and are filling up their warehouses and shops in anticipation of a sufficient market. Whatever the markets may be, there are mouths enough to fill and bodies to cover. There is machinery enough to more than supply all reasonable and probable wants. There are sufficient wheat, corn and cotton fields to produce all that will be needed. There are mines, and sufficient mining-machinery, to furnish fuel, ore and precious metals enough for all needs. The real question at issue is: How can a steady and profitable distribution be effected? That brings us to the most practical question of the age. The mechanic and the cultivator of land have done their duty: their products fill the market-places of the world. The American people have taught the people and the governments of the world one very valuable lesson: viz., that popular government can be maintained, and it is probable that this same people will have the task of demonstrating to the world that a new and better economic system than has ever yet been recognized can be successfully developed and applied, and that in its structure and fibre it will be as different from the older economic doctrines as our present form of popular government is different and distinct from the older forms of government. The thinkers of the present age are thinking in this direction. This is no idle question. It is a burning one in the minds of our most careful students. On its successful solution very greatly depends the permanency of our form of government. Government is now extremely utilitarian. Every year makes it more so. Dom Pedro left Brazil to make room for practical men, or, at least, for men who think they can use government to better push their material interests. The same thought and feeling is rising up everywhere, and is the ghost that stands behind many a European throne. On the standard of every agitator who is calling for broader liberty at the hands of his ruler is the inscription, which the ruler is expected to answer, "Cui Bono?"

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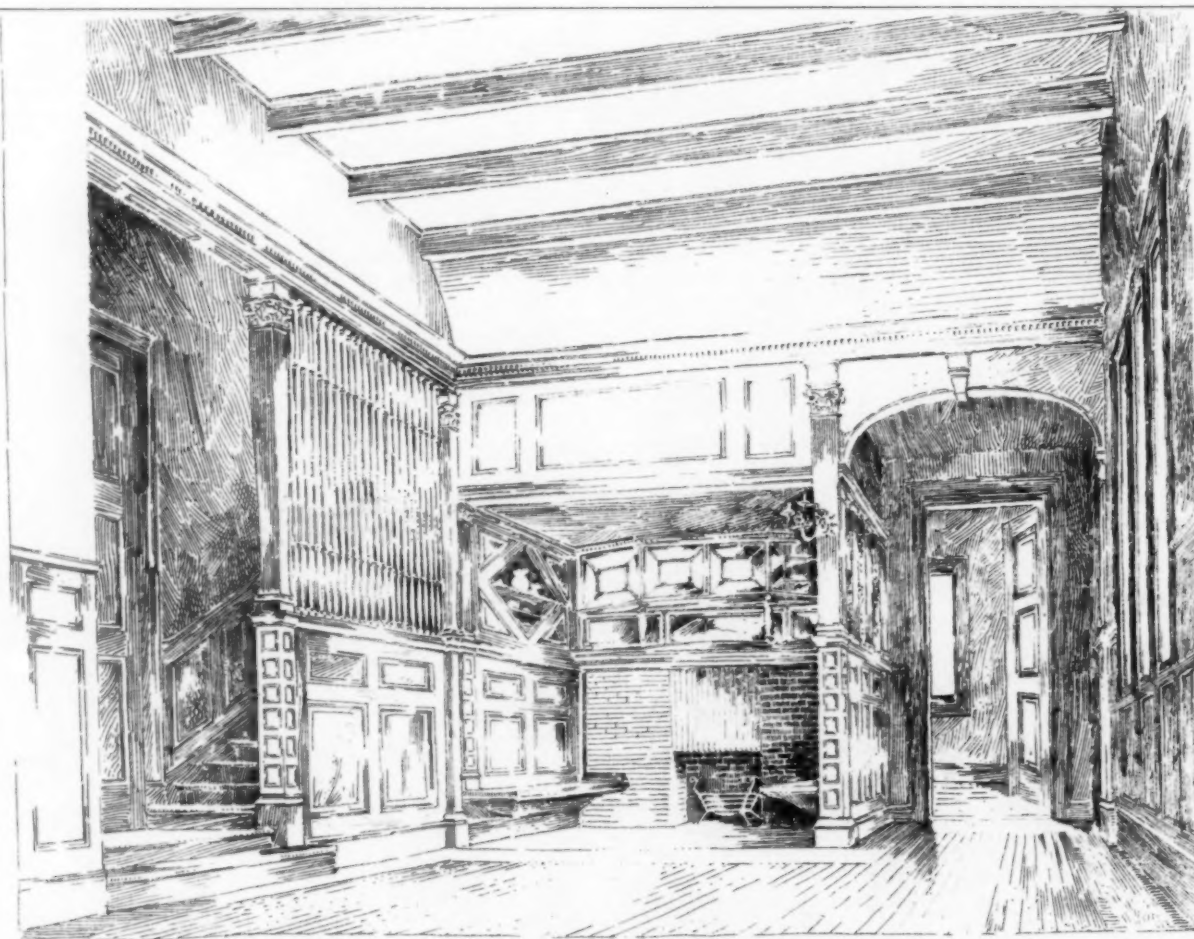




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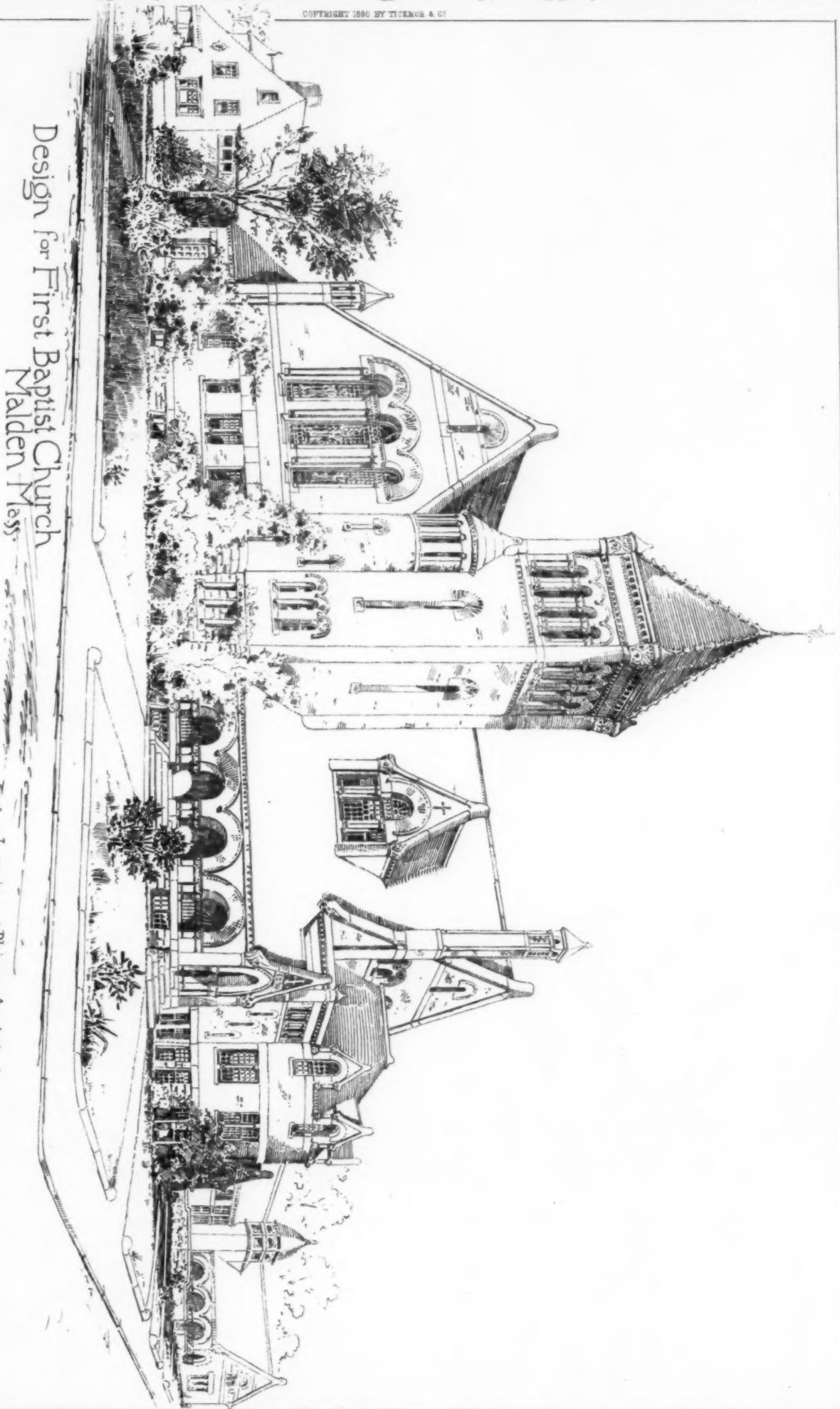


W. Redgrave Rev. July '89

Interior of Hall. Residence of W. R. Ray. Los Angeles. Cal.



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