PRICE 15 CENTS.

JUNE 14, 1890.

THE AMERICAN ARCHITECT AND BUILDING NEWS

VOL. XXVIII. * REGULAR EDITION * NO. 755.

ARCHITECTVRE

ENGINEERING

DECORATION

CONSTRVCTION

TICKNOR & COMPANY

BOSTON MASS.

CONTENTS.

ILLUSTRATIONS.

THE AMERICAN ARCHITECT AND BUILDING NEWS.

VOL. XXVIII. Copyright, 1890, by TICKNOR & COMPANY, Boston, Mass. No. 755.

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

JUNE 14, 1890.

CONTENTS

WE are requested to "announce" the Third Annual Exhibition of the works of the students of the Department of Architecture of Columbia College, which occurred on Thursday, Friday and Saturday of last week. We do with pleasure what we can in the matter, and regret that the very pretty card of invitation which accompanied the request, having been addressed to "City," wandered about, according to the postmarks, so long that it did not reach us until our last number was in press.

ANOTHER effort which we trust may be successful, is to be made to secure the necessary money for the purchase, in behalf of the American School at Athens, of the site of Delphi. Dr. Charles Waldstein, the very distinguished Director of the School, is expected to arrive in this country during the present month, and will devote himself to the task of presenting the subject to the public in such a way as to excite popular interest. Dr. Waldstein is not only an American, and a scholar of whom any country may well be proud, but is remarkably successful in awakening the sympathy of the public with his own earnest enthusiasm; and he has the advantage, so far as the American public is concerned, of not being connected with any college. Of course, every one knows that a college official is not necessarily a person of ill-developed manners and questionable attainments, but the idea of college men which is conveyed by the newspaper accounts of the performances in which they figure has not tended to increase public confidence in schemes promoted under their auspices.

A NEW attraction is promised for the Exposition at Chicago, on condition that sixty thousand dollars is raised to pay for it. It seems that a citizen of Alexandria, in Egypt, has most opportunely discovered the corpse of Cleopatra, which he is willing to dispose of for the sum mentioned, and, thinking that the World's Fair Commissioners might be glad to have the opportunity of securing so interesting an object, he has written them, enclosing a sample of the remains, which now consist of bones and dust, the fleshy portions of the corpse having crumbled away as soon as the "sarcophagus" which contained it was opened. Antiquarians will be curious to know how and where this relic was discovered, and it appears that some "archæologists," digging in "Cæsar's Camp," near Alexandria, exhumed the "sarcophagus," which is sculptured with what the present proprietor "positively says" are "images" of Cleopatra. How he knows this is not stated, but he suggests that "any good spiritual medium" can tell from the sample fragment whether his corpse is really that of Cleopatra, so he has perhaps ascertained in this way the identity of the portraits on the coffin. It is said that "the committee thinks very favorably of the proposition," and that "if the sarcophagus is proven to be that containing the bones of the famous queen, the sum asked for will be readily and cheerfully paid." It is hardly necessary to predict that, so long as the committee remains in this disposition, corpses, equipped with spiritual evidence of their identity, will flood the Chicago market. At sixty thousand dollars apiece, the committee can probably soon have its choice among the remains of Agamemnon, whose relics are a good deal better attested than those of Cleopatra, Frederick Barbarossa, Charlemagne, and hundreds of other saints and heroes; while, if it really wishes for authentic relics, it might, perhaps, hire the Saviour's Crown of Thorns, which has been kept in the Sainte Chapelle, in Paris, ever since Saint Louis bought it from the King of Jerusalem for six hundred thousand dollars, and brought it with him, on his return from the Crusades, to deposit in the lovely building which he had had erected for it.

A CONVENTION of Building Inspectors is to be held at the Grand Pacific Hotel, in Chicago, on Wednesday, June 18 next, at 2 o'clock P. M., for the purpose of organizing a National Association of Building Inspectors. All Inspectors of Buildings in the United States are earnestly invited to be present, and it is hoped that a common understanding may serve to increase considerably the efficiency of building inspection in our large cities.

AS our readers will remember, the temporary arch erected at the lower end of Fifth Avenue, in New York, on the occasion of the celebration of the centenary of the inauguration of Washington, from the designs of Mr. Stanford White, charmed the people who saw it so much that a subscription was almost immediately started for the purpose of having it reproduced in a permanent material. In less than a year, money enough has been raised to justify the commencement of the work of erecting the permanent structure, and a few days ago the corner-stone was laid, with appropriate ceremonies, on a foundation previously prepared. Mr. White has somewhat modified his original design, to suit it to the more massive material, and we may be quite sure that the completed monument will be one of the most beautiful things in New York. The situation is a charming one, terminating Fifth Avenue, and separating it from the trees and shrubbery of Washington Square, and the quietness, as well as the modest scale of the surrounding architecture, will add materially to the effect.

THE organized profession in St. Louis has hitherto been represented by a body known under the name of the St. Louis Institute of Architects. What the constitution of this body may have been we cannot say, or whether, like the Boston Society of Architects, it was ever affiliated with the American Institute of Architects; but, for some reason, it has been thought best to form in that city a regular chapter of the American Institute of Architects, which has now been organized and chartered, with Mr. P. P. Furber as President, Mr. J. H. McNamara as Vice-President, Mr. A. F. Rosenheim as Secretary, and Mr. C. K. Ramsey as Treasurer. All these are well-known names, and we do not doubt that the new chapter will hold an important place in the deliberations of the Institute.

WE make no apology for making a few more extracts from Herr Hinträger's very interesting pamphlet on school-houses, which we mentioned recently. After his account of the French school-houses, he describes those of Belgium and other countries. In Belgium, it seems, the movement for improved school-buildings has followed that in France, and French models are generally followed, but with certain differences. In Belgium, for instance, the sexes are not usually separated in the classes, but the schools for the infants, which

in France are usually joined to those for older children, so that the little ones may go to school under the care of their older brothers and sisters, are in Belgium always in separate buildings. The two most striking peculiarities of the Belgians, their cleanliness and their love of music, show themselves in the provision of music-rooms in many schools, and of wash-rooms in all, even in the villages, where the children can brighten up at intervals their faces and hands. Gymnasiums are also almost always provided, and every school, even the smallest, has a library, and also a museum, for which the pupils themselves collect objects. In the country schools, the teacher and his wife sweep and wash the school-house, which, as Herr Hinträger observes, does not tend particularly to increase their authority over the pupils; but the city schools have regular janitors, and servants under these. The division, as usual on the Continent, is into classes of thirty to thirty-five pupils each, in separate rooms. The area of the playground is fixed at not less than twice the united area of all the class-rooms.

IN Germany, "the land of schools and barracks," we expect to find the most advanced ideas in school-building, and are not disappointed. All, or nearly all school-houses, besides the class-rooms, are provided with gymnasiums, work-rooms, libraries and so on, and, in addition to these, the principal schools in many cities, following the example set by Göttingen in 1884, have bath-rooms attached, in which the children are refreshed with warm or cold shower-baths, as the season may require. The whole school may be washed in a short time by sending the children in relays, and putting two or three at once under each shower; and it is found that their "freshness and enjoyment of study" are greatly increased by the treatment. The last country treated of is Japan. It will surprise most people to learn that Japan, with a population of thirty-nine million heathen, who were, not long ago, little short of savages, has now twenty-eight thousand, six hundred elementary schools, attended by two and one-half million children, besides numerous kindergartens, high-schools, special schools and public libraries. In arrangement, the Japanese schools closely resemble those of France and Germany. The windows are filled with paper, instead of glass; but they have tables, benches, wall-maps and pictures, and a teacher's desk, like a European school. Instead of ink-stands and pens, however, they have sticks of India-ink and brushes, and their writing is done upon sheets of paper, which, from long use, are black, and stiff, like pasteboard, the difference in shade between the moist, newly-made letters and the dry background answering perfectly well for correcting the exercises. For some mysterious reason, the Japanese prefer not to insist upon silence in their school-rooms, and as all the children, therefore, not only "study aloud," but encourage themselves during their writing-lessons by shouting, the consequence is that a school-house is distinguished by the confused roar which issues from it, and can be perceived a long way off.

THE Philadelphia *Daily News* quotes, from an official report of the United States consul at Mannheim, an account of a new process of manufacturing glass, by which the soft "metal" is taken from the melting-pot, and passed between heated rolls, which deliver it in long sheets. According to the account, the rolls are covered with oil, wax or coal-dust, to prevent the soft glass from sticking to them, but the surface of the rolled sheets is smooth, and the glass very clear. If this process should be what is claimed, we may hope to see an immense improvement in the quality of sheet-glass before long, as well as a great reduction in the price of it. The raw material of glass is of very little value, while large sheets, made by the ordinary cylinder process, are expensive, and polished plate is still more so. If glass nearly as flat and smooth as polished plate can be made at one operation, by rolling, it will come into use for a great variety of purposes for which it has never yet been employed.

IN another place in New York the cowardly and criminal warfare against Peck, Martin & Company is going on. Messrs. Peck, Martin & Company, as our readers know, are dealers in building materials, who have the audacity to employ non-Union men. For this reason, and because they have been independent enough to refuse to discharge their men at the demand of the walking-delegates, they have been persecuted for two or three years by every sort of malice that the delegates could think of. Some of the delegates have already got themselves into jail by their excessive zeal in tormenting people who chose to employ poor men whom the same delegates wished to prevent from obtaining employment, and the zeal of the rest has been limited only by their fear of the police. The way in which their attacks are made has been to order strikes at intervals in all buildings where materials bought from Peck, Martin & Company are used. The other dealers in materials have shown their opinion of the contest by agreeing not to sell any materials to replace those which Peck, Martin & Company have been prevented from selling, and the consequence is that in one of the buildings in New York, where the unfortunate firm of friends of the oppressed have been engaged to furnish materials, there is total stagnation, no workman daring to appear for employment. It is not many years since there was a strike of railroad men in New York State, the consequence of which was that Governor Hoffman, of energetic memory, immediately seized the railroads, put them under military guard, and operated them as usual, by the State authority, until the strike was settled, which, as the ringleaders found their means for tormenting the public taken out of their hands, soon happened. The Spanish Governor of Barcelona took another step in advance last month, by putting the factories in his city under martial law, and ordering that strikers who tried to interfere with non-Union men and women should be shot without ceremony; and it looks as if the public force would, before long, have to be called in to protect that portion of the citizens which has the misfortune to be employed in the building trades.

AS the summer advances, the people who conduct the wretched game of strikes grow more reckless, and those whom they govern less tractable. In New York, the other day, the house smiths and framers engaged in a certain building took offence at something, and appealed to the Central Labor Union to order the building "struck" by all the workmen in it. The bricklayers employed in the work, who had nothing to complain of, objected to being thrown out of work, but the Central Union voted to strike the building, whether they liked it or not. The bricklayers then expressed their intention of keeping at work, notwithstanding the action of the Central Union, and took their places on the staging the next morning, as usual. Pretty soon a walking-delegate appeared. He was much too wary to approach the bricklayers, who, when they happen to take it into their heads, are as reckless as the delegates themselves in enforcing their views on other people; but, instead of this, slipped down into the basement, where he found the engineer of the hoisting apparatus by which bricks and mortar were lifted to where the bricklayers were at work. As the Engineers Union belongs to the Central Labor Union, the walking-delegate was enabled to bring all the terrors of the united trades to bear upon him, and he soon frightened him into quitting his engine, leaving the bricklayers without bricks or mortar until a non-Union engineer could be found, with courage enough to take his place.

A DECISION of importance to architects has been made in the United States Circuit Court, in the district of Massachusetts, in relation to the patents for electric gas-lighting apparatus. The litigation has been going on for several years, to determine the validity of certain patents for electric hand-lighting gas-burners, having a fixed electrode, a ratchet on the valve-stem, and an angle-lever, which is fitted loosely on the stem, with one arm for operating, by means of a chain or cord, and the other arranged to carry an electric contact-point past the burner-tip, and carries a pawl, to engage with the ratchet and turn on or shut off the gas. These familiar details are common to burners made and sold by many dealers and electricians, but it has now been decided that the devices of which they form part are covered by certain patents, now the property of Mr. A. L. Bogart, of New York, and the Electric Gas-lighting Company of Boston, and that the patents are valid; so that henceforth only these two parties, and their licensees, can manufacture or use such goods until the expiration of the patent. Who the licensees are we are not informed, but as architects and their clients often get into trouble by the innocent use of articles which turn out to infringe some one's patent, we advise people in the profession either to refrain entirely from using apparatus of the sort, or to require from the contractors furnishing it a satisfactory warranty that all the just demands of the proprietor of the patent have been complied with.

RELIGIOUS ARCHITECTURE.[1] — X.

V. CHRISTIAN ARCHITECTURE. — THE BYZANTINE PERIOD.

Chimney in the Chateau de Chantilly. M. Daumet, Architect.

DURING the early centuries of the present era, Christianity was the religion of the "lower orders" — of converted Jews who had come to Rome to carry on the inferior crafts, and of the Syrian population of cosmopolitan cities, and of a vast number of slaves. From the days of Nero, the professors of the new faith were often subjected to persecution, and their tenets were held in especial contempt by the Roman aristocracy, as may be learned from the study of the Latin authors of the period. The erection of important religious edifices in the open air was out of the question for the early Christians. Long forced to hide their worship, or, at least, to avoid calling attention to it, the fire of their belief was kept alive in the catacombs, which were either abandoned quarries or underground galleries excavated to serve as assembling halls for Eucharistic celebrations and for common prayer, as well as for burial-places for the dead and the martyrs.

These galleries were veritable labyrinths, with paths running in all directions, and with tiers of deep niches made in the walls to receive the dead. Each niche, when used, was closed by a stone slab, on which a palm was rudely graven with a trowel, or in which was fixed an ampulla filled with the blood of the martyr.

In many cases there are several stories in the catacombs, ranging one above the other, and inter-communicating by means of stairs. From point to point, where the paths meet, vent-holes hidden under the briars let a little light into the interior, and wells are found extending down to subterranean pools, which supplied the water needed for baptisms. It is near these vent-holes that fragments of pagan tombs have been discovered; their position has led to the belief that they must have fallen in from without, and it is supposed that the catacombs have always served exclusively for Christian ceremonies.

The rapid spread of Christianity into all the provinces of the Roman Empire, the cessation of persecutions in the fourth century, and the adoption of the new worship as the official religion by Constantine, are events known to all the world. When, about 330 A. D., Constantine transferred the seat of government to Byzantium, the Oriental city became the capital of the Christian world.

With the zeal of an imperial neophyte, Constantine caused many of the edifices of antiquity to be destroyed, and erected Christian churches on all sides.

With the beginning of barbarian invasions in the West, civilization, heir of the ancient world, turned once more toward the East. The cities of Greece and Syria, like Constantinople herself, reared countless religious structures. The Eastern Empire reached the zenith of its power in the sixth century, under Justinian, who built the Church of Saint Sophia as it has come down to us. It sustained itself until the ninth century, after which it gradually declined under attacks from West and East alike, until in the fifteenth century the Turks fixed their capital at Constantinople.

During the flourishing period of Byzantine rule, Christian churches continued to be erected throughout the empire — in Asia Minor, and in Greece.

The history of the struggles of the Eastern Empire against various barbarian invasions is well-known; the stories have often been told, also, of the triumphs of the Greek Empire in Italy, and of the final establishment of the Longobards in Italy, as of the Franks among the Gauls; of the attempts of Charlemagne to reconstruct the Western Empire; of the establishment at this period of regular and frequent intercourse between the Occident and the Orient, and of the consequent influence exercised by the ancient civilization over that which was in process of formation. It is not to be wondered at, then, that Byzantine architecture, engendered by ancient art and metamorphosed to suit new needs, had almost universal sway until the tenth century.

We shall find traces of it in Western Europe down to a comparatively recent date.

With Christianity came ceremonial demands quite unlike those of paganism; vast halls were required for processions and other ample rites, as well as for the assemblage of the faithful and the clergy for common prayer. Two of the Roman edifices, to wit, the rectangular basilica and the circular hall, were found well adapted to answer all the requirements of the new forms of worship. These structures were taken as models in the construction of a large number of churches. But to these a third type was added, which was peculiar to Christian architecture, and the origin of which is to be sought in the Church of St. Sophia, erected at Constantinople under Justinian.

We can henceforth rank all examples of religious architecture in one of these three groups — basilicas, circular temples, and churches with domes resting on pendentives — down to the moment when, during the so-called Romanesque period, the West, having reached a sufficiently advanced state of civilization, escaped from Eastern inspiration and created a new style of Christian architecture, the Gothic.

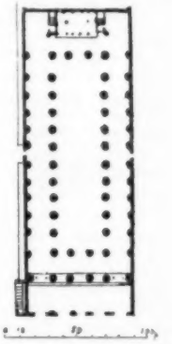


Fig. 1. Plan of the Basilica of Pompeii (1st Century B. C.).

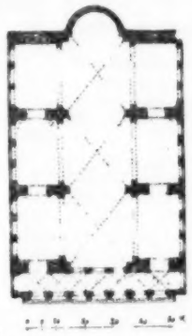


Fig. 2. Plan of the Basilica of Constantine, at Rome (4th Century A. D.).

We will point out the main characteristics of the three groups noted above, and will then indicate, with greater detail, the edifices erected during this period, in the East and West alike, by Byzantine architects, or under their influence.

The form of the Roman basilica was well adapted to the needs of the crowded Christian assemblies. The long, vaulted halls of the thermæ would have answered these needs equally well, but their construction was far more difficult and costly.

According to Vitruvius, the most important Roman basilicas had *chalcidica*, which were probably aisles running crosswise,

[1] From the French of P. Planat, in Planat's "*Encyclopédie de l'Architecture et de la Construction.*" Continued from page 145, No. 754.

either at the entrance or in front of the tribune, or *prætorium*. This disposition was copied in the oldest Christian basilicas, St. John Lateran and St. Peter's, at Rome, and also in the basilica of St. Paul, when it was reconstructed under Theodosius.

The aisles, or lateral naves, were often surmounted by lofty galleries, opening on the central nave by a second order of columns three-quarters the height of the lower order. The intercolumniations were closed three-quarters of the way up by a partition, called the *puteum*. Above the whole, an attic, adorned with pilasters, supported the timber-work of the roof, for such was the usual method of covering the structures of this period. However, a few basilicas existed, like the Temple of Peace, or Basilica of Constantine, at Rome, built, in fact, by Maxentius, in which the different naves were vaulted (Figure 2). In such edifices, massive piers were used instead of columns.

At first, lintels were employed to span the spaces between the columns supporting the walls of the principal nave; this necessitated the use of a considerable number of columns, as only a comparatively small superincumbent weight could be borne by the lintels. Columns were freely transferred from the ancient edifices to the new; however, when these became more scarce, the arch was substituted for the lintel.

The ancient basilica comprised a main nave carried on columns, and two lateral naves, or aisles, supported on the side walls; on the principal façade were three doors corresponding to the three interior divisions. The central nave terminated, at the head, in a semi-circular recess answering to the *prætorium* of the civil basilica of the Romans. Sometimes, however, this recess was wanting, and the *prætorium* formed a part of the hall itself, as in the basilica of Pompeii (Figure 1).

The side-aisles were sometimes doubled, as in St. Peter's, and St. Paul's without the walls (Figures 5, 6). They were often of two stories, as at S. Agnese (Figures 7, 8), and at S. Lorenzo, where, also, there is a tribune on the inner face of the front wall.

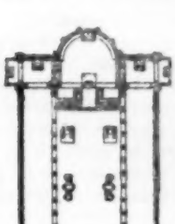


Fig. 3. Plan of S. Maria Maggiore, at Rome (5th Century).

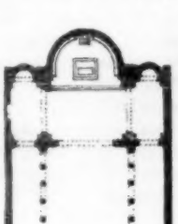


Fig. 4. Plan of S. Pietro in Vincoli, at Rome (5th Century).

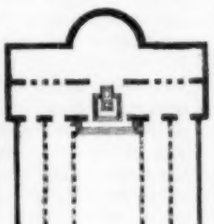


Fig. 5. Plan of St. Paul's without the Walls, Rome (5th Century).

The pronaos at the foot of the principal nave was designed for the catechumens and penitents, who were not allowed to listen to all of the service, but were compelled to leave the church at the time of the consecration of the host. The lower clergy, constituting the choir, were stationed in the centre, a place afterward termed the choir; the space about the altar, which stood at the entrance to the semi-circular recess, near the *altarium* or *sacrarium*, and which was often closed in on the sides by solid walls, was occupied by the deacons and sub-deacons; the higher ecclesiastics sat on a semi-circular bench in the apse, designated under the name of *presbyterium;* while in the middle was the *consistorium*, a raised seat reserved for the episcopal authorities.

The worshippers were in the aisles, the men taking the left as they entered, and the women the right; these directions were sometimes reversed, as they were dependent on the orientation of the edifice. It was a rule in early times that the churches should be so set that the priest should face the east at the consecration of the host; as he turned at that moment toward the assembly, the men should be on his right; that is, on the south side of the house. This law, which was fixed by one of the Clementine constitutions, was not always observed, and more than one of the basilicas was set differently. S. Clemente and St. John Lateran may be cited among those regularly oriented.

From the fifth century, it became a rule for the priest to turn his back on the worshippers; the churches were then built to front the west, and the men took the right and the women the left on entering. The basilica of S. Apollinare, at Ravenna, is oriented in this way. Therefore, in the mosaic

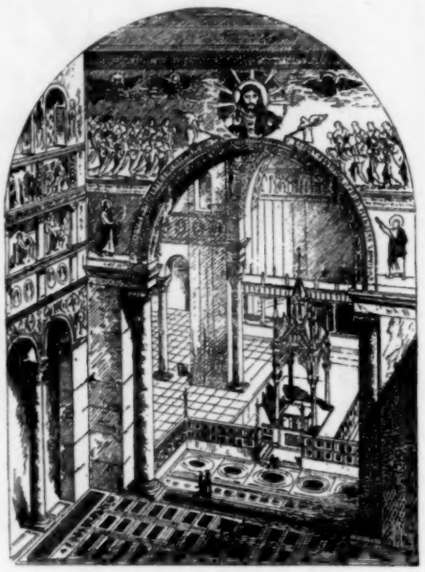


Fig. 6. Interior of St. Paul's without the Walls. After M. Rohault de Fleury.

frieze, with which the interior is decorated, the female saints are represented on the northern wall, the women's side, while the figures of the male saints are found on the southern side.

In the Roman civil basilica there was often, either at the entrance, or toward the rear, in front of the *prætorium*, a transverse hall, which, as we have already remarked, must have been the *chalcidicum* mentioned by Vitruvius. In the fifth century this disposition was revived under the name of transept, and by its means an ampler, better defined and more isolated space was secured for the sanctuary. The wall of the transept was pierced by broad bays corresponding to each of the naves; the central one took the name of *arcus maximus* or *triumphalis*. The wings, arms or cross-bars of the transept often extended beyond the side walls, so that the general form of the church was that of the Greek *Tau;* a symbolical expression was attached to this letter because its shape was that of a cross.

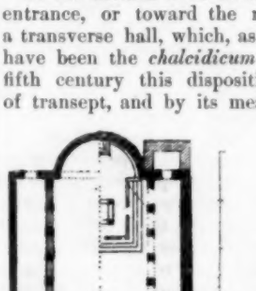


Fig. 7. Plan of S. Agnese without the Walls, Rome (7th Century).

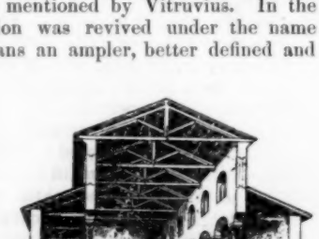


Fig. 8. Interior of S. Agnese without the Walls.

The transept sometimes terminated in small apses.

Thus three well-defined types are to be found, to wit: the basilica without a transept, like S. Agnese (Figures 7, 8); the basilica with a transept: (1) with a single apse, as S. Maria Maggiore; and (2) with three apses, as S. Pietro in Vincoli.

[To be continued.]

THE GREAT TOWER IN LONDON.

Schloss Heeswijck, Holland.

IS London to have a great tower of an altitude equal to or surpassing that raised by M. Eiffel in Paris? Sir Edward Watkin and his friends say that it is, and few engineers will be disposed to raise objections, for considerable scientific interest attaches to such erections, while they provide work for iron and steel manufacturers, engine and lift makers, and many others. At the same time, it must not be forgotten that it will not be sufficient that the proposed tower shall be well and scientifically constructed, and that it shall reach a few hundred feet further skyward than the erection on the Champ de Mars. If it be not also a commercial success, the effect will be felt in engineering circles, and the public will be, for a time at least, on their guard against all novel enterprises. There are plenty of people always ready to throw a stone at an unfortunate undertaking, and if this should not succeed there will be no hiding it. It will expose its forlorn length to every passer-by, and advertise its own failure in the most effectual fashion possible.

This consideration needs to be borne in mind in the choice of a design. M. Eiffel's venture proved a great financial success, but it by no means follows that it would be wise to imitate it very closely on the banks of the Thames. Even he must at times have regretted that he had not provided greater facilities for ascending and descending, and more space at the summit, so that the traffic through the turnstiles might have been quicker. Fortunately for him, Paris was, last summer, the focus of all the pleasure-takers of the world, and was filled with crowds having time on their hands, and money in their pockets which they were anxious to spend. There is no likelihood that such a state of affairs will ever occur in London to the same extent. The millions who attended the last Exhibition at South Kensington were largely composed of people who deferred coming until the entrance-fee was practically reduced to a few pence, and very few of them would have paid three or four shillings to ascend a tower, even if it had reached to the clouds. We doubt even whether the well-to-do English people who crowded up the Eiffel Tower so readily would not count the cost much more carefully in their own country.

The London tower, if it is to pay, must provide for the Londoner some attraction which will bring him again and again. Few people will care to go to a height of 1,000 feet more than once, while immense numbers will postpone the journey for the convenient season which so seldom comes. Yet it has been demonstrated that outdoor pleasures — trees, flowers and music — will draw, all through the summer, crowds who are quite content to talk, smoke and promenade, and who will neglect the treasures and curiosities of an exhibition for the sake of the fresh air. Now, if these attractions could be raised 200 feet or 500 feet above the smoke and the dust-laden air, they would be immensely increased, and every evening there would be a rush both of the gay and the jaded to enjoy a new sensation, which would never pall so long as the summer weather continued. The country cousin and the conscientious sight-seer would go to the summit, but the first stage would detain the bulk of the visitors.

We think that considerations of this kind will weigh with the committee who have under review the form of the proposed tower. To facilitate their labors, two prizes of 500 guineas and 250 guineas respectively were offered for the best designs last November, and, the time allowed having expired, the designs await adjudication. For the present, they are being exhibited to the public in the hall of the Drapers' Company, Throgmorton Street, E. C., where they will be on view till Friday, the 9th inst. The competitors were not hampered with any restrictions; they could choose their own height, style of construction and material, and all that was demanded was that there should be sufficient lift power and space for restaurants and offices. To show how far advantage has been taken of this latitude, we may mention that the heights of the designs vary from 1,197 to 2,007 feet, while both granite and concrete towers are suggested in addition to those of steel and iron. Of course, the majority of the candidates prefer steel.

In reviewing the various designs, we must frankly admit that none excels the Eiffel Tower in beauty and grace. We fancy the candidates must have often bemoaned the fact that they were the second, and not the first, to undertake this class of structure. The plan of building a column on four splayed legs merging into a vertical, square shaft is so evidently the best, that the choice lies between plagiarism and retrogression. Of course, the four legs may be changed to three, or six, or eight, but the principle remains the same. Most of the good designs follow these lines, which, from a structural point-of-view, are certainly correct. A few competitors, however, and notably among them Mr. Max am Ende, have offered towers of architectural design, some of them being of very considerable beauty and grandeur. On paper, these are very striking for their solidity and apparent massiveness, but we doubt if this appearance would be associated with the actual structure. The essence of art is truth; any material, stucco even, may be made decorative and beautiful if it be used in a way that frankly acknowledges its nature, and does not endeavor to represent it otherwise than it is. Now, if these towers were covered with plates, the mind would recoil from them as shams, while if they were to a great extent open lattice-work we fear they would jar on our sense of congruity. The essence of a masonry tower is solidity, and, with this preconceived idea in our minds, we should find ourselves unsatisfied by an open and airy structure. It is said that some of the early buccaneers struck terror into their victims by hoisting sails of network, through which the moonbeams streamed, giving the impression that the vessel was the "*Flying Dutchman*." We imagine a lattice-tower of architectural form would have a somewhat ghostly effect at night.

Besides the two classes of designs we have mentioned, there is a group of what may be called the Perpendicular style. By this we mean they are built up of vertical pillars tied together with cross-bracing. There are usually several rings of these pillars. The centre rings mount to the summit, while those nearer the periphery are stopped off at lower levels, thus forming a tower whose diameter decreases by steps, each step forming a deck or gallery. In some cases a winding road leads round and round from base to summit, thus forming the Tower of Babel of the picture-books. These designs give an enormous amount of accommodation, but they are necessarily heavy, and would require an excessive amount of cross-bracing to withstand the wind-pressure.

Lastly comes the miscellaneous group, with more sub-sections than we care to count. Many of these are utterly impracticable, and in others the question of expense has never been considered. The estimates which were to accompany each design are not exhibited to the public, and we fear that many of them are merely wild guesses. It is most difficult in many cases to gather the constructive details from the drawings, and very few carry any dimensions except the height of various galleries, so that only a general idea can be gathered as to the sufficiency of the structural arrangements. Many are absurdly light, while others contain an unheard-of quantity of material. Speaking generally, those that have the most graceful appearance are sadly lacking in accommodation, while those that provide ample space and to spare are supremely ugly.

In the first class, those supported by ribs or legs running from base to summit, we find several very good designs. Early among these, following the order of the catalogue, is that of Mr. H. Fidler, of Grove Park, Chiswick, London. The tower is of steel, 1,200 feet high, with a base 500 feet square, cruciform in plan. Through the centre of the cross there rises a square steel lattice-mast, which serves for the hoists, while a staircase is built round it. Semi-circular arches are thrown in between the legs. At the upper part, the four legs merge into the central mast. There are four galleries at heights of 280 feet, 560 feet, 840 feet and 1,120 feet, the first being 250 feet square.

From Messrs. Kinkel & Pohl, of Washington, there comes a handsome design of a tower 1,250 feet high on the very narrow base of 192 feet. The skeleton contains sixteen lattice-legs and a central tube. Between and around the feet there is erected a very large domed building 400 feet high, containing an immense central hall and many galleries. There are in all eleven galleries. The elevation of the building is very handsome, and it promises ample accommodation for all purposes. A curious design appears under the initials "WP." It is 1,200 feet in height, with a base of 310 feet.

There are six members grouped around a central cylindrical lift-tube, to which they are tied by bracings and by four platforms. Each foot is mounted on a rocking bearing on the top of a masonry foundation, and the whole is exceedingly light, and apparently wanting in rigidity.

A very good example is sent by Mr. E. S. Shaw, of Boston, U. S. A. From a base 500 feet square there spring four tubular columns grouped around a central tower, which stretch from the first platform, and into which they eventually merge, the whole rising to a height of 1,400 feet, and being of 100 feet diameter at the top. This design has a general resemblance to that of M. Eiffel, but the details are very different. Mr. T. V. Trew's tower resembles a light-house constructed of lattice-work, its profile being just that rendered familiar by pictures of the Eddystone and other beacons. It has eighteen lattice members, tied together by crossed spiral ties, running round the outside. There are four intermediate decks between the base and the top gallery at heights of 300 feet, 460 feet, 600 feet and 800 feet respectively. The outline is not broken by any galleries until the lantern is reached.

One of the triangular designs bears the well-known name of Mr. J. I. Thornycroft, of Chiswick. This is 1,760 feet in height, and each member is a steel tube, these tubes uniting in one near the top, and having a spiral staircase outside, while the lifts are inside. The three legs are united below the first platform by arches, there being four platforms in all. This design looks very artistic on the drawing, but it has the defect common to all three-legged structures that, viewed from certain positions, it does not appear symmetrical. We think this would be a fatal objection to this and all the cognate designs in the exhibition, since they have a lop-sided appearance which is quite incompatible with beauty. This is a matter of regret, as many of the tripodal designs are very handsome.

Monument to Guatemozin, City of Mexico. Francisco Jimenez, Architect and Sculptor.

An eight-ribbed tower, 1,300 feet in height, and on a base of 310 feet, is shown by Mr. W. H. Woodcock, of 6 Victoria Street, Westminster. It contains a central octagonal mast, and has three intermediate decks between the base and the top. The design is simple and neat, but the straightness of the sides give it too much the appearance of a simple cone. Mr. J. H. M. Harrison Vasey, of 20 Vicarage Terrace, Sunderland, has endeavored to supplement the scanty accommodation of the Eiffel Tower by carrying up four large struts from the first platform, and erecting a second gallery upon them equal in area to the first. While this is a decided improvement from the gate-money point-of-view, it has entirely spoiled the beauty of the design. The tower is 1,820 feet in height and stands a square of 800 side.

A design for a tower of 1,280 feet comes from America, bearing the well-known names of Mr. T. C. Clarke, Professor Joseph Mayer and Mr. W. Hildenbrand. The main skeleton is hexagonal, with the base carried out in square form. The upper part is circular, with a spiral staircase outside which suggests the Column of July. The design is pleasing in elevation and structurally very good, but scanty in accommodation.

Mr. C. Lean, of Palace Chambers, Westminster, sends a design for a 1,200-foot tower, comprising six legs, straight on the outside and converging to the top. It is an exceedingly simple design and has five intermediate decks. Mr. P. Campanakis, of Constantinople, shows a design which recalls the appearance of the Paris tower, except that it is triangular. The height is 1,197 feet, and exhibits a considerable amount of decoration. Next to this is one much like it, the author's identity being hidden under the motto "Time is Money." In this there are not only arches below the first gallery, but also under the second. An enormous clock with three faces forms part of the design, which is highly decorated. Mr. J. C. Chapman's tower is 1,200 feet in height and has six ribs. The contour is not a clean sweep from base to summit, but the line is broken and changes its direction at each intermediate gallery, of which there are three. A plain example of the light-house style of design is sent by Mr. J. T. Bateman, of 11 Beulah Road West, Thornton Heath, Surrey. It has six ribs which run in a single sweep from base to lantern. There are four galleries at heights of 200 feet, 500 feet and 800 feet, the total elevation being 1,260 feet. The design is a simple and cheap one to carry out.

The combined design of Mr. A. D. Stewart, Mr. J. W. Maclaren and Mr. W. Dunn, is a plain steel tower, having an octagonal base of 300 feet in diameter, and a height of 1,200 feet. There are four galleries at heights of 200 feet, 550 feet, 850 feet and 1,040 feet. Each leg is a square lattice frame, and the whole forms a strong and simple design, while Mr. Stewart's name is a guaranty of the good construction.

Mr. A. F. Hills, of the Thames Iron Works, soars heavenwards 2,007 feet, his design being a gigantic obelisk buttressed by struts which cover a base 644 feet square. The structure contains fifteen floors, and is named "Ye Vegetarian Tower," to the bewilderment of visitors who fail to see the aptness of the appellation. A central cylindrical mast, parallel for 800 feet, and supported sideways by flying-buttresses arranged in tiers and springing from one another, is the design of Mr. J. Tertius Wood, of Rochdale. The shaft carries lifts and a spiral roadway, and around it are built decks at heights of 200 feet, 400 feet, 600 feet and 800 feet. This plan of planting curved struts on one another does not fulfil either artistic or constructional requirements.

Mr. Robert Wylie's (Liverpool) tower is 1,470 feet high, including a masonry base of 60 feet. Its general appearance is much like that of the Eiffel Tower. Near it is a design by Messrs. Harper, Harper & Graham, of Birmingham, of which the same may be said, except that this latter instead of being on a square base is composed of two equilateral triangles forming a hexagonal star. The height is 1,300 feet.

An octagonal tower is exhibited by Messrs. W. Vaughan and W. H. Tomkins, of 64 Broad Street Avenue, E. C. Each leg is composed of three steel tubes braced together. There are eight of these legs curved outwards at the base; the general effect is pleasing. A very good example of an octagonal steel tower is shown by Mr. J. J. Webster and J. W. Haigh. Around the foot of each leg is built a large structure like an hotel, the upper stories of these buildings being continuous and reaching to a height of 200 feet. The bottom of the tower is thus masked, and its upper part springs out of a group of handsome buildings, the general effect being very good.

Next to this is a tower by Messrs. Rendel, Findlay & Ricardo. It is 1,260 feet high, on an octagonal base, occupying 46,000 square feet. The base is an immense glass-covered dome, laid out as a winter garden, while the shaft is formed by successive cylindrical columns, of decreasing diameter. A spiral road leads round these. This design provides very considerable accommodation, but it is mostly on or near the ground.

Mr. Henry Davey's design embraces twelve straight steel columns braced together to form a rigid truncated cone. Each column is buttressed at about one-third of its height by a raking strut which is masked by curved lattice girders which hide the straight lines and give a double curved outline to the base. At the top of the cone is mounted a tower of the light-house pattern, inside which is a staircase leading to the lantern.

Messrs. Read & Shuffrey, of 38 Welbeck Street, show a steel tower 1,475 feet in height, which is very like that built by M. Eiffel.

It has platforms at 200 feet, 800 feet and 940 feet in height. A good design is shown under the motto "Equilateral Triangle." It is 1,475 feet in height, and has a hexagonal skeleton sustained by six curved spurs. Each leg is formed of four members arranged in a square and braced together. The curves are pleasing. There are three intermediate platforms between the ground and the summit.

The joint design of Prof. Robert Smith and Mr. W. Henman, is a kind of three-legged Eiffel Tower. The height is 1,400 feet. Each leg consists of a tube 30 feet in diameter at the ground level, the centres of the tubes being 350 feet apart.

Messrs. Francis Fox & G. E. Grayson offer a design of a tower of 1,300 feet in height, and having a base of 370 feet in diameter. It is formed of eight straight tubes, each supported at about half its height by a lattice raking strut. The general appearance is good, but there is a great want of accommodation for visitors. Probably this could be remedied. Under the motto of the "British Lion" is shown a steel tower 1,200 feet high, with a hexagonal skeleton. The appearance of the design is good.

Turning now to the towers which more or less simulate masonry, the first is by Mr. W. P. Gibson, of 15 Queen Street, E. C. It is designed on the general outline of Sir Christopher Wren's spire to Bow Church, Cheapside, and so should appeal very strongly to all cockneys. The height is 1,232 feet. "Acme" sends a design for a tower of 1,300 feet, square in plan, which in itself recalls the clock-tower at Westminster. But it is stiffened by four radial trussed buttresses, which suggest that it has been condemned by the surveyor as a dangerous building, and has been ordered to be shored.

The handsomest of all the architectural designs is that of Mr. Max am Ende. It is 1,550 feet in height, of a Gothic design, constructed entirely of steel. The platform at 1,000 feet is treated as the principal one. Subject to the general objections we raised above to the imitation of masonry in metal, it is impossible not to admire the design. It is entirely original and exceedingly artistic. A 1,296-foot tower, also not unlike the clock-tower at Westminster, is shown by Mr. J. S. Fairfax, of 433 Strand, W. C. This is another handsome architectural design.

The group which we have named the Perpendicular is a large one. At the head of it (No. 1 in the catalogue) comes a tower of 1,355 feet by Mr. M. T. Otis, of Rochester, U. S. A. On a square base of 400 feet side, there is erected a many-story construction, carried up parallel. In the centre of this rises a second square structure of smaller size which serves as the base, at a height of 350 feet, for a square light-house-like tower. It is proposed to employ bolts instead of rivets throughout. This design supplies abundant accommodation on the numerous floors in the lower portion, but it is not beautiful. For thorough-going ugliness the tower with the motto "Circumferentially, Radially and Diagonally Bound," bears away the palm. It resembles a series of reels of cotton of gradually decreasing size placed one above the other, and surmounted with a wax taper from a Christmas tree. The height is 1,600 feet, and the successive diameters 280 feet, 240 feet, 200 feet, 160 feet, 120 feet, 80 feet, 60 feet, 40 feet and 20 feet.

Mr. S. Fisher, of Eagle Wharf Road, London, exhibits a design which is a veritable Tower of Babel. It is "2,000 feet or less" in height, and about 650 feet in diameter at the base. It is built of square pillars, in thirty-one stories, each story being less in diameter than the one above it. Around it runs several spiral roads.

The "Century" tower stands on a base of 400 feet in diameter and is 1,900 feet high. There are three stories in the base, decreasing in diameter by steps, and from the third there springs a slightly tapering shaft, like a factory chimney. It is 50 feet in diameter at the top, and is surrounded by a spiral path of easy gradient, which gives it the appearance of a gigantic screw. The design sent by Sir Bradford Leslie, of Willesden Lane, N. W., recalls to our memory that he has a reputation as an engineer of being able to carry out plans with very simple and cheap materials. He has certainly allowed this idea to dominate his design. This tower is 1,200 feet high in four equal stories of 300 feet each. The first deck is mounted on three circles of columns. The second deck is also carried on three rings of columns, of which the outer ring is over the middle ring of the first story, the middle ring over the inner ring, while the columns of the inner ring are carried on raking struts starting from the foot of the columns of the outer ring at the ground level. The third and fourth decks are similarly carried. It is needless to say that the effect is anything but pleasing.

Mr. T. Sington, of Manchester, sends a design "based upon an idea taken from the ruined tower of Atesh-Gâh at Firûzabad." The tower is 1,200 feet high, rising out of a square base of very large area. An inclined road runs round both base and tower.

We have not space to enter at length into the miscellaneous designs, and must content ourselves with very few examples. Mr. J. Horton, of Copley, near Halifax, sends a design for a tower 1,200 feet high and 180 feet in diameter at the bottom. It is built of corrugated plates, the corrugations running vertically, and, of course, getting smaller as the tower grows less in diameter. A curious effect is produced by a spiral way which runs round the tower, apparently carried on brackets. For half the height there is a spiral road for tramways and other vehicles. Under the motto of "Health, Light, Rest, Pleasure," is shown a building which would accommodate all the inhabitants of a large provincial town. An enormous circular tower rises out of a group of buildings beside which St. Paul's and the Crystal Palace would look small, and runs to a height of 1,300 feet. The tower marked "Ajax 4314390" looks like a magnified coast-guard station shored up by gigantic props. "Neloah" is a concrete tower of 1,200 feet, and is a handsome design. Next to it is a steel mast 1,200 feet high, which depends for its stability upon a multitude of wire-rope guys, anchored to concrete foundation blocks. The tower of Mr. Lamont Young, of Naples, is composed of a group of five towers, the main central tower, of 440 metres height, supporting a large terrestrial globe and four secondary ones.

We have only been able to give a very hurried and fragmentary account of the most striking of the sixty-eight accepted designs. The task of selection will be a very difficult one, for the public will insist that the new tower shall be an ornament to the metropolis, and not a blot, and it is difficult to reconcile this condition with the very ample space which we believe to be a necessary feature to insure success. We doubt if any of these designs will ever take concrete form; possibly by combining the best features of two or three, there might be produced a tower that would be both beautiful and a financial success.

ARCHITECTURAL SHADES AND SHADOWS.[1] — X.

CHAPTER VII — (*Continued.*)

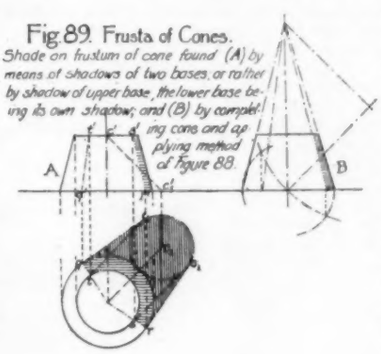


Fig. 89. Frusta of Cones.

Shade on frustum of cone found (A) by means of shadows of two bases, or rather by shadow of upper base, the lower base being its own shadow; and (B) by completing cone and applying method of Figure 88.

III. IT often happens in a drawing that the shadow of the base of the cone does not appear, and that sometimes, indeed, the whole shadow of a spire or conical roof falls upon profile planes or irregular surfaces, and consequently can be of no service in finding the shade on the conical surface. In such cases the really very simple operation described above is particularly useful.[2] Having once obtained the lines of shade on the cone, to cast its shadow, whether on a plane or on an irregular surface, becomes simply the problem of casting the shadows of two right lines.

112 For oblique cones, and cones in other than principal positions, no special rules can be framed; the shadows of base and vertex connected by two tangents furnish in all cases a ready solution of each separate problem. The shadow of a frustum of a cone (a form which in architecture rarely occurs except in the guttæ of the Doric order) is found by casting the shadows of both its bases and connecting them by tangents (Figure 89, *A*). This method applies as well to frusta of pyramids, the extreme points of the two base-shadows being connected by right lines corresponding to the tangents used for the conical frustum. The lines of shade are then found as for the complete cone or pyramid. When only the shade is required, or the shadow of but one base, the line of shade on the frustum may be found by completing the cone and using the method of Figure 88, as shown in Figure 89, *B*.

113. The shades and shadows of surfaces of revolution in general are found by the general method outlined in Chapter III, and which will be more fully developed in a later chapter. But any surface of revolution may be considered as made up of an infinite number of frusta of cones whose various lines of shade and of shadow together form the line of shade and the line of shadow of the whole surface of revolution. Consequently if we complete the cone whose infinitesimal frustum forms any given zone of the surface of revolution (that is, the cone circumscribing that surface and tangent to it in a

---

[1] By A. D. F. Hamlin, Assistant Professor of Architecture in the School of Mines, Columbia College. Continued from page 83, No. 750.

NOTE. — [In view of the inconvenience of having to refer to back-numbers for explanations of the notation used in these papers, the following memorandum will be found of service.]

HP = horizontal plane of projection; $V'P$ = vertical plane of projection; GL = ground-line or horizon. Capital letters designate points and lines in space, small italics their horizontal projections, and the same accented or "primed," their vertical projections. Subscript figures indicate points of shadow: small figures above the line indicate points of shade. Greek letters (α, β, γ, θ, δ,) designate angles. The *diagonal* of a line or dimension is its length multiplied by $\sqrt{2}$. Shadows are indicated by vertical shading; shades by horizontal shading; shearing light by oblique shading parallel to the projections of the luminous ray.

[2] There is no simple formula for computing directly the distance from the foot of the axis of the cone to the foot of the rectilinear line of shade on either the nearer or further half of the cone for any given angle at the base. If this distance be called D for the visible line of shade on the upright cone and the invisible line of shade on the inverted cone, and the height or length of axis of the cone be designated as h, $D = \frac{\sqrt{2h^2 - 1} + 1}{2h}$ For the corresponding distance on the further or invisible side of the upright cone, and the nearer or visible side of the inverted cone, which we may designate as D', we have $D' = \frac{\sqrt{2h^2 - 1} - 1}{2h}$ These formulæ are too complicated for practical use, and the geometrical method of Rule (XIII) and Figures 87 and 88 still remains the most direct process for finding the position of the lines of shade on the cone.

circle of revolution) and find its line of shade, the infinitesimal fraction of that line lying on the assumed frustum — or, in other words, the point where the line of shade of the cone crosses the circle of its contact with the surface of revolution — will be a point of the line of shade of that surface (Figure 90). By assuming as many of these frusta or circles of contact as we please, and locating the point of shade on each at its intersection with the line of shade of the tangent cone, we can ascertain so many points of the required line of shade of the whole surface. If we are familiar with the position of the line of shade on the cylinder, on the cone of 45° inclination and on the cone of 35° 15′, we can readily locate a point of the line of shade upon the circle of contact made by each of these cylinders or cones. And as most spindles, toruses, balusters and like forms will have two circles of contact for each kind of cone (namely, one with the upright and one with the inverted cone), and at least one with the circumscribing cylinder (namely, the circle of greatest convexity, which we will for convenience call the *equator*), we can generally determine five points of the line of shade at once. If we are also familiar with the general character of the line of shade of the surface we are investigating, we can sketch the required line through these points with a very considerable approximation to accuracy.

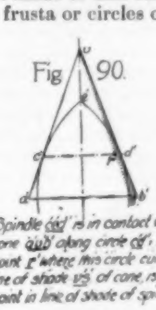


Fig 90.

Spindle c′d′ is in contact with cone a′ub′ along circle c′d′. The point f′ where this circle cuts the line of shade v′s′ of cone, is a point in line of shade of spindle.

114. Figure 91 shows a solid of revolution, composed of a cylinder and cones, or frusta of cones, with the line of shade belonging to each part. Figure 92 shows a spindle-shaped surface of revolution with five points of its line of shade located by means of the just-mentioned figures in Figure 91. Whenever the position of the line of shade on a cone is known, we need not draw the whole cone, but only a small part of its extreme right or left hand element tangent to the profile of the solid of revolution, in order to locate the circle of contact upon which the point of shade is then marked at the required distance to right or left of the axis. As the line of shade on the cylinder is upon its corner, that of the direct cone of 45° upon its extreme right-hand or profile element (Figure 84, *A*) and that of the inverted cone of the same inclination upon the middle front element (Figure 84, *B*) it remains only to determine the highest and lowest points of the line of shade, which are on the two circles of contact of the direct and inverted cones of 35° 15′, on the further right-hand corner of the former (consequently out of sight) and the left-hand front corner of the latter of these two circles, leaving all parts of the surface of revolution flatter than these two cones wholly in light or in shade according as they are directed towards or from the sun. We are thus enabled to formulate the following rule for determining five or more points of the line of shade of any torus, spindle or similar convex surface of revolution whose axis is a principal line. The rule applies to the projection on the plane to which the axis is parallel; from this projection the points, once found, can easily be located upon the other projection, in which the circles of contact appear as circles instead of parallel lines:

115 — (*XIV*) *a. To find the visible line of shade upon a convex surface of revolution, locate upon that one of its projections in which the axis is parallel to the plane of projection, the circles of contact of cones of 45° and of 35° 15′ inclination, both direct and inverted (by drawing to its lateral profile, tangents at the above inclinations) and of the cylinder (by a vertical tangent); drawing through the points of contact thus found the rectilinear projections of the circles of contact; these will be right lines perpendicular to the axis. Upon each of these locate the point where it is crossed by the known line of shade of the cone to which it belongs; these are points of the required line of shade.*

b. If additional points are required, find the apex and circle of contact of each of several cones; locate their several lines of shade by means of Rule (XIII), and proceed as above. The line of shade of the solid of revolution will pass through all the points thus ascertained.

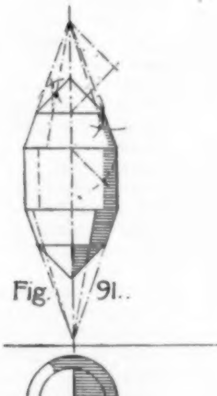


Fig. 91.

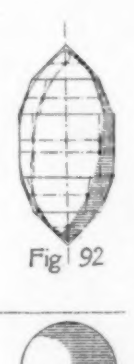
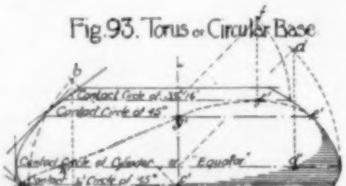


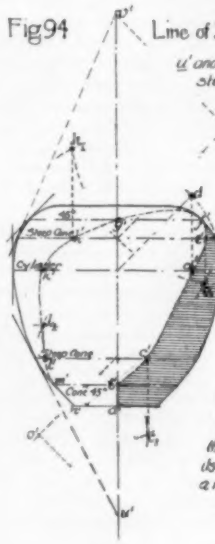
Fig 92

Fig. 93. Torus or Circular Base



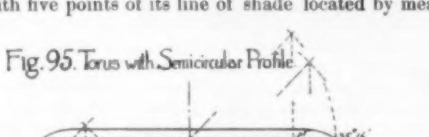
Highest point f′ of line of shade is on further corner of circle of contact of upright cone of 35° 16′. Lowest point b′ is on front left-hand corner of circle of contact of inverted cone of 35° 16′. e′ g′ points of line of shade of upright cone of 45°. a′ c′ points of line of shade of inverted cone of 45°. Line of shade of Torus crosses Equator at its corners d′ and h′; it is tangent to profile of Torus at e′ and a′. Points b. f. d. used in finding the corners of circles of contact, b′. f′ and d′.

Fig 94 Line of Shade on High Bowl.



u′ and v, vertices of cones steeper than 45°. e′h′ and c′l′ points on lines of shade of these two cones found by means of centres o′ o′ and points e₁ h₁ c₁ and l₁, by method shown in Fig. 88.
f′ g′ b′ and m′ points on lines of shade of 45° cones.
d′ k′ points of shade, (i.e. corners) of the circumscribed cylinder.
Note the abrupt angle at b′ caused by the almost imperceptible change in the profile from a curve to a straight line, the lower part of the bowl being truly conical, its line of shade consequently a right line.

Fig. 95. Torus with Semicircular Profile



This Torus, generated by revolution of a semicircle, is symmetrical with respect not only to its equatorial plane, but also to its centre o′. When the visible half a′b′c′d′e′ of its line of shade has been found, the other half may be drawn thro′ the points f′g′k′h′, equidistant from o′ respectively with b′c′i′d′ upon lines drawn from the latter through o′. In other words, go′ = oc′; ko′ = oi′; ho′ = od′, and bo′ = of′.

The result of applying the first part of the above rule to the sphere, torus, spindle, etc., may be particularized thus:

(*XV*) — *The visible line of shade upon a torus*[1] *is one-half of an irregular curve, tangent to the right and left hand profiles of the projection of the solid, at their points of contact with tangents parallel to the projection of a ray of light. It crosses the equator at its front corner furthest from the sun; it crosses the middle-front element (or projection of the axis) at the point where this is intersected by the circle of contact of the inverted 45° cone; and is tangent to the circle of contact of the inverted cone of 35° 15′ at its front corner nearest the sun.*

116. This last rule, once fixed in mind, enables the draughtsman to find in a few seconds the five most important points of the visible line of shade upon any torus, spindle, vase or baluster having a convex profile, or even a profile of double curvature, where the concavity is very slight. Where the concavity is pronounced, as in broadly spreading bases, in circular scotias, and the like, the problem is complicated by the shadows cast upon part of the concave portion of the surface, by the convex portion, so that the "method of slicing" has to be resorted to. But for a considerable proportion of the various solids of revolution common in architecture, and for the convex portions, at least, of all others, it affords the most convenient and simple of all methods for drawing the line of shade with approximate accuracy, and Figures 93 to 96 illustrate its application.

117. When it is desired to complete the line of shade by drawing the further or invisible half, this may be done in the case of all spindles or toruses whose profiles are curves symmetrical with respect to the "equator," by drawing through the centre of the equator any number of right lines to points of the visible line of shade already drawn. These points are each, upon its line equidistant from the centre of the equator, with a corresponding point of the required further half of the line of shade. Consequently if we lay off on the further half of each of these lines a measure equal to the distance

[1] The spindle and sphere may be taken as extreme forms of the torus.

upon it from the centre to the visible line of shade, the further extremity of the segment so laid off will be a point of the required further or invisible half of the line of shade. This is made clear by Figure 95 where it is applied to a torus.

118. The sphere, which is one limiting form of the torus, is shown in Figure 96 where its line of shade is treated by the "five-point" method, the invisible half of the line of shade being ascertained by the process just indicated. Here the line of shade which in the torus is not a plane curve at all, and appears in the elevation as an irregular, ellipsoidal curve, becomes a true ellipse, as it ought to be, being the projection of a great circle of the sphere.

Fig. 96.

Line of shade on sphere found by means of five points a,b,c,d,e and three others equidistant from o with b,c,d, as in figure 95. It is of course a great circle of the sphere, and projected as an ellipse.

119. We have now given rules and methods for drawing the shades and shadows of all the principal geometrical solids most commonly occurring in architecture, except certain surfaces of revolution requiring recourse to the "method of slicing"; but the plane of incidence has in these discussions been assumed to be parallel or coincident with the plane of projection. It is our intention, to devote a part of the next chapter to the study of problems in which the surface of incidence is not a plane of projection, or, indeed, not a plane at all, and then to show the practical application of the "method of slicing," and of other methods for special cases. These will be succeeded by one or two chapters upon the general subject of the drawing and rendering of shades and shadows in architectural plans and elevations from the artistic point-of-view, and these will be the concluding papers of the series.

(To be continued.)

SILESIAN COUNTRY-SEATS.[1] — II.

IT was shown in the first of these papers on German country-seats that the manor-houses of Silesia are the most characteristic examples of middle aristocratic architecture in the Empire; that the total modernizing of seats undertakes the acquirement of well-lighted stairways for its chief object; and that the total neglect of modern improvements results in leaving a dearth of comfort, and that, even with considerable improvement, the average manor is unevenly and incompletely furnished. Kreisau, the country-seat of Count Moltke, was given as a fair specimen of the prevailing style of architecture, and some details, furthermore, were added as to the court of the typical manor.

A patch of "carpet" flower-beds, a round of grass, set off by hot-house trees in green tubs, or a quincunx of rose-trees, makes a space in this wide court for a carriage-road to wind round and distinguish its route to the front door; for though the rest of the expanse of the court-yard was once covered with sand, its yellow is now defiled, and the fresher and cleaner for the green and the flowers, looks the raked space that is immediately in front of the house. You print a foot-step in it on alighting from your carriage to begin the ascent of the stoop, and a moment later you leave the coarse grains on the dark floor of the vestibule.

The vestibule is not this time a modern copy of the Italian Renaissance, but an old original, the like of which makes up the conception which one gathers of German country-houses in the main; it is the vestibule of the castle in which the German ambassador to Russia, Herr von Schweinitz, was born, and is now the property of Count H., a rich private gentleman.

The Vestibule.

Its shape is nearly square, and it lies in the bosom of the house, having the same width, and being found on the same line as the dining-hall, at the back. Between the two, or the dining-hall and the vestibule, lies a middle segment of hallway, where the stairs are to be seen. The glow of light visible in the illustration, falling on a rounded corner in the middle ground, comes through the window in the first landing of the staircase at the right. The vestibule is illuminated with double doors with side window-shafts, the panes of which are of stained-glass, in large geometrical forms, set in wood. The leads seen here and there in the tracery are not the remnants of the ancient framelets, but modern repairing; a replacing of a broken pane and its framelet costing much less — about half, and sometimes from twenty to a hundred times less — than a restoration in carved wood. (In the case of a charming scroll window-frame of a château I owned in Lower Silesia, the oak of which had become rotten through time and neglect, I was even unable to find an artisan to copy it at any price, so entirely has the art of wood-carving in *leisten* decayed at the present day. Windows were treated in some instances as mirror-walls are often found treated, in Venetian Gothic, or as illumined backgrounds for fantastical tracery. Leads, and all that we attach to English windows of the Middle Ages, play no *rôle* in Silesian manors.)

The floor of the vestibule is composed of the broad planks without jointures that the early squire was fond of having laid in a conspicuous place, as proofs of the great antiquity of his forests, for width meant age. The covering of it is only partial, and of a date so recent as the invention of linoleum. The old-fashioned old manor has a bare vestibule floor, partly, I think, because of the ruinous dirtiness that results from the custom of covering all paths of the park with loose sea-sand, and from the visits to the stables which are made daily by the conscientious *hausfrau*, and are often undertaken out of politeness and curiosity by guests. This and similar customs, such as the gathering of the peasantry in this part of the castle at Christmas and other dates, has been against the laying of hall floors with anything less easily cleaned than mats. Where the floor is not of painted or scoured wood, it is composed of slabs of limestone.

The essential furniture of a *vorhaus* is a bench. The peasant who comes with a complaint, the *knecht* arriving with a message, the lackey who brings an invitation — all must wait, and wait here in the vestibule. My illustration does not show the seat under the fur mantle that hangs at the left, but, if it were distinguishable, it would be seen to be of carved oak, with a back-board three feet high, and inscribed with the arms and initials of the proprietor.

The second essential piece is the stove, and I am glad to be able to show this example, although it did not stand in its present corner originally, but was brought down from one of the state chambers now out of use. It is exceptionally delicate for a hall stove, its costliness aside, however, and it serves uncommonly well for showing a favorite style of this masterpiece of German furnishing.

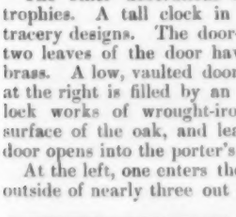
The material is glazed pottery, with feet of cast-bronze, set upon a floor of tiles. The ground tone is white, and the plaques are cast in different shapes and sizes, some, like that of the middle pieces, representing a grotto-niche, being of unusual length and width. Each plaque is modelled with charming elaborateness of finish, after light and lively designs. The painting is less successful. The tones, however, run in the same *baroque* and gay inconsequentiality as the spirit of the modelled genii over all the scale of colors; or in reds, greens, blues and yellows. The top mounts like a double roof, and is crowned by a brown and green fowl of indeterminate genus, but most excellent hard glaze. The effect of the whole is light and refined, and the stove has only to be thought of as standing in a lofty, square chamber with white and blue furniture, as it originally stood, to be found in exquisite taste.

In the corner, against the wall, is a pipe-like opening that penetrates the wall and empties into the middle corridor adjoining. Here the stove is lighted. Now, whether this arrangement is common to all German stoves of past date I cannot say; I forgot to note this particular in the specimens that are set up in the Berlin, Munich and Nuremburg museums. But of Silesian stoves, I found a quantity which not only opened into a corridor, but that, in some cases, three stoves are lighted from a single corridor-closet. Often, indeed, the closet is an architectural structure, built out of brick, like a huge wardrobe, covered with stucco designs and closed by wooden doors (painted in colors), or by brazen open-worked leaves, the space inside being large enough for a supply of wood and for a man-servant to turn about in.

[1] Continued from No. 749, page 70.

The other decorations of the vestibule are the usual hunting trophies. A tall clock in a rococo case is adorned with bronze tracery designs. The door-frames are of the simplest order. The two leaves of the door have a handle and lock shield of massive brass. A low, vaulted doorway in the cavernous depth of the wall at the right is filled by an oaken, unpolished door, with hinge and lock works of wrought-iron, spread ornamentally over half the surface of the oak, and leads into a vaulted storeroom. Another door opens into the porter's or lackey's chamber.

At the left, one enters the suite of society rooms that occupy the outside of nearly three out of the four sides of the manor. Of the two rooms that are entered directly from the vestibule, that in the corner is the cabinet of his honor, and is used as a smoking-room on social occasions.



Ground Floor of the Manor.

A¹, Vestibule; A², Middle hall and stairway; B, Store-room; C, Lackey's and porter's room; 1, Society rooms; 2, Vaulted chambers.

No better example could be found, perhaps, of a rich old interior, in which the inclination to snugness, which counts generally as a plebeian or *burgerliche* trait, has been given the place, for once, of formal, sharply-defined scantiness. The ceiling is composed of an oblong, octagon, central field, surrounded by smaller fields of lime-wood, with a foot-deep framing of hard oak; the planes elaborately inlaid with intarsial designs of the heavy, heraldic patterns *à la* Scheffer-stein. The window light, striking them irregularly, reveals here a fantastic claw, there a round limb, a puffed cheek, a grinning mask, or the delicate throat of a forest flower, and I, for one, reclining back in the niche below, have more than once beheld strange embodiments of the mediæval German world. Or was it just the imagination of a mind removed from the activity of the town and set amidst these isolated landscapes, with their woods and morasses and sombre climate, that evoked such a fantastic population? Just as these outlines of dragons flash out for a moment when hit by a ray of light, so must the monster of the chivalrous tale of St. George, and all the beings of the ballads of the wandering *spielmänner*, have come like illuminations into the monotonous, dreary humdrum of these early countrymen's lives. Indeed, mediæval poetry is full of instances where the horsemen and their glistening armor, moving along a distant road, appear as visions of supernatural beings to the observers on the castle towers. They were not an abstract and artistic, but a most familiar folk — these genii and dragons to the warriors and châtelaines of the Middle Ages and their vassal artisans.

Wherever their outlines occur in art works, they possess, in consequence, a nice finish and detail. A massive oaken wardrobe of lofty height, an oaken table and a niche in the thickness of the wall, lined with oak and ending below in a semi-circular carved bench, have ornamental cornices with grotesques for subjects, all of which are models of life and action. On the shelves above the bench, however, stand some German mugs of the seventeenth and eighteenth centuries, and the paintings on these are proofs of the helplessness of workmen before unfamiliar tasks. They are scenes of French idyllic gallantry, and lack every detail of form. There are *objects* enough. You get even bed-screens set up in the open air against draughts. But the attitudes of the gallants and their ladies are like childish caricatures, whereas, for these scenes, the *air* of personages should compose the essential trait. One laughs at the clumsy imitation of foreign patterns, without wondering why similar arts should show such different degrees of excellence, as the marquetry of the ceiling and the designing on the mugs. In one case the objects of the drawing were traditional and intimate, while in the other they were vague and unfamiliar.

As for the cushions and hangings of the bench, they are, of course, modern, but care was used in choosing them to match the style of the ceiling and furniture. Very heavy curtains hang before the windows and the space between them. Indeed, a large portion of wall is covered by this hand-woven drapery of dyed wool and gold thread. It has no compositions for designs, but only separate figures of dragons and heraldic flowers, so that nothing is lost by its being suspended in folds. As is the case with the back hangings of the niche, the suspension of the drapery is by means of brazen rings and grotesque hooks.

The chairs, like the rest of the furniture, are of carved oak. Their covering of pressed leather is also modern; so, too, are the thick Oriental carpets that cover the parquette floor, as, indeed, all stuffs must be to convey the warm and subdued impression of cleanliness and freshness. The faded tapestries which are occasionally seen in old manors are relegated to galleries; they are adverse to the housewifely sense of the provincial châtelaine.

Her own personal salon in this instance is typical in as far as it is wholly without style. One is commonly struck in houses of the middle aristocracy and the gentry of the old and stable order, by the sight of very costly original and restored gentlemen's rooms and of incoherent ladies' salons. These two apartments occur in every manor and retain their functions from one generation to another, the chief point in determining the situation of the first mentioned being a nearness to the front-door of the court-side of the house. And this being settled, it follows naturally perhaps, that the wife's sitting-room is made the adjoining one: while the prevailing inferiority of the last is easily accounted for by the national sense of the second-rate position of woman — a sense that is conventionally raised to an unspoken dogma of the propriety of the husband wearing on his person and showing in his surrounding the greater stateliness.

As a rule such a lady's salon is an epitome of successive replacements, rather than of restorations. That which remains of earlier times are the substantial architectural details of ceiling, wall and windows, or such massive pieces as the stove. The furniture, which was not massive, has been replaced by bits of equal inferiority, such as tables of limewood instead of durable oak; and, furthermore, mostly in slenderer forms, as more suitable to the feminine sex. The instances are rare where a complete lady's cabinet has withstood the accidents of use and time, and is original; even although it is just this apartment of the manor which is the least ancient.

Your old German house had no especial place for the *hausfrau*. The thing was an adoption from France and Italy. All the mediæval German woman had set apart for her use was a corner of a room.

This historic fact I have often found very interesting, for in manors, which are the strongholds of so many conservatisms, the prevailing French style is still noticeable to-day in the architectural details of ladies' salons.

The salon of Countess H. has a white stucco ceiling, with a plain expanse, delicately bordered by gilded lists. The walls are divided into fields and framed by the same style of lists. And this elegant light decoration is repeated in the doors, bay-shafts and head-mouldings, as well as on the interior shutters of the windows. The stove is composed of white, plain tiles, with a figure moulding in front, of medallion shape, and is surmounted by a cornice-like heading.

In this airy setting one piece of furniture remains of early date, a lofty mirror. Its tall side pilasters are completely covered with graceful patterns and support a chastely-cut, arched head-piece. A cornice below sets its feet firmly on the floor, and curves upward with a temperate swing of line to the polished slab of white marble that serves as the mirror's shelf. The whole has the architectural effect which characterized mirrors of the eighteenth century in France, in contrast to our modern tendency to treat the piece as a picture or movable ornament, and to old German traditions as well as to modern German usages. An account of this effect, as well as to the rich gold and white of the coloring, the mirror conveys the impression of belonging to the architecture of the room. The remaining pieces wear the common air of being set into the room, nor do I mention them, as I hope it is understood, because of any peculiarity except their mere existence there.

A *chaise longue* stands with its head against the wall and its foot towards the centre of the room, and is a short, square frame of pine-wood, stained to imitate walnut, and covered by a parti-colored cover of plush. It is wholly without arm-rests. This latter feature, that has counted so long in history as the symbol of rich ease, is, indeed, reduced to the last insignificance in all the furniture of the room. The sofa has low rolls for arms, and the fauteuils about the table in front of it, possess mere excrescences, in the joining of the semicircular-shaped back to the seat, as representatives of their members.

Of the other pieces that make up the inventory of ladies' salons, the writing-table, of solid rosewood, is broad, low and railless. The chair before it, of ebony, elaborately decorated with enamel painting in pearl and agate tones, has the round back-form of modern high-seat fauteuils; but, whereas fauteuils are cushioned and upholstered, this fancy chair consists entirely of framework. One corner *étagière* is rococo (one-legged waved-table of hardwood, decorated with bronze ornaments): another, modern (mahogany, with delicately-turned columns of the same wood). A low chest, meant to receive family chronicles of minor importance, such as the school examinations, money accounts of the children and so forth, stands against the wall near the *chaise longue*, and is of stained limewood and decorated with intarsial painting. A couple of small, round-top stands are hung with hand-embroidered covers. No piece of furniture besides the mirror is lofty in height save a slender wardrobe, with sides and front of solid rosewood. A number of portraits and paintings, in gilt frames, hang on all the walls; and curtains of modern, woollen cross-striped stuff are at the windows, while the stove screen is a curtain of the same material, but ornamented with the arms of the family in gold embroidery, and suspended from a rail, fixed at one end into the wall, at the same height as the top cornice of the stove.

The room adjoining retains an early ceiling of stucco, while the walls are clad with wood. The panelling shows the manifold waving lines of the rococo style, is flat rather than deep, and the structure of the fields is marked by round-faced lists, painted white. The ground-tone of the wood is a light, clear brown. Brown-colored oak (book) cases, of shoulder height, with small, round, stained leads, in chastely-carved frames for doors, occupy the whole space of the three inner sides of the room except the corners.

In one of these the panelling of the wall is seen, and here it composes a door that opens into a small, round staircase, with a spiral flight of steps. A second corner glistens from the stately constructions of a brown majolica stove, with ridged plaques and elaborate front-reliefs and head-piece.

Bronze small copies of Classic sculpture and a few prints in oaken frames, compose the only ornaments of this apartment, which

has a quadrangular heavy table and a few rococo chairs for its sole furniture.

The room is an ante-chamber to the salon. Now it occurs frequently that German salons are two-stories, or one and one-half in height. We shall see later that this rule is almost invariable in castles of the higher aristocracy — or, let us say the richer, aristocracy. But so long as the one-story type is as common in manors as the two-story *saal*, I keep on describing the seat which I have selected.

Its *saal* is simple, but a gem of its kind for a provincial house, meant to receive a high-bred, stiff and conservative company. Other rooms are made for enjoying ease, intimate conversation, the sensuous indulgence of eating and the cloistered quiet of reading or meditative moods. One room must be devoted to the restrained, first presentation and intercourse of carefully-nurtered youth.

So we find a spacious apartment that is almost empty. The ceiling of white stucco has a broken, waving line of high-relief for a border and a similar pattern, both in blue, for a frieze.

The walls are composed of Dutch tiles, which are white, with small landscape designs in blue. Doors and windows, and the frames of the mirrors that are built into the spaces between the niches of the latter, are decorated with the same graceful form of reliefs in blue, which occur in the frieze. A white porcelain stove of massive dimensions has a fireplace below, and candelabra of Dresden china for shelf ornaments. Three corners of the room are filled out by sofas, so constructed as to end in a lofty, corner headpiece in the shape of a cornice, and support porcelain vases. The only other furniture of the room is a round centre sofa, that is removable, and spindle-legged tables; a forty-armed central candelabrum of gilded bronze, and three-armed wall candelabra; and, at either side of the door-frame, on the dining-room side, a buhl pilaster, surmounted by immense Sèvres vases, of rose-color and gold, with medallion paintings of idyllic landscapes. The covering of the sofas is blue and white cretonne, while the window curtains are of white native laces.

The aspect of the room is cool and refined to a very high degree, and when the lights are aflame a flush of gold is reflected like a shimmer from the polished wall. I have yet to see a room where the rosy countenances, shoulders and gauzy toilettes of girls have a more magical background. The glow of the wax lights adds the necessary heightening effect of animation to the cold tones of the white and blue walls; and their hard glitter is the best contrast possible to the exquisite, light-absorbing quality of the human skin.

Marple Hall, Cheshire, Eng.

A ball-room is a display ground of personal charms, and it must be considered a most happy hit, where the architecture of it takes up these charms, like a setting its gem, and leaves them in their due and rare conspicuousness. And how very successful the present room is, must come to light, when it is remembered that the charms which it displays are those of unsophisticated maidens; for dancing is restricted in great part among the Silesian aristocracy to unmarried women, and, furthermore, to the formal numbers of the quadrille. A tone of sensuousness, given by plastic details, or choice of coloring, or of stuffs, and in accordance with the spirit of festivals, is quite admissible in ball-rooms which are resorted to by mixed or by sophisticated companies.

Such a tone, indeed, is almost imperative in public or club-house salons. But where the first social intercourse of young couples is to take place among traditionally suave and stately surroundings, a pattern could be taken from this Silesian *saal*.

The coloring, blue and white, is very common in old German society-rooms, and so, too, is a rococo-like style of architecture. That which distinguishes my specimen *saal* are the walls. Their material is glazed earthenware, be it noted, in place of stucco.

COUNTESS V. KROCKOW.

[To be continued.]

PARIS

THE TWO SALONS OF 1890. I. — THE SALON OF THE CHAMPS-ELYSÉES.

THE *Salon* of the Champs-Elysées is the first to open its doors, on the usual date, and in the accustomed place, in the Palais de l'Industrie. The other, that of the Champ-de-Mars, has fixed the date of its inauguration on the 15th of May. Let us recall in a few words the discussions which have resulted in this unfortunate schism among the members of the Society of Artists. The storm first broke out in connection with the recompenses awarded at the Exposition. At the meeting of the general assembly of the Society, in December, 1889, over which M. Bouguereau presided, the committee asked the assembly to decide whether the recompenses awarded in the Exposition should be valid for the annual exhibitions; that is, whether they should confer the dignity of "Hors Concours," or "exempt." This question was one of some importance, as the number of new artists who would become endowed with the title of "exempt," as a result of awards at the Exposition, would be 645, in addition to the 1,856 already existing. In painting alone the number of exempts would in this way amount to 1,422, and many artists feared that the space properly due to those not yet honored by an award would be found extremely limited. Very violent discussions followed. M. Meissonier tried to show that the new exemptions would be less alarming than was asserted, and appealed to the patriotism of his colleagues, saying that France ought not to try to diminish the value of recompenses which foreigners had received with gratitude. M. Gérôme observed that the Exposition was organized by the Government, while the annual *Salon* was conducted by a Society, which ought, above all, to keep the control of its own exhibitions. Finally, after a worse than stormy session, in which anything like discussion was impossible, a formal vote was ordered. By 405 votes against 82, the Society decided that the recompenses of the Exhibition should not carry with them the title of "exempt" for those who received them. By the same vote, also, all exemption was abolished; and every canvas was required to be submitted to the jury of admission before it could be received into the *Salon* of this year. With this, however, the Society protested against the idea which some attributed to it, of wishing by its resolutions to depreciate the Exposition, and cast doubt on the competence or fairness of its jury; and repeated earnestly its sentiments of brotherly friendship toward foreign artists, who had always been admitted to its exhibitions on a footing of perfect equality with Frenchmen. Finally, the committee decided that the recompenses of the Exposition should be duly mentioned in the *Salon* catalogues.

But before the vote which rejected their views, several members of the committee ranged themselves beside M. Meissonier, and offered their resignations. These were MM. Puvis de Chavannes, Carolus Duran, Dagnan-Bouveret, Duez, Gervex, Roll and Waltner. These artists, followed by several others, then organized a private *Salon*, which is to open May 15 in the rooms of the Palace of Fine-Arts in the Champ-de-Mars. It is thus that the names of several successful artists are wanting in the *Salon* of the Champs-Elysées; let us hasten to add, however, that some of these artists already begin to regret their rash step; and that it is probable that next year all will be found again under the same banner, and under the same roof, in the Palais de l'Industrie.

The opening of the *Salon* of the Champs-Elysées, called also the

Salon-Bougnereau, was thus awaited with an impatience even more lively than usual. The jury was rumored to have been very severe; but in any case the schism among the artists would be likely to cause a difference in the number of pictures sent. In point of fact, the number of canvases shown this year is 2,480, against 2,771 last year, and 2,786 in 1888. The difference in number is, therefore, not very sensible. Let us examine now the quality. Well, it is about the same as usual; the same first impression, after a rapid glance, of mediocrity. However, on a more critical examination the first impression is somewhat modified; one recognizes much talent everywhere; talent, also, the more conspicuous, since we have no longer to occupy ourselves with a certain number of fashionable artists, who shed upon the *Salon* the brilliancy of their names, or of their works, a brilliancy greatly heightened by the powerful aid of the newspapers. Many are absent, but many remain, to attest the strength and influence of the modern French School, which carries everything before it, particularly in the departments of landscape and portraiture. These two departments are very fully represented this year, and in a brilliant manner, while decorative paintings are hardly anywhere to be seen, the conspicuous exception being a work of M. Munkacsy, who, after several years of absence, exposes an immense canvas, composed for the decoration of a ceiling in the Museum of the History of Art in Vienna. It presents an allegory of the Italian Renaissance. In the middle of a decorative architectural background, a sort of rotunda, open to the sky, the middle of which is occupied by a projecting loggia, are grouped the principal artists of that great epoch, Raffaelle, Leonardo da Vinci, Paul Veronese, Michael Angelo, and so on. The loggia is occupied by Lorenzo the Magnificent, the great protector of the arts. Several figures of women, naked, standing as models to the pupils of Titian, bring into the great decoration the bright note of their flesh tints, and the graceful lines of their figures. M. Munkacsy has painted his own portrait at the right of the picture, as if to show that he is found worthy of a place among these immortal artists. Finally, hovering over the whole, the figure of Glory, indispensable in such compositions, holds in her hand a huge palm; while Renown, who accompanies her, blows her accustomed tune through the familiar old trumpet. All this is well grouped, and in a grand style, but how can one judge of such a work, which is not placed, either in distance or position, or in lighting or surroundings, as it is intended to be? The distortion of ceiling perspectives when placed in vertical planes is inconceivable; and one is equally disturbed by the enormous size of the figures, which are to be placed, it is said, at a height of forty feet from the floor. However this may be, we can suppose that the ceiling will have a grand effect in the Vienna Museum.

M. Munkacsy has also sent a portrait of Mme. B. Princess S. Here, as in his ceiling, M. Munkacsy adopts a bright and luminous manner, of an exquisite charm. It is one of the prettiest things in the *Salon*. The Princess S. is seated in the middle of a quantity of artistic bric-à-brac, which serves as an elegant frame, and indicates aristocratic surroundings, without injuring the effect of the principal figure, or leading the attention away from it. The whole is in perfect harmony, and has a rare quality of distinction. M. Jean-Paul Laurens, on the contrary, has this year, notwithstanding his talent, a portrait of a woman which is thoroughly displeasing. Standing erect, in a room which, by the perspective, ought to be of considerable depth, the figure appears, nevertheless, glued to the tapestry of the further wall; and the whole is flat and devoid of relief. Passing rapidly in review the principal portraits of the *Salon*, we should mention that of M. Carnot, President of the Republic, whom M. Bonnat has made very harsh-looking. This artist appears to be changing his former firmness into dryness; among the broad, vigorous touches which characterize his energetic talent, he has come to put little hatchings, which look like so many furrows in the flesh portions, or little shavings in the hair. And if this way of working is unpleasant in his portraits of men, it is still more so in the portraits of women, in spite of the evident effort of the artist to soften its force.

M. Henner is always an idealist, even when he paints a portrait. All his subjects acquire, thanks to his brush, that look of ivory seen by moonlight which the artist gives to his flesh-tints; and it is thus that appears to us, in an imperfect resemblance, Madame Roger-Mielos, the great pianist.

A pupil of M. Bonnat, M. Louis Galliac, shows a beautiful portrait of a man; and M. Korochanski, a Russian artist, shows a splendid portrait of a woman.

Among the most remarkable portrait-painters, who sustain with honor the glory of our French School, we will mention further MM. Debat-Ponsan, J. Benner, Yvon, whose talent is always correct and conscientious; Weerts, who shows a charming little portrait of the sculptor Hugues, in his studio, skilfully treated in tones of white, of a delightful harmony, giving much relief and life to the figure of the artist; MM. André Brouillet, Ed. Fournier, Comerre, Chartran, whose portrait of M. Emile Blavet of the *Figaro* is a little too shining; Wenckler, Popelin, Machard, and Morot continue worthily this list of artists of talent, to whom should be joined Mlles. Singer, Besson and Beaury-Saurel, who has sent two canvases, strongly painted, which a master might sign.

Among the foreigners, M. Van Beers is always noted for his delicate painting, approaching miniature; and we will mention a very curious portrait by M. Van Hove, treated in the Dutch manner. Are those portraits, the figures of young women which Mr. Stewart, an American artist, has grouped in a picture entitled "Spring Flowers"? In any case it is pretty and graceful. The movements of the young girls disposing flowers on a table are graceful and natural, and if the background were not, unfortunately, a little too dry and detailed, it would be perfect.

M. Jules Lefebvre, besides a beautiful portrait, shows a large canvas, in a style outside of his usual manner, devoted to a subject which he has taken from an English legend. Lady Godiva, the most modest of women, was the spouse of the Count of Coventry. She interceded with him to remit the taxes with which he oppressed the people of his county. "Before God," cried the stern warrior, "I will not remit one of the taxes, unless you will ride on horseback, naked as a new-born infant, from one end of the city to the other." He thought thus to propose an impossible condition; but Lady Godiva accepted it, to save the poor people. Her husband then ordered that on the day of the trial no one should set foot in the streets, and that all should remain in their houses, with doors and windows closed; and threatened with death whoever should cast a look upon his wife. And indeed, in a deserted street, we see Lady Godiva advancing, naked, on a horse led by an old woman. She has her hands crossed on her breast in a shrinking and modest attitude. The principal group, brightly lighted, is delicately treated, but the architecture, in a sombre and monotonous tone, is rather dry; the subject, moreover, does not suit a scale so large, and would undoubtedly have gained by not being presented at life-size.

[To be continued.]

BAYNARD'S CASTLE.

"All the Modern Improvements." — No. 12.

BAYNARD'S Castle, says Peter Cunningham, stood on the banks of the Thames, immediately below St. Paul's, and was so called of Baynard, a nobleman that came in with William the Conqueror. This fortress was fortified by him, or one of his descendants, in the year 1111, and granted to Robert Fitzgerald, son of Gilbert, Earl of Clare, in whose family it remained for three centuries. The Castle, however, is of Roman foundation, as can now be proved from two large stone corbels and other Roman relics recently discovered there in the erection of Messrs. Pilkington's new warehouse, now in course of completion.

These relics were exhibited and described by Mr. J. H. Macmichael at the recent meeting of the British Archæological Association. Mr. Macmichael said that in the course of the late excavations of this warehouse for Messrs. Pilkington, glass-factors, of St. Helen's, Lancashire (Messrs. Chambers, architects), many interesting relics had been unearthed, which, one may trust, will never be dispersed, but may eventually find their way to the Guildhall Museum. "If you thrive well, bring them to Baynard's Castle," says Gloucester to Buckingham, in allusion to that wily nobleman's efforts to engage the sympathy of the citizens. Other monarchs were entertained here down to Charles II, who is described by Pepys in his "*Diary*" as going, accompanied by "my Lord Sandwich, to supper at Baynard's Castle," June 19, 1660. The Earls of Shrewsbury resided here till the Great Fire, which, six years afterwards (1666), left only the blackened walls, never to be rebuilt. It had been twice burned and twice rebuilt. In 1428 it was almost entirely destroyed by fire, and rebuilt by the good Duke Humphrey of Gloucester. Henry VII again repaired or rebuilt it, and changed its form, says Pennant, "into that of a palace for quiet times." It is to the structure, as rebuilt by Henry VII, that the few architectural remains, such as the transom of a double or two-light window, and the two stone corbels, to be shortly hereafter referred to, appertain. The Roman wall along the whole south side of London proper terminated in Roman times, both east and west, with a fortress, which was called Arx Palatina, or the Imperial (Palatine) fortress: upon the site of these fortresses the Tower and Baynard's Castle were built, the limits of the city having been, in 1274, extended to Blackfriars. In the course of erecting the new warehouses for Messrs. Pilkington, some oaken piles were encountered by pick and shovel. These are probably identical in age with the "strong oaken piles" which Mr. Roach Smith tells us were used for the foundations of the Roman wall. Besides the transom of a window and the two stone corbels, one of the objects which have been lately dug up is an old steelyard. There is only one perfect example of the Anglo-Roman steelyard in the British Museum, and that is but 6 inches in length. Mr. Sutton,

the Clerk-of-the-Works, who is himself a Devonshire man, and to whom is owing the preservation of this and the other relics, at the happy instigation of Messrs. Pilkington, says there is a steelyard of similar construction in use at the present day in his county. He does not, however, remember having seen anything like the incised ornamentation. The stone transom contradicts all the old engravings in which the windows are represented as single lights, this transom being that of a double or two-light window, as described by Pennant. But the two carved stone corbels are probably the most important discoveries yet made. They are both in low relief; one represents a pair of wrestlers, and the other a ram. The ram is not heraldic; it can, therefore, only represent the prize which the Mediæval or Roman wrestler received — either a ram or a cock — as a reward for his dexterity when victor. But the circumstance of the conjunction of two corbels measuring 1 foot 6 inches in height each, both carved in low relief, one representing two nude wrestlers and the other a ram, and both found built into a wall 16 feet below Upper Thames Street, is surely worthy of adequate attention. Not the least interesting feature of the excavations was the meeting with a black, manure-like stratum of substance about 2 feet in thickness, and 17 feet below the surface. What could this have been but the green rushes which were strewn upon the floor in the Middle Ages? Hence our word straw from *sterno*, stratum, to stretch out, straw being used in winter, as well as rushes in summer, to spread upon the floor — when they were said to have engendered a delightful sensation of coolness, as well as presenting a very pleasing appearance, recalling, as it did, the "simple manners of other times." There has been no necessity to strew the church floors, said Mr. Macmichael, with rushes in summer or straw in winter, since they were paved or flagged, as was generally the case after the Tudor period, and unusually so since the Reformation. "Is there a village church," he asked, "in the United Kingdom and Ireland where the bare floor still exists?" Grasmere Church is said to have had a bare floor in 1828. One, at least, of the numerous tiles or fragments which have been preserved dates from the original building of the Castle by "one Baynard" — that with two birds back to back. There is a similar one in the Geological Museum. Two fragments of skulls were also found 6 feet below the foundations, and 24 feet beneath the level of Thames Street, and, *mirabile dictu*, beneath an oak-tree, which was found *in situ!* A marbled tile (like scagliola of to-day), an ornamental metal hoop and boat-hook were all found together; also four spurs, a Roman nail, bone stilus, a primitive peg-top, a fragment of a short pendant, ear-pick, and a shoe, Norman or Plantagenet, with pointed toe; the peak was stuffed with tow or hay. Mr. Macmichael also exhibited some other objects of interest which had been found elsewhere, and which he described. — *The Builder.*

THE ILLUSTRATIONS

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

BUILDING OF THE BOSTON STORAGE WAREHOUSE, BOSTON, MASS. MESSRS. CHAMBERLIN & WHIDDEN, ARCHITECTS, BOSTON, MASS.

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

COMPETITIVE DESIGN FOR THE ERIE COUNTY BANK, BUFFALO, N. Y. MESSRS. CARY & TROWBRIDGE, ARCHITECTS, BUFFALO, N. Y.

[Premiated Design. Issued only with the International and Imperial Editions.]

COMPETITIVE DESIGN FOR THE ERIE COUNTY BANK, BUFFALO, N. Y. MESSRS. M. E. BEEBE & SON, ARCHITECTS, BUFFALO, N. Y.

[Premiated Design. Issued only with the International and Imperial Editions.]

COMPETITIVE DESIGN FOR THE ERIE COUNTY BANK, BUFFALO, N. Y. MESSRS. CYRUS K. PORTER & SON, ARCHITECTS, BUFFALO, N. Y.

[Premiated Design. Issued only with the International and Imperial Editions.]

MEMORIAL VAULT FOR THE LATE HON. JAMES N. BURNES, ST. JOSEPH, MO. MESSRS. ECKEL & MANN, ARCHITECTS, ST. JOSEPH, MO.

SUMMER HOUSE FOR H. McMILLAN, ESQ., GROSSE POINTE, MICH. MESSRS. MASON & RICE, ARCHITECTS, DETROIT, MICH.

SKETCH OF WINDMILL FOR L. A. EMERY, ESQ., ELLSWORTH, ME. MESSRS. STEVENS & COBB, ARCHITECTS, PORTLAND, ME.

STUDY OF RESIDENCES AND APARTMENT-HOUSE FOR W. H. DOUGHTY, ESQ., TROY, N. Y. MR. H. LANGFORD WARREN, ARCHITECT, BOSTON, MASS.

HOUSES FOR EDW. R. WOOD, ESQ., 17th STREET NEAR LOCUST, PHILADELPHIA, PA. MR. FRANK MILES DAY, ARCHITECT, PHILADELPHIA, PA.

SKETCH FOR BAPTISTERY, CHURCH OF ST. PAUL THE APOSTLE, NEW YORK, N. Y. MESSRS. HEINS & LA FARGE, ARCHITECTS, NEW YORK, N. Y.

[Additional Illustrations in the International Edition.]

WROUGHT-IRON GATEWAY. EXECUTED BY M. LÉON BAUDRIT, PARIS, FRANCE.

[Copper-plate Etching.]

THIS gateway, designed and executed in the studio of M. Léon Baudrit, is in the pure Louis XV style, and is remarkable both as a specimen of forging and for the handwork upon it. The centre panel is forged in a single piece, and surrounded with a light border decorated with delicate and graceful sprays of foliage. All this foliage in hammered-iron relief is executed with the hand of a master. An arched moulding supporting a lantern, completes and surmounts the work. A remarkable variety of execution distinguishes this work, in which the finish of the foliage is in turn relieved, flattened, forged, or hammered in the German style. In this connection we wish to add some details concerning the plate published in our number for May 10, 1890, representing the very remarkable wrought-iron balustrade executed by M. Baudrit for the Hotel of Prince Demidoff, Paris. In this work all the scrolls which are forged in iron, ornamented with mouldings raised in the forge, and finished with the chisel by cutting in the solid piece, terminate in enlarged projecting clusters. The foliage and the flowers are in hammered relief and intertwine gracefully their strong supporting limbs. The whole structure springs from a griffin, also in hammered iron, a veritable marvel of hammer and chisel, planted threateningly in the midst of his encircling foliage.

HOUSE ON THE REICHSRATH-PLATZ, VIENNA, AUSTRIA. HERREN KLAUS & GROSS, ARCHITECTS.

[Gelatine Print.]

THE CHURCH OF SAN FRANCISCO, LIMA, PERU.

[Grano-chrome.]

ARRAS TAPESTRY FOR EXETER COLLEGE, OXFORD, ENG. DESIGNED BY MR. E. BURNE-JONES, A. R. A., MADE BY MESSRS. MORRIS & CO.

FONT AND CANOPY, BENTHAM CHURCH, YORKSHIRE, ENG. MR. W. R. LETHABY, ARCHITECT.

RESIDENTIAL SHOP PREMISES, DIGBETH, BIRMINGHAM, ENG. MESSRS. ESSEX & NICOL, ARCHITECTS, BIRMINGHAM, ENG.

WE illustrate this week a group of shop and dwelling-house premises erected in High Street, Digbeth, the oldest part of Birmingham, on a portion of the Horton estate. They are picturesquely treated, and harmonize with the surroundings. The elevations are carried out with red bricks and Bath stone.

CHARLECOTE, WARWICKSHIRE, ENG.

WE print below the descriptive text belonging to the illustrations of Messrs. Ernest George & Peto's work which were published last week.

NO. 6 CARLTON HOUSE TERRACE.

OUR illustration of a portion of the work in this beautiful house shows part of the marble staircase which is now being built. The staircase arrangements were previously undignified and lacking in style, and the proprietor has reconstructed internally the whole of that part of the house, making a noble marble staircase, with marble balustrades and wall linings, with delicate carving and detail in the style of the Italian fifteenth century. Above this marble staircase, part of which is carried on arches, the walls are covered with green and gold brocade and some fine tapestries of the early sixteenth century. The doorways opening on to the staircase are all of white statuary, the pilasters carved with delicate Raphaelesque detail, the

doors themselves being inlaid with rich intarsia work. The ceiling of the grand staircase is coffered with wood and gessowork in blue and gold, the coffers themselves being filled with a star-shaped flower, the petals of which are composed of pearl shells.

The noble entrance hall, into which we get a peep in the corner of the picture, is entirely lined with marble, the large panels of which are pink Soudanese, divided by statuary pilasters, the latter carved with fine Renaissance detail. The chimneypiece is a good specimen of marblework in the Italian style of the fifteenth century, modelled by Mr. George Frampton. It has a frieze about 3 feet wide of boys with garlands. This entrance-hall is 38 feet by 25 feet, and also has a ceiling of blue and gold gessowork: the pavement is of choice colored marbles.

The dining-room is being panelled with mahogany up to the ceiling, with a deep frieze of carved panels, partly gilt, in the style of Henri II, the margins of the lower panels being inlaid with satinwood; the ceiling has wood coffers, with the whole central portion domed and decorated with finely-modelled figures in ivory color on a gold ground.

On the first floor are the library and drawing-room 38 feet by 25 feet and 50 feet by 25 feet; the lower portion of the former is panelled with Italian walnut, in the style of François Premier, beautifully carved; part of the walls to the height of the panelling are arranged with bookcases matching the dado, and above the walls are covered with gilded leather; the ceiling is of inlaid walnut coffered work, the panels and frames being inlaid with boxwood. The drawing-room has been treated in the Palladian style of the Italian sixteenth century; the ceiling has its panels filled in with paintings, and the walls divided with pilasters; the panels between these are filled in with gray and gold brocade. This room has a superbly rich effect, and proves how quiet and lovely gold is when used in broad enough masses. An interesting use is made of cloisonné enamel in this house, as the walls of two bathrooms have been completely lined with it above a low marble dado; one bathroom is Pompeiian in style, and has representations of standard pomegranates, oleanders, orange-trees, etc., and the other is Japanese, with very life-like treatment of lotus plants, with fish and storks.

The house generally has been finished in a superb manner, there being few in London to rival it in the care of its detail or beauty of finish. The time that has been occupied in carrying out these great undertakings has been incredibly short, only eight months.

The whole of the work has been designed by Messrs. Ernest George & Peto.

SHIPLAKE COURT.

The exterior of Shiplake Court appeared in last year's Royal Academy among the designs of Messrs. Ernest George & Peto, who now give a drawing of the hall in this house. It is 70 feet in length, and has an open timber roof, with moulded purlins and wind-braces, its oaken beams, of ample substance, reminding us of good old work. Above the oak panelling the stone walls are shown. There is a screen and musician's gallery at one end. The tall stone chimney is shown in the drawing, while at the end of the hall, behind the spectator, is a small spiral staircase giving an approach to the boudoir and family rooms above. The tall windows are shuttered to the height of the lower transom, thus continuing through the line of the panelling.

THE POLES.

In the Architectural Room of the Royal Academy is a drawing, by Messrs. Ernest George & Peto, of The Poles, in Hertfordshire, a house now being built for Mr. Edmund Hanbury. The building is Jacobean in style, with parapets and shaped gables. The walls, with their cornices, are all of brick excepting the mullioned and transomed windows, which are of Ham Hill stone. A principal feature of the house is the oak-panelled hall, the ante-hall at one end being separated by a screen, while the main staircase, between oak posts, leads from the other end. The hall is lighted by long windows above the panelling, and a large bay-window, with window-seat, opposite to the big chimney. The ceiling is of moulded oak beams. From the ante-hall a large garden-porch leads to the south terrace. The drawing-room is much the same shape as the hall, but variety is made in the treatment by giving this long room a vaulted or barrel ceiling of enriched parquetwork. The dining-room, drawing-room and library are symmetrically arranged on the principal side, so that when their folding doors are thrown open there is a vista of 120 feet — a perspective which is always interesting. The billiard-room is at one end of the hall, while Mr. Hanbury's business-room is between the dining-room and the offices. A second or family staircase is provided in this part of the house. The offices are in a wing which projects, giving an L-shaped plan to the house. The kitchen is carried up through the first floor, giving it the height of two stories.

A HOUSE WITH STUDIO, NEAR GUILDFORD.

The house near Guildford is to occupy a wooded knoll by the "Hog's Back." The studio is commodious, with a gallery at one end. Beneath the latter is the lavatory; also stairs leading down to a canvas-room, which has also a door from the garden. A fall in the ground at one end of the house helps to form this basement room. The rest of the house is compact in its scheme, being designed as the occasional retreat of an artist, The lower part of the building is of Bargate stone from a neighboring quarry, and the upper story is of oak quartering. The whole is covered by a simple hipped roof of heather thatch.

SOCIETIES

TEXAS STATE ASSOCIATION OF ARCHITECTS.

The fifth annual meeting of the Texas State Association of Architects was held in Dallas on the 13th and 14th of May, and the following officers elected: *President*, James Wahrenberger, San Antonio; *Vice-President*, Nathaniel Tobey, Dallas; *Second Vice-President*, George E. Dickey, Houston; *Secretary*, George W. Stewart, Dallas; *Treasurer*, G. M. Tozer, Dallas; *Executive Committee:* J. J. Kane, Fort Worth; B. B. Haggart, Fort Worth; M. McQuirk, Dallas; W. W. Larmour, Waco; J. Larmour, Austin.

The following address by the President, James Wahrenberger, was delivered:

Gentlemen of the Texas State Association of Architects: Before proceeding with the regular order of business, permit me to address a few remarks to you gentlemen, here assembled as representatives of an important and noble profession. I feel confident that our actions and deliberations will be of such a dignified and harmonious character as becomes the nature of our occupation, and that the best motives, kind feelings and a spirit of true fellowship will govern us in all our discussions, for the benefit of our Association and of the profession in the State. And, after completing our labors, may we all return to our homes with many pleasant recollections of this, our annual convention.

Important questions may be brought before us for consideration and discussion, upon which depend to a great degree the future standing and welfare of our profession, and let no member of this Association hesitate to express his views fully and without reserve upon all points in this connection, as the interchange of ideas and personal experiences can only be of great benefit in devising measures to be taken for the future welfare of the profession.

I desire, furthermore, to impress upon your minds the fact that it is of the utmost importance that more attention be paid to the affairs of the Association by its members, and that its meetings be better attended than heretofore. In a comparatively new field, where the nature of our occupation is not fully understood, and the labors of a professional man are to be peddled like a lot of merchandise, concerted action on the part of educated professionals becomes imperatively necessary. The practices of ignorant and unscrupulous pretenders must be met with united, intelligent and persistent efforts of a thoroughly organized association, to place the profession before the general public in the dignified standing to which it is justly entitled.

It becomes the architect to stand before the public as a man educated to follow a profession which makes demands for talent and attainments second to none in existence; for while it is necessary that we acquire a thorough knowledge of the principles of construction, and keep abreast of the times with reference to all new improvements made in the mechanical branches connected with the profession, there are also those æsthetical studies connected with the builder's art that require much time and application in order to become proficient and to keep up with the spirit of the times.

If the practice of architecture were simply to supply the ordinary wants and comforts of man, without cultivating the mind for an artistic taste, the same would cease to rank with the fine arts, and descend to the level of an ordinary trade. Besides providing for the physical wants and comforts of our fellow-beings, it is for us, also, to satisfy those desires of a refined intellect that move beyond the materialistic wants of every-day life. Not to forget, however, that the laws of æsthetics are taught us in the works of nature, and the effect of beauty can, therefore, in no manner be that of shallow sensualism, but that of a true moral spirit. We can never obtain the desired effect upon the beholder unless the entire composition of our work, together with all its details, be so treated as to express a certain deep and earnest signification in the outward appearance of the design, as well as in its interior decorations and arrangements. By imprinting upon our work the prevailing ideas of intellectual taste, we create and further develop the peculiar styles that characterize the spirit of the age.

Monuments left by past generations teach us the history of the people gone before us, and mark their progress in culture and refinement; they give us an insight to their religious views, and to the peculiar habits and customs existing in their times. The history of architecture as a fine art begins with the temple, the house of God, which, in its various forms and details, has furnished ideas that have led to further developments for the adornment of public buildings and the decorative features of our homes.

In order to acquire a proper knowledge of the various architectural styles, and a correct understanding of the many different forms

therein employed at various times, the reason of their origin and their purpose, we must trace back the history of architecture, and become acquainted with the prevailing ideas and views of the people in this connection that have led the old masters to the development of these peculiar forms and compositions. As we do this, we find that in many cases one style has served as a basis for the gradual development of another, and as the peculiar ideas of taste and of the grand and beautiful become more developed in certain directions, we are able to follow up the progress of the various architectural styles from their origin to their highest state of perfection. Those of the profession who are so fortunate as to enjoy travels in older countries abroad, to view the monuments left by the old masters at different periods of history, and also the grand works of modern times, derive the greatest benefit and the most valuable assistance in their studies of this kind. That the same are of great importance no educated architect will deny; they are essential to the designer in order to fulfil the first requirement of a design properly executed, which is, that a building, as a mass, shall, at a glance, impress the mind of the beholder with its importance, and disclose to him the purposes for which it was erected.

It has always appeared to me absurd that public-buildings, like court-houses, post-offices, etc., at this age of steam-cars and electricity, should be of such antique architectural styles as to remind us of the dark days of the Inquisition and of the carrier-pigeon. Of that hideous nightmare, the so-called modern Queen Anne residence, perhaps the least said the better; and perhaps, also, of the peculiar misapplication of the misunderstood Byzantine and Moresque forms, in which some of the younger brethren of the profession seem to take a special delight to show their ignorance in architectural style and æsthetics, and which to a great degree may account for the depraved taste displayed in much of our modern architecture.

The arts of painting and sculpture are closely allied with that of architecture, and have at all times lent a helping hand in embellishing and decorating important works. It is, therefore, required of the educated architect to show good judgment and taste in employing the assistance of these kindred arts. They have been developed hand-in-hand with that of architecture. Mark the difference in the manner of employing them at different periods of history in connection with the architectural styles then in vogue, and compare the severe, stiff, cold lines and coloring of the earlier days with the graceful forms and beauties in the works of the Renaissance.

By reason of the amount of study needed to become well skilled in these beautiful and important branches of our profession, the practice of architecture should be entitled to stand as one of the most prominent practised among the cultured and refined classes. That the educated architect does not yet fully receive the encouragement, through a proper appreciation on the part of the general public, which his profession entitles him to, and which he enjoys in older countries where the profession and its requirements are better understood, is a fact, of which we have almost daily demonstrations in our practice. However, of late years, we may note a marked improvement in this respect, with the wonderful growth of our country. The temporary log cabin of the hardy pioneer will soon exist only in the recollection of a few, and the time of the weather-boarded corner-grocery and drygoods establishment, with a stock of patent medicines and the United States Post-office combined, is quickly passing by. The character of our public buildings is undergoing a marked change, and the importance of the profession is steadily increasing until it will eventually arrive at that high plane of excellence to which it rightfully belongs.

In the meantime let us strive to establish those proper and correct relations which should exist between the honorable educated architect and his clients; we will thereby gain the confidence of the public that is necessary for the attainment of our objects.

We have repeatedly and in vain petitioned for legislation, to regulate the practice of our profession, and to protect us, as well as the general public, against the abuses and pernicious practices of uneducated and unscrupulous pretenders. While we should renew our efforts with increased energy and vigor, what the prospects for success will be in the near future remain yet to be seen. The average legislator is not given to much thought in matters of this kind, and as long as only questions of a political nature remain uppermost in his mind, an encouragement in the promotion of science and the arts cannot be looked for by any legislation in this direction, in the near future. And positions held under the government by professional men, chiefly obtained through party influence, instead of ability and personal merit, will for some time, still lack that moral influence and high honor due the profession.

However, it is for us not to become discouraged in our labors, but to renew the same with a determined resolution hand-in-hand with those of kindred associations, and with the fond hope that with the wonderful growth and increasing prosperity of this country, our unremitting efforts will be eventually crowned with success. In the meantime, let us meet in council, and advise with each other, as to the proper steps to be taken towards the public, to overcome the evils born of unprofessional and unscrupulous methods, and present such professional facts, methods and ideas in a manner that the public mind must become educated to the importance of our occupation. We must form rules to guide us in our practice, that will command the respect of our clients, with whom we have our daily business transactions, and the public at large will soon begin to appreciate our position. Let us, also, not hesitate to exclude from our ranks, and ignore the pretensions of those who are not fitted by education, or otherwise, to practice the profession; such, who look upon the occupation simply as a milch-cow, and especially those whose past career in the profession has been of a dishonorable character.

During the few years, since the organization of our Association, much good has been accomplished; the interchange of ideas and personal experience has been of great benefit to all of us; we have become united in one common fellowship, and have learned to struggle hand-in-hand, for one common cause. Our aims and objects are already beginning to be understood and appreciated by educated and well-thinking men. Let us remain united in our persistent efforts to ultimately attain the objects of our Association, and aid in raising the profession to that high standing which it so fully deserves.

In conclusion I take the liberty of stating to you, gentlemen, that my views in regard to architect's competitions, as now generally conducted, have not changed in the least since expressing them at our last meeting at Waco. I still believe, that, the more architects respond to the shallow inducements offered in advertisements for these sham competitions, the more difficult the task will become, to raise the profession to the standard so much desired. Good professionals should discourage such competitions by paying no attention to them, and all competitions where awards are not made by juries of competent professional men, should be entirely ignored. The temptation, I admit, is sometimes great, to convince an ignorant committee of the superiority of one's ideas, expressed in his plans and specifications, but we may only succeed in our aims by sacrifice commensurate with the results to be accomplished. The methods of proceeding in these unregulated competitions, controlled by persons totally disqualified, have led to much discussion and ill-will among our professional brethren, and it is necessary that we have the proper respect and friendship for each other, in order to secure the confidence and respect of the public, and to succeed in the task that our Association has laid out before it.

COMMUNICATIONS

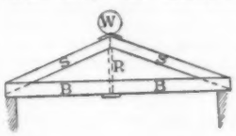
[*The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.*]

CONCENTRATED LOADS ON TRUSSED GIRDERS.

LOS ANGELES, May 20, 1890.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — In "*Kidder's Architect's and Builder's Pocket Book*," page 340, for concentrated load on trussed girder, is given the formula for tension in B as $\frac{w}{2} \times \frac{\text{length } B}{\text{length } R}$, why should it be half the weight and not the whole weight? By answering the above you would greatly oblige



A STUDENT SUBSCRIBER.

[THE formula is given in this way simply for convenience. It might just as well be $B = W \times \frac{\text{length } B}{2 \times \text{length } R}$. Construct the graphical diagram and you will see at once the relation of the strains. — EDS. AMERICAN ARCHITECT.]

"*THE ARCHITECT'S SKETCH-BOOK AT HOME AND ABROAD.*"

ST. PAUL, MINN., June 6, 1890.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sir, — In your list of architectural books in the *American Architect* for July 30, 1887, a book is mentioned which is called "*The Architect's Sketch Book at Home and Abroad*," by Thorpe.

Will you be kind enough to inform me through the *American Architect*, where and by whom this book is published.

Yours truly, RICHARDS GORDON DEACON.

[WRITE to B. T. Batsford & Sons, 52 High Holborn, London. — EDS. AMERICAN ARCHITECT.]

NOTES AND CLIPPINGS

CORROSION OF LEAD. — When plumbers strip the roofs of churches or other buildings covered with lead, which has lain undisturbed for many years, they usually find that side of the lead which is contiguous to the boards covered with a white pellicle, as thick sometimes as a half-crown; this pellicle is corroded lead, and is as useful for painting and other purposes as the best white lead. The lead on the south side of any building is found to abound most with this white crust, that on the north side having very little or none at all. It is believed also that lead which lies on deal boards is not so apt to be covered with this white incrustation as that which lies upon oak; if there be any truth in

this observation it may perhaps be explained from hence that oak contains a much stronger acid than deal, and this strong acid being distilled, as it were, by the heat of the sun in summer attaches itself to the lead and corrodes it, or this corrosion may be the effect of sun and air, which by their constant action, calcine or corrode the lead; and this calcined lead not being washed off by the rain may, in the course of a great many years, form the crust here spoken of. It might be worth while, in a philosophical view, to examine more minutely than has been done the difference between old lead, which has lost some of its parts by long exposure to the air, and new lead. The plumbers have assured me that if a pig of old lead and an equal pig of new lead be put together into the same iron pot, and exposed to the same degree of heat, the new lead will be melted much sooner than the old lead. Another difference betwixt them respects the quickness with which they may be reduced to a calx, the new lead being observed to calcine much faster than the old. — *The Architect.*

The Church of St. Audoen's at Dublin. — The city of Dublin, rich in tumbledown courts and historic halls leaning towards disuse and decay, has now, since the enthusiastic patching up of the two great cathedrals, but one genuine ruin. Of course, this is also a church, for pieties are long on the ebb tide. In the midst of a neighborhood which is foreign soil to fastidious folk, full of wild sights, squalor, and the aroma, atoning for all others, of magnificent memories, stands St. Audoen's, planted on a slippery and hilly alley, south of the Liffey, at the junction of several roads. The present tower of the seventeenth century, where still hangs a bell dated 1423, and in the hollows of whose ancient peaceful stone-stairs pigeons continually make their nests, has been kept, exteriorly, in repair; the battlemented walls, the decent entrances, and the impossibility of commanding a wide view of the place from any point whatever, combine to hide, from everybody but the born mouser, the existence of a spacious and very beautiful Gothic fragment, older than Magna Charta. Its name comes from the good gentleman Ouen or Audoenus, archbishop of Rouen, who died in the seventh century, and whose body lies in the famous cathedral dear to Ruskin and to all men of his own town. The Anglo-Normans, from the year 1171 on, were not so busy with their theft and pillage but that they must needs edify Ireland with sacred architecture. As early as the time of Henri de Londres, the vigorous archbishop of Dublin, who built the castle and snuffed out Brigid's everlasting fires at Kildare, there is mention in the records of this church. It was certainly put up at the close of the twelfth century. The aisle parallel to the choir and of equal length, came into being, or into full renovation, 300 years later, at the cost of Lord Portlester. His beloved wife was buried there in 1455, and the two effigies were made to mark her grave, though he himself was to die long after and far away. In their rich and quaint dress, on a slab whose long Latin inscription (*Rolandus Fitzeustace de Portlester et Margarita ejus uxor*, 1455) is yet decipherable, they lie now in the securer shelter of the porch; their neighbors are the little gem of a Norman door, the first which has shed the Christian hope on twenty generations, the low, dark tower entrance, and the figure, more venerable than their own, of a nameless prelate, flat-featured with time. All about, the ancient burial stones hold up their dim letters to the light, and seem not to rejoice at all at the snug whitewash with which modern scruples have adorned the walls. East of the porch is the curious and roofless fragments of a chantry authorized by letters patent from Henry VI, in 1430, and nominally dedicated to the praise of God and the honor of St. Anne. — *Louise Imogen Guiney, in Boston Herald.*

Cordova, S. A. — Even with its modern innovations Cordova is one of the best types I have seen of the Spanish-American town as it was known before the era of railways, immigration bureaus and land speculation. A chess-board furnishes the ground plan of the city. Four of the central quadras or squares are reserved for the main Plaza, with its Cathedral and Cabildo. The remaining rows of squares are filled with churches, shops and houses. The dwellings are small quadrangles built around enclosed courts. Nearly all the houses have a single ground floor, the servants' quarters being in line with the kitchen. A few of the more pretentious dwellings have an additional half-story in front, where the servants sleep. The entrance is an archway, with an iron fence or gate across the front, and a glimpse of the patio, or shaded court, within. Many of these courts have fine trees and shrubbery; the poorest have pots of flowers, and the best have statuary, fountains, ornamental vases of great size and rare plants. The courts have stone floors and are clean and cool. There are reception and dining rooms under roof, but family meals are ordinarily served out of doors, and guests are entertained in the shaded courts fragrant with flowers. A few of the largest contain two or three quadrangles built around as many courts. There is a greater range of coloring in the exteriors of the houses and shops than I have seen since I left the northern coast towns of Brazil; but the streets are cleaner, the dwellings and patios more tidy and orderly, and the general aspects of the city are refreshing and restful to the eye. In the olden time the pride of Cordova was its Alameda, or public garden. True to the checker-board design, that, too, was a quadrangle, with an artificial lake in the centre and with double rows of noble trees around the outer edges. Near by were a series of Moorish baths, with reservoirs supplied from the lake in the Alameda. This beautiful pleasure-ground was devastated ten years ago by a tornado, which uprooted a large number of the trees and destroyed the symmetry of the lines of shaded walk. The baths are in ruins and the scene is now one of departed glory. Engineers have planned a new Alameda with a large artificial reservoir, and work is now in progress which will supply the city with a modernized park. Many of the open water-courses which formerly ran through nearly all the principal streets and furnished means for irrigating private gardens have been closed. Cordova is gradually losing the characteristic features of its ancient Spanish estate, but with all the encroachments of the modern, it remains essentially antique and mediæval. — *New York Tribune.*

Bridging the Bosphorus. — Engineers are, it is said, now considering the scheme for bridging the Bosphorus, thus connecting Europe and Asia and their railway systems. The Turkish newspaper *Hakikat* gives some particulars of this project, which appears to be an offer by a French syndicate to build a bridge of 800 metres in length and 70 metres high between Roumeli and Anatoli Hissar. The striking feature of the bridge would be that it would consist of one span, and thus, although of much shorter length than the Forth bridge, it is described as a greater work, because its single span would exceed in length by one-half the longest span of the Forth bridge. — *Commercial Advertiser.*

Montstuart Palace. — Lord Bute's mansion, called "Montstuart," near Rothesay, is the largest and costliest private palace in the world. It is in Gothic style and covers nearly two acres. The halls are of marble and alabaster and the rooms are finished in mahogany, rosewood and walnut, with carved marble fireplaces. The cost of the mansion was about $9,000,000. — *Commercial Advertiser.*

TRADE SURVEYS

The fact that bank clearings throughout the country for the month of May were 21½ per cent greater than for May, 1889, is sufficient, in itself, to show the general expansion of business which has taken place within the past twelve months. Reports from manufacturing corporations and firms in all sections show that expansion is the rule. Machinery of enormous capacity is taking the place of older machinery; additional floor-space is being supplied in hundreds of establishments, and in every way capacity and facilities are being increased. Within the past 30 days orders for fully 500 locomotives have been placed; during that time orders for cars have been placed by a large number of railroad companies, and from reports received from car-builders, it is evident that there is more business coming to hand now than at any time for six months. The car-trust interests are crowded with negotiations for additional work. The railroad companies, and those companies having control of rolling-stock, are in the market with heavy requirements, and the car-builders are now figuring upon some of the largest orders ever placed. The makers of car-wheels, axles, brakes, and railway equipments and supplies generally, are making active preparations for meeting heavy future requirements. A number of improvements in railway equipment have been practically adopted within the past few months, and the necessary changes of old appliances for the new are giving a great deal of work to manufacturing establishments in this line. The electrical works are all crowded with work. Recent combinations have greatly improved the position of some of the stronger concerns, and harmony is being gradually established between heretofore conflicting interests. Electricity for street railway purposes is meeting with favor in many localities, and in numerous instances cable systems are being abandoned for the electric motor. All the manufacturers of machinery state that the orders for machinery are now more abundant than ever before known. A great deal of heavy machinery is being contracted for; several new rolling-mills are to be erected in the Southern States; the projection of blast-furnaces continues as though an actual scarcity of crude-iron prevailed. The iron trade has gained strength within the past week. Steel rail-makers have just booked orders for 50,000 tons of rails, and very heavy orders are now awaiting their acceptance. Prices have advanced on small lots. Throughout New England all the industries are fairly prosperous, but the makers of machinery lead all others in the volume of business and the margin of profits. The paper manufacturers report a fair degree of activity, but complain of narrowing margins. The textile mills are plodding slowly through numerous difficulties; the hosiery manufacturers are somewhat better off. The boot and shoe manufacturers are crowded with work; stocks at distributing points are almost exhausted. Manufacturers of all kinds of hardware, heavy and light, report an active demand.

Throughout the Middle States, iron-makers and coal-miners are busy. An expansion of the coal trade in both anthracite and bituminous is reported. The hurrying-in of orders for summer and fall work is keeping the shop-capacity of the Middle States more actively employed than was the case in the early spring. Western Pennsylvania is particularly active in its heavier industries. Throughout the oil and natural-gas regions a great deal of pipe-line laying is underway. The Standard Oil Company has purchased four large refining companies, and is interesting itself in a scheme to push the exportation of oil in tank vessels on a large scale. An increased industrial activity is reported in Kentucky, Tennessee and Alabama; numerous coal-mines are being opened, short lines of railroad are being built with a view to mineral and timber development, and a multitude of small industries are springing up, chiefly by the aid of Northern capital. No untoward influences have as yet arisen to check enterprises in these States; very few failures occur; the railroad companies of the South are earning, according to reports, more money per mile than roads elsewhere. Late reports from Texas and the Southwest point to increasing immigration from the older States to these regions. The railroad managers are doing their utmost to aid in the development of these sections, and private enterprise is securing and preparing to make the most of the splendid opportunities which this development opens up. Authorities upon such subjects state that an impetus has lately been given to immigration into the Northwest also. Much as has been said about agriculture being overdone, it is stated that a vast amount of land is now being taken up by new settlers, mostly Americans from the older States. The farmers have gained many minor advantages during the past two or three years: land continues low; manufacturing products have declined in price; railroad freights are more favorable, and other influences are contributing to a larger and steadier demand for farm-products. In commercial and financial circles a very hopeful feeling prevails. The general crop prospects are excellent. Railroad earnings are large, and this fact is inducing a quiet speculative movement for certain stocks. Railway management is making slow but steady progress. National legislation on economic questions is moving slowly in the right direction. Commercial failures are not in excess of the usual monthly average, and the volume of money, so far as the great business centres are concerned, is sufficient, although in remote localities a scarcity exists.

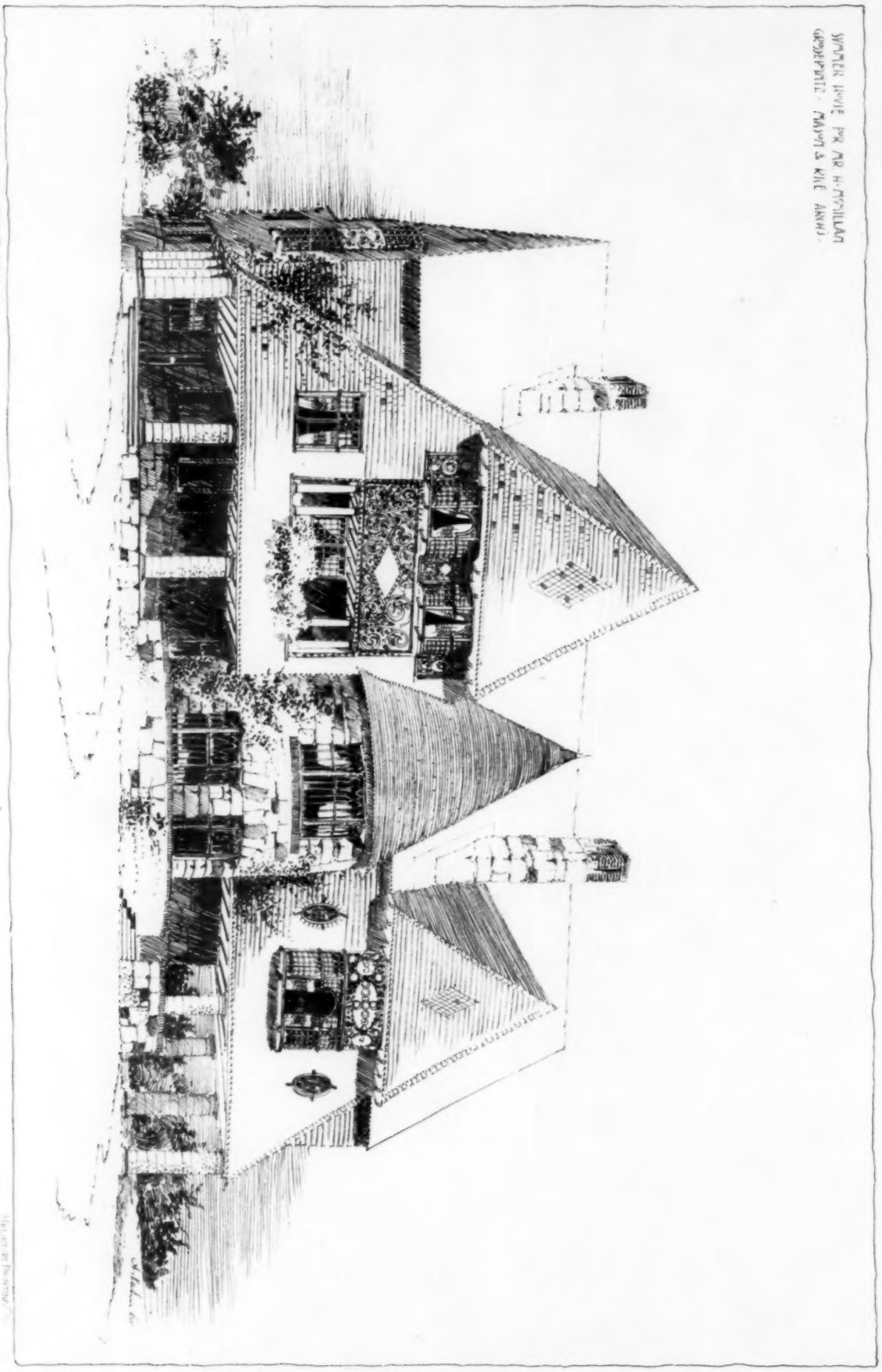
S. J. Parkhill & Co., Printers, Boston.

From the Boston Architectural Club Exhibition

NES. · ST. JOSEPH, MO. ·

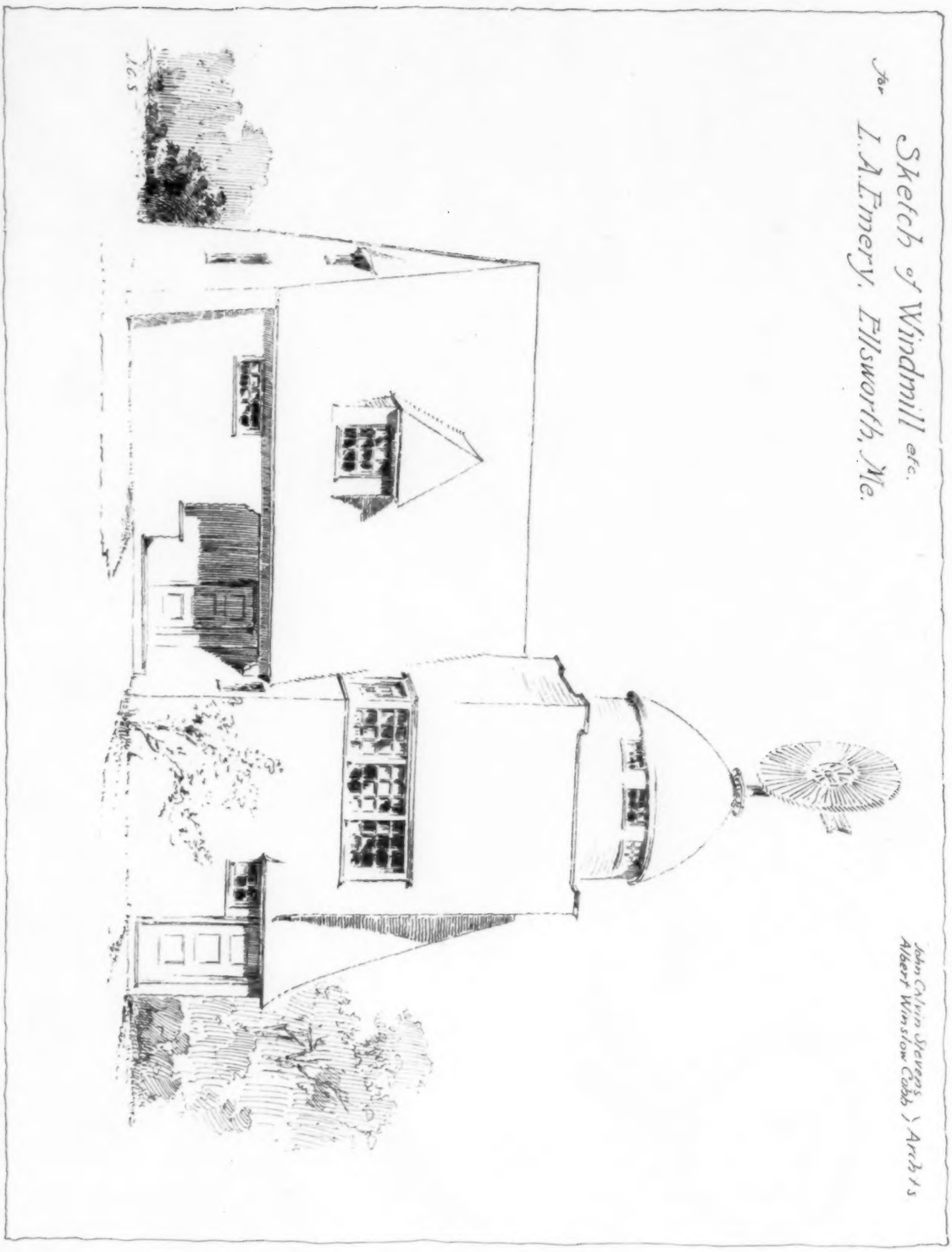
9.

HELIOTYPE PRINTING CO BOSTON



SUMMER HOUSE FOR MR H. McMILLAN
GROSVENORDALE. MASON & RICE ARCHTS.

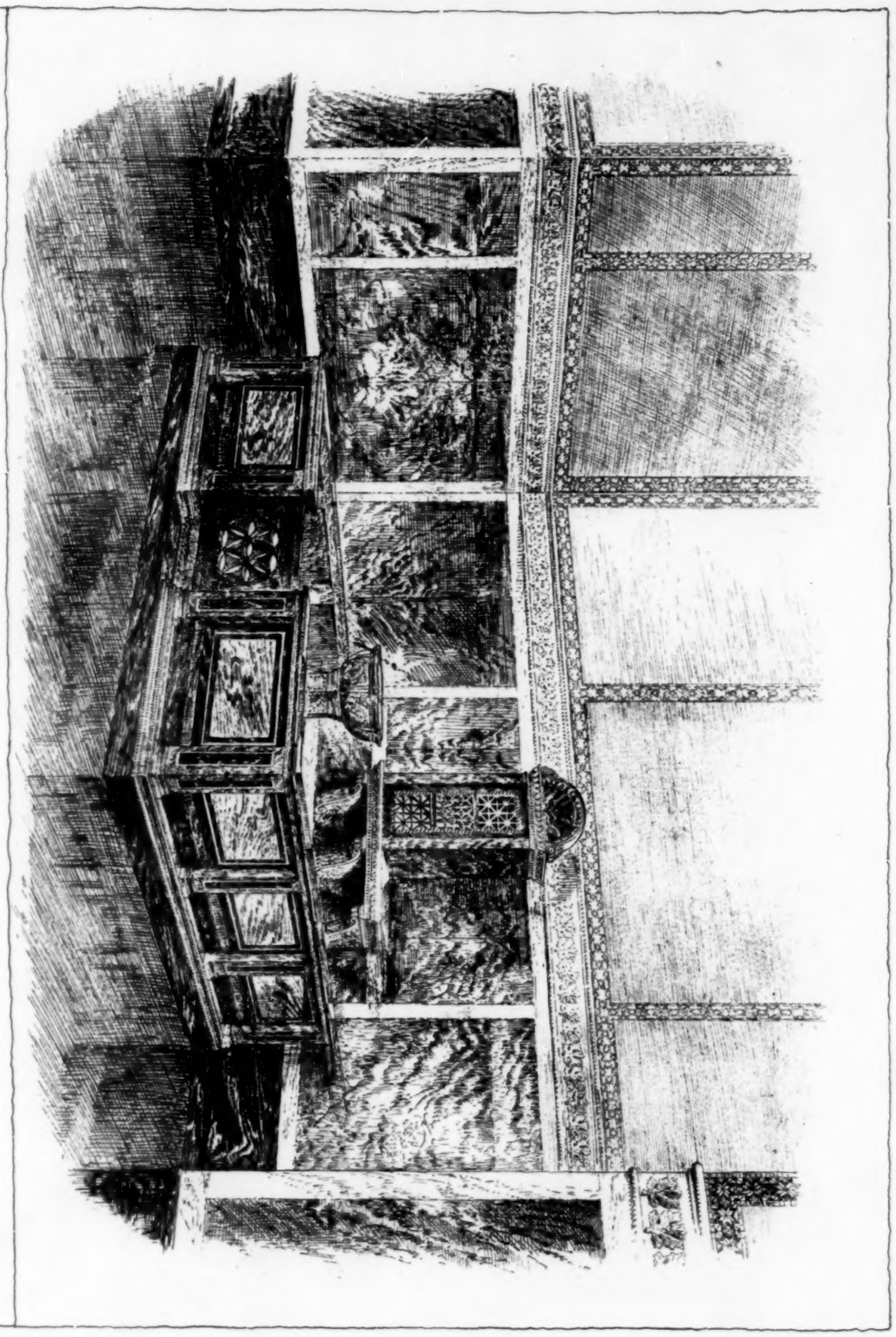
From the Boston Architectural Club Exhibition.



Sketch of Windmill etc.
for
L. A. Emery, Ellsworth, Me.

John Calvin Stevens,
Albert Winslow Cobb } Archts

From the Boston Architectural Club Exhibition

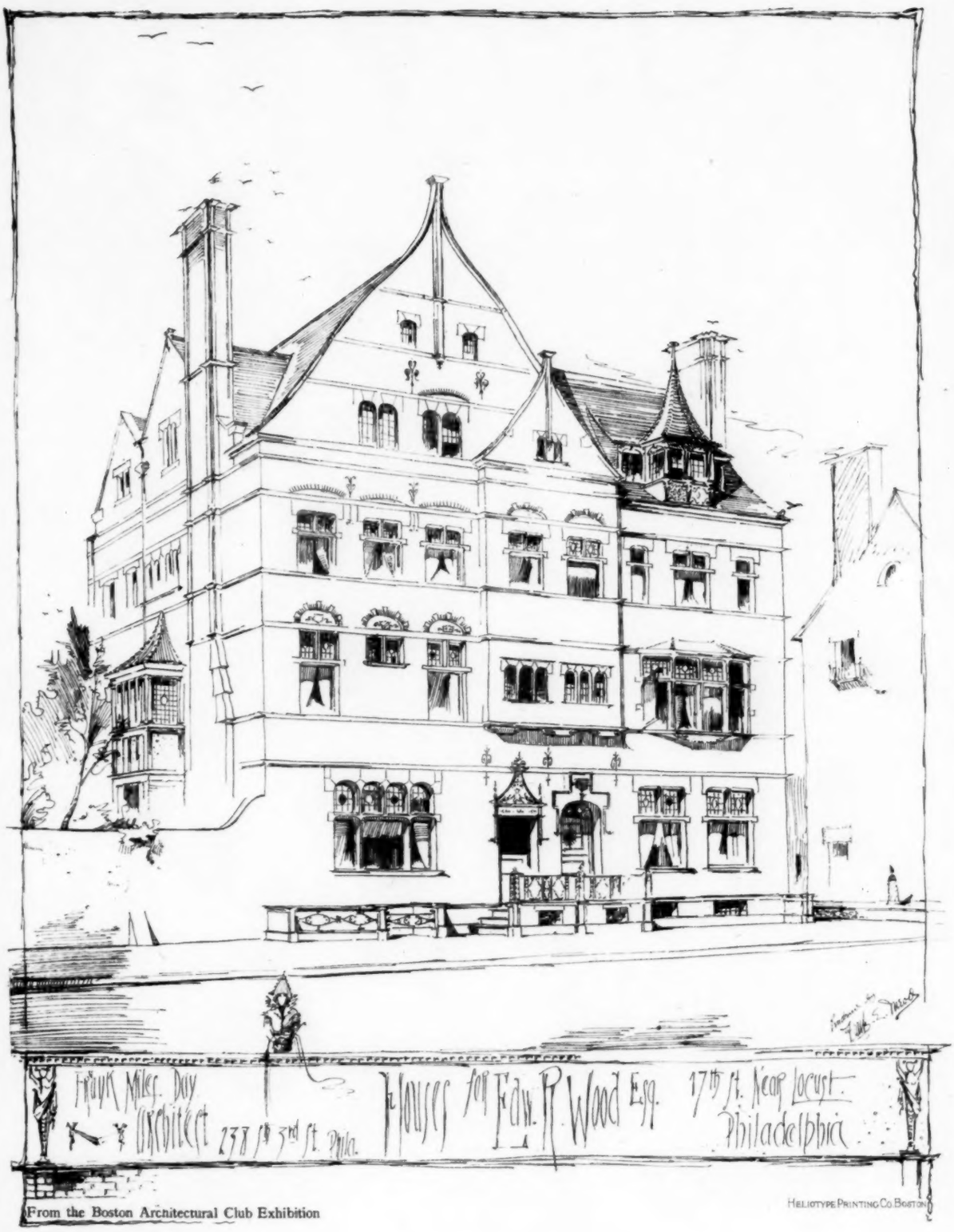


SKETCH FOR BAPTISTERY, CHURCH OF ST. PAUL THE APOSTLE · NEW YORK.

HEINS AND LA FARGE ARCHITECTS.

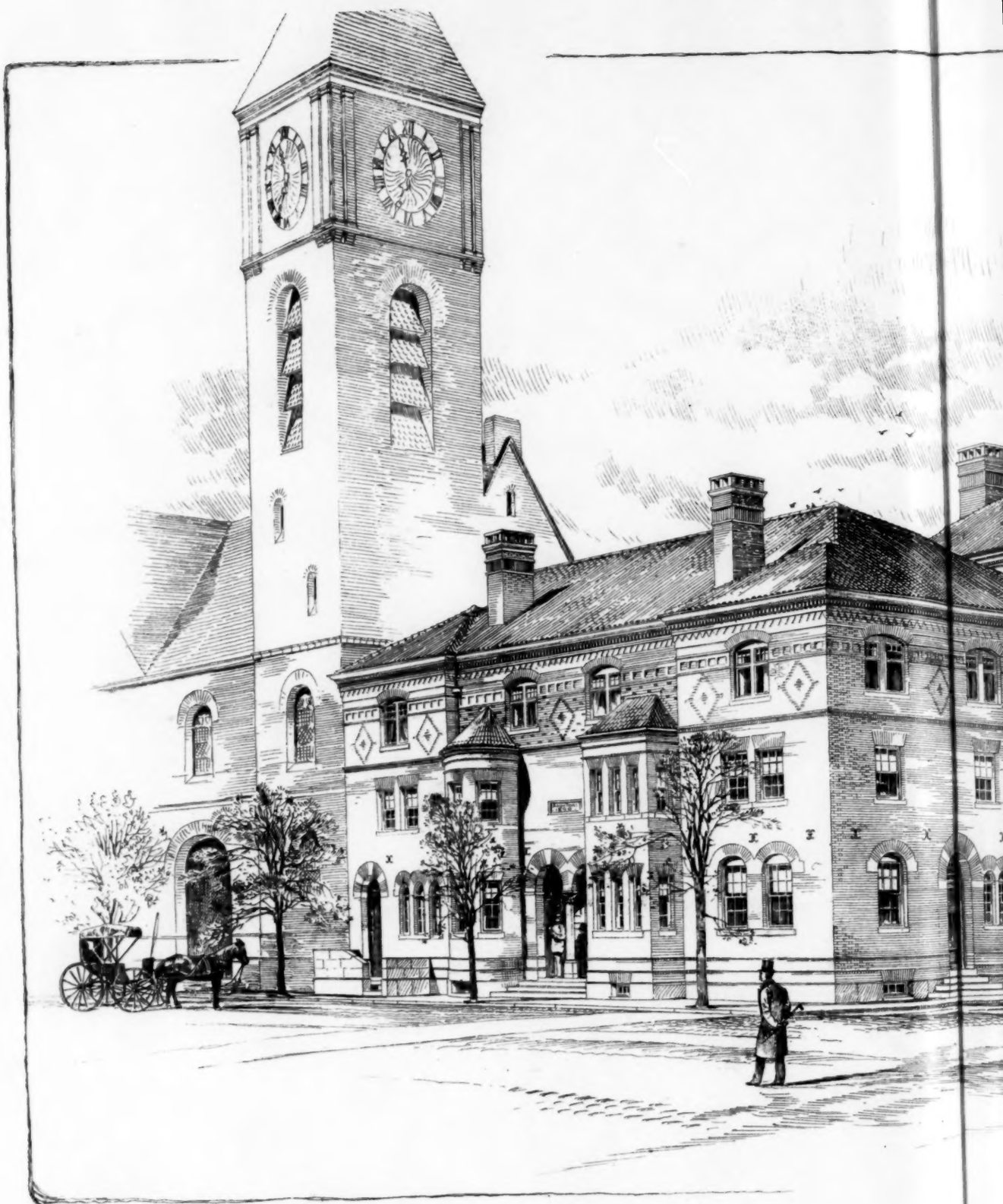
From the Boston Architectural Club Exhibition

Heliotype Printing Co. Boston



From the Boston Architectural Club Exhibition

HELIOTYPE PRINTING CO. BOSTON

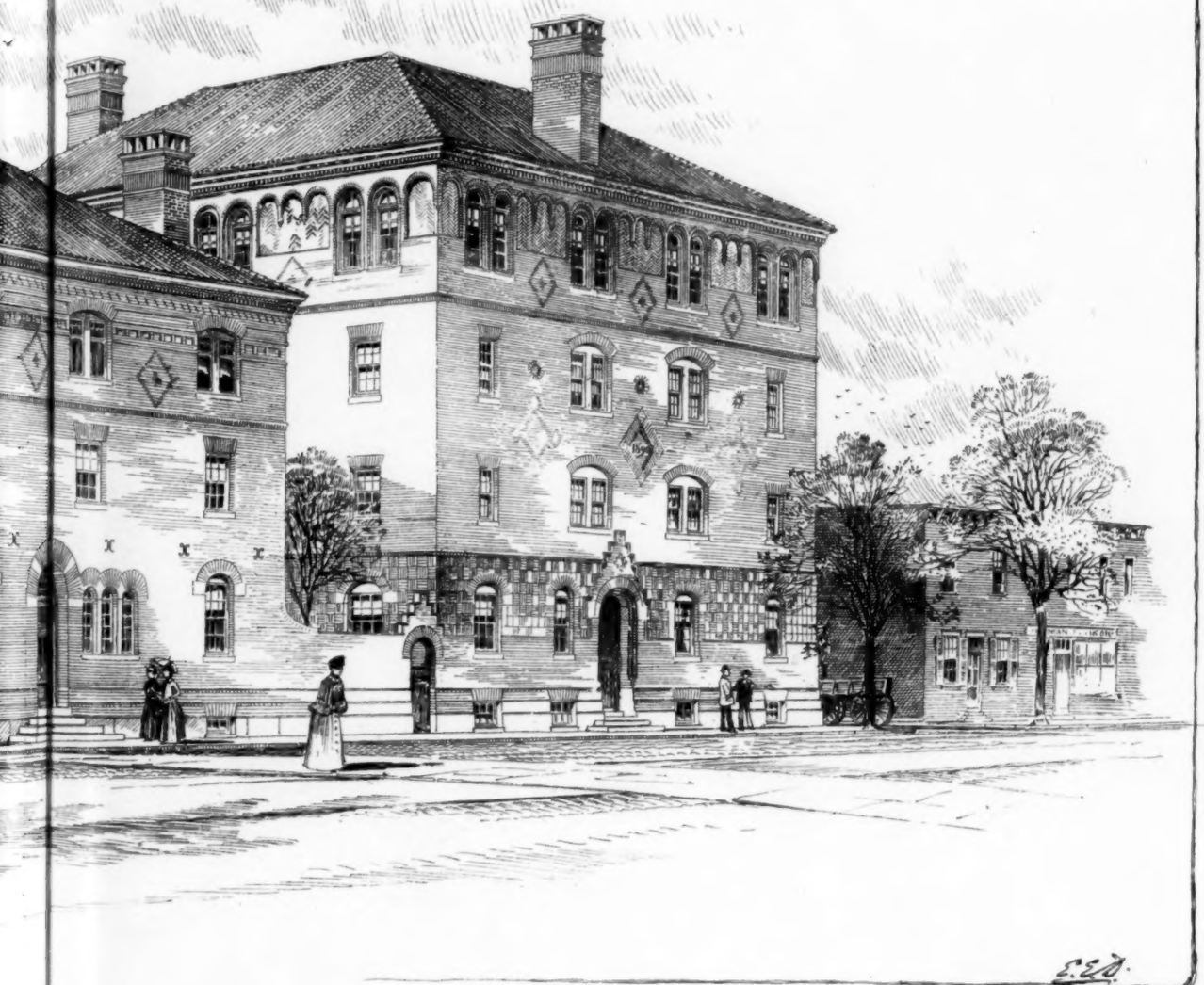


From the Boston Architectural Club Exhibition

STUDY OF RESIDENCES AND APARTMENT HOUSE

AT TROY, N.Y. FOR W.H. DOUGHTY, ESQ

H. LANGFORD WARREN, Architect,
8 PARK ST, BOSTON, MASS.



E.E.D.

HELIOTYPE PRINTING CO. BOSTON.