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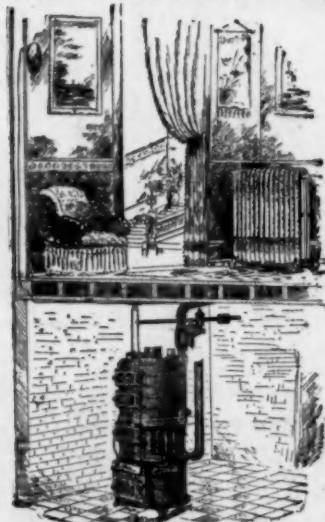
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MARCH 19, 1892.



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A LONG-NEEDED change in the building laws of New York is, we are happy to say, under contemplation. As every architect who has practised there knows, the erection of a building in New York involves the making of four distinct sets of plans, in addition to those required for the execution of the building, the office copies and whatever drawings the owner may need for his own use. One of the extra copies must, under the law, be filed in the office of the Inspector of Buildings; another must be filed in the Light and Ventilation Bureau of the Department of Health; a third must be filed in the Plumbing and Drainage Bureau of the same Department; and a fourth must, under the regulations of the underwriters, be made and kept in a safe place for their benefit, in case they should have to pay a loss or rebuild in case of fire. Of course, the architect is expected to furnish all these extra drawings without charge, and the cost of making them amounts to a very substantial slice of the profit which he would get out of his commission, so that the modification of the present statute in such a way as to consolidate all these departments into one, or, at least, to bring them into such intimate relations that one set of plans would do for them all, is a thing greatly to be desired. Probably the underwriters will continue to insist upon having a set of plans for themselves, but there is no reason why the plans on file in the city offices should not be open to them, so as to relieve the architect of the whole of the unnecessary burden now imposed upon him. It is curious that architects and builders suffer more than any one else from the ridiculous system under which our towns are governed; yet the patience which the trials of building tend to cultivate is so profound that it is rare to hear any complaint from one of the building fraternity. Under the present system, any one who desires to add to the taxable property of a city has, so to speak, to storm in detail half the intrenchments by which the town government has defended itself against such attempts. His first tussle, that with the Inspector of Buildings, is a short and easy one in comparison with those that follow it. After his plans have been passed and his permit issued, he is obliged to apply to the city engineer for the grades. Nothing can be learned as to the established grade from the actual curbstone, which may be several inches from its proper position, and the

incautious builder who takes his measurements from the sidewalk as it is, instead of as it ought to be, may find his front steps and basement windows half buried in the pavement if a fit of zeal for the rectification of the grades should happen to seize the city surveyor. After this matter has been arranged, and the hypothetical position of the sidewalk has been shown by a mark on a convenient tree, arrangements have to be made for occupying a part of the street for delivering materials. To obtain permission for this, it is usually necessary to make several visits to the police-department, or the street-department, or both. Then comes the question of a supply of water for building. The water-department must be consulted, applications made, considered and issued. Drains come next in order. Several visits are made to the sewer-department, and, after long consideration, an order is passed to lay a sewer in the adjoining street. It does not, however, by any means follow that the passing of the order will be followed by the laying of the drain. In order to lay a sewer, it is necessary to open the street, and the streets are under the exclusive jurisdiction of the street-department, which may have reasons of its own for not wishing to have the street opened in that particular place. If this should be the case, the builder, or the architect, if the structure is for a private client, must undertake the reconciliation of the independent ideas of the two departments. It would be a frightful breach of etiquette to have any consultation between the two departments on the subject, and the unfortunate go-between is obliged to make a compromise of his own, and submit it to the two sets of officials for their gracious approval, before he can proceed a step with his work. After this is done, however, his trials are by no means at an end. It is quite possible that the Board of Health may not approve of the system of drainage ordained by the sewer-department, or of some provision made by the street-department, and an order is issued to the builder or architect to desist from doing anything in accordance with them. This done, the Board of Health rests on its laurels. It has nothing to do with the street-department, or the water-department, or the sewer-department, or they with it, nor is there any communication between them. It has observed something going on which appeared to it objectionable, and has forbidden it. By whose orders the objectionable arrangement was made it does not know or care. Again it is the builder or the architect who is compelled to rush from one department to another, striving to reconcile the dignity and the principles of each with those of all the rest. Finally, he effects a compromise, and is allowed to proceed with his building, happy if the Harbor and Land Commissioners, or some other body armed with power to hurt him, do not fall foul of him before he gets the front up.

PRIVATE matters, added to the delays on our part caused by the fire in our office in November last, have kept on this side of the ocean until now the winner of the American Architect Travelling-Scholarship for the current year. The successful candidate, Mr. William Marbury Maccafferty, of Brooklyn, N. Y., is now in his twenty-first year. At the age of fifteen he entered the office of Mr. James E. Ware, and after spending a year and a half there and a shorter time in the office of Mr. R. H. Robertson, interrupted this method of acquiring an education and in place of it substituted the three years' course in the Architectural Department of Cornell University. After graduation he entered the office of Messrs. Renwick, Aspinwall & Russell and has found no reason for any further change until this opportunity of a year's travel abroad enticed him to earn a holiday.

THE architects of the District of Columbia have prepared a bill, to be submitted to Congress, providing that after a certain date no person shall practice the profession of architecture in the District without being furnished with a diploma, which shall be issued without examination to all architects actually practising in the District at the time of the passage of the Act, but shall be issued to others only on condition that they shall pass a satisfactory examination before a Board of Examiners, consisting of three members, at least two of whom shall be Fellows of the American Institute of Architects. An exception is made in favor of architects not resident in the District, who are to be permitted to compete for and superintend special buildings in the District without examination or diploma. Besides this, draughtsmen or assistants of

legally qualified architects are permitted to do professional work under the authority of their employers; and any person may design his own building. The projected law is a very sensible and fair one, and it would be greatly for the benefit of the public of the District to have it passed, but we suppose that there is not much probability that this will happen at present.

AN "American" piece is just now being played at one of the Paris theatres, which, although perhaps open to doubt as to the exactness of its delineation of American life, affords an opportunity for a novel piece of stage mechanism. The name of the piece is *Le Pays d'Or*, the gold country being California. The chief character is a young lady, naturally beautiful and enterprising, like all American damsels. For some mysterious reason, it becomes of great importance to her to be in California on a certain day, and it becomes of equal importance to some villains to prevent her from arriving there in time. The villains having intercepted, by means not explained, all other routes of communication between New York and San Francisco, the heroine is obliged, as a last resource, to cross Niagara Falls on a bicycle, which runs on a rope suspended across the Falls. Why the villains, after taking possession of the three bridges and the ferry boats, should not have also kept guard over the ropes stretched across the river for the use of bicyclists, we are not informed, but it appears that not only is no obstacle placed by the pursuers in the way of the trip, but the fair young person is permitted to take a passenger, in the shape of an "*audacieux amateur*," who makes the trip seated in a trapeze, which is suspended from the bicycle. It is needless to add that the heroine and her charge arrive safely on the Canada side of the river, and, having thus distanced pursuit, reach San Francisco before the baffled villains can overtake them.

OF course, the trip across the Falls on the tight rope is made in full view of the audience, and calls forth rapturous applause. Those who have seen the little wooden monkeys of the street peddlers run on a string, on a bicycle to which a weight is suspended, will have no difficulty in surmising how the feat is accomplished on a more important scale. The rope, which is stretched across the stage, is of wire, covered with hemp, and the bicycle is an ordinary safety machine, from which the rubber tires have been removed, leaving the wheels with a concave rim. The "*audacieux amateur*" hangs below the cable, in a trapeze suspended from a short iron bar, fixed to the front of the bicycle. To all appearance, the trapeze is of the ordinary sort, except that two large ornamental bells, covered with chenille, decorate the lower end of the ropes. These ornaments, however, conceal two masses of cast-iron, weighing about seventy pounds apiece, and the weight of these, with that of the trapeze and the "*audacieux amateur*," carries the centre of gravity of the whole affair so far below the cable that not even an earthquake could throw the bicycle off, and it always returns to its upright position from any other. There is thus no real danger whatever in the passage, although the joy of the audience at seeing the villains foiled is greatly heightened by what seem to be the perils of the undertaking. The effect is improved by an ingenious device for representing the cataract just behind the rope. It would, of course, be impracticable to pour a flood of real water having the smallest resemblance to Niagara Falls upon the stage of any theatre, but an almost perfect illusion is obtained by having the cataract painted on a screen, and pouring a thin sheet of real water over the painted representation. To accomplish this, a zinc gutter is concealed in the upper edge of the painted screen, and in the bottom of the gutter is laid a pipe, perforated with a great number of small holes. When water from the street mains is turned into the pierced pipe, the gutter is immediately filled, and overflows with tolerable uniformity throughout the whole length, sending down a sheet of water over the painting; and, at the bottom nothing is necessary but to catch it in another concealed gutter, from which it is led off to the sewer.

THE suit to subject the wardens of Holy Trinity Church, New York, to the penalties of the law, for having imported an alien laborer, that is, an English clergyman, under a contract as to his salary and duties, has been pushed through successive stages to the Supreme Court of the United States. It will be remembered that the court below decided

against the church, and imposed a fine of one thousand dollars as punishment for the crime; but the highest court has now reversed the decision. On what grounds the decision is reversed we are not informed. The law exempts from its operation dancers, singers, actors, and persons who are brought to the United States for the purpose of introducing a novel and useful industry. To which of these categories the Rev. Dr. Warren is assigned we cannot imagine; still less can we comprehend how he could lawfully have been imported unless invoiced under one of these heads. However, the decision settles the point that clergymen are to be classed, for customs purposes, with pugilists, ballet-dancers, and the other favorites of the law, and congregations will undoubtedly take notice of the fact. It is now reported that the Holy Trinity action, instead of being based on a *bona fide* complaint against the church, was entered by a rich banker as a test case, for the purpose of showing the absurdity of the statute. The costs have been heavy, but the banker may congratulate himself on having done a real service to the public.

THE discussion over the silver production of our own country adds a special interest to the account which is given in a recent number of *Le Génie Civil* of the greatest and richest silver mine in the world—that of Broken Hill, in the foot-hills of the Barrier Range, in New South Wales. This mine was discovered only a few years ago, the working having begun in 1885, but in five years after operations began the stockholders in the company which owns it had received back the whole amount of their investment more than twelve times over, and now, on a capital invested of sixteen hundred thousand dollars, the net profits of the operation of the mine are about five million dollars a year. The formation in which the mine is found consists of gneiss, alternating with quartzites and mica-schist, passing occasionally into talc-schist. The stratification is very much contorted, so that it is sometimes hardly discernible, and is interrupted by many intrusions of eruptive rocks, such as diorites, porphyry and granulites, forming dykes of small extent. Many veins of quartz occur, some of which are auriferous. The largest mass of silver is found in a huge vein, running from northeast to southwest, and forming a ridge, which is visible on the surface for about two miles, while in some places the blackened masses of the "cap" rock which covers the vein reach a height of fifty feet above the general surface. As to the depth of the vein below the surface, nothing certain is known as yet. The shafts of the mine have reached a depth of over three hundred feet, without any change in the average value of the ore, and there seems to be at present no occasion for going deeper. The "cap" of the mine consists of quartz and oxide of iron, mixed with manganese. Below this is the same mixture of quartz and iron, with the addition of decomposed feldspar, sulphate of baryta and carbonate of zinc. In this mass are scattered lumps and veins of carbonate and sulphate of lead, and carbonate, oxide and sulphide of copper, while numerous "pockets" occur, particularly at the points of contact of the feldspathic dykes with the vein, which are filled with soft, decomposed feldspar, mixed with chloride, chloro-bromide and iodide of silver, and enriched with garnets, scattered through it like plums in a pudding. This material is known as the "kaolin ore," or "garnet ore," and is very rich in silver. The ore taken from the mine is worked both for lead and silver. The production of lead averages about sixteen per cent, while the average yield of silver is about fifty ounces to the ton. It will interest photographers to know that the silver is extracted from the kaolin pudding by means of hyposulphite of soda, which dissolves out perfectly the chloride, bromide and iodide of silver. The other ores are treated in the usual manner for ores containing both lead and silver, the metal being first extracted together, and the silver then separated from the lead by means of zinc. As in most new mining camps, the cost of labor and materials of all sorts is very great, and nearly one-half the value of the metals obtained is paid out for extracting them; but the proportion of cost to value of product is steadily diminishing.

WE regret to learn the untimely death, at the early age of thirty-one, of Mr. Arthur Lyman Tuckerman, an architect of New York, whose most notable piece of design was the extension to the Metropolitan Museum of Art in Central Park. Mr. Tuckerman was a pupil at the *École des Beaux-Arts* in 1883.

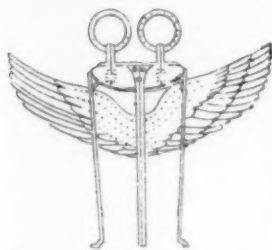
CAPITALS.¹—IV.

Fig. 49. Tripod of the Delphian Apollo.

forms; this claim would be indisputable if research of the kind offered a greater degree of certainty and left less room for hypotheses. We have given the results of the investigations into the development of the Ionic capital because its quite complex composition seems to us to suggest something of its origin.

To complete our work we should attempt the same inquiry in respect to the Doric capital. Its simplicity puts an additional difficulty in our way. It is not probable that a different course is to be adopted in examining the two capitals. Doubtless the same spirit guided the originators of both, and the same path must be taken in tracing forms so perfect, and so free from personal impress, from the finished state back to the original. We should, then, turn our search toward some primitively consecrated object. As has been remarked, the simplicity of the Doric capital presents the first obstacle to the solution of the problem. It has elsewhere been shown that the channellings of the shaft result merely from the arrest of the process of rounding it, just at the point where the unfinished column would gain in accent by preserving traces of the work that would have completed it. The separation of the shaft from the capital is left undecided, and a doubt exists as to whether the circular grooves around the top of the shaft mark the lower limit of the capital or simply prepare the way for its appearance just above; in which case the annulets of the capital would indicate the lower part, as the strigæ do not interrupt the ridges of the flutings. Lastly, the square, thick plinth is clearly distinct from the rest of the capital. The Doric capital would therefore be essentially reduced to what is called the echinus, adorned simply with annulets. Is it not possible that the latter, as in the case of the channellings of the shaft, are merely the remaining traces of the cutting of the echinus, as, for example, in the cases of the complicated chisellings, making a profile almost identical with that of the annulets, which the constructor purposely preserved for the bases of the Ionic columns, because of the accent obtained from this very incompleteness?

Finally, does not the form of the echinus—which we take to constitute the sole element of the Doric capital outside of the abacus, whose only function is to convert the column into an efficient support—suggest some object of importance corresponding to the altar for the Ionic capital? If we turn to the primitive Doric capitals and examine carefully the echinus, of which the echinus of the fifth-century capital is merely a skilful and artistic modification, we cannot help being struck with its likeness in shape to a vase or a flaring basin, with the upper edge quirked in to prevent the contents from spilling over. And we at once recall the characteristic basin, without handles or feet, which rests on the Delphian tripod.

In the early part of this sketch, in the section treating of the different capitals employed by the various orders as constituted since the Renaissance, it was remarked that when an architrave rests at one extremity on a wall, with the other borne on a column, the face of the wall is in a way disguised as a pilaster, with the details of the capital reproduced, as far, at least, as is possible in the transformation of a rounded surface into a flat surface. The Ionic capital even underwent this modification, although in the process it necessarily lost the contrasts on which its grace depends. Among the Greeks this never happened; it never occurred to them that the wall could be assimilated to the column as an architrave support. One is built in courses, the other is in principle monolithic, and certainly it is illogical to undertake to give both the same appearance. However, the course on which the architrave

rests was always strengthened by mouldings the *ensemble* of which, though lacking the development and amplex of the capital of the column, is not without a certain likeness to it, and is suggestive of the identity of their functions. The Greeks invented the parastas or anta. If we examine the end of a wall and the column facing it, we shall see that as the architrave was somewhat broader than the thickness of the wall the latter had to be carried out at the side so as to give it the

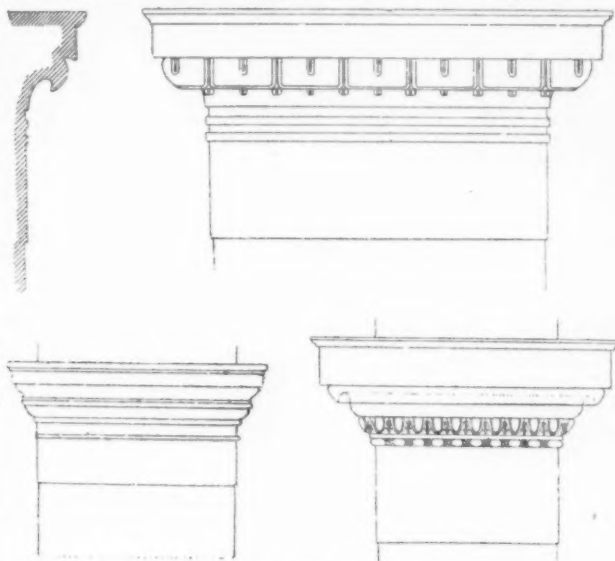


Fig. 50. Antæ Capitals.

breadth of the architrave, thus making a sort of small narrow pilaster; this was later so modified as to give the side face the same width as that toward the column. According to the Greek disposition the anta should appear to be merely the wall broadened to match the architrave; the column maintains its independence, and the few points which we have brought out concerning the origin of the column accord perfectly with this result; the column is a monument by itself. The Romans could not content themselves with this arrangement and, incapable of appreciating the delicacies of Hellenic art, they made lavish use of pilasters, to the detriment of the columns of which they were the false images.

The anta has, in Greece, we repeat, its peculiar profiles; these, extending around the angles, are sometimes carried quite around the edifice, as in the small temple on the Ilissus, drawings of which Stuart has preserved for us, and in the beautiful temple of Erechtheus and Athena Polias on the Acropolis of Athens. Sometimes the column is so close to the anta that the profiles of their two capitals run together; as in the fragment from the temple of Jupiter at Olympia which may be seen in the Louvre, and as in the supports of the architrave of the Macedonian Propylæa of Palatitza.

We give a few profiles of antæ capitals taken from different regions and belonging to different epochs. The richest is that of the Erechtheum in which it is even possible that the superimposition of the ornamented mouldings (Fig. 50) is somewhat overdone.

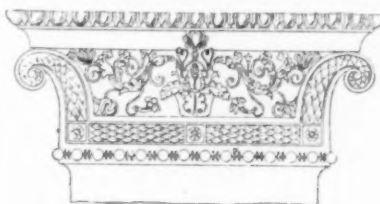


Fig. 51. From the Temple of Apollo at Miletus.

Aside from certain purely accidental forms, as for example, the supports with bulls' heads of a portico of Delos, there are other capitals which enter into the composition of a normally constituted edifice, forming there a sort of order apart and crowning genuine pilasters; but it is to be remarked that in these cases the reproduction of the capital of the circular column is notably wanting. Such, for instance, are those capitals of Asiatic Greece in the interior court of the temple of Apollo at Miletus, where they support the cornice crowning the wall; a sculptured frieze of the same depth connects them on the upper course of the wall (Fig. 51). They may be seen at the Louvre whither they were brought from Asia under the direction of MM. Rayet and Thomas, at the expense of

¹ From the French of Adrien Joigny, in Planat's *Encyclopédie de l'Architecture et de la Construction*. Continued from No. 846, page 166.

the Rothschilds. Their composition is elegant and, we hold, also suggests the figure of a square altar. We give likewise (Fig. 52) the capital of the antæ of the temple of Minerva at Priene, which is not without likeness to that of Didyma.

We have passed in review the Doric capitals, or those belonging to Greece proper, and the Ionic originating in that

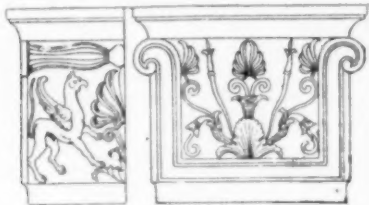


Fig. 52. From the Temple of Minerva at Priene.

part of Asia Minor comprised in Ionia, or those of Hellenic Greece. Athens being an old Ionian city has shown us both in their perfection. The lands of Greece likewise witnessed the creation of a third capital which singularly enough received the appellation of Corinthian. It is, in fact, remarkable that while the first two capitals are named from extensive districts corresponding to well-defined racial distinctions, the third owes its designation to a single city. It seems impossible that, in such an important creation of art as this, one city could have by itself counteracted the influence of two regions as influential as Doric Greece—to which Magna Græcia must be joined—and Ionian Greece, especially when we take into account the tremendous growth attained by this new and characteristic element in its later stages.

Corinth was situated on two seas, as it were, and it owed its fortune to this position. It was the great city of transit between Ionia, Greece and Italic Greece. The Oriental origin of the Corinthian capital is not to be questioned and it doubtless took the name of the city whence, at a later date, it seemed to have come. In the same way the painted vases now described as of Oriental style were termed Corinthian, because Corinth was the centre of traffic in them, and because many of them were manufactured there, in order to meet the immense demand for them, and to seize the opportunity thus offered for a valuable profit. Doubtless Phœnicia, whose arts were inspired from Chaldea and Egypt, was the originator of this capital; but Greece was in one sense its real inventor, for it was through the work of Greek artists that its forms were coördinated; although the elements were borrowed, the composition was Greek. These elements were derived from plant life—leaves, roses, volutes. We have attempted to indicate the primitive constituents of the Doric and Ionic capitals; vegetable forms play only a very subordinate part in them; and again when they do appear it is not as containing the germs of a capital in which the leaf constitutes the chief element. Now this, as has been shown, was a permanent principle in the Egyptian column, and not only the capital but the shaft itself was of plant derivation; this form existed to the exclusion of every other; nor were shaft and capital distinctly separated from each other as in Greece. In the latter country the shaft had its consecrated form, a circular monolith with an astragal dividing it from the capital; therefore the new capital was the only division of the column containing vegetable elements, and the *ensemble* was so composed as to rest on the astragal, just as in the Ionic order. At no period in the total development of ancient art was this principle of a clear and complete separation of the shaft and the capital disregarded. Thus willed the genius that presided over the creation of the Greek column. And it is for this reason that we have thought it necessary to assert, in our discussion of the Egyptian column, that it could not have been the immediate prototype of the Greek column, not even of that surmounted by the Corinthian capital.

Let us turn again to the temple of the Phœnician city of Paphos, an illustration of which we have already given, after an enlarged Roman medal (see Fig. 20). The capital is Egyptian; it has the general form of the flaring bell, and, notwithstanding the engraver's transcription of the disposition of the leaves adorning it, there is no question as to their presence, at least. But there is, apparently, no abacus; the entablature is disposed in the Egyptian manner, a die surmounting the capital, with its principal face in the same plane with that of the architrave. Along with these Egyptian features is found a shaft furnished with an astragal; this is no longer Egypt; the shaft is disposed after the Greek manner, with astragals and base. We apprehend here the transformation; that is to say, the transition between the Egyptian creation and the Greek.

This quasi-Egyptian form occurs in a Greek capital of a period far removed from the date of its origin, and bears witness to the maintenance of the primitive type. We refer to the capital of the doorway in the Tower of the Winds at Athens; the leaves springing out above the astragal suggest those of the Corinthian capital, which had already been formed, but the long, flat leaves rising behind these resemble more closely those of the Egyptian capitals. They do not curl over at the end, and therein lies one of the most characteristic distinctions between the Greek capital and the Egyptian. In the latter, whose original type is a cluster of leaves, the architect was not called upon to present a solid body, on which these leaves were applied as an ornament, for, strange as it may seem, it was the foliage or other plant element which supported the die of the architrave. In Grecian architecture, on the other hand, the leaves are merely accessory, and the artist never neglects to indicate the fact plainly by showing the basket, or rather, vase, constituting the solid part and having the look of being capable of forming a substantial support. When, in the course of the development of the capital, volutes and cauliculi were introduced, these never figured as a support, but as a decoration, curling over on reaching the abacus simply because of their supposed weakness. The reinforcement which this ornamentation brings to the abacus is, of course, genuine when the capital is of stone, since it helps to form the entire mass; but the Greeks always executed the details so that no one should be deceived as to the true nature of the decorative foliage. There is, then, it will be said, no absolute relationship to be established between the Egyptian foliage and the Greek, and it is no longer clear how one could have been the prototype of the other. Such was, however, the fact, but only in the sense that it suggested to the Greeks the thought that, by the addition of a plant element, a new style could be created; they made their selections and applications in their own way; they demanded, first, a solid form for the body of the capital, exactly as in the other Greek capitals already in use. There was no imitation of antique and exotic forms; there was, one might say, simply a manifest desire to do what others had done. The solid core which the foliage envelops and adorns is, as was just remarked, a basket similar to that borne by a man seen in Figure 53, or like the one presented in Figure 54, from a mural painting at Pompeii. These examples are selected for the purpose of making our thought clear, but, if they seem to the reader too recent, it must be remembered that the objects represented by them, because of their simplicity, must reproduce a very ancient type. However this may be, though its origin was at once forgotten, it remained, without exception, the essential element of the Corinthian capital. It is doubtless the *Kalathos*, a basket for the reception of the gifts of Ceres, a terra-cotta vase of the same form and name for those of Bacchus, etc. Therefore, its use could be justified everywhere.

It has been thought that the marble Roman candelabra, made up of superimposed baskets of fruit, were intended to represent the baskets filled with flowers and fruit which the country people brought in, and which were so piled up one above another that they might be offered up to the divinity by touching fire to them. The whole rests on a triangular altar, and, when of bronze or marble, it was surmounted by a large cup filled with inflammable materials, thus recalling the primitive offering.



Fig. 53.



Fig. 54.

As reference has been made to the *Kalathos* of Bacchus, it may be observed here that the Corinthian capital occurs in a great many edifices connected with the worship of Bacchus, and particularly in Choric monuments. The most ancient example of a genuinely Greek Corinthian capital that has come down to us in Continental Greece is that of the Choric monuments of Lysicrates, dating from 334 B. C. The disposition of this capital was destined to attain later, at Rome, a higher degree of perfection, but not of grace. On the frieze is recounted, in a bas-relief of remarkable execution, one of the episodes in the life of Bacchus. The crowning of the monument is a complicated cluster of leaves and volutes, and bore originally a sort of triangular abacus with concave faces to carry the tripod, which was doubtless the reward bestowed upon Lysicrates.

This last disposition reminds us of those three-faced Corinthian capitals, two examples of which may still be seen on the Street of the Tripods, beneath the southern wall of the Acropolis, and which supported in a similar fashion a tripod. If these examples are not very ancient, they doubtless reproduce more primitive dispositions, and their three-faced capital may have been one of the prototypes of the capitals in edifices which would assume, like those of the other orders, a quadrangular disposition, while at the same time preserving the concavity of the four faces of the abacus—a detail already marked in certain Ionic capitals.

We will cite also as a purely Greek capital that of the pronaos of the temple of Apollo at Miletus, where the elements which go to make up the Corinthian capital in its perfection are already shadowed forth. The temple of Olympian Zeus at Athens presents us this capital in its complete form, but its resemblance here to the best Roman types leads us to think that the colonnade which it adorns belongs to the works constructed under the emperor Hadrian. In one feature it differs from the Roman capitals; the angles of the abacus are extremely sharp, not having been chamfered off.

To recapitulate, the Corinthian capital is derived indirectly from the Egyptian, but its leaves do not, as in the latter, belong to the column; it borrowed from the older country only the idea of plant decoration. In Greece the leaves in a way envelop and decorate a genuine but ordinarily very simple capital, and their semi-independence of this solid core reveals itself in their flexibility, whether they are represented as curling over from their own weight, or whether at their point of contact with the abacus they gracefully bend, yielding to this immovable obstacle. It has been said that this curvature of the leaves, in either case, differentiated between the Egyptian and the Greek capital.

We have reviewed all the different kinds of Greek capitals. The different orders to arise and the variations in the proportions and details of the columns and entablatures are not matters to be discussed here. But the capitals are clearly distinguished by certain forms and by certain curves introduced into them, and which are peculiar to each. The Doric capital is remarkable for its simplicity; it is satisfied with the contrast of plane with convex surfaces, of straight lines with the circle. Its echinus, the profile of which was at first a sort of depressed circle, gradually lost more and more of its curvature until it became almost a straight line. Were the other curves, the spiral of the Ionic capital and the curling leaf of the Corinthian, the only ones possible, and so far as the capital characterizes the order was the number of the orders necessarily restricted to three? This is a question which we should like to answer here, not for the sake of airing vain speculations, or of attempting to explain what the monuments have already sufficiently demonstrated, but to put in its proper light the truth that the noblest productions of art are always in accord with the laws of reason, although we at the same time recognize the fact that successful artistic creations are always the pure work of sentiment. But this discussion must be reserved for a treatise on the orders as a whole.

[To be continued.]

REVIVAL OF CHRYSELEPHANTINE SCULPTURE.—An eminent Berlin sculptor is attempting to revive the old Greek art of gold and ivory sculpture, and is engaged upon a bust concerning which a correspondent of the London *Athenæum* writes: "As to the technique, the whole flesh is of ivory cut into thin plates with the grain, not, as in the case of the statue of De Quincey, against it. Of these plates there are thirty-four, covering the whole flesh surface. They are eight millimetres thick, except in the case of the nose, which is one solid piece, as otherwise the nostrils would be unmanageable, the same being the case with the ears. The most important point, however, is the method by which the plates are fastened to each other and to the wooden block, which is solid, and carved to exactly correspond with the inner surface of the ivory. Small steel pins join each plate, the ivory being bored to receive them (this boring, by the way, the sculptor understands to be the meaning of *toreutic*). This method of clamping is also used to secure the plates to the wood. Glue, he thinks, would not be strong or delicate enough for such work; while at the same time by the former method there is less liability to damage owing to the warping of the wood. The whole bust is of wood, the hair and drapery being overlaid with thick gold-leaf, which certainly gives a fine effect, especially as regards the hair. The eyes are of onyx, the pupil being painted. The eyelashes are painted, as well as the eyebrows, and a little hair by the ear. The effect of the last is very bad, as is also that of the hard line between the gold hair and the flesh, perhaps unavoidably due to the difficulty of joining the two different materials. So in the work of the ears and the nostrils we see the same difficulty in managing the material. The lips are tinted, but not the cheeks." The bust has been bought by the Emperor.

EQUESTRIAN MONUMENTS.—XLVIII.

THE HOUSE OF SAVOY.



Victor Emmanuel II, Udine. Crippa, Sculptor.

THE absurdly mediæval utterances of the young German Emperor which brought about the riots in Berlin itself during the last days of February, 1892, make one suspect that the new dynasty of German Emperors may be short-lived. And when one contrasts the brutality with which William II comports himself toward the lower classes with the tender solicitude for people of the same degree which King Humbert displayed a few years ago during the cholera season, it seems plain that the dynasty of the House of Savoy has a far better chance of existence than has that of the House of Hohenzollern. Yet the difficulties that confront Humbert are more serious and complicated than those that, in the natural order of things, William has to deal with: for in spite of an outward unity there are many elements of inharmoniousness which inhere in the several Italian States, heirlooms from the times of freebooter and condottiere, and most unfortunately for Italy there does not seem to be a statesman like Cavour who has the address to meet the situation.

The movement which resulted in the unification of Italy may be considered as starting from the Congress of Vienna, which did what it could to restore all Europe more or less closely to the position in which it was before Napoleon went into the cartographic business. One of the arrangements made at that time was the establishment of the Lombardo-Venetian kingdom under the suzerainty of Austria, an arrangement which at once so suggested the revival of the old



Victor Emmanuel II, Florence: E. Zocchi, Sculptor. From *Illustrirte Zeitung*.

conflicts of the Guelphs and Ghibellines that it had a sensible effect throughout all Italy. Naturally this arrangement was more obnoxious to those Italian States which bordered on the new kingdom than to the States farther south, while to the unfortunate inhabitants of the district the overbearing conduct of the Austrian governmental officials was obnoxious to the last degree.

The most important of the neighbors of the new kingdom was the kingdom of Sardinia, ruled over by the House of Savoy, who, by the same Congress of Vienna, had had their domain enlarged by the addition of the territory of the Republic of Genoa. The kingdom was governed at this time by Victor Emmanuel I, who shortly

¹ Continued from No. 841, page 92.

was confronted with the evidence of a popular movement against monarchical institutions, a movement in which the head of the younger branch of the family, Prince Carlo Alberto, was somewhat interested. The ostensible excuse for this movement was an alleged hatred of the neighboring Austrians. Victor Emmanuel I, not feeling himself able to cope with the seditious spirit, resigned in favor of his brother Carlo Felice, who, in his turn, had to yield before the revolutionary wave that swept over Europe in 1830 and, dying in the following year — thus causing the extinction of the elder branch — was succeeded by Carlo Alberto himself, who, after endeavoring to

uel to turn to his former ally, Louis Napoleon, who, from first to last, always felt that the salvation of his usurped powers depended on keeping the attention of thinking men turned away from himself and absorbed in the accomplishment of those frantic pursuits of glory



Victor Emmanuel II, Verona. Borghi, Sculptor.



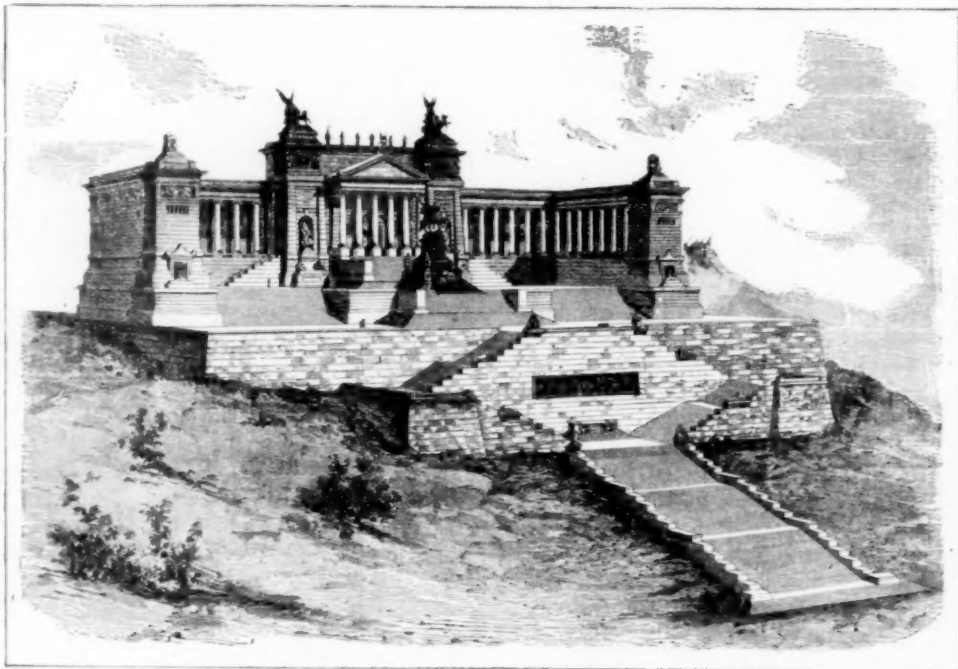
Victor Emmanuel II, Genoa. Barzaghi, Sculptor.

maintain the former order of things, in his turn gave way to that greater revolutionary movement of 1848, adopted a constitutional form of government and about the same time took the field against Austria. Fate did not favor him and he was at length signally defeated at the battle of Novara, March 23, 1849, and believing that matters were beyond cure incontinently disappeared, leaving the reins of government in the hands of his son, Victor Emmanuel II, who already, at Novara, had proved a brave and able soldier.

Seemingly the young king had inherited the liberal principles which his father in his own early youth had entertained; but, of firmer fibre

which his uncle had made so attractive to his mercurial subjects. Magenta and Solferino brought the brief campaign to a close and the Peace of Zurich secured Lombardy to the king of Sardinia. To be sure, Savoy and the County of Nice had to be ceded to France in payment for her help, but this loss was speedily made good by the *plébiscite* which added to Sardinia the Grand Duchies of Modena and Tuscany and the Æmilian provinces of the Papal States. At this stage the new aggregation of States took the name of the Kingdom of Italy and the whole country was put under arms, as well to guard against reprisals that might be attempted by Austria as to be in a

position to take advantage of the internal political movements which were taking place throughout all Italy, which for years had been honey-combed by the active workings of republican secret societies. Chief and most magnetic of all the leaders in these movements was Garibaldi, who had frankly associated himself with Victor Emmanuel in his struggle with Austria and who, when affairs in the north had become settled, turned his attention to the



First Prize Design in the First Competition for a Monument to Victor Emmanuel at Rome, by Bruno Schmitz. From *L'Illustrazione Italiana*.

Russia in 1854 and at once joined the Anglo-French alliance.

The growing importance of Sardinia had by this time excited the apprehension of Austria, and in 1859 she moved to the attack. In this situation nothing could be more natural than for Victor Emman-

movement in the south which had become centralized in Sicily. Taking the leadership here he rapidly overcame opposition, secured Naples and drove the Papal troops before him. On the other hand, Victor Emmanuel proceeded southward and joined Garibaldi, who

had secured the annexation of the Two Sicilies to the Kingdom of Italy by a popular vote, and with him entered Naples, November 7, 1859. Another series of *plébiscites* followed, the result of which was that with the exception of the Roman and Venetian provinces all Italy was united under the rule of Victor Emmanuel, who had as the power behind his throne the sagacious Count Cavour. The siege of Rome in 1870, the wresting of temporal power from the Pope, and the final acquisition of Venetia from the Austrians completed the unification of Italy and raised Garibaldi and Victor Emmanuel to the rank of demi-gods in the estimation of the Italian masses.

The epoch was a most interesting one and its incidents impressed themselves vividly upon a people particularly receptive of emotions,

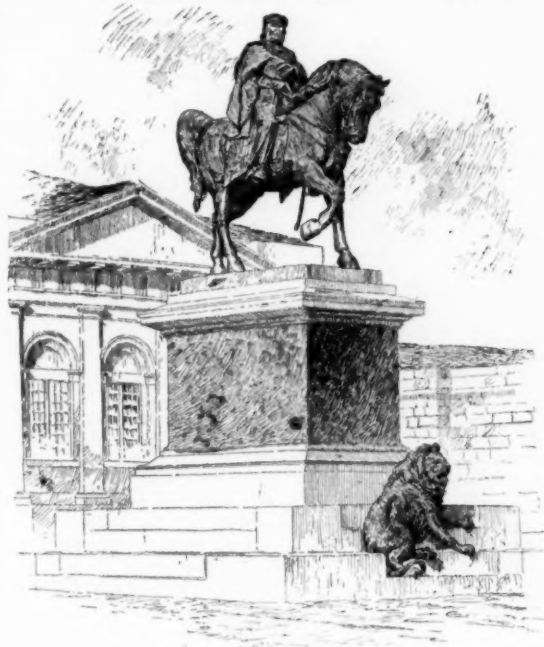


Victor Emmanuel II, Bologna. Monteverde, Sculptor.

a people, moreover, of whom a large percentage gain a livelihood in the productions of works of art, and that these impressions should be put into enduring and obvious form was the most natural of effects. What would, then, elsewhere have been the result of years of effort was in Italy an almost spontaneous growth. A grateful and artistic nation at once set to work and with great rapidity produced monuments and statues commemorating battles, treaties, peace, statesmen and leaders. Cavour, Lamarmora, Mazzini, D'Azeglio, Garibaldi and most frequently of all, the king, have had statues erected in their honor in various parts of the kingdom: almost all of these are interesting; all certainly manifest great aptitude and expertness on the part of the modellers, but few of them have more than a pictorial

Seen from the front, this statue offers one of the most ludicrous sights that even modern Italian art has produced.

The first equestrian statue of Victor Emmanuel is the marble one at Rome, in the open arcade that overlooks the Piazza del Popolo, and as this was modelled during the king's life-time by a Milanese sculptor, the artist may have had sittings from the king. Its coming



Garibaldi, Brescia. Bordoni, Sculptor.

to Rome was due to the Prince Doria, who, while acting as the first mayor of the city, heard that the statue was in hand and gave an order for it, only to find that, when he left office at the end of the year, the municipality refused to ratify his order and he must pay the 35,000 lire out of his own pocket. Some time after, however, desiring to make certain improvements in the neighborhood, at his own expense, he obtained the right to make them, on paying 50,000 lire, but succeeded in persuading the officials to accept at net cost, in partial payment the equestrian statue of the king, which, some time in 1878 or '79, was placed in the loggia built for its reception on the Pincian Hill.

Just as Rome owes to one man this equestrian statue of the king,



Lio Gangeri, Sculptor.



A. Allegrette, Sculptor. (Medalled).



Gallori, Sculptor.

Models submitted in the First Competition for the Statue of Victor Emmanuel II, Rome. From *L'Illustrazione Italiana*.

interest. Most of them seem to clamor for attention rather than to possess the quiet dignity of assured merit.

This air of unrest is particularly noticeable in the equestrian statues which commemorate this epoch, and in none of them is it so marked as in the earliest, Balzico's extraordinary statue¹ of the Duke of Genoa, the brother of Victor Emmanuel, who like a ballet-master steps from his dying horse on the Piazza Solferino at Turin, and with the grace of a *première danseuse* poises his left leg in the air.

¹ See the *American Architect* for March 17, 1888.

the first one erected, so does Florence owe its statue, one of the last unveiled, mainly to the efforts of the syndic Peruzzi who collected 70,000 lire and procured from the city a grant of 50,000 more. The necessity of providing a place for this statue which Zocchi was to model, together with the dread raised in the minds of thinking men by the approach of the cholera, caused the municipality to determine to wipe out the section in the centre of the city known as the Mercato Vecchio, the picturesque but foul and crowded Ghetto or Jews' quarter of Florence, and make there a handsome open square. This was done and the place is now known as the Centro, and here

on September 20, 1890, in the presence of the king and queen, the bronze statue, more than life-size, was unveiled.

The difficulty that always attends the attempt to be in two places at the same time very likely prevented King Humbert from unveiling on the same day—a favorite anniversary day, since it was on September 20, 1870, that Rome opened her gates to Victor Emmanuel and all Italy was united—the equestrian statue of his father, by the sculptor Giulio Tadolini at Perugia: the ceremony at Perugia, which disclosed to public gaze a statue which Humbert declares to be one of the best likenesses of his father, actually took place some weeks later.

Just as the year 1890 was marked by the erection of these two statues, so were the years 1883 and 1888 signalized by the erection in each year of two other equestrian statues of the king, for in the year 1883 the statue by Crippa was unveiled at Udine and that by Borghi at Verona, while in 1888, Barzaghi's statue at Genoa was erected and that by Monteverde at Bologna was unveiled at the eight hundredth anniversary of its famous university.

All of these are simple portrait groups, not greatly idealized, and relying largely for their interest and merit upon the picturesqueness inhering in the character and qualities of the king himself—not forgetting the fact that on state occasions he was not at all averse to arraying himself in all the pomp and splendor that military etiquette would allow. But at Venice a more ambitious scheme was adopted: there, besides the equestrian group, which is more animated and perhaps better than any of the others, the sculptor Ferrari added to his pedestal two large groups in bronze, one of which—the one at the rear of the pedestal representing "Venice aroused"—is in intention as fine a group as any Italian sculptor in our time has made. The real merit of this auxiliary group altogether outweighs that of the equestrian statue above, though that too is interesting.

None of these statues is wholly satisfying, or altogether adequate to the opportunity. All give evidence of the fatal facility which academic teaching and the accessibility of schools seem to furnish to most modern sculptors in default of that divine gift of real genius, which only a few can have. Perhaps the really great and satisfactory statue of the first king of Italy will be found in the one, by Chiaradia, which is to be the chief feature of interest in the great national monument that is now building on the Capitoline Hill at Rome, near the Church of Ara Cœli. This great monument, of which a very inadequate representation¹ was published a few weeks ago, is being built after the designs of a young civil engineer, Signor Giuseppe Sacconi, who only provided the general design and has had to call to his aid sculptors for the many auxiliary groups of carving as well as the great equestrian group. Signor Sacconi received the prize in the second competition which closed December 15, 1883, the corner-stone being laid in the fall of 1884. It may be remembered that the first competition which closed September 23, 1881, was open to artists of all nations, and models and designs were actually submitted by an unusually large number of foreigners, to say nothing of the host of able and patriotic native artists. The first prize in this earlier competition was carried off by Bruno Schmitz with a design which is not altogether unlike the monument actually being constructed.

As for Garibaldi, it cannot be doubted that the popular love for him was at least as strong as it was for the king, but never a mayor

or syndic or committee-man of any kind could hope to better himself by promoting the erection of an equestrian statue of the red-shirt wearing hero, whereas, from the descendant of the king what might not be hoped for by way of reward! The nation was far from ungrateful, but it was less effervescent than in the case of the king. Still, two competitions were held for national monuments, one to be erected at Rome, the other at Milan, and in both cases equestrian figures were suggested by many of the competitors. Nothing resulted from these endeavors, however, and though there are statues and monuments to Garibaldi, the only equestrian statue, we believe, is the one by Bordini at Brescia with its replica at Verona.

After a man has achieved eminence and secured fame, not only his own previous history becomes of interest but the histories of his ancestors as well: but in the case of Victor Emmanuel, it cannot be said that his ancestors deserve mention merely because of the greatness of their descendant. His father Carlo Alberto had in mind himself to accomplish very much what his son succeeded in doing, and a people mindful of this can rejoice that his memory will be preserved in the bronze equestrian statue,² by Marochetti which

faces the Palazzo Carignano at Turin, was erected in 1861, twenty-three years after there had been set up in the Piazza San Carlo in the same city an equestrian statue, by the same sculptor, which represents Emanuele Filiberto, the "Iron Headed," Duke of Savoy, an ancestor who played an important part in the wars waged by Charles V. This statue which is, perhaps, the most noted work of its prolific author represents the duke as just sheathing his sword on his triumphant return to his own realm. One story has it that this group was ordered and paid for by Carlo Alberto, while another relates that the sculptor himself presented it to the city and that Carlo Alberto recognized his generosity by creating him a baron.

Turin is not badly off in the matter of equestrian statues, for besides the three already mentioned and the two groups,³ Castor and Pollux, by Sangiorgio, which guard the entrance to the courtyard of the royal palace, there is in the palace itself, in a niche at the foot of the staircase, the equestrian figure of still another member of the House of Savoy, Victor Amadeus I, a contemporary of Louis XIII of France. This statue, the work of the sculptors Rivalta and De Fries is exceptional amongst statues in that the pedestal, horse and accessory figures are of marble,

while the figure of the duke is of bronze. The work was executed about 1620, and is mainly the product of Rivalta's skill, Adrian de Fries, a pupil of John of Bologna, only modelling the captives whose duty it is to uphold the body of the rearing horse.

Another equestrian statue of Carlo Alberto, the work of the same Sangiorgio who modelled the groups at the entrance to the Royal Palace at Turin, is to be found at Casale.

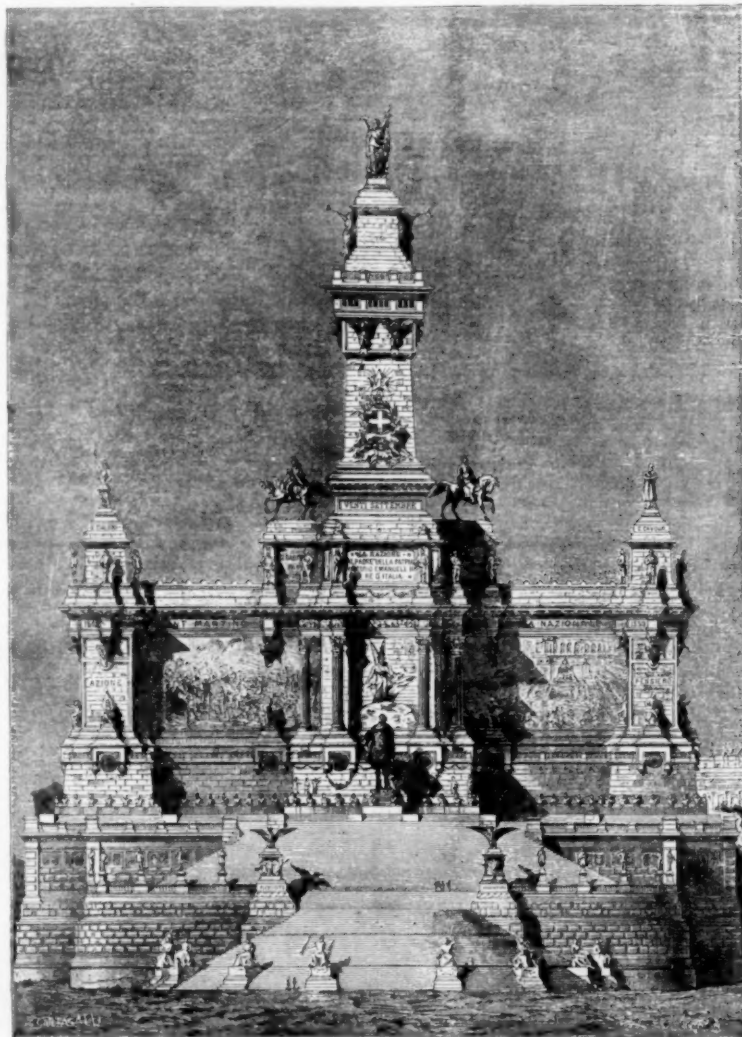
VICTOR EMMANUEL.—Victor Emmanuel II, King of Sardinia and first King of Italy, was born at Turin on March 14, 1820, and succeeded his father in 1849. He sent a contingent to the Crimean War, and was represented at the Treaty of Paris. He defeated the Austrians by an alliance with France in 1859, and was proclaimed King of Italy in March, 1861; obtained Venetia in 1866 and Rome in 1870. He died January 9, 1878.

DUKE OF GENOA.—Ferdinand Albert Amadeus of Savoy, Duke of Genoa, was the second son of Charles Albert and a brother of Victor Emmanuel. He was born in 1822, and entered the army at an early age. He distinguished himself as a soldier, particularly at the battles of Custoza and Novara. He died in 1855.

¹ See the *American Architect* for January 30, 1892.

² See the *American Architect* for October 1, 1887.

³ See the *American Architect* for March 17, 1888.



Second Prize Design in the First Competition for a Monument to Victor Emmanuel at Rome. By Luigi Boffi. From *L'Illustrazione Italiana*.

MONTEVERDE.—Giulio Monteverde was born at Bristagno about 1836. His chief works are "The Genius of Franklin," purchased by the Khedive of Egypt; a group of "Jenner Inoculating his Little Daughter"; an equestrian statue of Victor Emmanuel at Bologna, and a monument to Riva at Turin. His "First Inspirations of Columbus" belongs to the Boston Museum of Fine Arts.

SANGIORGIO.—Abbondio Sangiorgio was born in Milan in 1798. His principal works are the equestrian statue of Charles Albert at Casale; the horse-tamers in front of the Royal Palace at Turin; the statue of "Peace," in a chariot with six horses, on the Arch of Triumph at Milan; and a statue of "The Prodigal Son," made in 1840 for the Empress of Austria. Sangiorgio died in 1879.

GARIBALDI.—Giuseppe Garibaldi was born at Nice, July 22, 1807, and became a sailor. From an early age he was concerned in political conspiracies, and led an eventful and dangerous career, at one time fighting in South America for the Republic of Uruguay against Brazil. Having joined the Italian patriots in the war against Austria in 1848, he took part in the defence of Rome against the French the following year. Being exiled, he again visited America, and then retired to the island of Caprera. In 1859, he offered his services to the King of Sardinia against the Austrians, and, with his body of volunteers, won several victories. In May, 1860, he landed at Marsala with a small army organized for the liberation of Southern Italy from the Bourbons, in which enterprise he quickly succeeded, taking Palermo, Messina and Naples, which were annexed to the kingdom of Italy. The next few years were passed at Caprera, varied by an unsuccessful attempt to incite the Hungarians to revolt (in 1862), and a visit to England in 1864, when he received an ovation. In 1866 he again took the field against the Austrians, but was unsuccessful. In the summer of the following year, without the authority of the Italian Government, he raised an army for the liberation of Rome, was arrested, but escaped and defeated the Papal troops at Monte Rotondo, but was himself overcome at Mentana, November 4, 1867, by the Pontifical soldiers and the French expeditionary corps. He was again imprisoned, but released and retired to Caprera. He offered his services to the French nation during the Franco-Prussian War. He was elected a member of the Italian Parliament in 1875. He died on June 2, 1882.

CHARLES ALBERT.—Charles Albert, King of Sardinia, was born in 1798, and ascended the throne in 1831. He made liberal reforms in the government, granted a constitution, and put himself at the head of the movement for Italian independence in 1848. He gained several victories over the Austrians, but was defeated at Novara, March 23, 1849. He abdicated in favor of his son, Victor Emmanuel, and died in July of the same year.

EMANUELE FILIBERTO.—Emanuele Filiberto, Duke of Savoy, surnamed the "Iron-headed," was born at Chambéry in 1528, and was a son of Charles III of

Margaret, a sister of Henry II of France, and thus recovered a portion of his paternal domains, which had been seized by the French. In 1574 he obtained from Henry III the evacuation of all Piedmont, the condition of which was greatly improved by his wise statesmanship. He died in 1596.

VICTOR AMADEUS I.—Victor Amadeus I, Duke of Savoy, was born at Turin in 1587. In 1635 he was the ally of France in the war with Spain. He married Christine de France, a sister of Louis XIII. He died in 1637, and was succeeded by his son, Charles Emmanuel II.

[To be continued.]

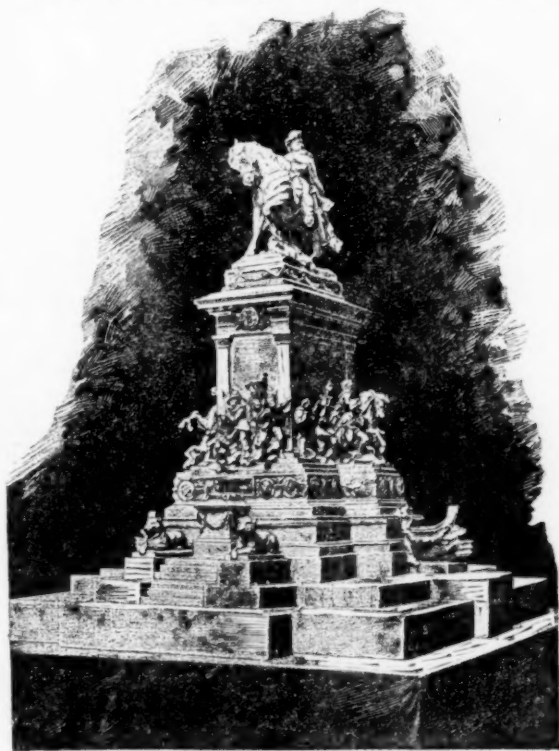


Emanuele Filiberto in the Piazza San Carlo, Turin. Marochetti, Sculptor.

BOILER EXPLOSIONS IN GERMANY.

—According to official statistics there were last year fourteen boiler explosions in the German Empire. The probable causes were as follows: In five cases a local deterioration, arising from various causes, of the boiler-plate; in two cases want of water; in two cases the boilers were too old and worn out; in two cases internal incrustation from the use of impure water; in one case faulty manufacture; in one case too high pressure; and in one case inferior material. Seven persons lost their lives through these accidents, one was severely, and ten less severely, injured. One of the exploded boilers was situated in a brewery, and the brewer himself attended to it, or, in his absence, the foreman; the safety-valve was usually loaded with five bricks and would not open even with high pressures. Two men were killed by this explosion, including the brewer. In another case the boiler was a tubulous one, and one of the lower tubes being leaky, another had been put in during the night. At six o'clock in the morning the boiler commenced work; a little before seven the work was stopped for a short time and at half-past seven the explosion took place with eight atmospheres pressure. The heated steam from the burst

pipe scalded the stoker so severely that he died a few hours later. The tube, which had just been put in, and which exploded, had, it was stated, been tested at 20 atmospheres pressure, and it was torn open for a length of 10 1-2 inches. During the last fourteen years 214 boiler explosions have happened in the German Empire, by which 194 people were killed, 106 severely and 277 persons less severely injured. In 63



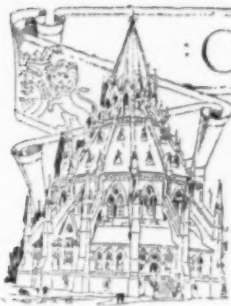
Competitive Design for Monument to Garibaldi: Ferrari, Sculptor. From *L'Illustrazione Italiana*.

Savoy. He entered the service of the Emperor Charles V in 1548, and in 1553 obtained the chief command of the Imperial army in the war against the French, over whom he gained a great victory at Saint-Quentin in 1557. He married



Competitive Design for a Monument to Garibaldi at Rome: Gallori, Sculptor. From *L'Illustrazione Italiana*.

of the above 214 explosions want of water has been considered the cause, faulty construction in 32 cases, and too high steam-pressure in 24 cases. —Engineering.



CANADA:

COMING CONVENTION OF THE EDUCATIONAL ASSOCIATION OF THE DOMINION OF CANADA.—SOME UNSATISFACTORY RESULTS OF THE MODERN EDUCATIONAL MOVEMENT.—EXAMINATIONS HELD BY THE ONTARIO ASSOCIATION OF ARCHITECTS.

THE Educational Association of the Dominion of Canada, organized last summer, will hold their first annual convention in Montreal early in July this year, under the presidency of the Hon. G. W. Ross, Minister of Education for the Province of Ontario. The convention will be conducted much on the same lines as the convention of the American Association, held last year in Toronto. It will last four days, the first of which will be taken up by the "gathering of the clans," welcome meetings and a *conversazione*. During the remaining days, meetings of the various sections will be held, and in the evenings meetings to which the public will be admitted will be arranged. It is intended to organize five sections: kindergarten, public school, normal, training and instruction and university education. It is expected that the Association will receive liberal grants from the Dominion and the Provincial Governments, and possibly from some of the principal cities.

The Western world seems to be going in fast and furiously for education just now. There is a wave of education flowing over it, which threatens to drown other interests. Any one who says a word against education, indiscriminate education, is looked on as a very ogre, who would hinder the humbler, or poorer rather (for humility is not a trait of that class) members of the community from their just rights; but, all the same, there is such a thing as over-educating a country. Education, some say, belongs to certain classes, but, if all classes are to claim it and receive it, there will be no one to do the work which the uneducated classes have done heretofore well and efficiently, which they certainly will not do if they are educated. For instance, we educate our country bumpkins and our farm laborers, or even our farmers' sons and daughters and the consequence is, they will not stay on farms; they turn up their educated noses in the presence of a manure heap, and they flock into the cities to learn a trade and exchange the free country life for the confines of a town, and the open fields for the ill-smelling factory. And yet those who go in for the education of the masses say a farm-hand will farm better if he be educated; but he doesn't. He does not even try to; he considers himself above farming, and immediately makes for the nearest town of any pretension. You sometimes come across a school-building standing by itself in the back counties, no cottages to be seen, but it happens to be the centre of a district to which the children have to come three and four miles in all weathers to learn that which will unfit them for the calling natural to them, the calling of their fathers. And the result: towns overstocked, hundreds of unemployed, every business, every profession crowded with half-educated practitioners, doing harm to the public and no good to themselves, and few able to make a livelihood; while the properly-educated

class, is swamped by cheap-jacks, and all the while farms lie idle for want of hands, and magnificent soil is barren. Then comes the formation of associations, professional and trade, men banding together to protect their rights, to protect themselves, or being banded together in public interests; Government grants given to aid the associations against that which Government grants have raised a destroyer. Government paying first to raise a blight which shall spread over the land, and then paying again to devise means to destroy it. The farm-hand or the farmer's son does not come up to the standard of the Association he thinks it is his right to join; he is thrown over, unable to earn a livelihood in the way the Government has thought it best for him that he should, and distress and grinding poverty are the outcome; or else, by good luck, he secures the bread he has no right to, and drives out the educated class. The barrister's son takes to farming, and the farm-hand to the law.

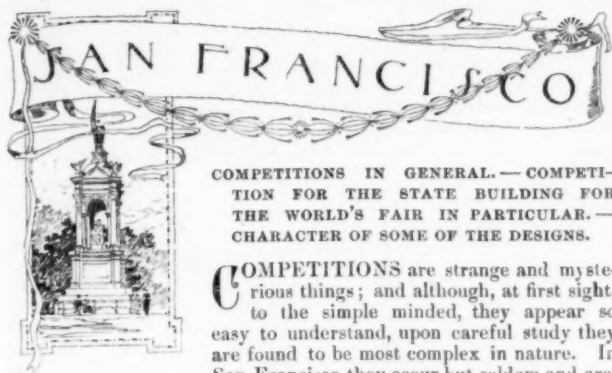
The Ontario Association of Architects (one of those associations the outcome of indiscriminate education, though not as yet assisted by Government funds) is preparing to hold its examinations in the spring, April being the month fixed.

The programme of the examination has been prepared, and about sixty applications have been received from candidates. Three examinations—the first and second intermediate and the final—will be held concurrently, so that the examiners will have no easy task before them in looking over some sixty papers. The Board of Examiners consists of eight members, with Professor Galbraith of the School of Practical Science as chairman. The students of the Architectural Club have shown a most praiseworthy interest in the coming tests of their efficiency, and have all the winter been working towards preparing themselves. They have got some of the examiners to lecture to them on their special subjects, and no pains have been spared on the part of architects interested in students to help them forward as much as possible. Education for the profession has received an impetus that will be long in dying out, for at last students, or I ought rather say, would-be architects, have discovered that they must work here as in older countries. The practice has been for a fellow, as soon as he has put in as much time as he thinks necessary as clerk in an architect's office, to put up his name as architect and begin making drawings and selling them cheap to speculating builders; or, if he can get anybody to trust him with a "job," he undertakes it and runs his chances on it: a fine thing for the public! But the end of this thing has come, and men passing the final examination of the Ontario Association may be considered qualified to practise and entitled to the name.

TWO BIG STATIONS.—The question is frequently asked, which is the larger structure, the new station erected in Jersey City by the Pennsylvania Railroad Company or the Grand Central Station in this city? As a railway station pure and simple, the last named is the larger. As a railroad station and ferry-house combined, the Pennsylvania Company's buildings cover the more ground. The Grand Central Station consists of the great arched structure and the sheds for incoming trains on the east side of it. These buildings are 688 feet long and 374 feet wide. They cover 257,312 square feet of ground. The new train-shed of the Pennsylvania Railroad is 651½ feet long and 258 feet wide. It is the largest roof arch in the world, covering as it does twelve tracks. The St. Pancras station in London is next to this train-shed in size. The design for the Pennsylvania Company's building was taken from the large railroad station in Frankfort-on-the-Main. The total length of the Pennsylvania's ferry-house and railroad station combined is 912 feet, and the total width of the ferry-house is 485 feet. As this is practically one structure, the Pennsylvania Railroad people naturally feel justified in claiming that the Jersey Central Station is larger than the Grand Central Station.—*New York Times*.



Statue equestre di Vittorio Emanuele I. posta sulla scala del Palazzo reale in Torino.
Victor Amadeus, Royal Palace, Turin: Rivalta and De Fries, Sculptors. From Litta's "Famiglie Celebri Italiane."



COMPETITIONS IN GENERAL.—COMPETITION FOR THE STATE BUILDING FOR THE WORLD'S FAIR IN PARTICULAR.—CHARACTER OF SOME OF THE DESIGNS.

COMPETITIONS are strange and mysterious things; and although, at first sight, to the simple minded, they appear so easy to understand, upon careful study they are found to be most complex in nature. In San Francisco they occur but seldom and are, as a rule, fought shy of, although in character I do not know that they vary much from those found in other parts. I suppose, however, that it is the unknown quantity that underlies the surface that makes them so fearful. They are essentially of two varieties in California:

first, that in which a public body, which nominally can show no favoritism, is obliged by law to throw the matter open to public competition, so that all may have equal chances. In this first category if the competition is for a State building, the law is obeyed within the scantiest limits possible; information is withheld, to that degree which is considered politic, from all who are not intended to win, while he who has been chosen is well posted; Justice all the while stands by, with scales in hand, watching with impartial eye this even-balanced contest; and when all is finished, he, whom the gods had foreordained, receives the prize; public opinion is satisfied, justice has been done, merit is rewarded, and all retire gracefully from the scene, each hoping that some other time the gods may manipulate the scales with greater discernment, and award him the crown of laurels.

Another use to which competitions are put in these parts, is in the case of a private individual or corporation, who, while all the time intending, if possible, to give the work to a particular friend, just as a spur to incite him who is chosen to do his best, invite other architects to compete in furnishing designs. The man of patronage may be very poor as an architect, and probably knows that he has but a small chance on merit, and so while he depends on influence to reach the goal, all the while exerts himself to produce the best possible design; for you know "there's many a slip between the cup and the lip."

Those who sit in judgment on the merits and demerits are, generally speaking, beautifully ignorant of their subject, and they feel that, as a rule, competitions insure each man doing his best; and as for the drawings, one is not much different from another, and even if there be one or two that may appear better than that of their friend, the personal equation more than balances its defects architectural; and so they give Smith or Jones the preference, and in their heart of hearts believe that his design will be as satisfactory as any of the rest.

There may be a great many more varieties of competition. I am afraid, however, that I am unsophisticated in this matter and have a great deal to learn.

I wrote thus far on the eve of the competition for the California State Building at the World's Fair which promised to be of considerable interest. But now the day of adjudicating has arrived, and with it the submission of thirty sets of drawings from about half of the architects of the city.

The State Commission, in their circular issued to architects, called for a design for the State Building at the World's Fair, to be in the mission and Moorish style, covering a ground area of 60,000 feet, with a gallery two-thirds that area; the building to be not less than 40 feet to the eaves, and, if possible, to have an interior court for

semi-tropical plants; the cost not to exceed \$75,000. The prize offered was \$600.

As I myself competed for this, I had occasion to study carefully the pros and cons as applied from all sides of the question, and, as a result, I do not think that the Commissioners were wise in their selection of the design to be considered as best. I say this with an assurance that I have no personal bias, for the faults in the selected design were the very ones on which I myself made shipwreck.

The Commissioners asked for a building in the mission and Moorish style, and there can be no doubt that, however small the knowledge they had of that for which they were asking, they asked for the right thing, and in their minds had, at least, a half-formulated idea of making the California building stand out as something unique among the modern examples of exhibition buildings with which it will be surrounded—something which would be characteristic of the State. But lack of knowledge begets weakness, and at the last, at the critical moment, they allowed themselves to be carried away by a spread of canvas and a glare of color. Between the two extremes of a modern exhibition building and a combination of the several ruined mission buildings of California, there were all sorts of hybrids, and it was one of these, a production by A. Page Brown, that the Commissioners considered most worthy. Many thought differently. I call it a hybrid

because it is neither one thing nor the other; in mass, it has no resemblance whatsoever to a mission building. I say so with some confidence, having studied most of the mission buildings in California. The central part is more Japanese than anything else, and, as to the attaching a mission front to each extremity of the building, this only heightens the incongruity. A casino's a building for pleasure essentially, is the real character of this design, and at the ends to add a church, and here and there a belfry, and then to imagine that you have a building of the mission and Moorish type—the thing is preposterous! One might as well say that "Kiss in the Ring" is a highly solemn and religious ceremony because some poor, passing priest has been captured and forced to engage in the romp and riot of the merry-makers; or that the front of the Cathedral of Milan is Renaissance because it has several windows in that style, and so on. In this design are interwoven two such inconsistent sentiments, frivolity and solemnity, that as a result we have the fate of the Kilkenny cats—death to both. I can only describe the building as having a great central mass of light; open, gay and holiday-looking in design, with, on each side, the long, low nave and Classic front and plain, solid, square towers of Santa Barbara Mission.

I think the Commission would have been wiser had they accepted the design of Messrs. Matteison & Maybeck, which was unmistakably Californian, and while on the one hand, a person acquainted with mission architecture might at the World's Fair pass and repass the accepted design without recognizing it as characteristic of his native State; on the other

hand, the design referred to, seen from near or far, would at once conjure up sweet memories of blue skies, eternal sunshine, the dark olive green of nature, woods and gold balls of fruit, all peacefully lying in the western sun.

Had those gentlemen whose design I consider best been born Jesuits, and learned the art of square and triangle within the walls of some holy mission, I do not think that they could have more happily expressed the mystery, solemnity and picturesqueness of these old mission buildings. Their design was essentially that of a church, cruciform on plan with a short arm at the sanctuary. The central feature was a low dome with four towers clustering around it, the southern transept terminating in a gable flanked on each side by belfrys, as at the mission of San Antonio; to the west faces the square three-story towers and Classic front of Santa Barbara; the whole combined in perfect harmony.

Several others, such as those of Messrs. Pissis & Moore and Mr. J. C. Pelton, were in my opinion, more in accordance with the requirements of the State; but let the matter pass, for now at all events it is too late to make amends. All that we can do in these matters is to justly criticize the action and judgment displayed, deplore the condition of the times in which architects submit to compete against one another without insisting on just and definite rules of competition,



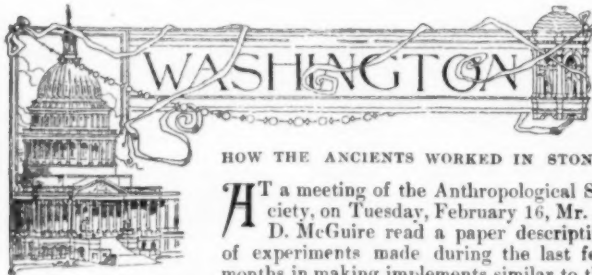
Statua equestre in bronzo, innalzata in Casale S. Eusebio da Mezzoponte in onore di Carlo Alberto di Savoia, autore e modello dello Scultore Alberto Sangiorgio, e fusa nella fonderia di Girolamo Bazzani.

Carlo Alberto, Casale: Sangiorgio, Sculptor. From Litta's "Famiglie Celebri Italiane."

and on close adhesion to them on the part of the competitors, and above all, the sending of all drawings under a non-de-plume, and having them adjudicated by men selected from the profession, kindred arts, or, at all events, from that select few to be found in any community that have a knowledge of architecture and appreciation of the fine arts, without which they are unqualified to express an opinion.

I may add that so far as the various plans were concerned there was not much to choose: most provided for a large open space, lighted from the roof, in which to place the exhibits, with no special planning save for accessories, such as café, assembly-hall, committee-rooms, etc.: such was Page Brown's; Pissis & Moore's, on the other hand, divided the whole building into two stories with long corridors surrounding a central court in the typical Spanish style, in general resembling more a museum or gallery of fine arts than the conventional exhibition building.

I think that neither the long, empty space of Mr. A. Page Brown which has to be well filled up to be effective, nor the many divisions of Messrs. Pissis & Moore which loses in grandness by lack of distance, but in a combining of the two would have been found the most happy solution of the problem.



HOW THE ANCIENTS WORKED IN STONE.

AT a meeting of the Anthropological Society, on Tuesday, February 16, Mr. J. D. McGuire read a paper descriptive of experiments made during the last few months in making implements similar to the ones used during the Stone Age, employing only such tools as might readily have been obtained by the inhabitants of the world during that period.

Mr. McGuire has been giving much of his time for years to the study of early stonework. Last year he read a paper before the same society on the Stone Hammer.¹ In this paper he foreshadows his work during the last year. Mr. McGuire's researches have brought to light several points of interest in reference to the methods adopted by the ancients in working in stone.

Existing examples of stone implements, carving and boring tools, found in all parts of the world, when placed by the side of the ones made at the National Museum by Mr. McGuire are so alike that they prove his conclusions to be true.

The stone hammer, Figure 1, which has been found in all parts of the world, is the simple tool with which stone implements and carvings were made. Many have been the theories and much the discussion among archaeologists as to the time

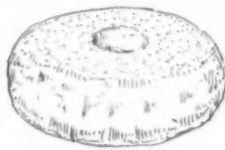


Fig. 1. Stone Hammer.



Fig. 2. Porphyry Grooved-stone.



Fig. 3. Rough Nephrite.



Fig. 4. Rough Nephrite.

required and the implements with which such work has been done. Tempered copper, iron, and steel pointed tools are mentioned as being used by the Egyptians. Emery and the diamond-drill have been suggested. But many stone implements are found in countries

¹Stone Hammer and its various uses. By J. D. McGuire, in *American Anthropologist*, Vol. IV, No. 4, 1891.

where no hard metal was in existence at the earliest periods of any nation.

The stone hammer, which is the same all over the world, is a tool which, as Mr. McGuire proves by actual experiment, will make any of the stone implements and by similarity of texture and deduction will make any of the earlier carving or statuary.

Archæologists have contended that a long period was necessary to make a single stone hatchet. A passage of Lafitau's [1724], stating



Fig. 5. Nephrite Axe.

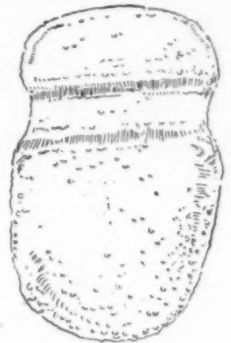
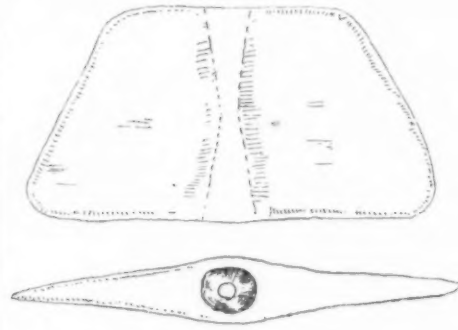


Fig. 6. Kersantite Implement.

that an Indian took a life-time to make a stone hatchet, is probably the source of such opinion. This statement is proved in the paper to be a probable piece of careless observation and writing indulged in by this Jesuit priest.

The first effort is shown in Figure 2, which is a close-grained black porphyry tool. The groove was pecked into this stone with the ordinary stone hammer by the investigator, in 1878, in the short space of five hours. The following tests of his theory have been



Figs. 7 and 8. Catlinite Ceremonial Implement.



Fig. 9. Hand-drill.

made by Mr. McGuire in the National Museum at the suggestion of Prof. O. T. Mason. The experiments have been in pecking, carving, polishing, and boring stone with no tools other than might have been used by men in the Stone Age; in many cases similar tools having been found, or being shown in ancient hieroglyphics. Mr. McGuire first attacked a piece of nephrite, one of the hardest and toughest stones known: it was shaped as shown in Figures 3 and 4. Forty odd quartzite hammers obtained from the well-known Indian work-shop on Piney Branch were destroyed in the effort to peck this stone: one of gray quartzite lasted eight or ten hours. At last a piece of yellow jasper from Yosemite Valley was tried and pecked the nephrite into shape in about forty hours: then it was



Fig. 10. Bow-drill.

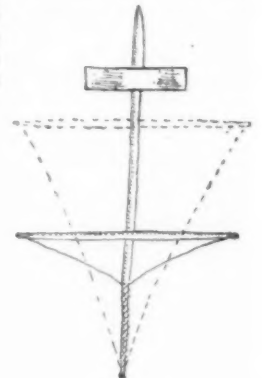


Fig. 11. Pump-drill.

rubbed for five hours on rotten granite, then rubbed with pebbles of compact quartzite about six hours. The axe, as shown in Figure 5, was completed in sixty-five hours.

As a contrast, a piece of kersantite from New Jersey, a tough stone, was next tried. The block was very rough when work was commenced, but two hours' work with an ordinary quartzite hammer

produced the result shown in Figure 6. The surface shown is that left from the hammer pecking.

Figures 7 and 8 show what is conventionally called a ceremonial implement: this tool was made from catlinite, or pipe-stone, by Mr. McGuire in about sixteen hours, but with added experience and increased skill he thinks the same could be accomplished in eight hours.

This stone is well made, polished and bored, the only implements used in its manufacture being the stone hammer, rubbing with

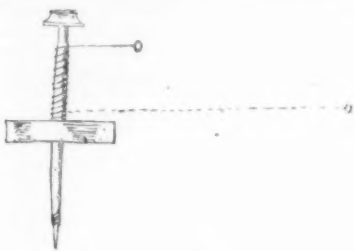


Fig. 12. Top-drill.

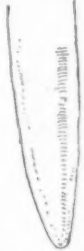


Fig. 13. Wood-point.

quartzite pebbles and polishing on wood and buckskin. The boring was done with a wooden drill and dry sand, this taking about three hours.

In boring these stones, the drills of the following primitive makes were used, all of which, except possibly the top-drill, are used by uncivilized natives at the present time. The hand-drill, Figure 9, is operated by twirling between the palms of the hands. The bow-drill, Figure 10, is operated by placing the top piece in the mouth, against the hand, or breast, twisting the string of the bow, which is



Fig. 14. Cylindrical Copper Point.

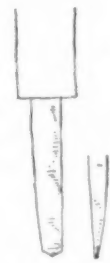


Fig. 15. Copper Point, Solid.



Figs. 16 and 17. Flint-stone Points.



loose, once around the drill and drawing the bow rapidly back and forth, the drill making about 500 revolutions a minute.

The pump-drill, Figure 11, has a balance-wheel and cross-bar with a hole in the centre through which the stem of the drill passes: it is swung to the top of the stem by two thongs. The strings are twisted around the drill so that when the cross-bar is pulled down the drill revolves, the momentum of the balance-wheel winds the machine up again; about 600 revolutions a minute can be made with this drill.

Mr. McGuire found in the museum, a top-drill, Figure 12, that was classed among toys and a similar one among weaving implements which he found upon experiment to be very efficacious as a drill, and he feels certain that the one classed under weaving instruments had been used as a drill by the Zuñi Indians. This drill has never been described by an archaeologist before this time, so far as known. By simply pulling the string the balance-wheel revolves and rewinds the string, after which the operation can be repeated, the drill making 2,000 revolutions a minute.

The points of the drills used were wood (ash being found most useful), bone, flint, stone and natural copper.

The wooden point, Figure 13, on drills was operated with dry sand. With wooden drills, a hole an inch deep can be bored into granite in two or three hours.

With stone points, Figures 16 and 17, soft stones are drilled with stone and sand; on hard stones the drill is used with sand and water, preferably under water.

In copper points, Figures 14 and 15, made from native copper, Mr. McGuire has made what may be considered a find. The soft copper will drill into the hardest stone in connection with sand. It is probable, as he suggests, that in beating out the copper, small particles of

quartzite are imbedded into it, forming a primitive diamond drill, and possibly it may be found a very useful modern appliance when the pieces of quartz may be imbedded in the soft copper. The character of holes made by the different drills are shown in Figures 18 to 21, Figure 18 being made by a cylinder of metal. Figure 20 is made with a cylindrical metal or wooden drill in connection with sand. Figure 19 is made with a solid simple wood or metal drill and sand. Figure 21 is a type of hole found in many old stones, the only explanation for which is that of a metal drill expanding after entering the stone.

In this connection experiments have been made in sawing stone.

BOOKS AND PAPERS

THE name of Dr. Henry C. Burdett is already very familiar to all who interest themselves in hospital construction or management. It might be too much to say that without him the mass of literature relating to hospitals would never have been systematized and reduced into a form available for English readers, but it is, at least, doubtful whether any one else would have done it so well, and no one could possibly have done the work with more zeal and fidelity. Most of our readers probably know his earlier book on "*Cottage Hospitals*," which has had a large circulation outside the medical profession; and the present work,¹ although it is almost an encyclopædia of hospital administration and jurisprudence, promises to be found of the utmost value to architects and committees, who have to undertake the difficult task of planning a hospital to suit certain circumstances, and wish to carry it out intelligently and successfully.

The first and second volumes, which are all that have yet been received, are devoted exclusively to asylums, or, as Dr. Burdett prefers to call them, hospitals for the insane. The first volume is full of notes, historical and statistical, which, while interesting and useful to an architect who wishes to understand the subject thoroughly, are less directly suited to his purpose than the classification of systems of asylum planning, and detailed observations upon the defects and advantages of each, to be found in the second volume, which is devoted entirely to asylum construction. The object of Dr. Burdett's classification of plans will commend itself particularly to architects. As he says, the vast multitude of asylum plans may all be divided into a few general types, and the plans of a given type resemble each other almost precisely in every respect except size, so that, while it would be easy to fill the work with plans of existing buildings, more or less imperfectly adapted to their purpose, it is far more useful, especially to architects, who cannot, like an expert physician, appreciate the influence of different points of planning upon the practical administration of an asylum, to have the desirable qualities of each type, from the point of view of a medical superintendent, summarized in a model plan, like that which Dr. Burdett gives us. There is no doubt that architects, if they know what is wanted in the matter of arrangement and construction of hospitals and asylums, are much better qualified than any one else to provide it; but, in practice, the planning of such buildings is usually either left almost entirely to the architect, who follows as closely as he can the arrangement of some existing building which he is told has a high reputation, or is taken out of the hands of the architect and given to some physician of decided views, who knows what he wants, but, not having the architect's resources in the way of trained skill in planning and knowledge of materials to help him in getting it, generally falls, with his half of the necessary knowledge, about as far short of perfect success as the architect does who has only the other half to depend upon.

The remedy for both these disappointments is to have the architect and the physician work together. In the case of asylums, as Dr. Burdett says, the medical superintendent should always be selected before the plans are made, and his services should begin with the study of the arrangement, and supervision of the erection of the building in consultation with the architect. To say nothing of the advantages of his advice, and the probability that by means of it costly future alterations will be avoided, it is particularly necessary that in hospitals for mental diseases the arrangement should be planned under the advice of the man who is to be the responsible head of the establishment; for not only do the best alienists usually have some views in regard to treatment which it is both satisfactory to them and advantageous to their patients and to medical science to be enabled to carry out, but the needs of the insane in different localities vary to an extraordinary degree, and no one but an expert, and one, too, who has familiarized himself with the requirements of the district, can tell, for example, what will be the probable proportion of private patients, and, consequently, what accommodations should be provided for them; or what will be the ratio of paralytics, or idiotic children, or paupers, or victims of opium or alcohol, to the whole number of patients, and, therefore, the most economical and convenient distribution of the rooms. "It is doubtful," Dr. Burdett

¹ "*Hospitals and Asylums of the World*": Their Origin, History, Construction, Administration, Management and Legislation: with plans of the chief medical institutions, accurately drawn to a uniform scale, in addition to those of all the hospitals of London in the Jubilee year of Queen Victoria's reign. By Henry C. Burdett, formerly Secretary and General Superintendent of the Queen's Hospital, Birmingham, etc. In Four Volumes and Portfolio. London: J. & A. Churchill, 11 New Burlington Street, W. 1891.

says, "whether a single asylum in England has its inmates distributed as the architect intended they should be"; and, as every one knows, alterations to such buildings usually begin as soon as the patients are brought into them.

As to the mode in which an architect should be selected, Dr. Burdett thinks that open competition is best. To have the county surveyor make the plans is, he thinks, altogether wrong, and "there are, at least, fifty chances to one that the plan is not the best obtainable." A limited competition seems to him also objectionable, for the reason that the only criterion by which the invited competitors are usually selected is the fact that they have built other asylums, and, not only is this no proof that they can do it better than other architects, but, as he says, it is notorious that, with scarcely an exception, the second or third attempts of asylum architects are not improvements on their earlier ventures.

When the plan is once selected, however, the architect's work is hardly begun. Only those who have gone through with it can imagine the infinity of detail which an asylum design involves. To any architect worthy of the name, the study of devices for increasing the comfort and promoting the cure of the unfortunate patients is an occupation of the deepest interest, but to do so successfully requires an acquaintance with as many examples as possible, and Dr. Burdett provides, in the most intelligent and useful way, information which an architect would need many years for gathering by the toilsome process of collecting documents and visiting hospitals by himself.



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

HOUSES OF LOUIS B. JONES, ESQ., AND CHARLES L. HILL, ESQ., GARFIELD PLACE, BROOKLYN, N. Y. MR. C. P. H. GILBERT, ARCHITECT, NEW YORK, N. Y.

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

THESE houses adjoin the ones published in our issue for January 30, last.

A NATIONAL CUSTOM-HOUSE IN A METROPOLITAN CITY: SUCCESSFUL DESIGN FOR THE *American Architect* TRAVELLING-SCHOLARSHIP FOR 1892. BY MR. W. MARBURY MACCAFFERTY, BROOKLYN, N. Y.

[Issued with the International and Imperial Editions only.]

THE essential particulars of the programme under which this design was devised are as follows:

The group of buildings is to consist of an administration building and two or more warehouses for the storage of goods in bond. Access to these buildings is to be had not only from the streets, but from the docks, the arrangement of which is to form a feature of the design.

In the administration building provision must be made for the merchants and clerks who have to visit the building, in the guise of a large hall or vestibule near the entrance, where they can meet and hire brokers who are necessary to expediate their business; desk-room for at least fifty brokers should be provided. On the same floor should be the office of the Deputy Collector and his two assistants, each with his complement of four clerks in convenient suites. Provision must also be made for six head-clerks, each with a staff of twenty assistants. These head-clerks may be placed in any portion or on any floor of the building.

The Collector's office and the office of the Naval Officer must be in accessible but retired portions of the second floor.

In the administration building must be provided a restaurant, toilet-rooms, elevators, passages, staircases and so on, not forgetting that female typewriters and stenographers are employed as clerks. Provision must also be made for heating and lighting.

In the bonded storehouses provision is to be made for the clerks, janitors and laborers employed. Buildings are to be fireproof and divided into cells by party-walls, provision being made for the receipt of cargoes from the wharves and the discharge of the same from the building direct to freight-cars or trucks.

The area which may be covered by the buildings, docks and wharves is not to exceed 120,000 square feet.

SKETCHES AT SIENNA, ITALY, BY MR. W. E. PASCO.

[Issued with the International and Imperial Editions only.]

SKETCHES BY THE *American Architect* TRAVELLING-SCHOLAR FOR 1891. MR. ALBERT KAHN, OF DETROIT, MICH.

[Issued with the International and Imperial Editions only.]

COUNTRY-HOUSE FOR GEORGE BULLEN, ESQ. MR. FRANCIS M. WHITEHOUSE, ARCHITECT, CHICAGO, ILL.

This design was shown at the late exhibition of the New York Architectural League.

REBUDOS OF THE CHURCH OF ST. JOHN, STAMFORD, CONN. MR. W. A. POTTER, ARCHITECT, NEW YORK, N. Y.

FORTRESS HOTEL AND OPERA-HOUSE, QUEBEC, P. Q. MESSRS. ROTCH & TILDEN, ARCHITECTS, BOSTON, MASS.

BECAUSE of the recent political and mercantile revelations in Quebec, this enterprise is for the moment in a state of suspension.

WROUGHT-IRON GRILLES IN AND ABOUT PHILADELPHIA. MR. A. W. DILKS, ARCHITECT, PHILADELPHIA, PA.

STATUE OF VICTOR EMMANUEL, VENICE, ITALY. E. FERRARI, SCULPTOR, AND THE MONUMENT TO VICTOR EMMANUEL ON THE PINCIAN HILL, ROME, ITALY.

SEE article on "Equestrian Monuments," elsewhere in this issue.

[Additional Illustrations in the International Edition.]

ENTRANCE TO THE COUNCIL CHAMBER OF THE HOTEL DE VILLE, AUDENARDE, BELGIUM.

[Gelatin Print.]

THIS curious internal porch was carved in 1531 by Paul van Schelden.

THE BILLIARD-ROOM, CHATEAU DE MARLY-LE-ROY.

[Copper-plate Etching.]

FRONT OF MILAN CATHEDRAL.

It might be imagined that Prout would find Milan Cathedral unsuited for his painter-like style of drawing. But as we said before, masonry possessed a fascination for him, and he was no doubt pleased with the elaborateness of the stone-cutting in the Milan facade. He would not be troubled by misgivings about the mixture of styles or the somewhat bizarre design. With all its faults, the cathedral is attractive to most visitors, and probably it secures more admiration every year than any Gothic building in England or France.

NEW TOWN-HALL, CLECKHEATON, ENG. MESSRS. MAWSON & HUDSON, ARCHITECTS, BRADFORD, ENG.

THIS building was opened a few weeks ago. The original drawing was exhibited in the last Academy Exhibition.

ENTRANCE, MONTACUTE. MR. R. T. BLOMFIELD, M. A., ARCHITECT.

SCREEN, ENKHUYZEN. MR. R. T. BLOMFIELD, M. A., ARCHITECT.



[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.]

AN ADVERTISER ON ONE FORM OF ADVERTISING.

TO THE EDITORS OF THE *AMERICAN ARCHITECT*:—

Dear Sirs,—After a contractor has finished his work in one of the modern commercial buildings, he is now confronted with a peril in the form of a type of advertising brigand to whose methods public attention should be called.

He is a very bland gentleman who sends in his card and informs the contractor, material-man or artist, that he—the bland gentleman—has arranged with the owners of the Megatherium Building to publish "a work illustrative and exhibitiv of the beauties of that celebrated structure." The expense of publishing this book, with its magnificent illustrations and unique embellishments, is to be partially met by contributions—of course, voluntary contributions—from the various architects, artisans, manufacturers and contractors who have been engaged upon it. If the contractor is willing to contribute, say \$250 to \$1,000, his "product" will be alluded to and his firm name will appear in the "work." Having recovered his breath, the victim perhaps, inquires, what will be the effect of declining to make such a contribution? Well, in that case, the bland gentleman regrets to say, there will be no mention of him or his work in the book.

The bland gentleman has a little list of these "works." Let's see, were you interested in the Leviathan at Omaha? The Crow's Nest, Duluth? The Sixty Acquaintances, Santa Fé? Yes. Well, one thousand dollars will secure "representation, allusion and exhibitiv recognition" in these three remarkable volumes! And there will be twenty or thirty more soon, and like the brook, the business is to "go on forever."

Such publications have no circulation and are almost worthless to

any contractor or material-man as an advertising medium; but as it is made to appear that this volume is to be something in the nature of a monument to the enterprise and sagacity of the owner, who is relying on his generosity, and who, it is stated, will have to pay the difference between the contributions of the various material-men and the actual cost of the sumptuous publication, many contractors who can ill afford it and who would much rather not do so, submit to the levying of this tax.

Sometimes, the argument is that Messrs. Rafter, Dormer & Siding, the architects, have given your address and hope you will encourage the publication, as of importance to them. We hope and believe that this is not always so.

If a majority of the persons who are subjected to this species of blackmailing would absolutely refuse to have anything to do with such enterprises, when presented to them, and would expend one-quarter of the money which they would thus save in advertising their productions in the columns of the various building papers, there is no doubt that they would get tenfold more benefit in that way than could possibly be derived from burying a card in what, after all, is only an advertising circular, and a poor form of advertising circular at that.

Very respectfully yours,
LATH & PLASTER, Contractors.

SPECIFYING FOR GLASS.

PHILADELPHIA, PENN., March 8, 1892.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—We send you under separate cover a copy of our February number and call your attention to page 449, on which is printed a resolution adopted by the Pennsylvania Association of Master House Painters and Decorators at their recent convention, referring to the sizes of glass being specified by architects. You will see, also, that the president particularly desired that the resolution be printed in the *American Architect*. If you can do this you will oblige the association and render us a favor.

Yours very truly,
HOUSE PAINTING & DECORATING PUBLISHING CO.

[It gives us pleasure to comply with this request by publishing the following extract from the report of the convention's proceedings.—EDS. AMERICAN ARCHITECT.]

"The resolution in regard to the size of glass was then read as follows:

"WHEREAS, At previous conventions of the Master House Painters' and Decorators' Association of the State of Pennsylvania complaint has been made of the serious trouble and inconvenience that master painters are occasioned in consequence of the sizes of glass not being mentioned in specifications or marked upon plans, and architects having been urged to give such sizes wherever possible; and,

"WHEREAS, While the trouble has been to some degree removed it still exists to a serious extent; therefore, be it

Resolved, That architects are again respectfully urged to give their attention to this matter, and specify sizes of glass wherever practicable.

CHARLES MCCARTY.

"(Resolution adopted as read.)

"THE PRESIDENT.—I think passing the resolution alone will not have the effect you desire. I think it would be advisable to have it printed in its proper form and officially sent by the secretaries of the eastern and western chapters of the American Institute of Architects. If it was simply published in our report the architects would pay no attention to it. If it was published in the *American Architect* it would receive the recognition we desire.

"It was moved, as an amendment, that the question be written out in its proper shape and submitted to the various chapters of the American Institute of Architects for action. (Carried.)"

THE MORSE COLLECTION OF JAPANESE POTTERY.

SALEM, MASS., March 16, 1892.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—Will you kindly add to your item concerning the sale of the Morse collection of Japanese pottery, that permission was asked and granted that Mr. Morse should have the privilege of selling duplicates from the collection, the money thus received to form a fund belonging to the Museum of Fine Arts; the interest of that fund to be expended in enlarging or strengthening the collection of Japanese pottery. Since the collection has been on deposit at the Museum I have paid nearly fifteen hundred dollars out of my own pocket in adding important specimens. I justly felt that this expense should be borne by the Museum when the collection became its property.

Very truly yours,

EDW. S. MORSE.

A PROBLEM IN PERSPECTIVE.

WILKES-BARRE, PENN., March 14, 1891.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—Can you inform me through the medium of your journal how to put a spiral in perspective?

I have consulted Ware's and Wright's books on perspective but can find nothing which applies.

Should the explanation of this most difficult problem consume more space than you can afford, will you do me the great favor to refer me to some treatise on the subject. I shall be greatly obliged.

Yours respectfully,

E. H. DAVIS.

NOTES & CHIPPINGS

THE ACADEMY OF INSCRIPTIONS.—The reader will remember the discovery of the stone with the supposed Roman inscription, which Monkbarns makes and Edie Ochiltree exposes, in "*The Antiquary*," and the similar discovery in "*Pickwick*," where the alleged Latin characters turn out to be those of "BIL STUMPS HIS MARK." Well, this joke is neither Scotch nor English in its origin, but may be traced to the "*Mémoires de Ribeaumont*," edition 1777, where we read that, during certain demolitions and excavations which took place at Belleville, near Paris, about the middle of the eighteenth century, the workmen came upon a stone engraven with rude letters which attracted a good deal of attention among the learned and was examined even by the members of the Academy of Inscriptions. These virtuosi decided that the following letters were visible, in the subjoined order:

I C
I
L
E
C H
E M
I
D B
S A N E S.

To what language these letters belonged, or what they signified, no one could conjecture. The most competent authorities were consulted in vain. At length, the beadle of Montmartre, happening to hear of the stone and of the perplexity which it had caused, asked permission to see it, and immediately solved the problem. The letters, he said, framed a simple enough direction: "*Ici le chemin des ânes*" (this is the donkey's path). Formerly some plaster quarries were worked at Belleville, and the stone had been put up to notify to the peasants the route by which they were to take their animals to the loading place.—*All the Year Round*.

WIRE-GLASS.—Under the name of wire-glass, a new invention has been brought on the market by a Dresden firm which marks an important development in the glass-making industry. The process of manufacture consists in furnishing glass in a hot plastic condition with a flexible metallic layer, iron-wire netting for instance, which is completely enclosed by the vitreous substance and effectively protected against exterior influences, as rust, etc. The new glass, which has been patented in the leading countries, possesses much greater resisting power than the ordinary metal, and is, it is claimed, indifferent to the most abrupt changes of temperature, and will even withstand open fire. A further proof of its toughness and durability is stated to be the fact that it may, in a highly heated state, be sprinkled with cold water without being materially damaged. The glass is specially adapted for skylights, the powerful resisting qualities of the material enabling the usual wire protectors to be dispensed with. As wire-glass cannot be cut by the diamond, except under the application of great force, and cannot be broken without creating considerable noise, the substance is claimed to be, in a measure, burglarproof.—*Invention*.

EXPORTING WORKS OF ART FROM ITALY.—According to the *New York Sun*, a bill prohibiting to private individuals in Italy, the sale and export of rare old paintings to foreigners abroad was passed by the Italian Parliament about three weeks ago. The new law is stated in five paragraphs. The first provides for an annual appropriation of \$100,000 for the purchase of old works of art from private persons. The second appropriates \$30,000 more from the proceeds of the exhibitions in the public galleries. The third paragraph appropriates \$10,000 annually for the preservation of the works of art bought under the two preceding paragraphs, and the rest of the law enumerates the severe penalties which are to be inflicted on persons selling works of old masters to foreign buyers. The history behind this law is long and peculiar. Italian noblemen began to feel the pressure of heavy debts more than seventy years ago and to seek relief in selling many treasures of art from their family galleries. Thus, in 1822 and 1824 the Bourbons were constrained to make a prohibitory law against such practices in Naples, and in 1839, the provisions of the law were extended to Sicily. In the kingdom of Italy the sale of rare articles from galleries, libraries and collections of antiques of all kinds was forbidden by the law of June 28, 1878, for all cases where family property had been entailed, and somewhat later the sending abroad of similar treasures was made illegal, unless the export was specially approved by the Government. All these laws failed more or less, of their object. From time to time the Government learned that this or that painting or statue had been smuggled over the border, to appear in the gallery of some French, German or English collector. Attention was directed to that practice eventually by the loss of the *Cesar Borgia* portrait, supposed to be a Raphael. That picture disappeared from the gallery of the insolvent Prince Borghese, was taken over the border to France in a trunk with a double bottom, and shortly afterward was placed in the gallery of Baron Rothschild in Paris. That was bad enough despite the reflections cast on the genuineness of the Raphael, but not the worst. Prince Sciarra-Colonna, in trying to raise himself from a slough of debt about a year ago, negotiated with a foreign picture-dealer for the sale of his gallery. His domestic creditors got wind of his purpose and appealed to the courts that they might satisfy their claims by seizing his pictures at once. The Prince produced documents proving that his forefathers had entailed the property and that it must remain, according to the provisions of the founders, forever in the possession of the family. Therewith, it was thought, the danger was at an end and the paintings were safe.

Nevertheless, the Ministry of Education had an unacknowledged fear that the Prince might try to smuggle out of the country the gems of his art collection and offered him \$500,000 for eight pictures, including a Raphael, a Titian, and a Caravaggio. The Prince refused the offer and asked \$200,000 for the Raphael alone. The State reminded him that the documents he had produced against his creditors showed that he could not sell the gallery or a picture from it to private individuals. The Prince answered that there were no such documents, and, sure enough, they had disappeared. Legal proceedings and friendly negotiations, in tangled complication with each other, continued month after month until a short time ago, when it was rumored that the Prince had cut the knot by smuggling off the eight pictures in question. The Government took charge of the gallery and discovered that the rumor was founded on fact. Not only had the \$200,000 Raphael disappeared, but there were missing also Titian's "The Gamblers" and "A Beautiful Woman," Leonardo da Vinci's "Modesty and Vanity," Perugino's "St. Sebastian," and a Magdalen by Guido Reni. The State threatened the Prince with arrest if he did not reveal the fate of the pictures, but he refused. Then the Minister of Education, Villari, brought into Parliament the bill which has just become a law. Whether Prince Sciarra-Colonna will be frightened by the penalty of six to ten months' imprisonment prescribed by the law, and what has become of the paintings for which the State is searching, remain to be ascertained. Another phase of the same business is the smuggling of valuable ancient books and manuscripts out of the country. This goes on constantly, with the connivance of corrupt priests who have the guardianship of the great monastic collections. It is a notorious fact that almost any book in the Vatican Library, for instance, can be acquired by you or me, provided we can pay enough for it and know to whom to entrust the contract of filching it. — *The Collector*.

THE BERLIN CATHEDRAL. — The proposed Berlin Cathedral is again being talked about in the German capital, the interest in the subject having been revived by the Emperor, who has expressed a wish to inaugurate the "Dom" on his first birthday in the new century. Professor J. Raschdorff has, apparently, during the months he has been in oblivion, had some steady work done in the reduction of his last design to a less extensive and cheaper one, and we hear that a very complete set of drawings of this "reduced" scheme will be put before the Prussian Houses of Parliament, when the vote for the first 15,000*l.* of an estimated total of 500,000*l.* will be asked for by the Government. Of the 30,000*l.* voted some years back for the preliminary office work, some 20,000*l.* yet remains unspent, but this sum is to be applied for the erection of a provisional wooden or iron church, for the use of the Court whilst the cathedral is in course of erection on the site of the present church. The 15,000*l.* referred to above is intended for the preliminary foundation work which the Emperor and his architect would like to see commenced this summer. We, however, scarcely believe that the money will have more chance of being granted this session than in the one of last year in which it was refused. The old objections relating to site, architect, plan and architecture, are making Raschdorff's Cathedral scheme more unpopular every year, and the provincial representatives in the House are not much in favor of their constituents having to pay for what they regard as an unnecessary luxury in the capital. If the Landtag will not vote the money, and the Emperor wishes to stick to site and architect, he can, however, still have recourse to his privy purse, or to his power of granting a public lottery. — *The Builder*.

MUNICH SEWERAGE. — A series of experiments by Professor Pettenkofer on the waters of the river Isar, which carries away the sewerage of the city of Munich, is interesting, as bearing on the subject of river pollution from the drainage of cities. The experiments were started at the instance of the inhabitants of Friez, a village about twenty miles below Munich on the Isar. On examination at this point the professor, who is well known for his experiments and researches regarding bacteria, found not a trace of any harmful substance therein, only sand and soil, just what is found in the freshest of mountain streams. The most careful chemical and bacteriological investigation failed to show any disease germs. The explanation seems to be that nature, through the means of running water, has provided a means by which the water can and does keep itself clean. In running water the disease-producing bacteria, such as typhoid and cholera micro-organisms, cannot remain at all; if the contrary of this assertion were true, then would the towns along the Isar below Munich be desolated by typhus fever, and Munich itself would be one of the most affected cities in the world. To the question: In what manner does the river cleanse itself so rapidly of the sewage poisons that are constantly being poured into it, the answer comes that the water bacteria and the river grasses destroy the faecal matter and the disease-producing bacteria. Investigation has shown that the water plants consume an astonishing mass of garbage and sewage stuff and assimilate a part of it, thus appropriating it for sustenance. — *Fire and Water*.

ACCENTUATING HISTORY IN THE LOUVRE. — Visitors to the Louvre, we suppose, make it a rule to read the history of the building before they enter, but it will be found that the objects which are seen drive history out of their minds. The authorities have now decided to aid the memory of visitors by placing tablets in the various galleries which will suggest the associations. In that way the well-known gallery of Henri II will recall not only the early meetings of the Academy of Sciences but the sovereigns who on their visits to Paris were received in it. The Salle Lacaze was once the scene of many important events in the sixteenth century, and there the turbulent "Ligue" used to assemble. The long gallery which is so well known was for a time used as a printing-office. In it also several of the artists who ministered to the luxury of Louis XIV were accustomed to work. Some of the small salons were assigned as residences to painters. In the hall now used for the display of Egyptian sculpture Pigalle, Falconet and other

sculptors were allowed to set up their ateliers. The museum of Oriental antiquities has displaced the Hôtel d'Alençon. Catherine De Medici occupied a part where now is found the department of antiquities. The "Salle des Cariatides" was constructed by Pierre Lescot. In the neighboring sculpture gallery the French Academy held its sittings from 1672 to 1793, and there Christiana of Sweden was received. Any one who is endowed with a little imagination can, with the aid of the information that will be legible in the galleries, fill the Louvre with ghosts, but we hope none of them will see visions as whimsical as appeared before Henri Heine when he tried to repeople the Louvre and Tuileries. — *The Architect*.

DISCOVERIES BY DOCTOR WALDSTEIN AT ARGOS. — Communications from Athens announce that Doctor Waldstein of the American Archaeological School, has discovered at Argos the foundations of the Temple of Hera, which was destroyed by fire in 429 B. C.; also the remains of a second temple, containing vases, bronzes and fragments of sculptures, including a beautiful head of Hera. There are 180 workmen employed on the excavations. — *New York Tribune*.

EFFECT OF WIND ON AN ARTESIAN WELL. — A phenomenon is observed in an artesian well near Edensburg. The well spoken of is down about 200 feet, but the water in it is still 160 feet below the surface. The peculiarity consists in the fact that, when there is no wind the water is that distance below the curbing; when there is a high wind flowing water pours out of the pipe. — *Invention*.

TRADE SURVEYS

Two opposite agencies or influences are beginning to be felt in the business world: one working in the direction of higher prices and a heavier demand, and the other in the direction of lower prices and a continuation of restricted dealings. The cause for the first agency is the natural growth of business; the cause for the second is the restricted facilities for doing business. At no time has there been as much curbed enterprise as to-day. In every department of activity there are schemes and projects by the score awaiting the right time to be sprung. There is a conviction in the minds of a great many shrewd business men that there is an insufficient volume of money to float more than a very small percentage of these new enterprises. Uncertainty and a lack of confidence is felt in almost every branch of trade. The expanding demand which is being felt can be quickly supplied, not from stocks in hand, as stocks are light, but from current production, which is at its maximum point in many directions. While railroad companies are making large gross and net earnings, and while many properties which have not paid dividends for years are now beginning to pay, there is yet a feeling of uncertainty and distrust in railroad circles and in banking circles connected with railroads. The railway journals for the past four weeks have shown a greater number of new enterprises under consideration than at any time for twelve months. Yet the work is not begun. There is a great deal of delay. Managers and promoters desire to know that the situation is perfectly secured; that is to say, that there will be a sufficient volume of traffic developed within a short time to support any new mileage that may be constructed. Much of this new mileage would be risked if conditions were what they were four years ago. Since then conditions are changed in railroad circles, and where it was then safe to construct a thousand miles it is not now safe to construct a hundred. Money then readily sought investment, and was, so to speak, content if it did not pay dividends. Investments now are not made that way. Investors, whether large or small, demand almost immediate return, and they are limiting their outlays to enterprises which will produce almost immediate results. For this reason, capital is scarce when it comes to large enterprises calling for patience as to returns. Another favorable feature is that the amount of railroad mileage under receivership is declining; there are two reasons for this, perhaps three. The first is, that many railroad companies are naturally extricating themselves from indebtedness. Another is, that many of these weak and sick roads are being taken up or absorbed into stronger systems. A third and minor reason might be assigned; namely, that but little mileage has been constructed of late years but what has paid, and, therefore, the receivership mileage has not been increased. The railroad situation is improving in a decided way. The return of foreign securities, so far as railroads are concerned, has not affected the situation in the least. It is quite probable that within ninety days a good deal of the projected construction will be undertaken, and, while appearances are not favorable, the fact is that the prospects for a considerable increase of railroad mileage within the next twelve months are really favorable. In other directions, there are a good many things to note with satisfaction. The iron trade, dull and disappointing as it is, is in much better shape than the papers which represent it admit. Bridge-builders have fully as much work on hand as they have had at any time for years. Car-builders and locomotive-builders are well supplied with work. Machinery-makers, as a rule, are busy, although some of the larger establishments have not as yet overcome the effects of the depression of last year. A great deal of small railway material — small engines, small equipments, including dynamos and everything connected with the application of electricity — are being ordered, and demand from that quarter will probably increase rapidly. The textile interests are in pretty good condition, and, while margins are not large, the volume of business is. The coal trade is quite active as measured by volume, but unsatisfactory as measured by margins. Financial and commercial papers draw gloomy conclusions from these narrow margins, but the people at large are benefiting by them; middle-men never had a harder time of it than at present. Speculators have very little opportunity. All big trusts are bowing to public opinion one after the other. The basic conditions are improving. Small capitalists and manufacturers are finding conditions more favorable. Little land owners are finding nearer and more profitable markets. The farmers are doing remarkably well, and are wiping out mortgages rapidly. The commercial conditions are favorable almost everywhere. Eastern cities may not do as much of the total business of the country as a few years ago, but it is done in the Far Western and Southern cities, where it should long ago have been done. There are no serious dangers ahead, and politicians have less power to unsettle business than they ever had.

· WROUGHT IRON WORK ·

· ALBERT W. DILKS · ARCHT. · PHILADELPHIA ·



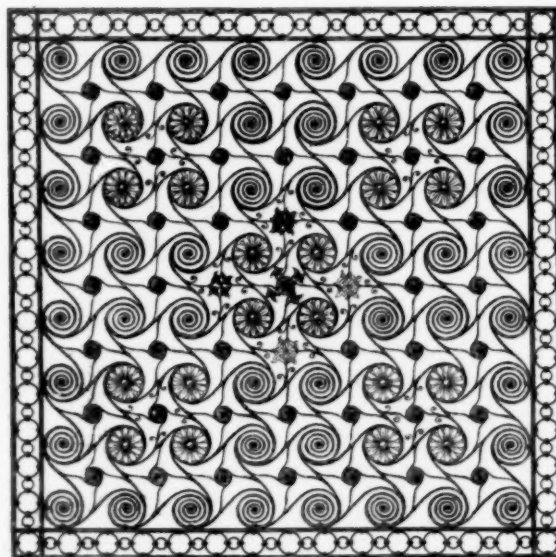
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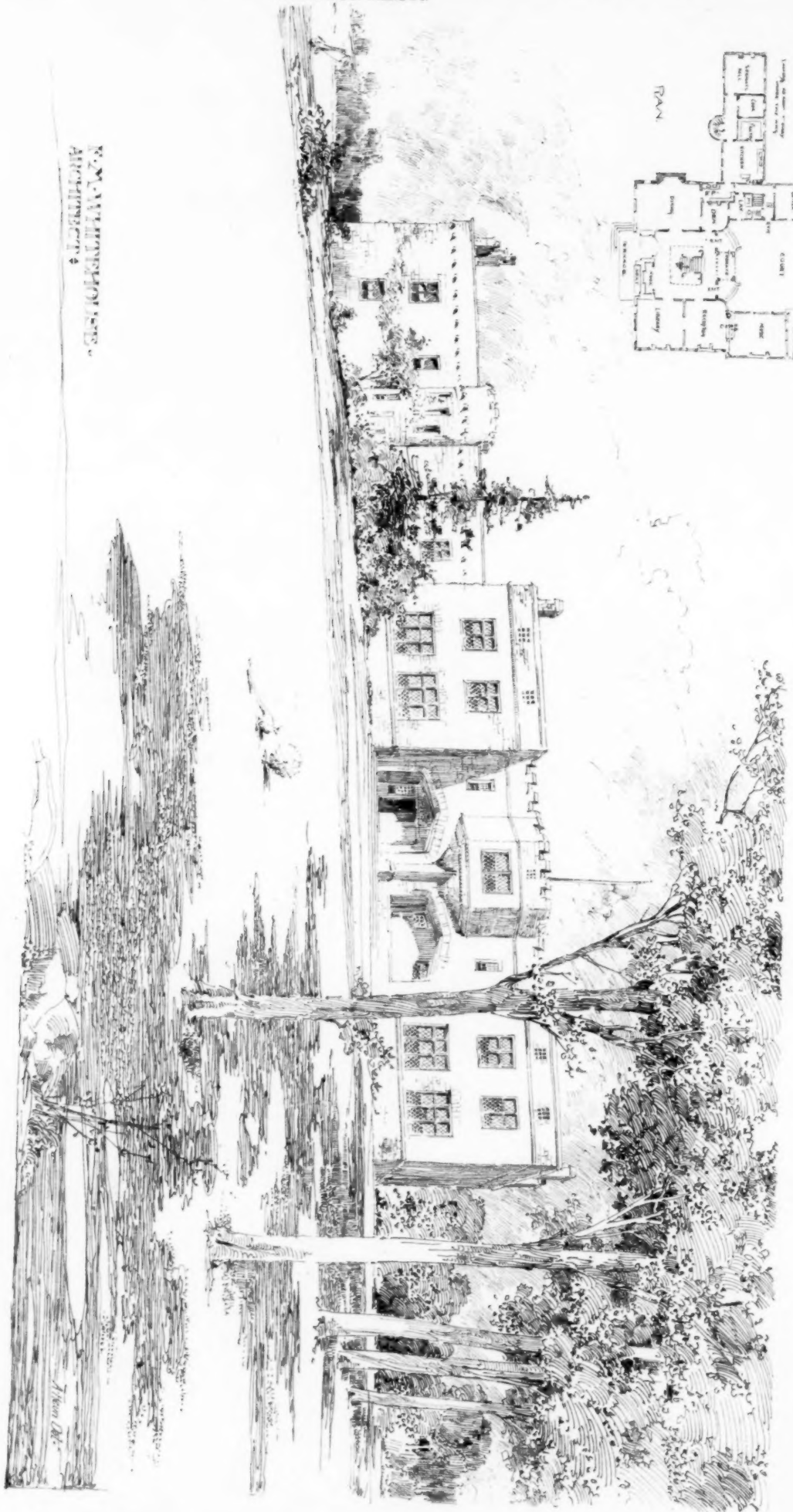


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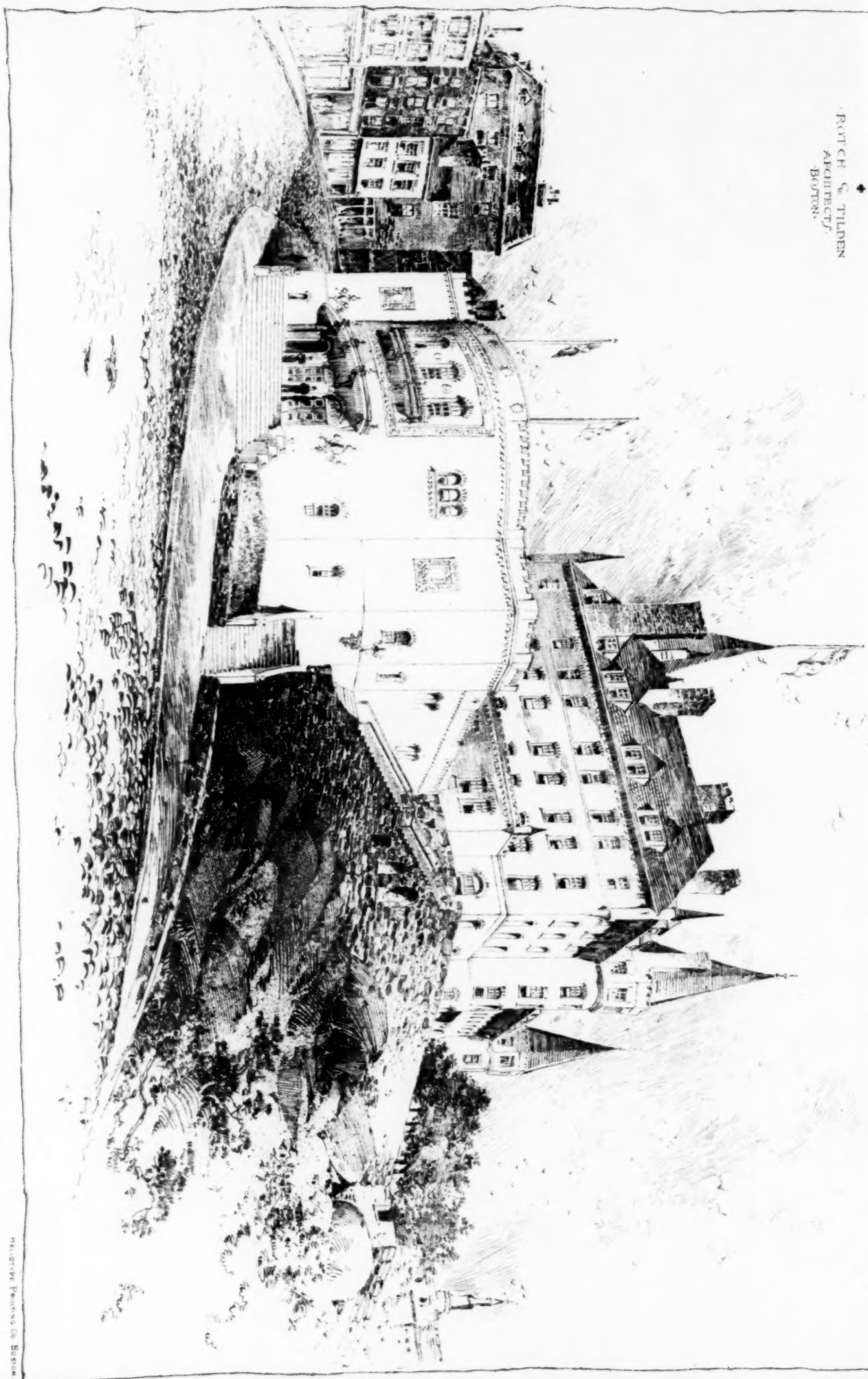
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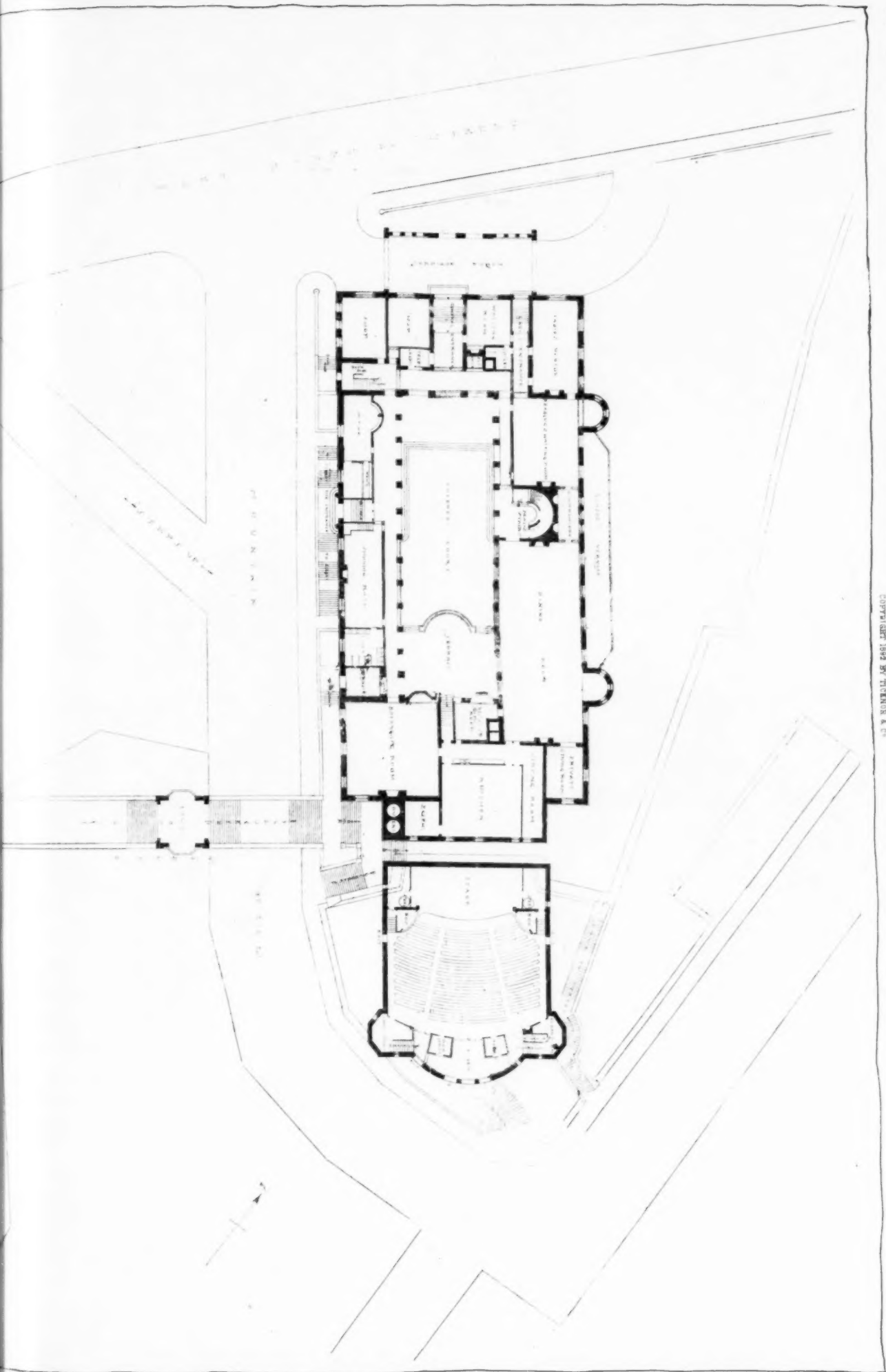
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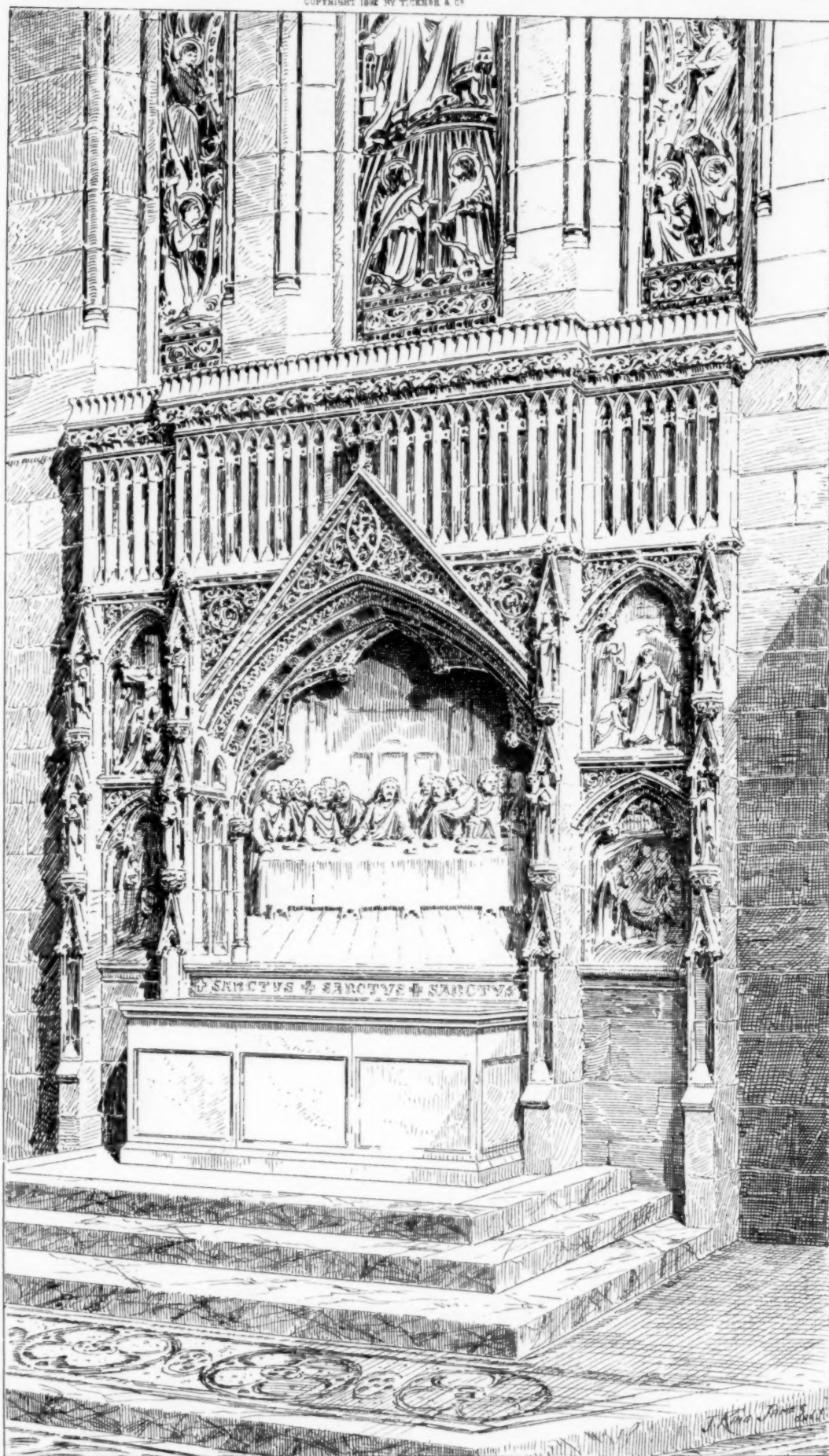
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