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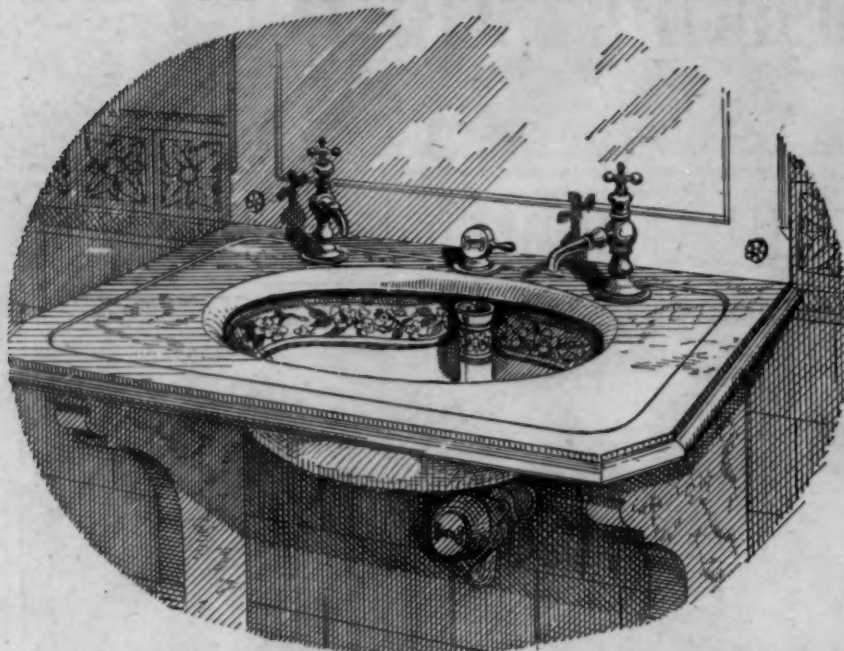
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THE AMERICAN ARCHITECT AND BUILDING NEWS.

VOL. XXVIII.

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JUNE 7, 1890.



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THE Fellowship in Architecture at Columbia College, founded a year ago by that generous friend of art, Mr. Frederick A. Schermerhorn, and open to all graduates from the architectural course of the College, under thirty years of age, has been awarded this year to Mr. Arthur A. Stoughton, of the class of '88, from among about twelve competitors. The income of the scholarship, which is awarded every second year, now amounts to about thirteen hundred dollars, which must be used by the holder in travel and study abroad.

ACCORDING to the *Philadelphia Ledger*, the *Carpenter*, the official organ of the United Brotherhood of Carpenters and Joiners, has published, or is about to publish, a statement by the General Secretary and Treasurer of the Brotherhood, Mr. McGuire, which contains, among other matters of no interest to the profession, the assertion that the Builders' Exchanges, in resisting the strikes of the past month, "have gone so far in some cases as to combine with the architects to exclude competent and skilled men from an opportunity to estimate on work that they might do." Now, without questioning Mr. McGuire's intention to be perfectly accurate in his statements, which in other respects seem to be made with commendable care and moderation, we would very much like to know what architects have ever "combined" with any Builders' Exchanges for any purpose whatever; and, most of all, for the purpose of excluding from estimating on their buildings any persons whom they thought likely to carry out contracts with honesty and skill, and at a price lower than that which would be asked by the members of the Exchanges. We ought not to have to point out to any reasonable man that architects do not care for the questions in dispute between contractors and their men; it is the senseless and ruinous way in which the dispute is carried on, destroying their business, as well as that of the contractors and the men, which attracts their attention and disapprobation. So far as the present commotion over shorter hours is concerned, it is easy to see that architects would be considerably the gainers by the universal adoption of an eight-hour day, at nine hours' wages. Notwithstanding the pretences of the Socialists, every one knows that this change would increase the cost of building ten or twelve per cent, and as architects' commissions would be correspond-

ingly increased, they would have no interest in opposing a movement, which, indeed, many of them favor on theoretical grounds; but they have a right, as architects, to object, and do object seriously, to having the discussion of the subject begun by the collapse of their whole season's business at the order of a few walking-delegates, while as free American citizens, they resent and protest against the violence and tyranny with which the same walking-delegates coerce the poor and timid workmen into a reluctant support of their schemes. There are no better friends of the workmen, we need hardly say, than the architects, who soon learn to observe and appreciate the modest thoughtfulness and industry which mark the deserving mechanic, and to rate at their true value the claims of the idle and loquacious botch; and if an eight-hour day, or anything else, would make the good men and their families more comfortable and happy, they can always rely on the architects to help them to get it, and we can assure them that the support of such a body would be of more advantage to them in negotiations with their employers than all the boycotting, picketings, hustlings, beatings and persecutions that their newly-imported leaders can devise.

MR. FRANKLIN W. SMITH, of Boston, the designer and owner of a noted Moorish villa in Florida, and the originator of a scheme for a Roman mansion in the same State, which has, we believe, not yet been carried out, has, in pursuance of the same enthusiasm for reproductions of antiquity, just completed a Pompeian house at Saratoga. According to the newspapers, his efforts after an accurate imitation were for a long time baffled by the opposition of the Italian Government, which "jealously guarded" the original models, as well as by the "impossibility of finding artists familiar with the style of coloring." We had supposed that the decorators who claimed, at least, to be familiar with the Pompeian "style of coloring" might have been readily found anywhere; but perhaps their idea of it was not accurate enough to satisfy Mr. Smith's taste, and the end of the matter was that he took some "Salon artists" to Pompeii with him, "to catch the spirit of the decoration," and then brought them to Saratoga, to "transfer it to the new world." As now built, the house comprises the usual atrium, peristyle and so on, adorned with columns, tripods, statues and pictures, and paved with mosaic, in which appear representations of "a fierce dog," with an inscription, "Cave Canem," and another inscription, "Salve," both these devices having been copied from the Pompeian originals, which the "jealousy" of the Italian Government appears to have been unsuccessful in guarding from the eagle eye of the Bostonian. Archaeologists will be curious to see the "rare engravings," which, we are told, are scattered over the "carved marble tables" of the "bibliotheca," with rolls of parchment and similar antiquities; but the whole affair seems to be cleverly designed, and to be, at least, more successful as an educational curiosity than the celebrated Pompeian Court at the Crystal Palace.

ARCHITECTS will be rather surprised to learn from the *Boston Journal* that "Baltimore is to have a Jewish synagogue, which will be the only specimen of Byzantine architecture in the United States." We must confess that we had supposed many of the synagogues in New York and elsewhere to be good examples of the clever adaptation of Byzantine architecture to congregational uses which is now so popular among the Israelites, while hundreds, if not thousands, of other buildings in this country claim, with more or less justice, to be in the Byzantine style. So much harm is done to the development of architectural knowledge and taste by the ridiculous ignorance of the people who write about architecture in the daily papers, that it is doing the public a service to hold up to derision the worst of these blind leaders of the blind, if only to remind them that a little acquaintance with the greatest and most ancient of the arts does no discredit to a literary man, and may even be occasionally of service to one who makes that art the subject of his lucubrations.

WE wish to call the attention of the mill mutual insurance companies to the description of the new immigrant landing-depot, to be built on Ellis's Island, in New York Harbor, which we find in the *New York Herald*,

specially requesting them, however, to observe that the structure is not designed by one of their *bêtes noires*, the architects. According to the *Herald*, the new building, in brief, is to be four hundred and ninety feet wide, and three hundred and thirty feet deep, with "an immense dome" one hundred and twenty-five feet high, and several towers. The construction is to consist of "wrought-iron columns, with walls of wood between." The main side-walls will be formed of "two-inch planking, tongued and grooved," and "inside the planking will be tarred paper, and inside of this the rooms will be finished in yellow matched pine." "As an outside covering, corrugated galvanized iron will be put on over the two-inch planking." Besides this interesting structure, there are to be "hospital buildings, erected on precisely the same plan," besides an engine-house and quarters for an electric-light plant. Water is to be brought from New Jersey, in pipes, but we trust, for the sake of the thousands of immigrants who will be crowded into the building, that an efficient apparatus for extinguishing fires with sea-water will be provided.

HERR CARL HINTRAGER, Architect, of Vienna, whose contributions to the literature of school-house building we have before mentioned, as well as his admirable plans for a large school-house in the Tyrol, has published a second pamphlet on the subject, which we can highly recommend to those of our readers who understand easy German, and will take the trouble of sending to the author for it. The pamphlet is simply a report of a lecture delivered by the author last February before the Austrian Society of Engineers and Architects, but it contains the latest and most concise information that we know of on the subject of the construction of common school-houses in various countries, illustrated with plans, and tables of statistics. We do not like to appropriate other people's work too liberally, but as most of our readers would probably not understand the original text, while the book contains matter of the greatest value to the profession, we venture to quote some of the most interesting matters. We all know that in France, of which the pamphlet treats first, the impulse to the great modern system of education was given by the Franco-Prussian war. With a courage and constancy which has done them undying honor, the French accepted their terrible defeat as a lesson, and, instead of blustering and howling about the "Lost Cause," and so on, tried to learn the reasons for the superiority of the Germans, and to reform their own habits in accordance with the principles which they found to have been most effective in giving moral and material strength to their neighbors. It did not take them long to find out that the schools and school training of the Germans were superior to their own. Jules Simon expressed the conclusion deduced by thinking Frenchmen from this fact when he said that "The people which has the best schools takes the first place among nations; if it is not first to-day, it will be to-morrow;" and immense preparations were made for reviving and extending education in France. In the year 1876, a special appropriation of twenty-four million dollars was made, for the purpose of building and furnishing common schools; and within the last ten years the regular annual appropriation for public education has risen from eight million dollars to nearly twenty-seven million.

ON the 17th of June, 1880, a code of regulations was published, which had been drawn up by the most distinguished experts, and gave directions for the construction and furnishing of school-buildings. This code, which was copied and commented upon everywhere, has since been much modified; but it was then a compendium of the best thought on the subject, and served, at least, as the foundation on which subsequent improvements could be advantageously based. In accordance with the new rules, a competition was invited for model plans for school-houses, and about twenty-five hundred dollars paid in prizes for thirteen successful plans. As might be expected, the new plans showed in unexpected ways how the directions of the code of 1880 could with advantage be modified, and on the 28th of July, 1882, a new code was published, containing rules for the most important matters in school-house construction, but allowing more liberty in detail than the old code. Under the new regulations, no primary school-house group, which consists, in France, of a school for boys, one for girls, and an infant school, in adjoining buildings, is allowed to accommodate more than seven hundred

and fifty pupils, of whom one hundred and fifty must be provided for in the infant department. For a country one-room school-house, the maximum number of pupils allowed is fifty; in school-houses of more than one room, not more than forty pupils are allowed to a room. Every school-house lot must contain at least eight hundred square metres, or nearly nine thousand square feet; and every scholar must have at least fourteen square feet of floor-area in the class-rooms, and about two hundred cubic feet of air-space. The height of the class-rooms is fixed at thirteen feet, and the exact dimensions of rooms for forty or more pupils are specified, both for single and double seating. In regard to the much-vexed question of lighting, some modifications have been made in the original rules, and, as the regulations now stand, lighting from the left side only, while acknowledged to be preferable, is declared to be insufficient for rooms more than six metres, or about nineteen and one-half feet, in width. For rooms wider than this, windows are required in the right-hand, as well as the left-hand wall; but the right-hand windows are usually smaller than those at the left. Lighting from the back or front is not permitted. In nearly all French common schools the basement is occupied by a covered play-ground, opening by arches into the garden, where the children play and exercise in rainy weather, gymnastic apparatus being usually provided. A few years ago, great importance was attached to the teaching of drawing in common schools, but the instruction in drawing is now reduced to a very small amount, and, in place of it, both boys and girls have careful and thorough training in manual arts, including joinery, blacksmiths' work, modelling and carving, laboratory work, and even agriculture. In the details of construction, the recent improvements have been in the direction of ventilating and heating. The perforated glass panes in the windows, which were extensively used a few years ago, are now abandoned, tests having shown them to be nearly useless as ventilators, and regular provision for inlet and outlet of air is made, the sectional area of the inlet shafts being required by law to be about six square inches for each scholar.

A VERY historic estate in Brittany is offered for sale at a low price, and enterprising brokers or other persons, who have had enough of the practical side of life, and would like to see something of the poetical, will do well to take notice. The estate is that known as Elven, comprising four hundred and fifty-two acres of land, and an ancient castle, in tolerably good preservation, besides other buildings, and the price asked is only sixty thousand dollars. The readers of Feuille's "*Romance of a Poor Young Man*" will probably have a vivid recollection of the part that the Tower of Elven plays in the affairs of Maxime and Marguerite; but, independent of its connection with a pretty novel, Elven Castle is noted as having been for some time the prison of Henry the Seventh of England, who, after the battle of Tewkesbury, fled to France, and was driven by a storm to the Breton coast, where he was seized, by order of the Duke of Brittany, and confined in the castle with his follower, the Duke of Pembroke. Besides this, Elven is in the very midst of the scene of the old Breton civilization. Morbihan, the chief place of the Druids, is close by, with the neighboring Carnac, next to Stonehenge the most remarkable group of prehistoric monuments in the world; and Auray, reported to have been King Arthur's habitation, is not far off.

A SENSIBLE judge seems to have been discovered in Denver. Mr. Edbrook, of the firm of Edbrook & Marean, made plans for a house for a Mrs. Wright, which was to cost thirty-six hundred dollars. It actually cost forty-one hundred and when the architect sent in his bill for services, he was coolly informed that the owner proposed to pay for her extra conveniences out of his pocket, and that she was going to keep his money for that purpose. Naturally, he objected to this arrangement, and brought suit for the amount. His claim was resisted on the usual ground, that if a building costs more than the owner wishes to pay for it, the architect must make up the difference between what the owner thought he ought to pay, and the actual cost. With most juries, and with a good many judges, an appeal of this kind strikes a responsive chord; but the judge in Mr. Edbrook's case laid down the law that "architects drawing plans for a house that was to cost about a certain sum could not be held responsible for what it cost to construct it over that amount"; and ordered judgment for the plaintiff.

RELIGIOUS ARCHITECTURE.¹—IX.

IV. RELIGIOUS ARCHITECTURE OF ANTIQUITY.—ROME.



FOUNTAIN OF SAINT-SATURNIN

WE give here an abstract of the passage from Vitruvius, which has stood the test of time, and, which, moreover, possesses the merit of clearly indicating the relationship of the divers types of temples to one another. The earliest Greek temples were certainly of wood, as has already been stated; according to Polybius, the columns and porticos of the ancient temple of Dodona were burned, which shows that they were of timber work. Pausanias frequently mentions the preservation of the wooden remains of primitive temples in the reconstructed edifices. It may be admitted, as Quatremère de Quincy assures us, that, for buildings of such mediocre size, a simple wooden beam running from wall to wall on the principal façade was used to form an open vestibule before the door; this was probably the origin of the temple with *antæ*, the simplest type of the stone temple. The term *antæ* is applied to the quadrangular pilasters terminating the side-walls of the cella when projected forward to form the porch.

As the dimensions of the temple were increased, it became necessary to establish intermediate points of support beneath the beam, especially after the adoption of the stone architrave in the place of the wooden girder. And thus the type of a temple in *antis* was completed. The pilaster or *antæ* was decorated in the same way as the intervening columns, which were generally two in number, though there were sometimes more. The temple on the Ilissus, at Athens, and the Temple of

ures took the name of *amphiprostyle*. The pronaos was repeated in the rear by the *opisthonaos*.

There were usually four columns on each face. These were increased to six when a row of columns was introduced on the lateral façades, in order that there should be no change in the proportions of the naos or cella of the interior; this number was, however, not obligatory, as examples are not wanting where it was increased to eight. The temples surrounded on all sides by columns were called *peripteral*. The Temples of Theseus at Athens, of Concord and Juno at Agrigentum, of Ceres at Segesta, of Corinth, of Sunium, and two of those at Paestum, were *hexastyle*; that is, they had six columns in front. The Temple of Minerva, at Athens, had eight.

Instead of forming an open gallery all around the edifice, the columns along the sides were sometimes made to serve a



Fig. 10. Ruins of the Great Colonnade of Palmyra (3d Century A. D.).

purely decorative purpose, without encroaching upon the width of the interior cella. In such cases the columns joined the lateral walls; that is, they were engaged. This style of temple took the name of *pseudo-peripteral*. The Temple of Jupiter Olympus at Agrigentum, the Maison Carrée at Nîmes (Figures 8, 9), and the Temple of Fortuna Virilis at Rome (Figure 3), were of this type.



Fig. 9. View of the Maison Carrée at Nîmes (2d Century A. D.).

Fortuna at Rome, not far from the Porta Collina or Porta Salaria, belonged to this early type.

Vitruvius gives, as derived from the preceding, the *prostyle* form, in which the *antæ* were replaced by isolated columns, the walls of the cella stopping on a line with the entrance, instead of projecting. The façade was thus adorned with a porch, open at both extremities. This was the most common form of temples.

To embellish the temple still further, a similar porch was sometimes constructed on the posterior façade. Such struc-

¹ From the French of P. Planat, in Planat's "Encyclopédie de l'Architecture et de la Construction." Continued from page 129, No. 753.

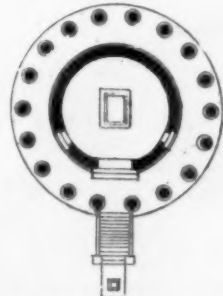


Fig. 11. Plan of the Temple of Vesta at Tivoli (1st Century A. D.).

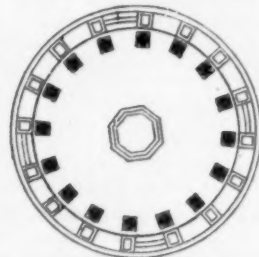


Fig. 12. Plan of the Temple of Jupiter Serapis at Pozzuoli (1st Century A. D.).

To create a more ornamental style, the surrounding colonnade was doubled, thus forming the *dipteral* type. Such were the Temple of Diana at Ephesus and the Temple of Quirinus at Rome.

The inner row of columns was sometimes omitted, still leaving a width of two intercolumniations to the surrounding gallery. Such temples were called *pseudo-dipteral*, examples of which were to be found in the Temple of Diana, constructed by Hermogenes, and the Temple of Apollo, by Mnesthes, at Magnesia.

The rectangular plan was occasionally abandoned for the circular. Some of these structures were encircled by a single

row of columns, the temple being entirely open, with no cella wall. Neither was there any cover. The Temple of Serapis (Figure 12), at Pozzuoli, is cited as an example of this type, which was termed *monopteral*.

In the *peripteral* style the cella was enclosed by a wall, surrounded by a range of columns. It was covered by a cupola, or *tholus*, crowned by a floral finial, says Vitruvius. Among temples of this kind we may rank the Temple of Vesta or Hercules, called the Temple of the Sibyl, at Tivoli (Figure 11).

The Pantheon of Agrippa (Figures 13, 14, 15) is a circular edifice, which may be considered as a temple, since it was

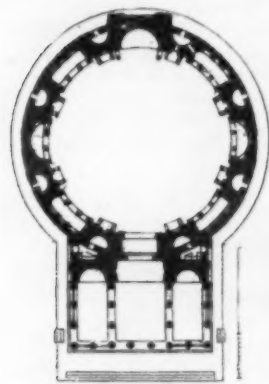


Fig. 13. Plan of the Pantheon of Agrippa at Rome (1st Century A. D.).



Fig. 14. Façade of the Pantheon of Agrippa.

placed especially under the protection of Mars Ultor, Cybele and Jupiter the Avenger. The Greeks also seem to have understood and employed this sort of construction, though no vestiges of similar Greek edifices are to be found.

The peribolus, or external enclosure of the temple dependencies, in time assumed great importance. It was adorned with columns, porticos, *ædiculæ*, altars, fountains, chapels and treasures, to say nothing of the sacred grove often comprised within it.

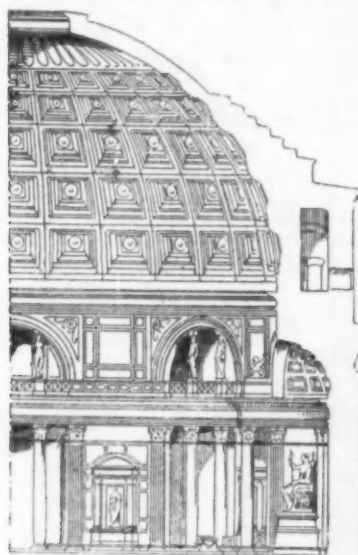


Fig. 15. Section of the Pantheon of Agrippa.

The peribolus of the Temple of Æsculapius, at Epidauros, embraced a *stadium* and a theatre. The enclosure was sometimes adorned with propylæa or porticos. Remains of the peribolus are still to be seen in the Temples of Jupiter Olympus at Athens (Figure 4), of Ceres at Eleusis, and of Themis at Rhamnus.

Pompeii offers an example of a peribolus, on a very small scale, in the so-called Temple of Isis; the naos, raised on a quite lofty basement, stood at the extremity of a peribolus, which was surrounded by a colonnade. The peribolus of the Olympian temple at Athens was, according to Pausanias, filled with a vast number of statues of gods or emperors, and adorned with several sacred edifices; it was four *stadia* in circuit, or nearly half a mile.

The peribolus of Palmyra (Figure 10), visible in part at the present moment, was 250 to 300 feet on a side. It was bounded on three faces by a wall pierced with gates, and running around the interior of this wall were two ranges of columns, making two walks. The entrance to the peribolus occupying the centre of the fourth wall, which was otherwise solid, was formed by an exterior colonnade. The same motive was repeated on the other side of the wall; this disposition recalls the propylæa of Athens and of Eleusis.

According to Vitruvius—whose teachings must be inter-

preted broadly here, as on many other subjects—the Roman temples admitted of five different proportions for the intercolumniations:

Thus we have the *pyncostyle*, with a space between the columns equal to one-and-a-half times the diameter of the columns; for example, the Temples of Julius Cæsar and of Venus.

In the *systyle* the space was of two diameters: the plinths of the bases were equal to the interval between them, as in the Temple of Fortuna Equestris.

As the closeness of the columns—we quote still from Vitruvius—prevented the mothers from going up to the temple hand-in-hand, and forced them to walk in single file, which was a serious inconvenience, the *diastyle* proportion, or three diameters, was adopted. Examples: the Temples of Diana and of Apollo.

Such broad interspaces were unsafe for the architraves, which frequently broke. Therefore, when the *arcæostyle* (three-and-a-half diameters) came into use, the stone architrave was superseded by the wooden beam. The aspect of these structures was heavy and clumsy. "It was, consequently, impossible to adorn the pediment with anything but figures of terracotta, in the Tuscan fashion, or of gilt bronze. Examples of these temples were to be seen near the Circus Maximus, in the Temple of Ceres and the Temple of Hercules, built by Pompey. Such, also, was the temple on the Capitoline hill."

The *eustyle*, which was deemed the most graceful and harmonious arrangement, gave two diameters and a quarter. "Only, the central intercolumniation, whether on the side of the pronaos (anterior part), or on the side of the *posticum* (rear wall) was of three diameters. This disposition imparted nobility to the *ensemble*, it gave freedom to the entrance and majesty to the colonnades, which served as walks around the temple." Such, at least, is the opinion of Vitruvius, whose views seem not to have been always shared by his fellow-citizens, and with less frequency still by the Greeks.

If one chooses to classify the religious edifices of antiquity according to the orders of decoration, it may be said that the temples of Pæstum, the temple of Jupiter at Ægina, the Parthenon at Athens, the temples of Apollo at Bassæ, of Minerva at Sunium, of Juno Matuta or Pietas (Figure 2) at Rome, and of Hercules at Cora, in Latium, belonged to the Doric order.

The Erechtheum at Athens, the temples of Fortuna Virilis (Figure 3), and of Saturn, after its restoration, were Ionic.

In the Corinthian order may be ranked the temple of Vesta at Tivoli (Figure 11), and of Minerva at Assisi, the Pantheon of Agrippa (Figures 13, 14, 15), the temples of the Sun and of Antoninus, of Vespasian, of Castor, restored by Tiberius, of Antoninus and Faustina, of Nerva at Rome, of Jupiter Olympus rebuilt by Adrian (Figure 4) at Athens, the temples of Palmyra and Baalbek (Figures 6, 7, 10), and, in general, all the great religious edifices reared by the emperors.

As the Roman temples were constructed after Greek models, they exhibit all the varieties noted by Vitruvius: temples *in antis*, with two or four columns, as the temples of Hercules at Cora and of Augustus at Pola; *prostyle*, with four columns, as the temple of Fortuna at Pompeii, or with six as in the Pompeian temple of Jupiter; *amphiprostyle* temples seem to have been of rarer occurrence; *dipteral*, as the temple of Quirinus or the great temple of the Sun, at Baalbek, with double colonnades; *pseudo-dipteral*, as the great temple of Palmyra; *peripteral*, as the three temples erected in the vicinity of the theatre of Marcellus; *pseudo-peripteral*, as the celebrated Maison Carrée at Nîmes (Figures 8, 9).

To this last type also may be referred a large number of temples consecrated under the emperors, with a double invocation—usually Rome and the imperial ruler; among them we may cite the temple of Venus and Rome (Figure 5), built by Adrian.

The temple of Jupiter Olympus reconstructed by Adrian, at Athens, was a *hypæthral* temple, as was also the temple of the forum of Pompeii.

The Romans, we have said, erected a certain number of circular temples: some of these were *monopteral*, as the temple of Jupiter Serapis at Pozzuoli (Figure 12); a statue was placed on a pedestal in front of each column. The Pantheon of Pompeii seems to have been constructed on the same plan. Small edifices of this kind were probably covered with a dome; the large ones were roofed with timber.

The other circular temples were called *peripteral*; a temple

of this form existed at Rome near the Tiber, and another one at Tivoli, which has already been noticed.

In the Pantheon of Agrippa, at Rome, the pronaos with its sixteen Corinthian columns is of later date than the rotunda; it seems probable that the entrance was at first through a simple door. The interior cella was lighted from the circular opening in the centre of the dome. Near the circus of Romulus there are ruins of a temple which must have offered similar dispositions.

Lastly, we might note as examples of peculiar construction, the temples of Concord at Rome, and of Isis, Mercury, and Esculapius at Pompeii, in which the very shallow cella was broader than the pronaos.

[To be continued.]

THE NEW SORBONNE.



Cardinal Richelieu laying the Corner-stone of the Church of the Sorbonne. From Flameng's Painting in the New Sorbonne.

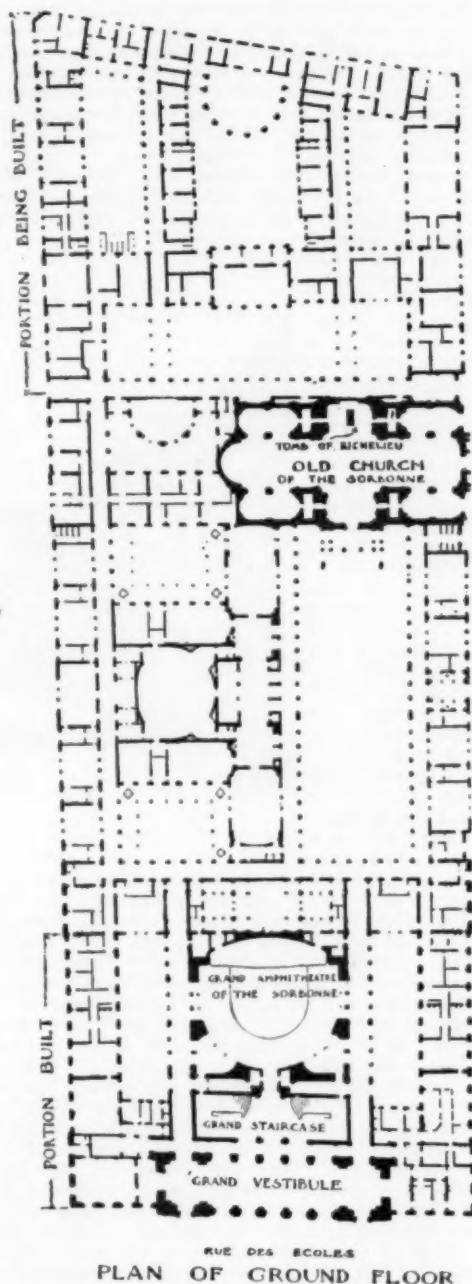
THE new Sorbonne was inaugurated the 5th of August, 1889. This inauguration took place in the hardly-finished building, which actually occupied less than a third of the buildings which will in six years, at least, constitute the real new Sorbonne. But it was necessary, apparently, to have during the exhibition a fête at the University for the sake of gathering there foreign students, and after that they can begin work. It is necessary to go back to 1256 to reach the date of the foundation of the Sorbonne, since it was at that time that a teacher of theology by the name of Robert, a native of Cerbon, or Sorbon, bought several houses for the purpose of establishing in them a college for poor theological students. The King, Louis IX, protected this new institution, which thus had the favor of the clergy, and soon gifts of all kinds flowed in upon it. But the establishment only received theological students. Robert de Sorbon then had an idea of founding an institution for novitiates in connection with the buildings of the Sorbonne, and this latter became the College de Calvi. In 1470 the Sorbonne became the cradle of the art of printing in France, for it was in its cellar that was set up the first printing-press. In 1622 Cardinal Richelieu enlarged the buildings, and caused the architect Lemercier to erect the buildings surrounding the large inner court-yard, and, unfortunately, these buildings will not be preserved; first, because of their scanty solidity, and next because of the lack of height of the stories, which are not even upon the same levels, and are badly arranged for new uses; but the court-yard is preserved, as well as the general dimensions and distribution, and the Church of the Sorbonne will be respected.

Cardinal Richelieu laid the first stone in the month of May, 1635, and, according to his last will, his remains were transferred thither after the completion of the church. His tomb, the work of Girardon, is still visible in the church, and forms the most interesting feature in it. The cardinal is represented reclining, one hand upon his breast, the other outstretched, and his eyes raised toward heaven. He is supported by Religion. At his feet, a female figure, personifying Science, leans upon the sarcophagus with a most lively expression of grief. Behind, two *genii* support a shield of the coat-of-arms of the minister. If one can criticise the too great barrenness of the interior of the church, it is not the case with the very elegant exterior, with its gracious *silhouette*, formed by four little bell-towers flanking the dome. This dome rivals that of the Val de Grace, and is treated somewhat in the same spirit. Both, moreover, are by the same architect, for it was Lemercier who began to build the Val de Grace after the designs of François Mansard. The church, then, will be preserved, and will be surrounded by the buildings designed by M. Nenot, the fortunate victor in the great competition which took place in 1882. The first stone of the portion at present finished, the façade of which faces the Rue des Ecoles, was laid August 3, 1887. This part of the building comprises two of the principal apartments of the designs, the grand amphitheatre and the hall of the academic council. The latter occupies the first story above an immense vestibule or waiting-room, which, on the lower floor, precedes the grand staircase of honor, or rather, the grand

staircases, for we find here staircases at the right and left symmetrically placed, and giving access to the grand landing, the centre of which is occupied by an oval opening carried by a wrought-iron balustrade, through which the lower floor is lighted. This landing receives its own light through a glazed ceiling decorated with stained-glass. A glazed ceiling also lines each one of the two grand staircases. A staircase-well at the first story is surrounded with arcades, which give access to the meeting-rooms and different service-rooms. They are ornamented with very interesting and decorative paintings, in which one can follow the history of our University from its foundation; and, besides, they are otherwise wholly logical, while being quite as decorative as the grand allegorical composition of M. Pavis de Chavannes in the grand amphitheatre.

We shall find there the paintings which we have already seen at the recent exhibitions at the Palais de l'Industrie, and which we

RECONSTRUCTION OF THE SORBONNE



PLAN OF GROUND FLOOR

can now judge as a whole and in their proper place. Here are those of M. François Flameng, which form three triptychs. The first represents St. Louis bestowing upon Robert de Sorbon the charter of the foundation of the Sorbonne; Abelard and his school upon the mountain of St. Genevieve, and the installation of the first printing-press in the cellars of the Sorbonne. This is the best of the three. We have already spoken of it apropos of the *Salon* of 1887, where it was exhibited. On seeing it in place, our first impression has not been modified. The *ensemble* of the composition

is harmonious, the background is ravishing, but the red robe of Abelard is somewhat out of keeping with the general gray and vaporous tonality of the whole painting. The centre of the second triptych represents the laying of the first stone of the Church of the Sorbonne by Richelieu. At the left, the learned doctors of the Sorbonne chat with one another. They are Etienne Dolet, Jacques Amyot, Ronsard and Rabelais. On the right are Henry IV and the rector Galland. Just as when we saw this decoration at the *Salon*, we prefer the first. In spite of this, it is still charming and luminous, even sunny, but discreetly so, and as a decorative painting which ought not to cut a hole in the wall upon which it is applied, nor oppose its brilliant coloring to the cool tone of the stonework. The third triptych is less good. The interior of the College of Beauvais, at Paris, which occupies the centre, and which shows us the figure of Rollin, the principal of the college, directing his pupils, has a disagreeable dryness, and the black robes of the personages give to the whole a too severe monotony. Happily, the motives of the two side pieces are treated in a less uniform style, which redeems in a certain measure this bad impression. But, after all, the general effect of M. Flameng's work is very decorative and of good proportion. M. Chartran, who was intrusted with the decoration of the other staircase, unfortunately gave to his figures a too great scale. At the side of balusters, of columns and balustrades, they absolutely have the air of giants. But in the execution of these paintings there is a good deal of ability obscured by apparent carelessness, as, for instance, a bit which, seen near at hand, has the appearance of being incompletely finished, at a certain distance takes on the air of being perfectly modelled for decorative effect.

Here, again, we follow the history of the Sorbonne. Just now it was the side of the University with M. Flameng, and now, with M. Chartran, it is the side of Science. His first triptych is consecrated to Louis IX, Bernard Palissy and Ambrose Paré, the latter being shown at the siege of Metz putting a ligature about an artery of a wounded *arquebusier*. This motive, which occupies the centre of the triptych, is very fine. The second triptych initiates us into the labors of Buffon, Pascal and Lavoisier, and the third familiarizes us with those of Cuvier, Laennec and Arago.

The landing of these two great staircases gives access to the central tribune of the grand amphitheatre, which has a really superb appearance, and this without tormenting ornament and without outraging decorative propriety.

Around the immense semicircular hall are arranged five two-storied tribunes, the first with stone balustrade, and the second with iron railings of a rather odd design and somewhat lacking in simplicity. These tribunes are arranged in large semicircular niches which add much to the depth of the whole, at the same time they interrupt the movement of the circular lines. Between the tribunes, in niches composed by a pediment supported on two columns, are six seated figures, representing Robert de Sorbon, Descartes, Lavoisier, Rollin, Pascal and Richelieu. The ceiling is partly glazed and is decorated in its full portion, which is vaulted in plaster on a metal framework, with five charming medallions painted by M. Galland, which symbolize in graceful female form Law, Medicine, the University of Paris, Science and Letters. These paintings, soberly treated without that pale tonality which Puvis de Chavannes has inspired in his incapable imitators, are luminous, and of a correct and yet supple design. Why was it necessary that the general harmonious effect of this amphitheatre should be compromised by the decoration which M. Puvis de Chavannes has applied to the rounded surface of the enclosing wall of the platform reserved to the authorities? What an unequalled and incomprehensible artist is this painter of the life of St. Genevieve in the Pantheon, which is a fine work, and of the "Poor Fisherman." This dull and disconnected platitude we have already criticised apropos of the *Salon* of 1887. It is a complicated and essentially allegorical and indecipherable composition, and in fact it would be impossible to guess what was represented by these different figures arranged with affectation in the foreground of a woody clearing. We have already given the explanation (see *American Architect*, No. 608). Let us only recall that eloquence, poetry, philosophy, history, science, the sea, the land, botany, geology, physiology, physics and geometry take part in this little symbolical fête. The ordinary public will understand

nothing about it; but these criticisms which could be properly applied to the cartoon of the *Salon* of 1887, are not the only ones which we apply to the work of M. Puvis de Chavannes.

Why does this artist, who can design in the most perfect manner, as was clearly demonstrated by the admirable drawings in red chalk sent to the Universal Exhibition, take the trouble to show us immeasurable legs and colossal arms upon bodies of the ordinary size, since it is inadmissible that these imperfections should not be intentional. Perhaps it is these things which constitute the archaic side which the ardent admirers of M. Puvis de Chavannes discover in everything which he does, and which, therefore, excuses all the faults of the master. To this we will say that excess in everything is a defect, and we ask those who attempt this principle to explain to us how deformity constitutes that which they are pleased to call archaism. But this is not all. The coloring of M. Puvis de Chavannes, which is ordinarily rather transparent and clear, is here dull and heavy. The sacred wood which here serves as the background of the composition extends itself in a thick greenish blue mass, upon which the clearer tones of the troop of nude figures stand out too brutally. It is evident that this judgment is harsh, but in truth one is often compelled to severity by the admiration systematically declared with a *parti pris* which is so much the fashion in France to-day. Questions of art here become questions of parties, and unfortunately too often questions of politics. Now if in politics it is necessary to overlook faults of the leader of a group, we do not see the use of applying the same principle to matters of art. We have much admiration for the work of M. Puvis de Chavannes at the Pantheon, but ought we to feel because of this the same enthusiasm for his paintings in the Sorbonne? We should experience it in a less degree, since these systematic chantings of praise have as a result the encouraging of the inefficient, who seek in the imitation of

an art which they deem an easy one that success which is too likely to be accorded to them.

These, then, are the principal rooms of the new buildings which on the lower story serve for the administration and the staff, and contain also small amphitheatres and rooms for lectures and meetings, and on the first the grand hall of the academic council, halls for the commissioners and apartments for general use.

Work upon the buildings opposite to the part which is already finished, has now been commenced. The walls are showing above the ground. The old buildings surrounding the ancient inner court will be demolished, and this destruction and reconstruction will last

for about six years, if the appropriations do not give out, and if nothing arises to hinder the regular progress of the work. To judge by the façade on the Rue des Ecoles, the new Sorbonne will have a rich and monumental aspect. This is grand architecture, a little Classic, perhaps, but without coldness or dryness. The vestibule is marked on the façade by five full-centred arches. Large windows in the first story lighting the hall of academic council are separated from one another by engaged Corinthian columns, with entablature broken around them to give support for statues. Two circular pediments, whose tympana are decorated with sculpture, crown the two bays at the ends of this central portion of the façade, which project from the curtain walls and are somewhat higher than the two wings. These two pediments, the work of MM. Chapu and Mercié, represent one, the Faculty of the Sciences, and the other the Faculty of Letters. As to the stone statues which decorate the façade, and which are about nine feet high, they have been intrusted to MM. Marqueste, Hiolle, Albert Lefevre, Injalbert, Carlier, Cordonnier, Suchet and Pain, that is, the very élite of the artist world are collaborating with M. Nenot in the decoration of the Sorbonne.

Among the painters, besides those whom we have already mentioned, we name MM. Benjamin Constant, Lerolle, Wencker, Cazin, Lhermitte, Roll, Raphael Collin, Duez, Merson and Clairin. The new Sorbonne, therefore, will be a true museum of art, which will mark the progress of painting, sculpture and architecture at the end of the nineteenth century.

BRUSSELS TO BE A SEAPORT. — It has been decided to make Brussels a seaport, by means of a canal capable of admitting ships of 1,000 tons. An English syndicate has accepted a contract for the work. — *Boston Herald*.



The Old Sorbonne.

BRICKMAKING IN AMERICA.



"All the Modern Improvements."—No. 11.

ANY ONE paying his first visit to America cannot fail to be impressed with the business energy and enterprise of its people; and looking abroad, and considering what it is that inspires this, the cause is very apparent. In America it seemed to me to be the ever opening up of new resources which excites the energies of the people, and spurs them on in untiring industry. These resources are also as varied in their character as in their richness, so that, whatever branch of industry is considered, the same tempting bait is offered. The

branch of industry in which I was more especially interested was that of bricks and kindred manufactures. The leading building material almost everywhere in that country is brick. Granite, marble, and building stone of good quality are abundant, but they lie remote from the cities generally, while excellent brickmaking material is almost everywhere abundant. One peculiarity of this material as compared with that in our own country is that it is almost everywhere of the same character, viz., a loamy material; but it contains sufficient alumina to make a sound and strong brick. It will admit of a thorough firing, and comes out a bright red color. Around Philadelphia and all the way to Washington, and around St. Louis, are found, perhaps, the richest clays; but the districts where brick-making material is not found are very rare indeed. In the neighborhood of Chicago the clay is weaker and stony, and produces an indifferent brick; but in the State of Indiana, and not far away, is again found clay of good quality, and, notwithstanding the rapid expansion and growth of that city, I found that the bricks were sold there at much less price than in any other part. Again, in Canada the same characteristic of the clay prevails; and coming round again across the St. Lawrence, and all through Maine, Massachusetts, to New York, New Jersey, etc., and also in those States lying between, is found the same. The peculiarity of prevailing sameness to me was most remarkable, accustomed as I am to such variation as is everywhere found in England. In those districts where the best clays prevail, the manufacturers are to be commended for the excellent quality of the bricks which they produce. Those used for facing buildings are as perfect as they can well be, both for density, form, and color.

The best facing bricks are generally produced by handwork. The Americans in their brickmaking are ahead of us in some respects, and in none are they more so than in their careful preparation of the clay before it is made up into bricks. It is usual with them to dig and heap it up for a thorough weathering; then in using it is tipped into what they call a tempering wheel-pit. This is about 3 feet deep by 24 feet in diameter, and is filled level with the surface with the clay, water is sprinkled over it as required, then the tempering wheel is set going. The wheel is about 5 feet in diameter, and consists of two or three rims of iron, of about 1-inch section, which are tied together 1 inch apart, and form one wheel. The cavities between the rims give them an increased kneading effect. The wheel is supported in the boss by an iron arm, which extends to the outer rim of the pit, and is drawn either by a horse or by power. The wheel works loose on the arm, and as that is drawn along the wheel revolves in the clay, cutting and kneading it as it travels through it round the pit, and by an ingenious arrangement is made to cover every part of it, and change its course at every circuit from the inside of the circle to the outer, than back again to the inside, and so continue without any attention, never going more than one round in the same groove. It is allowed to run thus for twelve hours, when the clay, after having been patted and smoothed over the surface, is allowed to remain over night, and the next day it is mellow and in good condition for being moulded into bricks either by machine or by hand. The pit holds sufficient clay for 20,000 bricks, and two or more pits with their wheels are required to keep a yard going, according to its size. The plan is purely American, and it would be rather interesting to know the origin of it. The tempering is certainly done very thoroughly by it, but it might be done equally well with greater economy.

The superior character of the clay which prevails generally gives one very little difficulty in dealing with it in any of these processes. There is very little hand-moulding, and machinery is almost everywhere in use. The Americans have what they call three classes of brickmaking machinery, viz., the mud, the stiff clay, and the dry. The mud or soft clay process is most generally in use. In this process the clay is usually prepared by the tempering-wheel, and in some cases by shovel and hand tempering. It is then supplied to a vertical square pug mill. At the bottom of this is an arm or wiper, which forces the clay into a chamber situate on the outside of the pug mill, but attached to it. In this a plunger works vertically. Six bricks are made at once, and the moulds are formed in one frame, which is placed in position by hand, so that an arm in the machine can push it under the plunger to be filled. This forces the clay into the moulds; the empty mould in being pushed into position for filling pushes forward the one previously charged ready for being taken away, and is emptied on to a pallet which is placed on an incline on a circulating disc holding several pallets. These are then lifted on to a wagon, the pallets containing the bricks being placed one upon another on a wagon holding 500 bricks. This is then run into a drying-chamber, and, after remaining there for twenty-four hours, is ready for being set in the kilns. The moulds have bottoms in them, and are sanded for the double object of enabling the bricks to leave them freely, and to leave them sanded over the surfaces. An ingenious method is adopted for sanding the moulds mechanically. This machine is capable of turning out 40,000 bricks per day, but 25,000 is the usual day's work, and in Canada 12,000. The slower the machine is worked, the better is the quality of the brick produced. In Canada a very good brick is made which is used for facing work without repressing, as well as for ordinary purposes. This process is the nearest imitation of handwork, and is almost everywhere in use. This method has undoubtedly advantages. There is a saving over hand-moulding, and the bricks so made are quite as good; and in stony clays, where for making ordinary bricks it is not necessary that they should be either crushed or cleared out it is a useful process, and the machine takes little power and gives little trouble, and it seemed to me that it might be adopted in the London stock brickyards with considerable advantage. But as it is employed in America most generally it would, no doubt, be greatly improved upon in respect of economy in brickmaking, and without any deterioration in quality.

The stiff clay process is by the pug mill and wire-cutting method. There is in the country a very great variety in the machinery of this type, and each with varying merits. Both vertical and horizontal machines are employed. Some of these are small, and others excessively large; but it seemed to me that the designers of the whole of them had failed to comprehend the actual requirements of brickmaking. There are several machines which combine the vertical with the horizontal type, but for what good purpose it is difficult to understand. Good work is done by perhaps all the machines; but it is done with much waste, both in wear of machines and power taken up in driving. There is one machine, of which I saw several in use, which I thought to be the best. It turns out a large quantity of bricks, but they are of the roughest quality, and are only used for inside work. Considerable advantages are claimed for this machine, the specially valuable feature which is claimed for it being its automatic cutting off, but the quality of bricks made by it would not be used for any purpose in this country, and we greatly excel it in many respects, the foremost being in quality, in amount of power it takes, and in wear, and the advantage in the automatic cutting off is also more apparent than real. America, with all its genius for invention, and its variety of brickmaking machinery, has yet something to learn from the old country.

There is perhaps quite as much variety in machinery for the dry brickmaking process as for the stiff clay, and I cannot speak too highly of much that I saw of this class. There are several notable failures which were accountable for a vast waste of capital, of which I saw several instances that confirmed my unfavorable view of them. One serious defect, which I noticed in all alike, was the extreme porousness of the brick made by this process. The method adopted for charging the moulds in all the machinery of this type alike is responsible for this. The clay in many parts is specially favorable for making bricks by the dry process; and if the Americans would adopt the plan of repressing the bricks as they come from the machine they would be very much improved in this respect. There is an entire absence of our semi-plastic process being employed in those materials which are being worked on the dry plan; very superior results as to quality might be produced by this. In the methods adopted for brick-drying American brick manufacturers are much in advance of us. Artificial drying-chambers are almost everywhere adopted. The plant for this, in the first instance, is expensive, but the cost is recouped many times over in the great saving in labor in permanent working. Various methods of heating the chambers are adopted—some with fireplaces, others with pipes heated with steam, others hot air, and, again, with fire fumes passing through the body of bricks. All these methods are more or less successfully employed. Ordinary drying-floors, which involve labor in the bricks being put down and taken up again, are not in favor. The excellent character of their brickmaking material favors them here again in allowing the bricks to be rapidly dried, which is generally performed in twenty-four hours.

In their methods of burning their bricks I consider the Americans much behind us here. The Hoffmann kiln, I believe, has no existence there as yet, or even any of the greatly improved methods of

burning; the old-fashioned open case is everywhere in use. There are a great many so-called patent kilns, but the alterations from the most ancient type is almost without a difference, and in some cases are a decided deterioration from the original. Very great improvement might be made in their method of burning, and I was much surprised to find that they had been so slow to realize this.

In sanitary pipe manufacture the Americans are fairly well abreast of ourselves, and in some respects I must allow them to be in some measure ahead. They prepare the clay well, and are alive to the saving of labor in the detail of the manufacture. Too much cannot be said of their fire-brickmaking. This is universally carried on by handwork. In preparing the clay the tempering wheel before referred to is employed, and in some instances the solid bottom edge runner mill. In Pennsylvania they are somewhat ahead of other parts, both in their mode of manufacture and in burning. They are slow to realize the advantage of employing machinery in this manufacture; but in this there is little to boast about even with us. In Scotland they are just beginning to realize that equal results with hand labor are to be obtained from machinery, and with a great reduction in cost of manufacture, and machinery is now becoming adopted, and is increasingly inquired about. The Americans are also beginning to awake to the advantages which are to be gained by the use of machinery. One firm in Massachusetts has put down a model fire-brickmaking plant in which machinery is fully employed, and also a greatly improved method of burning, and their example will no doubt be largely followed by others by and by, for the Americans are quick to adopt improvements and economical methods as soon as they become convinced of their genuineness. I specially noticed the poor quality of the white and buff building bricks, and the almost entire absence of the manufacture of white and colored enamelled bricks. There is an abundance of material that is suitable for all these; but as yet the manufacture in them is very limited, and the few that are produced are of very inferior quality. I found that this class of bricks is largely imported from England, and the trade in them might be largely increased if the English manufacturers were more alive to the openings there are for trade in this direction. The difficulty which the Americans have to obtain them makes the use of this class of brick very limited, and I noted a very earnest inquiry among the brick manufacturers in the country to be enabled to produce them. If English manufacturers would cultivate this trade, I saw sufficient to convince me that they would find a demand equal, perhaps, to the whole production of this country. The Americans say they do not use them for the simple reason that they cannot be got, not because they are costly, although the tariff added to the original cost here makes this considerable, but the complaint is that they are unable to obtain them. Silica or ganister bricks seem to be entirely unknown in the country so far as their manufacture is concerned. The Americans have the natural material, but as yet the manufacture has no place in the country; but there is an inquiry for this class of brick which should enable the Americans to produce them.

I noticed the pottery branches were fairly well developed. An excellent quality of terra-cotta goods is manufactured in the neighborhood of Boston, but this is not nearly so largely developed as there is clearly a scope for in this class of goods. Pottery ware is produced, but the country is still largely dependent upon importation for the best ware. I had noticed previous to my visit a boasting that in this branch the Americans were leaving Staffordshire in the rear, but in my observations I failed to find evidence that they were at all near in the race. I noticed much pottery ware that was very fine, for the Americans possess considerable artistic taste and an eye for the beautiful, of which I saw abundant evidences, but for the gratification of much of this they are dependent upon England, and perhaps in nothing more than in pottery ware.

My observations extended to many other branches of industry, but as I was more especially interested in those referred to in these notes, and therefore gave particular attention to them, I found the opportunity most valuable in obtaining information and also many useful hints, which will no doubt be taken advantage of at the proper time. — W. Johnson, M. I. M. E., in the Architect.

DEFACING PUBLIC MONUMENTS. — News comes from London that an Englishman has been prosecuted for having inscribed a name upon the battlements of Guy's Tower. This offence, coming as it does close upon that of the vandals who recently broke off a part of the wreath from the bronze statue of Giordano Bruno, at Rome, renders the prosecution doubly commendable; and it is to be hoped that it will be the means of putting an end to the very vulgar and senseless practice which many make of defacing buildings and monuments. There are, however, two palliating circumstances connected with the present case. One is that it has a royal precedent in Queen Elizabeth; *vide* the famous verse scribbled by her upon a window-pane; and the second is the halo of romance which is lent it by the fact that it was his lady-love's name which the sentimental cockney inscribed upon the battlement. Leigh Hunt tells us that when we see "John Jones" cut on a bench or a tree, we are not necessarily to set it down to vulgarity, as it may be "the natural desire to achieve such immortality as may be within his reach." How much more pardonable, then, is a man who seeks this immortality, not for himself, but for the object of his affection! — N. Y. Tribune.

M. BERGER ON THE CHICAGO EXHIBITION.



Palace-door at Trent, Austria.

WHERE is certainly nobody better qualified to advise the promoters of the coming Exhibition at Chicago than the principal director and organizer of the past Exhibition at Paris, and the suggestions which M. Berger has made to that end in the April number of the *Century Magazine* will be read with attention by all interested in exhibitions, past and future.

As, while indorsing many of M. Berger's ideas, there are some which I think are certainly open to criticism, I venture to ask the opportunity of commenting in the pages of *Engineering*, the journal *par excellence* of exhibitions, on some of his proposals. My friends in Chicago will absolve me of any desire to offer them unasked advice, since the subject is one of importance, not alone in reference to the next great international exhibition (I hope we are not to be obliged to call it a "fair"), but in connection with the future organization of exhibitions generally. No time can be better for the general discussion of the matter than immediately after the conclusion of so successful an experiment as that in Paris.

To begin with, M. Berger will hardly expect us to admit his preamble, or to allow that in the Paris Exhibition of 1889 the idea has culminated, and that nothing equal is possible. The proposition is excusable, and so far justifiable that it cannot well be disproved, before it is, in the nature of things, forgotten, but it may be left without contradiction for courtesy's sake. Let us each hold our own opinion. Personally I prefer to regard the Paris Exhibition as a grand lesson, teaching us how we may do better over here when we can make up our slow-moving minds to try, and showing us a few points to avoid, as well as, be it admitted in all honesty, many that we shall do well in not attempting to rival.

There is no city in the world, old or new, so attractive to visitors as Paris, none so hospitable, none so ready to receive strangers within her gates, and for due consideration, to entreat them well; none therefore, so fitted for a "World's Fair" of amusement and entertainment, none to which foreigners from all the world (but chiefly from America and England) will so readily flock.

No exhibition in London would draw the same crowds. It seems to me absolutely unreasonable to expect that one in Chicago could; but with that exception, and that exception alone, there is certainly no reason why an exhibition in London or in Chicago should not be as much, in certain qualities, superior to Paris, as Paris, in certain qualities, was superior to her predecessors.

Now, in my opinion, one of the great wants of the Paris Exhibition was open space. The limited available area, and the way that area was divided, were the great difficulties in the way of those two able administrators, MM. Berger and Alphand. The manner in which they overcame those difficulties was the great proof of their ability. Two separate plots of ground, connected by a long roadway, with a

third cut off by a broad river and two roads, do not, as a whole, form the best possible site for an exhibition. Could buildings such as those of 1889 be arranged round a large quadrangle of garden-ground, larger than that of the Champ de Mars, with a surrounding space of park or garden in which separate pavilions and annexes could be erected, that would be my ideal arrangement for an exhibition, and with the abundant spaces of Chicago it might well be realized there. The mean surroundings of the Paris Exhibition, their closeness to the buildings, and the want of an impressive entrance, sadly damaged the general effect, especially the external effect. As to the buildings themselves, nothing better need be desired than the grand Palais des Beaux Arts and Arts Libéraux, with their convenient covered arcades, in which crowds found room for passage in either wet or sultry weather. The ample galleries in which the industrial products were shown were well suited to their purposes and well constructed. The great Machinery Hall would perhaps have been better applied to some other purpose than the exhibition of machinery, and was certainly for practical purposes needlessly lofty, but its effect was magnificent, and it also must be regarded as an example to be followed. The arrangements of restaurants on the ground-floor of the buildings surrounding the gardens, was admirable, and should be imitated in future.

The various buildings in the Esplanade des Invalides were too numerous and too crowded, consequently they lost much of their effect. Yet how could this be helped? The fact is an exhibition on the scale of that of last year should have for itself the area of a fair-sized town, and should be laid out as the American founder can lay out a future city, independently of surrounding owners and inhabitants.

M. Berger lays stress on making buildings of a permanent character. This is very nice, if it can be done, but it is a costly method of setting to work, and I believe the very heavy outlay is not justified by the return. If indeed the buildings as they stand can afterwards be utilized, and if their future application is not allowed to effect their arrangement, it may be an economy to build permanently, but I cannot see much force in M. Berger's contention that an architect who puts up merely temporary buildings will "lessen greatly the chance of making afterwards remunerative sales of the building materials or of organic parts of his structures."

It is a difficult question how far concession is to be made to the popular desire for mere amusement. If the concessions do not go a long way, the Exhibition, however valuable and complete, will be a popular and a financial failure. "The Exhibition must be full of gaiety and liveliness, yet it must avoid anything that might impress upon it a trivial character—anything that savors of the circus or variety show." How far Eastern dances, "vanishing ladies," and cafés chantants come under this definition, I am not concerned to decide, but I cannot believe the French Exhibition would have been any the less successful if the amusements had been of a little higher tone, and the executive supervision a shade more severe. Over here we were contented with music, and the evenings at South Kensington were popular enough. But amusements the crowds must have. It is preposterous to suppose people will crowd to an exhibition without it. Let it at least be as good as it can be made, something better than is provided by the average local music hall. Perhaps the inventive genius of America may provide us with an alternative to the South Kensington illuminated fountains, the greatest recent novelty for the entertainment of crowds.

It is very satisfactory to see that his experience has converted M. Berger to a true view of the value of exhibition awards. In the early days of the Paris Exhibition I tried hard to convince him of the objections to them. He silenced me with the remark that he did not think any of my colleagues, the other foreign commissioners, would agree with me. I dare say he was right. To suggest to our own exhibitors that they should agree to put the British Section *hors concours* seemed too strong a measure, and, when awards were made in other sections, not desirable in their own interests; but I am sure I should have been supported by a large majority of our exhibitors in any proposal to abolish medals altogether.

M. Berger's opinion on this head ought to, and must carry great weight. If I may be permitted to indorse it, I do so most heartily.

In the same section of his article he suggests that "the formation of national sections should be abandoned." This idea, I fear, though good theoretically, is in practice but a counsel of perfection. Foreign exhibitors must have somebody to look after them, to represent them, to fight their battles. It was at first proposed to work the French Exhibition on this plan, arranging all exhibits by subject-matter, and disregarding nationalities entirely, but the notion was abandoned at a very early stage. As it was, the subdivision of the British space into five different sections, located in widely separated parts of the grounds, added enormously to our labors, and greatly increased our expenditure. Worse than this, it placed us at a disadvantage with other nations, and especially with France. Nobody really appreciated how considerable were the contributions of Great Britain, because nobody except the executive, really knew where all the scattered contributions were to be found. On the other hand, it is fair to say that the only "international" section, that devoted to railways, was well organized, and I believe our exhibitors were as well treated as their native competitors. That the alteration would be full of difficulties is certain. It does not seem to me as sure that if it could be carried out it would be wholly advantageous. Visitors like to see the various foreign sections, Russian, Spanish, Dutch, Norwegian,

etc. Each represents more or less a bit of its own country transplanted to the middle of a foreign land. The foreign visitors love to look at their own country's productions, to see their own folk, to hear their own tongue. On the other hand, natives equally take pleasure in seeing the examples which foreign countries have sent over to their own country. These popular advantages would scarcely be compensated by the more scientific value of collections of similar articles from different parts of the world, and the opportunity given to experts of close and careful comparison of adjacent products.

That no rent should be charged for space is certain, but I hold that there is not much difference in levying a rate on exhibitors for flooring, decorations, blinds, and maintenance, as was done in Paris, and in charging a rent for space. It is well-known that our British Committee was obliged to raise funds by charging exhibitors a rate or rental assessed on the amount of space occupied, and in very many cases I know that the amount thus charged did not greatly differ from the amount charged to French exhibitors, even making allowance for those instances in which the show cases were provided by the French departmental committees.

I know of no other way in which, when no Government grant is made, the expenses of a foreign section can be met, but I think a foreign section has a right to expect that they will be spared all expenses of construction, and that they should find the courts allotted them absolutely complete and ready for occupation. Had this been the case in Paris we could safely have reduced the charge made to exhibitors. In any future section, worked on this principle, I would recommend a sliding scale of charges, calculated on the amount of space occupied, and giving an advantage to exhibitors taking large spaces.

The question of sales is another thorny one. The French executive very properly announced that sales were absolutely prohibited, yet they entirely failed in stopping them. The worse offenders were, I think, amongst the foreigners, and naturally it was more difficult to put pressure on foreigners than on natives. As regards the British Section, I told exhibitors that so long as sales were not allowed elsewhere, they would not be allowed in it, but how was it possible to interfere when exhibitors in all the surrounding courts were selling their wares without let or hindrance? At the same time I should have liked our exhibitors to set a better example in this respect than some of them did.

A strong executive, determined not to allow selling, could stop it, and I think that the executive of any future exhibition ought to lay down and to carry out stringent rules for its prevention. The only case in which sales are excusable is when articles are manufactured in the building to illustrate the working of a machine. Even this should only be allowed under special permit.

As regards price of admission, a franc, or a shilling, or 25 cents may be looked on as the regular thing. Doubling the entrance fee after a certain hour is an unsatisfactory and irritating arrangement. The plan of raising the price on certain fête days seems a fair one, but that of making a considerable addition after a certain hour on such days is naturally futile, as everybody comes in before the specified time. To my mind the English plan of one day a week at a higher price has much to recommend it. It helps to sell season-tickets, it gives a good opportunity for those who really want to study the exhibition, and it affords convenient occasions for exhibitors (exhibitors of machinery especially) to do business. Of course, the nominal price should be the actual one. To put a mass of tickets on the market in such a way as to insure their being sold at a discount of 50 to 90 per cent, does not seem a satisfactory financial operation.

As regards classification, perhaps everybody thinks their own plan the best. M. Berger is enamoured of his. It was very elaborate and severely logical. It seemed to me to have faults. One would not look for pins and needles among metallurgical products, though such they certainly are. Why aerated waters and drain pipes were classed together I could never understand. There were certainly practical inconveniences in putting agricultural machines in one group and steam ploughs in another. It was hard to know whether to advise a gunmaker to enter under Class 38 for firearms or Class 66 for guns, and so on. But it is easier to criticise than to construct. Suffice it to say that there are now in existence a sufficient number of exhibition catalogues, on sufficiently various systems, to afford models for imitation and avoidance for any number of future exhibitions. Perhaps Chicago may adopt the Philadelphia classification of 1876. It is a thoroughly practical one, admirably suited for its purpose, which is to provide for the convenient arrangement of exhibits, not to present a logical sequence of abstract ideas.

The suggestion that each foreign section should prepare its own catalogue in the language of the country, uniform in size and type with that of country holding the exhibition, seems a good and reasonable one. Nor is a year too long beforehand to demand catalogue entries, provided opportunity is given afterwards for revision. But the promptitude with which a catalogue comes out depends on the executive and their printers more than on the exhibitors. In English exhibitions it has always been a point of honor to have the catalogue ready on the day of opening, and this precedent was followed at Paris, where the catalogue of the British Section was the only one in the building on the opening day and for some time after. Greater accuracy is insured if a second edition is published, say two months after the opening.

I certainly do not agree that exhibitors should be made to pay for their catalogue entries, or even for additional lines. In fact if the

executive can afford it, it would be better to omit all advertisements whatever and to make the catalogue purely official, as was done with the catalogues of previous British sections when they were subsidized by Government. The size of the catalogue is important. It should be as small as possible. Crown octavo, as at Glasgow and in our sectional catalogue at Paris, is the best size.

M. Berger advocates, somewhat strongly, the holding of Conferences in connection with international exhibitions. The idea was of earlier origin than he says, for it certainly is as old as the Loan Exhibition of Scientific Apparatus, held in 1876. Special congresses held in connection with special exhibitions, such as that of electricity in Paris in 1881, are of great value, and any meetings of the kind have their use in bringing together the specialists of different nations. Whether as a rule they are good for much more is doubtful. The best congresses at Paris were the meetings held by societies such as the French Ingenieurs Civils, the English Society of Electricians, etc. I believe that the most practical way of carrying into effect the ideas put forward by M. Berger is by inviting the chief societies and institutions of the country, scientific, professional, artistic, to hold each a meeting at the Exhibition, affording them all possible facilities, and providing them with the means of inviting eminent foreigners. The success of the visit to Paris of the American engineers is a case in point. Congresses do not attract the general public. A more popular feature would be illustrated lectures, such as those given at the Colonial and Indian Exhibition.

One of the greatest needs of exhibitions now-a-days is condensation. They are too big. They want cutting down. I would try and encourage collective exhibits; exhibits illustrating the productions of a town or a district, or the condition of a special trade. Is it too much to hope that at the next great Exhibition, Sheffield might be represented by a carefully selected collection of her best cutlery, Manchester by the finest possible samples of cotton goods, Birmingham by a series of her manufactures? Or why should we not have a joint exhibit from the English cotton trade, another from British

ought at all events to give enough to allow of all the contributions of the industrial exhibitors, direct and indirect, being expended to their advantage alone. — H. Trueman Wood, in *Engineering*.

THE PALACE OF THE VIRGINS OF THE SUN, COATI, PERU.

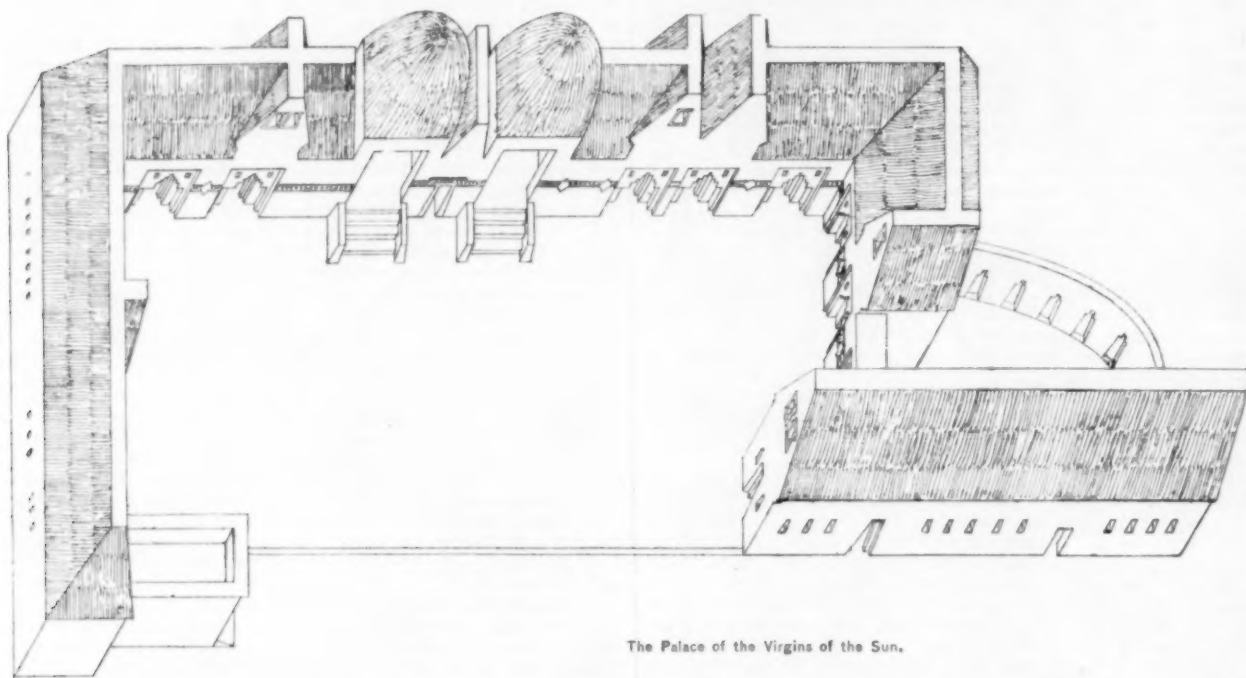


EXTERNAL PULPIT AT SAINT-DIÉ

THE remains of the Palace of the Virgins of the Sun on the Island of Coati, Lake Titicati, Peru, are among the most interesting specimens of Inca architecture in that country. The accompanying restoration has been compiled from the descriptions and illustrations by the late E. George Squier in his book, "*Incidents of Travel and Exploration in the Land of the Incas*," supplemented by some unpublished scale drawings and photographs loaned the writer by Frank

Squier, Esq., to whom especial thanks are due for the aid he has given. The following description is condensed from Mr. Squier's book:

The Palace or Temple, as it might be called, is situated on the northern side of the island, about midway of its length. It occupies



The Palace of the Virgins of the Sun.

ironmakers, and so on? It is not only the individual exhibitor who reaps benefit in a foreign exhibition, it is the trade he represents. I must allow that such an arrangement would much increase the difficulties of organization, already quite sufficient, but that is no reason why an effort should not be made.

With regard to the special question of the likelihood of large numbers of foreign exhibitors going to Chicago, M. Berger's views are encouraging. He hears many of his compatriots expressing their intention of taking part in the Exhibition, and, as he says, "What people are saying in France they will soon be saying everywhere." Even as a general proposition this statement has some truth in it. As a particular instance I believe it is correct. No better augury for the success of an American exhibition need be desired than the promise of a good French Section, especially, may I be permitted to add, if that section is so fortunate as to have M. Berger at the head of it. As to our own countrymen, of course they will grumble and say they will not go. Then they will all come in at the last moment, find there is no room, and — grumble again.

I have no fear as to there being a good British contingent at Chicago, but I do earnestly hope that we may have a Commission under Government authority, and though this is not so absolutely essential, endowed with a moderate Government grant. The country

the upper of a series of seven terraces supported by retaining-walls of cut and uncut stones. The structure is built around three sides of an oblong court, 80 x 183 feet. The material is stone, roughly broken into shape, laid in tough clay, and carefully stuccoed. Of the thirty-five chambers in the lower story, only one is faced with hewn stone, and this seems to have been a kind of secret chamber, approached through a narrow, arched passage. The only attempts at architectural ornamentation are on the façades facing the court, and consist of lofty and elaborate niches. Each niche is in the centre of a kind of stucco framework, or panel. The walls are further relieved with windows and ornamentation devised so as to admit light without outwardly indicating that they do so. Further variety is furnished by placing the lines of the cornice over the entrances higher than elsewhere, thus making a distinction between them and the blind doorways. The cornice, of three layers of stone, projects 18 inches. The exterior was painted yellow, with the exception of the niches and the undersides of the graduations of the cornice, which are red. The building was of two stories, or, more properly a story and a half. The roof was pitched almost as sharply as Dutch roofs. It was not parallel to the façade through its entire length, but was broken by gables.

The floors of the upper apartments have disappeared, having

evidently been of wood. The ledges, or sets-off, in the wall which supported them are plainly marked throughout; and there are similar ledges on the inner faces of the gables, with projecting stones on which to rest and fasten the roofs. The places in which the ridge-poles were inserted are still distinct. The upper story probably coincided very nearly in plan with the lower, and was reached by stairways of cut stone, some of which are still perfect.

The apartments were connected with each other by doorways, opening directly through the partitions, or sunk in the side-walls. To reach some of the inner apartments it was necessary to pass through several exterior ones. Every door opening on the court led to its own special and separate system of chambers. These were variously lighted; some by means of small windows opening on the court where they were masked by the ornaments of the façade, and others by means of windows opening through the exterior and unornamented walls, marked on the inside by niches. Every gable was pierced by one or two large windows, narrow at the top and broad at the bottom. There is, among the remains, a single small apartment, faced with smoothly cut stones, to which access is gained through a vaulted passage 20 feet long and 8 feet high. There is a small opening into this, only a few inches square, from an outer room or cell, evidently not intended for the admission of light, and which seems designed to permit verbal communication with the interior.

The salient features of the buildings, however, are two chambers or rooms, 20 feet long by 12 broad, entered from the centre of the principal façade, not through doorways such as have just been described, but through broad openings, 15 feet wide. The ground or floor within them is raised four feet above the level of the floors of the building generally, and is reached by a flight of stone steps. Within, and directly in front of the entrance, there is in each room a great niche, countersunk in the wall, which is here very thick. In style it is similar to those ornamenting the façade. Two small niches are seen at each end of the apartment. These rooms, which appear to have been much loftier than any of the others, and to have been surmounted by pyramidal roofs, have no communication with each other, or with any of the other apartments. They were probably shrines, and may have contained statues or simulacra of the Sun and Moon. The entrances do not appear to have been closed save, perhaps, with a veil of cloth. Between these two chambers is a smaller apartment, entered by a narrow door. The view is cut off by a curtain or traverse wall, behind which is a kind of dais in stone, with a platform in front of it.

Facing the convent, we find, behind its right wing, a court bounded by the building itself in part, and in part by a semi-circular, niched retaining-wall, conforming to the sweep of the amphitheatre in which the convent is built. It is entered from the terraces which curve around the heights, by a principal passage between two plain buildings, dependent, however, on the general structure. It was here that the sacred vicunas and llamas were kept, from the wool of which the mama-conas, or vestals, fashioned their own garments, those of the royal race, and the hangings of the temples. It is impossible to describe the beautiful but complicated series of terraces which fall in harmonious graduations from the court of the convent to the lake. The retaining-front of the second terrace below the court of the convent is of cut stone, admirably fitted, and along its top runs a wall of stones, breast-high—a kind of parapet or balustrade, pierced at regular intervals with openings, shaped like the niches in the building itself, through which may be seen the waters of the lake. Two stairways, countersunk, if the term may be used, permit descent to the terrace below, whence curve out flank terraces terminating on rectangular platforms, which, perhaps, sustained structures as light and temporary, if not as tasteful, as our summer-houses.

In the accompanying restoration large dependence has, necessarily been placed upon this description, as well as upon the plans and sketches of similar edifices in Mr. Squier's book. The haystack-like domes over the two central apartments are modelled after the dome of the Sondor-huasi, at Azangaro, which has retained the original thatched roof for more than 300 years. This building is circular, but there is every reason to believe that the domes of Coati were similar in construction. The dome of Sondor-huasi is formed of bamboos of equal size and taper, the larger end resting on the top of the walls. They are bent to a central point over a series of graduated hoops also of bamboo. At the points of intersection the vertical and horizontal bamboos are bound by fine cords of delicately braided grass. On this skeleton is a fine mat of the braided epidermis of bamboo or rattan, without seams, and which may have been braided in position. It is worked in colors and panels conforming with the spaces between the frame-work, which is itself painted. An open and coarse matting fastened with a fleece of finest ichu, depending like a heavy fringe outside the walls, is placed over this. Then comes a transverse layer of coarse grass or reeds, then ichu and so on, the whole forming a slightly flattened cone. The projecting ends of the ichu layer were cut off sharply and regularly, producing the effect of overlapping tiles.

Cieza de Leon describes the roofs as an eye-witness, thus: "They are of straw, but so artfully laid on, that, unless destroyed by fire, they will last many ages." Mr. Squier presents a translation from Garcilasso, which bears upon this point. It is as follows: "Their roofs were made of poles fastened to each other transversely by strong cords. These supported a layer of grass of the thickness in some houses, of six feet or more, which not only served as a cornice

to the walls, but extended beyond them for more than a yard, as a pent-roof to keep the rain from the walls, and to shelter the people beneath it. The part that projected from the wall was clipped off very evenly. I remember a structure in the valley of Yucay, of the kind I have described, more than 70 feet square (around) which was covered in the form of a pyramid. Though the walls were only 3 estados (18 feet) in height, the roof was more than 12 feet." The Sondor-huasi is illustrated by Mr. Squier at p. 394. No attempt has been made to represent the terraces, the description and plans not being sufficiently full.

BARR FERREE.

A FEW BUILDINGS OF OLD BELGIUM.



CHURCH OF VOROSMET

UNDER the heading of Bruges, at the end of the hotel list stands a name, "Panier d'Or," which Baedeker marks "unpretending" but which I find I have underscored with the decided words of praise, "where Thackeray stayed." This quaint little inn, surmounted with its "golden baskets" on every gable, has stood in the market-place for over a hundred years and its visitor's book recalls such guests as Longfellow, Dickens, Thackeray, George Eliot and Jean Ingelow. Its floors are sanded, its rooms are small and low-studded with thick beams crossing every ceiling, and its halls are dark and irregular, but the air of delightful ease that prevades the whole, the relics of by-gone days in the shape of carved chests and old china, the exquisite clean linens, and above all, the good things to eat, must endear it to the remembrance of every student who is fortunate enough to overcome that same condemning word "unpretending," and

make it his abiding-place while in Bruges.

From the windows of the "Panier d'Or" one looks across the market-place to the Halles, a large building erected in the thirteenth and fourteenth centuries from designs by Peter Dierix. The building forms a rectangle 48 yards broad and 93 yards deep, one side of which was formerly used as a meat-market. The Belfry or Grande Tour which Longfellow made famous by his well-known poem, rises in the centre of the façade on the market-place, and attains a height of 350 feet. It is built in the fourteenth-century style, story above story, each with its corner turrets, and surmounted by an octagon containing the chimes, and from whose summit an extensive view is obtained.

The three other sides of the Place and the innumerable streets running from it, are filled with mediæval bits of domestic architecture, and along the sides of the canals, the towers and doorways form abundant fruit for pencil and brush.

In the small Place du Bourg are found the Hôtel de Ville, and Palais de Justice, buildings suffering from the raids of war and fire, which have been finely restored, and are beautiful specimens of fourteenth and sixteenth century Gothic. On all sides are found the relics of past grandeur. It is sad to think of the greatness of Bruges so utterly passed away; but if her population were more ambitious, if one-third of them were not actually paupers, as the statistics show, how quickly would vanish all that air of mediævalism, that feeling of hundreds of years ago. Fancy modern buildings supplanting all her quaint gabled treasures, the five noble gateways that surround her torn down to make way for so-called "improvements."

No! far better that Bruges should live in the past and preserve her charm for student and poet, than fill her streets with factories, and join in the race for wealth.

Passing through the gate S. Antoine, and out into the country, one finds a picturesque combination of landscape and peasant. On every side lie profitable farms, the red-roofed cottages nearly hidden by overhanging vines and fruit trees, and in the yellow fields men and women work together, and always shout back a cheery word to our greeting. Through the greenest of lanes we stroll along, the blue corn-flowers and scarlet poppies growing at our feet, till after half an hour we arrive at our destination, the farm of Koed-Kerken, "Cold Kitchen," which has fallen thus from its high estate of the Templars Abbey.

Under a battlemented gateway, surmounted by the arms of the Templars, we pass into the yard. Bits of the wall still stand, forming a back-ground for sheds and out-houses, the moat still surrounds the Abbey, though spanned only by a rustic bridge. The Abbey itself, a fine old bit of the eleventh century, stands on a knoll, its towers on one side sinking into the waters of the moat, which repeat their battlements and gables line for line. A huge round tower rises from

the ground in front, whose warlike face is softened now by clinging roses and vines. Within, are high vaulted halls, the proverbially enormous fireplace at each end, with brick hood and narrow shelf, and the tall, narrow windows contrast oddly enough with the simple, home-like furnishings of the farmers. Winding stairs of carved wood lead to upper chambers in the tower, which are now dismantled and bare, and the rows of blue delft and shining copper pans are the only decoration where once armorial bearings and rare tapestries graced the walls.

The Hospital of S. John is an interesting bit of architecture. One enters its grim stone walls under a portcullis, but once within, small courts filled with flowers, cheerful corridors and sunny walls belie its outward appearance of coldness. The curious sculptures over the gate are of thirteenth-century origin, but the greatest treasure of which the hospital boasts is the rare collection of Memling's paintings, which one finds in the old chapter-house, a fit setting for their quaint style.

From the hospital one strolls on to the quiet Beguinage, a group of white-washed cottages surrounding a tiny chapel under great branching trees. But this extraordinary scheme of seclusion from the world may be studied with greater ease at Ghent. There the buildings form little towns by themselves, with streets and gates, and surrounded by walls and moats. These Sisterhoods have always been held in great reverence, and even in the most bitter ages of reform, when abbeys and convents suffered a common fate of suppression, the Beguinages were passed by untouched, and no doubt proved a welcome asylum to many a poor wanderer.

The first thing one does in Ghent is to go to the Cathedral and see the great altar piece of the Van Eycks, "The Adoration of the Lamb." This hangs in a side chapel, where one is carefully locked in, and a curtain drawn aside before its beauties are revealed. The poor unfortunates who have not paid their franc stand without, and try in vain to catch a glimpse through the railings. Fortunately, all the time one wishes to look at this stupendous painting, is granted, the old sacristan, with his heavy bunch of keys dropping from his fingers, dozing meanwhile in the corner. The Cathedral itself is uninteresting, except for its interior decoration, among which are the names and armorial bearing of the Knights of the Golden Fleece. A curious pulpit of marble and wood stands in the nave.

From a corner in the Rue de la Croix one may count five beautiful towers in view at once, S. Bavon, the Belfry, S. Nicholas, S. Michael, and the Hôtel de Ville, and back of the Hôtel de Ville, about the Marché du Vendredi are old relics by the dozen. Quaint, high-gabled houses, stone bridges, the Cloth Hall erected in 1325, and the famous Oudeburg, a massive castle-like gateway which is all that remains of a great palace that was built on this site in 868.

There are many treasures in Ghent that the casual visitor misses, and in the pathetic words of a blear-eyed guide who volunteered his companionship during our stay, "they go away and say, there is absolutely nothing in our beautiful Ghent."

The mediæval bits of architecture are not so easy to find as at Bruges, but are wonderfully satisfactory, for these rich old burghers have always built well and lastingly, and much wealth of carving and detail can be found if quietly searched. Then too, there is the fine ruin of S. Bavon's Abbey, near the abattoirs, across the canal. It is an easy walk if one knows the way, and within its quiet walls, one can make many a sketch of arch and tower. The cloisters and a low round tower adjoining are still in good condition and in the dining-hall are windows, traceries and a few stone graves. The chapel is nearly demolished, and the garden is full of broken bits of carving, tombs and pillars and one or two capitals in pure, early-Gothic style.

One of my pleasantest anticipations in planning a visit to Antwerp was the thought of seeing that historical monument of printing, the Plantin-Moretus Musée. Christopher Plantin, the head of the family set up his shop on this site in 1553, and from that date until 1875 the business of printing was carried on by this family, in the same workrooms and offices. It has since been purchased by the government and is now an interesting relic, preserving the character of a patrician dwelling and business house of olden days.

The building surrounds an oblong court, on two sides of which are the dwelling apartments and on the other two the offices. An aged grape-vine wreathes the windows on one side, and under an open arcade at one end stands an antique pump and a carved spiral staircase. The offices and salesrooms open to the street from this end and one can imagine the dignified and quiet transactions that went on in these rooms.

The work-rooms are still filled with all the implements for a vast business. Numerous printing machines, with forms of type all ready, as if business was to be renewed on the following day; proof-rooms, with the old tables covered with sheets, desks open, ink-horns and quill pens about, quaint pigeon-hole cupboards stuffed with old manuscript, and in every room the diamond-paned windows looking out into the sunny court. The family were so conservative in their art, that they even had a foundry for casting their own type in one of the upper chambers of the building.

All that wealth and taste could devise, that was also consistent with hereditary dignity, was lavished on the dwelling apartments of this excellent family. On the lower floor are several rooms panelled in oak and hung with tapestry or Spanish leather, the beams and the ceiling being carved and bearing the motto of the house "Labore et Constantia." Huge oak fireplaces occupy the ends, and the windows

are shuttered with oak and rare wrought-iron. Many portraits hang on the walls, painted by the best of Flemish artists, friends of the Plantins, and bits of carved furniture, chests, chairs and tables stand in every room. In long glass cases are exhibited specimens of work from the earliest days of the house, and old testaments yellow with age, and letters and prints. Up the wide and low stairs we find the chambers, each filled with rare tapestry and furniture, the delight of the Flemish housewife's heart. And one great angle of this floor is occupied with the library, one of extraordinary size and opened now to students, by permit from the city authorities. All is dignified, quaint and home-like, and a charming picture of the life of olden days.

The ancient prison of the Steen is also full of interest. At present the wretched hand of restoration has fallen upon it, but there is still enough of the old to show what a grand old pile it must have been. Situated on the quay that borders the Schelde, and at one end of that popular promenade for which Antwerp is famous, its position is prominent, and so long as it remains, it will be a picturesque object. Formerly the Steen formed a part of the Castle of Antwerp and was the scene of many bloody conflicts, and afterwards as the seat of the Spanish Inquisition it witnessed scenes no less horrible: at present in its character of a Museum of Antiquities it still preserves an awful grimness, from its stone walls, narrow windows and fierce catalogue of arms.

One enters through a grandly carved archway, into a small paved court, which is filled with broken bits of stone carving, pillars and cannon-balls. Through the heavy oaken door are numberless rooms dimly lighted with narrow windows set in thick stone walls where one finds historical relics of all kinds and ages, celebrated swords, bonnets and gew-gaws, and up the narrow, foot-worn stairs, in rooms where many a noble soul chafed and pined, are collections of furniture, some old effigies from the days of those famed processions, and a case or two of Roman remains.

But the crowning point is reached when with a "*Prenezgarde, Monsieur!*" the concierge gives one a lighted candle and points to the way down stairs. Stumbling and feeling our way from step to step, we descend as it seems, into the bowels of the earth. A chill strikes through one, from the dampness and the horrible recollections that come surging to the mind. These are the *oubliettes*, into which it one entered, the door closed forever; the world outside must forget the unfortunate to whom death came as a welcome guest.

In one of the lower prisons a ray of light penetrated, but most of them were totally dark, and about ten feet square. Water dripped and oozed from every crack. The doors were triple barred and locked, and in one cell we saw a thick post with chains and anklets attached. All was horrible enough, and we understood that the worst cells were not visible to the public, being literally under the surface of the river.

The student should walk from the Steen up the steep Rue de Steen that leads to the Grande Place. On every side are the relics of old Antwerp, the city as she was in the days of her glory. The curious Halle aux Poissons is in a side street, its red and white stripes and stepped gable making a noticeable landmark, and in the Grande Place itself are dozens of those tall stiff buildings called the Guild Houses, which formerly represented so much power and wealth.

These three old towns of Bruges, Ghent and Antwerp have many churches that are beautiful and fine, but to me the municipal buildings and domestic architecture are of deeper interest, and their history is one relating to their great struggle, first for wealth and then for independence, a struggle which will always identify the people of the low countries.

M. R. B.

THE COST OF ANCIENT STATUES. — The famous Colossus of Rhodes was made of bronze and was seventy cubits (or about one hundred and five feet) in height, was twelve years in making, and is said to have cost only 300 talents, or about £75,000, if we reckon the Attic talent, or £102,000 if we reckon the other talent, and probably the latter talent is to be reckoned in this case. At all events the so-called Colossus of the Sun, in the Capitol, which was a bronze figure of Apollo, only thirty cubits — or forty-five feet English — high, brought by Marcus Lucullus from Appollonia, in Pontus, cost five hundred talents, which, if reckoned even as Attic talents, would be over £125,000, and it would hardly be probable that the Colossus of Rhodes, which was twice its height, could have been executed for so much less. But this is a trifle compared to the price paid for a colossal statue of Mercury, made for the city of Averni, in Gaul, by Zenodorus. On this work he was engaged for ten years, and the cost of it was £335,000. What the gold and ivory Athena of Phidias in the Parthenon, or his Zeus at Olympia cost is not stated by any ancient author. The gold employed on the movable drapery alone of the Athena was over forty talents in weight of unalloyed gold, according to Thucydides, whose exactness in such matters is above suspicion. This would be equivalent to some £116,000 in coin, while a single lock on the head of the Zeus at Olympia weighed six minæ, or about the value of nearly £5,000. For the famous statue of Diadumenos, which was a bronze figure of life size, representing a youth tying a fillet round his head, Polycleitus received 100 talents, or about £25,000. — *Blackwood's Magazine*.

ILLUSTRATIONS

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

THE NEW SORBONNE, PARIS, FRANCE: THE VESTIBULE D'HONNEUR. M. H. P. NENOT, ARCHITECT.

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

THE FACADE OF THE NEW SORBONNE ON THE RUE DES ECOLES.

THE GRAND HALL OF THE NEW SORBONNE.

FOR description see article elsewhere in this issue. A heliotype of M. Puvis de Chavannes's painting in this hall was published in our issue for March 22d last, and a print of the tomb of Cardinal Richelieu in the *American Architect* of June 23, 1888.

BUILDING FOR EBEN D. JORDAN, ESQ., KINGSTON, BEDFORD AND COLUMBIA STS., BOSTON, MASS. MESSRS. WINSLOW & WETHERELL, ARCHITECTS, BOSTON, MASS.

HOUSE OF A. T. HUNNEWELL, ESQ., ON POWDERHORN HILL, CHELSEA, MASS. MESSRS. RODMAN & NORRIS, ARCHITECTS, BOSTON, MASS.

THE PENNSYLVANIA WORKING-HOME FOR BLIND MEN, LANCASTER AVE. AND 36TH ST., PHILADELPHIA, PA. MR. JOHN ORD, ARCHITECT, PHILADELPHIA, PA.

This building is now in process of construction at a contract price of \$33,148, which includes granite base and red stretcher-brick superstructure, plank floors and roofs—the latter covered with tin—and copper bay-windows. The stairway, which is entirely fireproof, is outside the building altogether, giving more room and greater safety.

[Additional Illustrations in the International Edition]

DINING-ROOM IN THE HOUSE OF WILLIAM H. NICHOLS, ESQ., BROOKLYN, N. Y. MESSRS. ROMEYN & STEVER, ARCHITECTS, NEW YORK, N. Y.

[Copper-plate Etching.]

RENAISSANCE WINDOW IN THE CHATEAU DE PAU, FRANCE.

[Copper-plate Etching.]

This window deserves the attention of architects on account of the skilful disposition of the mullion and the casing, as well as the scientific arrangement of the profile and ornamentation.

HOUSE IN MAYENCE, GERMANY. HERR VAN HOVEN, ARCHITECT.

[Gelatine Print.]

THE NEW CITY-HALL, VIENNA, AUSTRIA. PROFESSOR BARON SCHMIDT, ARCHITECT.

[Gelatine Print.]

MARBLE HALL AND STAIRCASE IN NO. 6 CARLTON HOUSE TERRACE, LONDON, ENG. MESSRS. ERNEST GEORGE & PETO, ARCHITECTS, LONDON, ENG.

THE POLES, HERTFORDSHIRE, ENGLAND. MESSRS. ERNEST GEORGE & PETO, ARCHITECTS, LONDON, ENG.

THE HALL, SHIPLAKE COURT, ENG. MESSRS. ERNEST GEORGE & PETO, ARCHITECTS, LONDON, ENG.

HOUSE WITH STUDIO, NEAR GUILDFORD, ENG. MESSRS. ERNEST GEORGE & PETO, ARCHITECTS, LONDON, ENG.

PREMISES ON SOUTH AUDLEY ST., LONDON, ENG. MESSRS. ERNEST GEORGE & PETO, ARCHITECTS, LONDON, ENG.

THE late arrival of a steamer prevents us from printing with the illustrations of Messrs. Ernest George & Peto's work the text pertaining thereto. It will be given in next week's issue.

We find that the "House in Kolowrat Ring, Vienna," published in last week's number, should be credited to Herr Schlaf, instead of Herren Fellner & Helmer.

BOOKS PAPERS

PARIS¹ is certainly the most intellectual city in the world. No doubt there are plenty of illiterate persons there, but the great majority of the people show an interest in what is worth being interested in, and a desire to extend their stock of information, which is not to be found, or, at least, is not publicly manifested, in any other great city that we know of. We remember, some years ago, meeting a procession of book-peddlers on the Rue de Rivoli. The familiar cry of "*Vient de paraître!*" arrested our attention, and we stopped to see what the work might be which a Parisian crowd was expected to absorb as if it were buying newspapers. It turned out to be a Volapük grammar; and, while we could not help being amused at the idea of selling books of this description out of baskets, as if they were peanuts, we wondered, at the same time, how many weeks, or months, the venders of such literature would have to canvass Broadway before their stock grew perceptibly lighter. But where there is one person in a New York crowd who would seize such an opportunity to improve his mind, there are ten in Paris, and a well-written book of useful information is sure of a market there. Hence it is that books containing such information, concisely, simply and attractively presented, are very common in France, and nearly every important occurrence is followed by the appearance of an admirable little work, serving not merely as a souvenir, but containing a mass of interesting statistics, usually explained by many illustrations, which serves to fix in the minds of those familiar with the subject the things most important to be remembered, as well as to convey to others an adequate idea of the affair. Of this sort is the little book before us, which gives a lively picture of the great Exposition of 1889, made solid, so to speak, by multitudes of statistics in regard to matters of engineering, finance and so on, which are sure to prove useful for reference, and illustrated with innumerable plans, woodcuts, photographic process-plates, and diagrams. A short historical retrospect of the great international exhibitions begins the book; then the various departments are taken up in order, and the best and most useful new knowledge which each department had to offer is very cleverly presented. As an example, we may particularly mention the chapter describing the Forestry Pavilion and its contents. After some pretty process-plates showing the construction of the pavilion itself comes a series of plates, showing more or less magnified sections of various sorts of timber, first in health, and afterwards as affected by diseases and by insects. The peculiar appearance of wood affected by both dry and wet rot is beautifully shown, as is also a peculiar yellow rot of oak; and a separate section represents the appearance of oak, still sound, but penetrated by the white threads of the dry-rot mycelium, so vividly that no one could fail to recognize the disease from it. The effect of the gnawing of worms is also shown, both in the timber and on the living tree; and the most dangerous parasites are represented. Still more interesting than this, however, from a scientific point-of-view, is a series of beautiful photographic plates which follows, showing the processes of "reboisement," or reclaiming and replanting forest lands. It is well-known that the French Government has made great efforts within the past twenty years, not only to check the violence of the torrents which in spring, when the snow melts, rush down the mountain sides and devastate the fields below, but, by the same means, to cover the bare, rocky slopes with valuable timber. The attempt has been completely successful. Many villages, once desolated by annual floods, which swept all vegetation away, leaving the rocks parched and bare, are now clothed with young forests, which the stream, restrained in spring by the soft, spongy soil, as well as by the shading of the snow-covered ground, serves to nourish rather than destroy, while the inhabitants, lately reduced to poverty by the violence of Nature's operations, now find themselves, through the application of scientific care, provided with constant occupation in the new forests, and with a prospect of an assured living, if not of prosperity, before them. The means by which all this is accomplished are beautifully shown in the plates. In general, the course of the mountain torrent at the bottom of the valley in which it is proposed to operate is interrupted by a series of "barrages," of stone and other materials. Walls of rock are built in favorable places on the slopes, and earth filled-in behind them, in which the young trees are planted. These little terraces check the water which would otherwise run down the slope to increase the torrent below, and, as the trees grow on them, a foothold is afforded for catching new soil, which may be washed down toward them, and extending the growth, which, once established, increases in every direction; and, in a few years, with a little judicious care, the rocks begin to be hidden by the luxuriant growth of the young trees, while the stream in the valley from an occasional torrent, violent enough to be dangerous for a few days in the year, and nearly dry the rest of the time, is reduced to a pretty brook, which runs all the year round, but never rises to a dangerous height. A pair of views of the same valley, one taken in 1877, at the commencement of the work, and the other ten years later,

¹"L'Exposition Universelle," par Henri de Parville, précédée d'une Lettre-Préface par A. Alphand, Directeur-Général des Travaux de l'Exposition, 710 pages, 700 illustrations. Price, bound in cloth, \$2.00; in paper, \$1.50. For sale by J. Rothschild, publisher, 13 Rue des Saints-Pères, Paris, and by all American booksellers.

showing the bare mountain-side clothed with vegetation, shows most instructively the process and its effects.

We might go on for an indefinite time, calling attention to interesting points in the book, but it is only fair to let every one look for himself for what he likes best, and there are few who will not find something that they like.

Those of our readers who have not yet procured a copy of the admirably illustrated catalogue of the Boston Architectural Club Exhibition will be glad to learn that copies may still be had at the club-rooms. The price is 25 cents each, or they will be sent, post-paid, for 35 cents each.

COMMUNICATIONS

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

BOOKS ON THEATRE CONSTRUCTION.

LOUISVILLE, KY., May 24, 1890.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—Your correspondent, Mr. Herbert P. Kelley of Philadelphia, who, in the *American Architect* of the 3d inst., asks for some work upon theatre planning and construction, will possibly find some information in a book recently published under the rather ponderous title: "*Szene der Alten und Buehne der Neuzeit: Ein Beitrag zur Lösung der Volkstheater-Frage, zugleich ein Versuch zur Raumgestaltung grosser Zuschauerräume; aus den bisher ueblichen Theater formen entwickelt von A. Sturmhaefel*," Stadtbaurath A. D. Berlin, 1889. Verlag von Ernst & Korn.

Yours truly,

LEO. MILLER.

SUGGESTIONS FOR IMPROVING BUILDING METHODS.

BOSTON, MASS., May 24, 1890.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

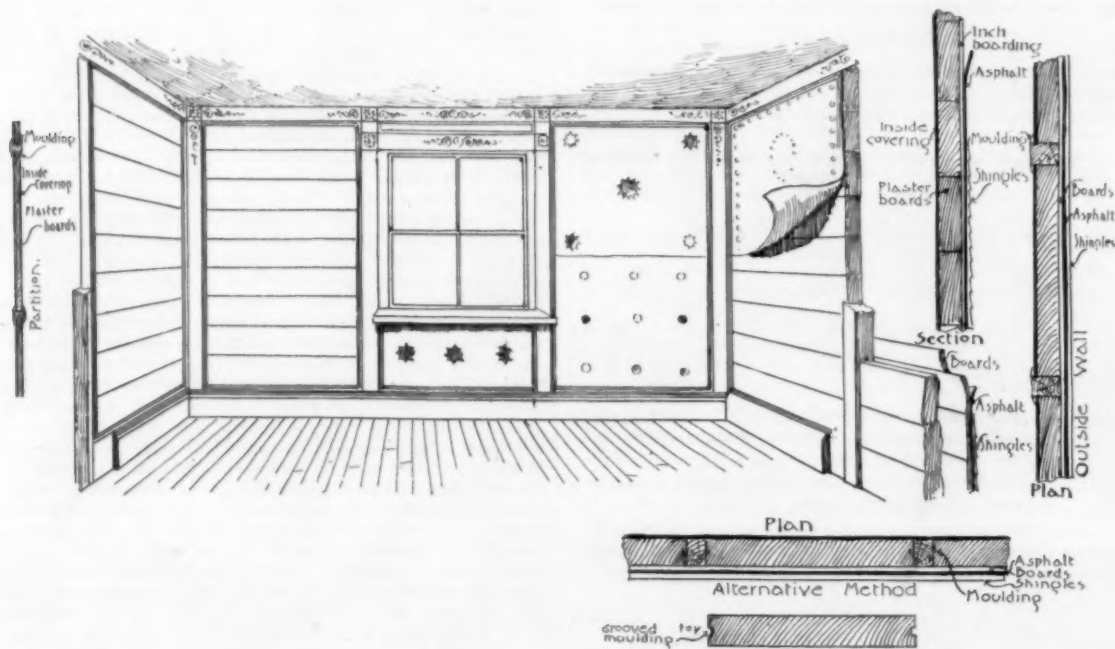
Dear Sirs,—It is pleasant to note the gradual change from the "crazy roof" on dwelling-houses once described by me in your columns, to the hipped roof of the old colonial style; a true renaissance in the construction of country-houses. There is one obnoxious

boards, from which plastering is to be suspended perhaps two feet below the under side of the roof, I can only wonder at such examples of what can only be called foolishness or ignorance. Doubtless the intention is to interpose an air-space; thereby to prevent the passage of heat and cold through the roof. The effect is to make an oven in the roof, and also to make a most dangerous hollow space into which fire may penetrate, to the destruction of the building; and to the danger of the firemen who may venture upon the roof in trying to extinguish a fire. A properly constructed plaster roof costs no more, is a much more effectual safeguard against heat and cold, and is in every way safer, stronger and better.

But the object of this communication is to call the attention of architects to a new substance in which the writer has no interest, and which may not find any great use in mill practice. I refer to the "plaster board," so-called, which is being introduced by the American Plaster Board Company, 50 New and 12 Broad Streets, New York. I do not give this notice for the purpose of advertising the Company, but I think it may be a favor to architects to have their attention called to this material. It is as yet little known. This plaster board is made one inch or two inches in thickness, of a mixture of plaster-of-Paris and hair, bonded together with the reeds commonly called "cat-o-nine-tails." It can be made in given lengths and widths. It is likely to be impervious to heat and cold. It may probably serve as a deafener when fastened to the under side of a plank and timber floor between the timbers. It is a good retardant of fire. It may be nailed up either with asphalt-covered nails or tinned nails manufactured for the purpose by Dunbar, Hobart & Company, of South Abington; or these boards may be cut in given lengths and held up at the ends by mouldings.

It would seem as if there might be a wide field for the use of this material, not only in the construction of ceilings and roofs, but in place of other material in outer walls of wooden houses and in partitions. The material can be placed between timbers or partition studs, then finished off in a day with a skim coat, so that not exceeding a day will be required for the building to become dry; or it may be made use of as a substantial part of the construction in the manner indicated by the enclosed diagram, which was made for me at my suggestion by one of our young men, Mr. Perry, which you are at liberty to copy if you desire to do so.

I would suggest that the floors and other wooden material for small houses of two-stories with flat roofs, might be cut to order in a manner corresponding to the enclosed sketch; be erected and finished within a very few days, without any delay for the drying or plastering. A family could then move into the house even before the outer coating of shingles or clapboards had been put on. I venture to suggest that brick chimneys would also become superfluous if a double earthen pipe with the interspace filled with plaster-of-Paris should be so placed as to be free from the danger of being



feature, however, in the construction of flat-roofed city buildings, both warehouses and dwelling-houses, which vexes the mind of one who cannot directly improve the methods of combustible architecture. When I pass by expensive warehouses and blocks of dwelling-houses which are being constructed with a flat roof made of thin

broken by any settlement or twist of the timbers of the house. These are suggestions merely which I hope some competent architect may work out.

In fact, there is no difficulty in theory in planning an eight or ten room house, two-stories high, of which all the material may be cut

to measure at the saw-mill and at the plaster-board mill, to be covered by a flat roof protected on the outside with cotton duck properly prepared and laid over the roof as cotton duck is laid over the deck of a vessel. If the materials were properly and promptly assembled, such a house could be ready for occupancy in two or three weeks after the work had been started; the flat roof properly railed in might serve as an excellent play-ground for children in winter, or for an excellent out-door resort at the sea-side in summer. In point of fact, such a house would be warmer in winter, cooler in summer, more durable and more suitable for simple household purposes than the common "æsthetic" shams made up of thin boards, lath and plaster, and fret-sawed mouldings.

Very truly yours, EDWARD ATKINSON.

[We do not like to throw cold water on any suggestions for improving building methods, and least of all on such excellent ones as we get from this source, but the fact that architects are often accused of being indifferent to such matters makes it proper to mention that the problem of filling-in four-inch studding with plaster boards one or two inches thick does not seem to us to be very successfully solved in the sketch; while, even if it were, there are much cheaper and better materials for the same purpose, which are extensively used by architects. The best way of using plaster board that we know of is to nail it up for ceilings, which is often done, both with the material mentioned, and with similar combinations of plaster and fibre, which have been made and sold, and specified by architects, for fifteen or twenty years, at least. As to the plank roof for "expensive warehouses" and city dwellings, we must, as before, mildly object to such expressions as "foolishness or ignorance," as applied to the architects who design such buildings with flat ceilings, furred down from the roofing proper. There is not one of these architects who does not know perfectly well that plank is much more fire-resisting than boarding, and that air-spaces under the roofing harbor fire; but they have their clients—not the insurance companies—to please, and most of the former prefer both the level ceiling, furred down from the roof, which must slope, to throw water off, and the air-space, and will not sacrifice either, or go to the extra expense of plank roofing, for the sake of protecting themselves against a risk which the underwriters assume for them.—EDS. AMERICAN ARCHITECT.]

NOTES AND CLIPPINGS

THE BURIED TREASURES OF STAMBOUL.—There is no exaggeration in saying that Stamboul, the antique portion of Constantinople, rests upon a stratum of vaults, passages, chambers and halls of unknown date and purpose, many of them superbly ornamented and all superbly built. Now and again they come into view by subsidences of the earth, and some are always accessible. The quarter named Fazli Pasha stands upon a labyrinth. When it was swept away by fire, in 1877—if we remember the date correctly, says the *St. James Budget*—the ground opened in many spots, and some English residents of Pera made several explorations. Astounding was their report. The hill upon which stands the tomb of Fuad Pasha is pierced in all directions like an ant heap, as they said, by vaults of fine masonry, leading no man knows whither. The same mysterious structures have been found in other parts when occasion served, especially in the neighborhood of the Seraskierat, or war office. Here, indeed, they are magnificent beyond belief; the passages and chambers so lofty that they were adorned with pillars of the Corinthian style at intervals. Very many capitals of these, dug up when the foundation of the new building was laid, strewed the upper earth not long ago. But we would speak of marvels which the visitor can see—or could a few years back. The grandest of all is closed now. This is Yere-Batan Serai, the "Underground Palace," which stands so far above the rest that we may concentrate attention on it. When scoffers like Juvenal discredited the stories of Hellenic wealth and power in bygone days, Plutarch bade them look upon the Parthenon. So the dullest philistine of modern times must see that legend does not exaggerate the magnificence of old Byzantium when he visits this astounding edifice. It lies behind the water-tower of Santa Sophia; and we used to gain admittance readily enough through a hole in the court-yard of a private house near by. Descending a few yards one reached a narrow, shining platform of granite, which doubtless encircled the whole area. In the underground palace is a cistern—nothing more luxurious than that; but such a cistern as we of the nineteenth century could picture only in dreams. A few steps below lies the water, shining black as ink under the candle rays. One huge pillar opposite is illumined at its base, and rises darkening upwards to the roof, where its fine Corinthian capital is faintly outlined; another on each hand and in front shines less clearly, and another beyond; then darkness closes in. How far the long array stretches right and left and forward no one knew with certainty, and an imaginative person would not be anxious to measure, being content to behold a scene without parallel on earth. For the vault is not quite black. Here and there the roof has given way in cracks, and pencils of daylight shimmer through, brightening a capital in the distance, gleaming on the water, reflected up and around the spectral columns. As far as eye can see, water stretches and pillars rise. We have heard it said that they number 330, disposed in 16 rows lengthwise, and 28 rows in breadth; but who counted or measured them is not recorded. The guide, a servant of the Turkish householder through whose court-yard we passed, had legends enough. He told with circumstantial detail how, in his predecessor's time, a "Chelebi," a Christian visitor of distinction, brought a boat down, launched it, and rowed out—never to return. Another, in his own day, made a like attempt, but he fixed a cord to the platform on starting. After rowing for an hour he found no wall to the cistern. Perhaps the mystery is solved now—the more pity if it be! To measure Fairyland and draw up a statistical report of its wonders is a sorry service to mankind. It should be added that the modern entrance was simply a fissure in the wall. Doubtless there is a portal somewhere corresponding with the fine sculpture of

the columns. Yere-Batan Serai is attributed to Constantine the Great—on no particular authority, we believe. Another great series of vaults accredited to him underlies the western end of the Hippodrome. Access has been closed for a good many years. Those who have seen it declare that this also was a cistern, but from the position one might almost suspect that it was connected with scenic displays. The Bin Bir Direk, "thousand and one columns," is supposed to have been built by Philoxenus, a great man of Constantine's day. Being dry now and partly unroofed, it is inhabited by silk weavers. The columns of marble, partly buried in rubbish, number 225, to be accurate—loftier than those of the palace. Dry also is the cistern attributed to Theodosius; but its Corinthian pillars are even finer than elsewhere. So is that of Arcadius, said to be the handsomest of all as a work of art; but it lies near the Mosque of Selim, somewhat out of the way of travellers. Close by the Mosque of Emir Akher lies a graceful cistern, with 24 columns richly sculptured, a stable for cows and horses. Beside these, we have in Stamboul a number of open reservoirs, mostly used at present as market-gardens. The largest of these is the Tehukonr Bostan, "the sunk garden," 200 yards square, beyond the cistern of Arcadius; another of the same name by the Adrianople gate.

THE GHETTO AT FLORENCE.—But as I have said, go ahead, hand-in-hand with stagnation, is the order of the day in Italy. Even artistic Florence has awakened to the necessity of coming up with the times, and is adorning herself with tramways after the fashion of modern towns. Already the beautiful Viale dei Colli and the grand old Poggio Imperiale have been broken up and torn to pieces, and the hissing, spitting machines, and the patient, long-faced Hungarian horses drag ugly cars up hill and down with an accompaniment of shrieks and whistles, smoke and steam, very annoying to dwellers in the immediate vicinity. The Ghetto, hateful record of the cruel, persecuting past, is fast melting away, the sun shines where formerly stood dark, narrow streets, where bands of masonry from house to house arched overhead and barred the sight of the sky. Hotbeds of fever, nurseries of cholera, dens of crime they were, those wicked, filthy old streets over whose disappearance Ouida has poured forth quires of eloquent lament in the *London Times*. It is true they were picturesque, but does that compensate for keeping haunts of vice and disease in our midst. No doubt the dwellers in these holes scolded and growled because they were moved away from their haunts and from their customers, but despite their picturesqueness and their historical interest, it is better, far better that they should go. Florence is off the line of military strategy, and besides people do not batter towns to pieces in these days. So the inhabitants have to take them to pieces themselves, when they get too old. After all, towns are made to live in, as well as to look at and to sketch. Meantime dozens of sketchers have been busy in the Centro since it was condemned, preserving to posterity all that deserves to be preserved, and on paper and canvas these fever haunts can do us no harm. The nonsense that has been talked and written in American and English circles on this theme passes belief. It is a popular idea among tourists that Italians are not fit to be entrusted with the charge of their own antiquities, that an international committee should exist to preserve them. The truth is far different. Italians guard jealously all that is worth guarding, but they do not wish to be a mere nation of museum custodians, they also wish to go on with their age, to make their cities salubrious as well as beautiful, livable as well as picturesque. And ought Americans and English, the first people to worship comfort and health, to say that they are wrong? No doubt improvement entails some losses, the removal of some familiar landmarks. Thus among other episodes of the demolition of the Ghetto and Old Market, so-called already in the eleventh century, think then how ancient its tenements must be, was the solemn removal of Giovanni da Bologna's quaint charming figure of the devil, familiar to all Florentine visitors, which hung low outside the corner of the house, marking the site of a pulpit from which S. Pietro Martire exorcised the evil one. The little fellow has been copied again and again in wood, bronze, terra-cotta, plaster, even gold and silver, but he can never look so well anywhere as he did in his old corner, clinging on to the tumble-down house of the Vecchi family, who existed already in the days of Dante, and are commemorated by him for their simple habits. The funny little imp was removed from his traditional site in the presence of the syndic of Florence, and of a deputation from the municipality and the council of fine arts. He is for the present to remain in that storehouse of Florentine art, the Bargello. It is worth mentioning, perhaps, that all outdoor decorations in Italy in the shape of frescos, statues, etc., are considered the property of the municipality of the town or village. This is done in order to preserve them to the nation and to prevent their being sold or removed without the consent of the authorities. Of course, however, the municipality cannot remove them or dispose of them against the will of the owners of the houses which they decorate. Besides the devil, there was a most beautiful Luca della Robbia in the market, which was removed, or, at all events, consigned for removal at the same time, also to be placed in the National museum. This Luca has been boarded over for a long time, so it is not lost, but rather recovered, to the outside world.—Helen Zimmer, in *N. Y. Commercial Advertiser*.

ITALIAN ARCHITECTURAL DRAWINGS IN WINDSOR CASTLE.—Among the objects of which we have copious detail drawings are those of the completion of St. Peter's and building the sacristy; the alterations of the basilican churches of the Lateran, St. Sebastian, and St. Maria in Trastevere, which were required by a change of ceremonies at the period of the papal benedictions of the Pope; a great number of new churches, among which San Ignazio, Spirito Santo, San Pietro in Montorio, works connected with Santa Maria dei Angeli and many others; among the villas are the Giulia, Medici, Albani, Riarii, Madama, Pamfili, and the banqueting-house of Cardinal Farnese; among the public buildings, the Curia Nuova, the Propaganda, and many of the buildings on the Quirinal; of the theatres, Alibert, Tordenone, that at Parma so well-known: the noble flight of stairs or salita of the Trinita ai Monti, and the fine façade of the fountain of Trevi. Among the

objects of antiquity are drawings of the columbaria about Rome, and of all the temples and basilicas in the state they were in at the time. Valuable as those are which represent objects still in existence, there are many which have a twofold value to the Roman antiquary, because they have since wholly or in part disappeared. Among them are the Temple of Minerva Medici, that in the Forum of Nerva, the Settizonium of Septimius Severus, the villas of Hadrian and of Pliny, and a great number of relics formerly in the Appian Way. There are also rich treasures in beautiful copies of friezes, arabesques, stuccos, and mosaics, taken from the remains of antiquity, many of which have faded since exposed to the light, and some, perhaps, have perished. But the architects have not confined themselves simply to building operations; they have condescended to design the minute adjuncts to decorations required. We find among those volumes drawings for altars, tents, tombs, funeral decorations, chimneypieces, fountains, and even lamps and thuribles. Nor have they been content with the artistic portion of their profession; we find among those volumes evidences of high scientific knowledge; we have drawings of harbors, with the method of repairing breaches of the sea and constructing breakwaters — on a less scale, it is true, but as ably planned as that at Plymouth, and a more wonderful work, if we consider they could not compel the services of that gigantic helot, steam, in those days. There are also designs for prisons and houses of correction, quite on the principle of our system of inspection, plans for complete drainage of towns, and a number of others, which show that architecture and engineering were at that time synonymous arts. Not only so, but military engineering exhibits itself largely in these volumes. There are plans of the sieges of Tortosa, Monferrat, Fuentes, Antibes; a number of military plans for various parts of the country; projects for fortifying the city of Lucca, which were carried out and now exist; curious designs for towers of defence, mounting one large gun, like our Martello towers; designs for large granaries; powder manufactories, with drawings of the machinery; designs for drawbridges: in short, specimens of almost all the useful and ornamental arts of the day may be found in those volumes. The names attached to the drawings, which in most cases, and perhaps in all, are autographs, are indeed deserving of deep respect, second only to those of the great men of the age which immediately preceded them, as De Vinci, Raphael and Michel Angelo. We find the names or marks of Giulio Romano, Domenichino, Bramante, San Gallo, Pirro Ligorio, Bartoli, Borromini, Oddi, the Fontanas, etc. And one precious volume is filled with original sketches chiefly from Venice, by the famous Canaletti. — *The Architect.*

COMFORTS OF MOORISH ARCHITECTURE. — A few dainty balconies, flung like a drift of spume against these walls of white, are seen. The decoration of these is light and graceful, and one can readily trace the origin of the suggestive and enchanting Spanish and Italian balcony. But they were never for anything but ornament. No woman's form ever added complete grace to their beauty. But these balconies are rare. No windows are chosen for ornamentation. They are invariably high, little, barred, prison-like. All other architectural beauty is found in carved doorways, among which are many magnificent specimens; in bases and capitals of spiral stone pillars supporting arches vaulting the streets, over which superstructures often shut out the sky, and are in the pure Arab style of 1,000 years ago; about the façades and fronts of numberless fountains set in cool alcoves, projecting unexpectedly from blank walls, or built upright from the centre of tiny squares, the only places in all this old quarter where sunlight ever reaches the earth; and behind the massive walls, in interiors, whose structural grace and exquisite ornamentation are an endless feast of artistic delight. Again, one finds in these interiors the origin of that loveliest of all inner forms of household architecture, the Spanish patio, or court, which American people of wealth might so happily copy, at least with the modification of glass coverings; thus preserving all the enchanting features of wide, lofty, lightful open spaces; the desirable opportunity for promenades, fêtes and festivities within court and galleries: and, above all, perfect ventilation and facility for the noblest and most classic use of pillars, arches, balustrades, draperies, chandeliers or candelabra and songful fountains, possible for the beautifying of the home. And I believe there is yet to come to the common, and artistic sense of American home-builders a form of palatial, and yet delightfully comfortable, habitation exceeding in beauty and availability any yet adopted style. This will comprise a reasonably modified Elizabethan castle, or manse-house, exterior; the Moorsque Spanish interior, with free use of gallery supporting columns, and arch with domed central roof; and that sweetest of all provision for comfort and home-blessedness, the most liberal possible use of the ample, glorious fireplaces of England old and new. — *Correspondence of Commercial Advertiser.*

A NOTABLE GREEK VASE. — The British museum has acquired a Greek vase, long reckoned among the art treasures of Castle Howard. Though belonging to the decadence of Greek vase painting, it is interesting because of the subject, which presents one of the Greek legends in a light till now unknown in the Greek literature which we possess. It is the story of Alcmena. Her husband, Amphitryon, has returned from the wars, and is filled with indignation at her conduct during his absence. She has fled to an altar for protection, where we see her on the vase. Meantime Amphitryon and Antenor have piled up in front of the altar a pyre of wood and are proceeding to light it. Alcmena raises her hands to the heavens and implores Zeus to help her. In the upper part of the vase appears Zeus, partially visible; he first hurls his thunderbolts at Amphitryon and Antenor, and next sends a tempest of rain to put out the fire. The rain is indicated directly by a great rainbow enclosing a space thickly dotted with drops of rain, and indirectly by two Hyades above the rainbow, who pour down water from vases. Beside one of the Hyades is a figure of "Morning." The names of the various persons, except the Hyades, are inscribed on the vase, so that there is no doubt of the meaning. The vase belongs to a time when it was not uncommon for vase painters to take their subjects from the

dramas of Euripides, and it is thought that the source of this design had been a lost drama of his, entitled "Alcmena," several fragments of which have been handed down by grammarians. In Plautus a storm is called an "Alcmena of Euripides." A similar scene was enacted in the case of Croesus when Cyrus, having taken him a prisoner, set him on a pyre to be burnt alive. Croesus appealed to Apollo, to whose temples he had made so many valuable presents, and Apollo responded by a violent shower of rain, which had the effect of releasing Croesus. That scene also occurs on a vase. The work in the museum is unique as comprising a representation of rain. Most curiously, the garments of the Hyades, which are distinctly crimson, are spotted in white lines of dots, which, beyond a doubt, indicated drops of rain. The rainbow is banded in different colors. — *Commercial Advertiser.*

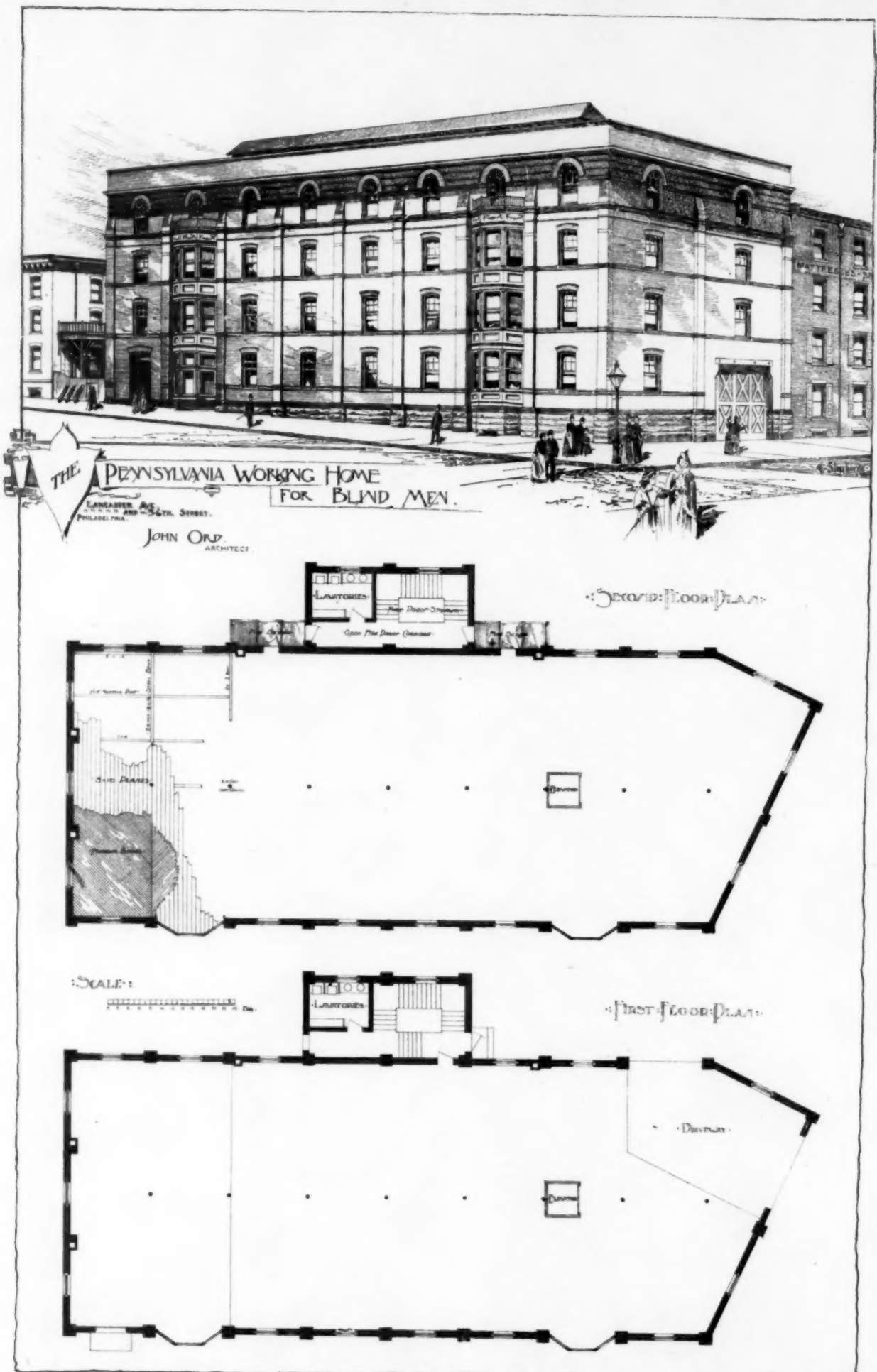
THE SCARCITY OF BRIDGE TIMBER. — It's rather queer — the fact that the Boston & Maine had to suspend operations on its Kittery-Portsmouth bridge for a whole season because the company could not find suitable timber for its completion. The depletion of our forest treasures is no myth. — *Lewiston (Me.) Journal.*

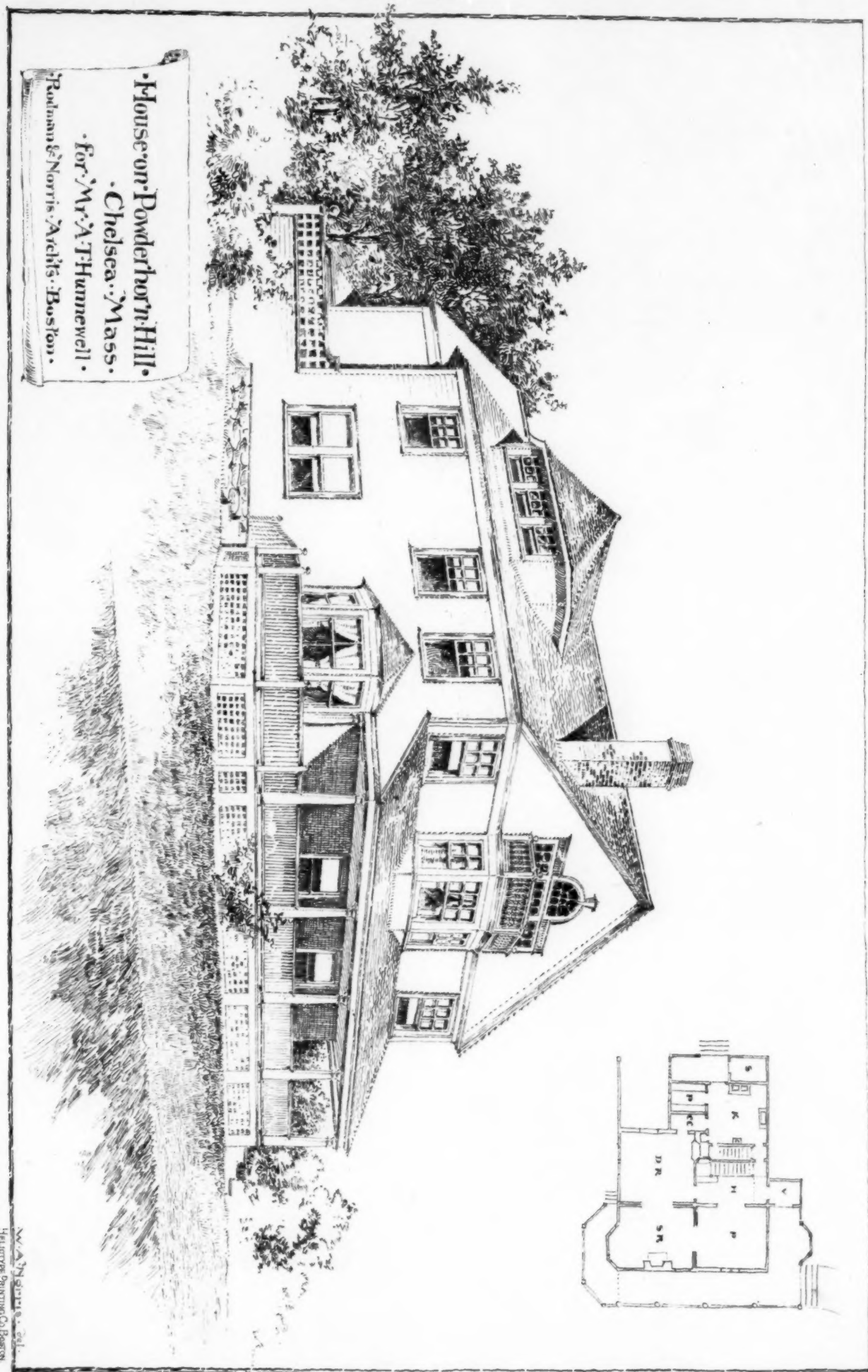
TRADE SURVEYS

THE contractors and builders in several large cities have of late been gathering fresh courage in their contest with the striking carpenters; it is apparent that in some localities the employers will be able to hold their own, and the carpenters will have to yield. At several points strikes have occurred among other branches of the building trades, notably among the stonemasons of Pittsburgh, the bricklayers of Chicago and one or two farther Western cities, the roofers in Brooklyn and elsewhere, and the plasterers in several other cities. There is a feeling of restlessness among the workmen in the building trades generally, but it has been checked to a great extent by the determined stand which the employers have taken; had they generally given in, on May 1, it is safe to assert that ere this a more or less general strike would have taken place. As it is, the strike is being narrowed down and comparatively few workmen are now out. Statements made by leading builders and contractors indicate that future demands upon the part of the workmen will be resisted with great determination. The workmen are conservative, but it is probable that they would be rash if an opportunity for a successful strike seemed to present itself. They have been disappointed at the result of the strike of May 1. Notwithstanding the successes heretofore referred to, so far as the carpenters are concerned, there is a spirit of dissatisfaction and surprise among the rank and file of the workmen, as to the mouse-like outcome of the monster movement which was expected to bring forth such grand results. A feeling of dissatisfaction with the leadership is cropping out here and there; the prevailing sentiment, poorly expressed, is, "If this is all we are to get, we might as well let it alone." Labor agitations, however, never cease; no matter how untoward the result may be, the effort to secure better conditions still goes on, and nothing but a widespread depression, causing disemployment of labor on a large scale, will prevent another concerted movement in another year. Business, on the whole, is improving, and manufacturers feel very confident that the remaining seven months of the year will be better than the past five. An enormous amount of work is on hand in every department of industry, and a vast amount of work remains to be placed. This statement, in substance, is made by the leaders in all the industries. The locomotive-builders have more orders on hand than for two years, and are negotiating for more work than they have ever before had under consideration at one time. The railroad managers generally are preparing to re-equip their lines with everything necessary, and as fast as money can be appropriated for that purpose, they will improve their road-bed.

The entire railway system of the United States is to be put in much better condition. English railway management, in regard to road-bed and equipment, is being more and more followed here, and with excellent results. While only a moderate amount of railway building is being undertaken, a great deal of new work is contemplated. The volume of railway traffic is very heavy, and complaints as to a scarcity of cars are emanating from many quarters. The railroad companies are making every effort to supply all demands, and heavy orders for rolling-stock are being given out from week to week. So far as known, there is not a single well-equipped car-building establishment in the country which has not orders ahead for two to four months. There is a strong probability that freight-car ownership will be consolidated into great equipment companies, controlling cars in large districts. It would seem that some such step as this was inevitable, owing to the great friction resulting from the present feudal system of management and the short-sighted policy which is followed, in disregard of the most urgent business necessities. The iron trade is in better condition than it has been since the first of the year. Plate and sheet iron, steel rails, merchant-bar, merchant-steel and wrought-iron pipe mills are all well supplied with work. The blast-furnaces are producing 180,000 tons of iron per week, every ton of which goes into consumption. Prices have shown an upward tendency during the past few days; large buyers are now covering summer and fall requirements. The production of coal is also increasing, but slowly; stocks are heavy at both Eastern and Western points. The manufacturers of all kinds of machinery report a very heavy demand for both standard and special machines. The steam-power capacity is being rapidly increased, and during the past four weeks a larger volume of business has been placed in this line, among the leading establishments of the New England and Middle States, than has been reported at any time for years. Much of this demand is for heavier, finer and more modern machinery, to replace old designs. The lumber trade is in excellent condition, and prices of hard woods are advancing in all markets. The demand may not be sufficient to lead to an increased production this year, but, if it continues, those who are conducting heavy lumbering operations will increase the sawing and planing capacity for next season. The brick-makers in all sections of the country are crowded with work, and the makers of brick-making machinery report a demand never before equalled. The smaller industries are all thriving, and thus far no serious inconvenience has resulted from a deficient supply of money, although financiers and business managers are constantly apprehensive of some injury to the smaller industrial interests through a sudden scarcity of currency. This fear may be groundless, but it is constantly expressed in trade circles.

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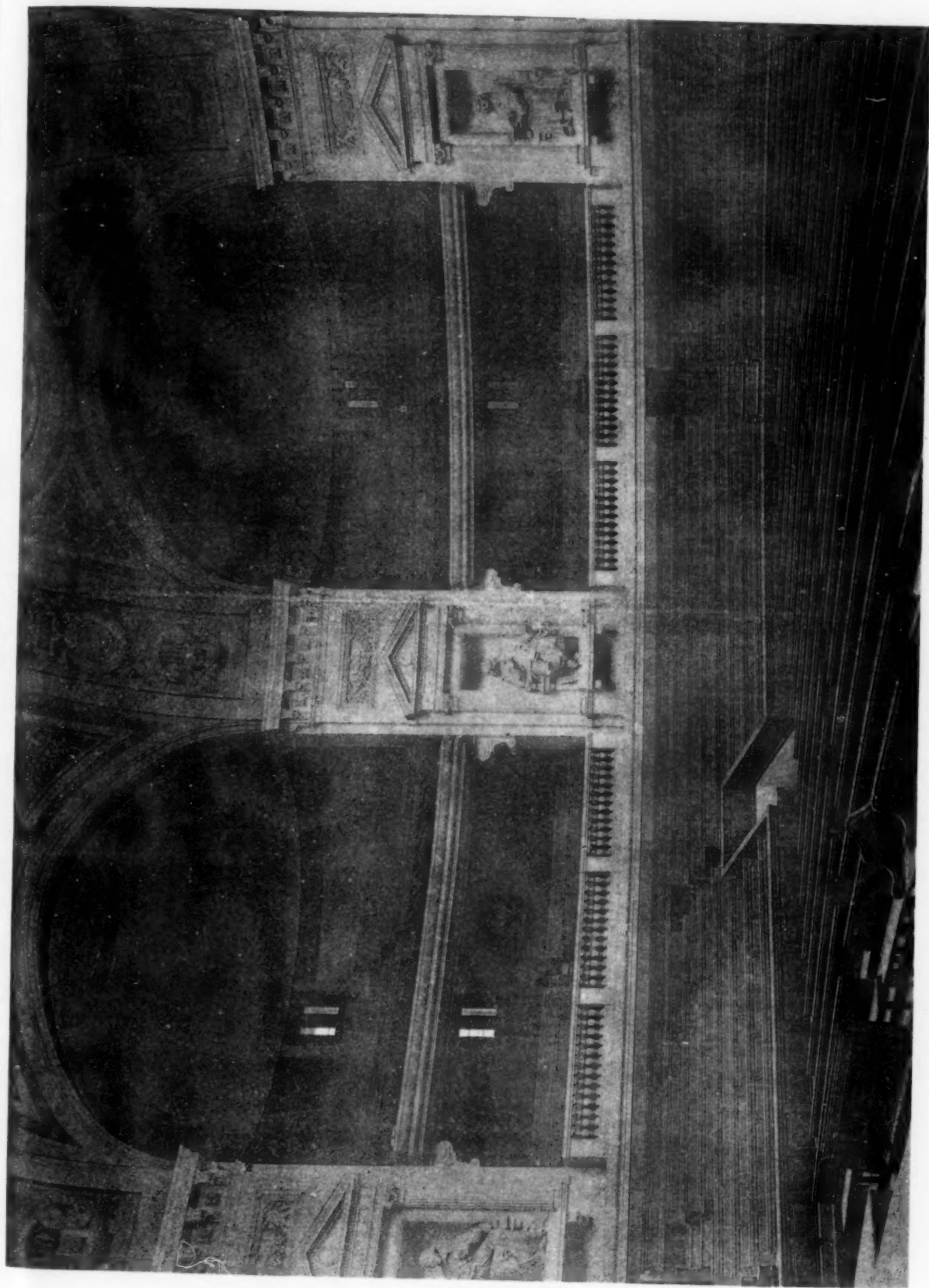
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