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VOL. XL.

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JUNE 10, 1893.



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THE question is beginning to be heard, not in professional circles only, but among the public, when the new law, relating to designs for buildings for the United States Government, is to go into effect. One of the latest Government undertakings in the East is the erection of a new entrance for the Brooklyn Navy Yard. The structure is to cost about fifty thousand dollars, and is to be quite monumental in character, so that it would seem quite fitting to make its design the subject of that special artistic study for which the new rules provide, and which cannot, as is acknowledged on all sides, be bestowed upon it in the hurry of the Supervising Architect's office. Judging from the illustration and description of the proposed design which appears in the New York *Herald*, we should say that there was an unusually large space for that improvement which the new law seeks to obtain by enlisting the coöperation of professional architects. The *Herald* informs us first that the structure will be "handsome," so that the mind of the experienced reader is somewhat prepared for what may follow. Next, it tells us that the details are to be "elaborate and striking," and that there will be some "striking features," and we hardly need say that these expressions, in the mouth of a newspaper writer on architecture, forebode the worst. One of the "striking features" is, it seems, to consist of "four round towers, eight feet in diameter, supported by polished granite columns." Investigation of the picture shows that each tower has one column, on which it is "supported," or rather poised, at the level of the third floor, in a manner strongly suggestive of a huge aurist's syringe, glued to the front of the building. We do not say, of course, that these ornaments are not extremely beautiful, as well as "elaborate" and "striking," but they would certainly not be employed to decorate what purported to be a "Romanesque" front by any architect of the class which, it is hoped, will henceforth control the design of public buildings, and it is unfortunate that a building so important as this should illustrate only the crude notion of a very hurried, and not very gifted or highly trained, clerk in the Government "plan-factory."

THE newspapers have a good deal to say just now about what we may call public sculpture, and, as a rule, these remarks have not the flattering character which was once customary under such circumstances. Whether they show any greater acquaintance with the art of sculpture now than they did before is an open question, but, where it was once fashionable for a newspaper to say, on the occasion of the in-

auguration of a new statue, that it "showed genius in every line," or that it was "a striking effort of the talented young sculptor," it is now the mode for the same newspaper to cast ridicule upon the same statue by calling it a "monstrosity," or something else of the same sort. If the critics, in either case, would explain why and wherein a particular statue is "monstrous" or "striking," something might be gained for the public appreciation of good sculpture; but without this either criticism is worse than useless, and we are not sure that the indiscriminate ridicule of all work not stamped with a certain fashionable mark is not more injurious than the indiscriminate and ridiculous praise which was once the rule. Appearances indicate that the present habit of ignorant sneering at statues exposed in public places has retarded by many years the development of the art of sculpture in this country. An atmosphere of foolish and gibing criticism is not that in which art or artists flourish, and, while young sculptors, who do not belong to the group which it is fashionable for the newspapers to extol, dread to expose their work to the silly sarcasm allotted to those outside the deified circle, their modesty is effectually seconded by that of the people who, dreading even more than they the ridicule of the critics, sedulously avoid employing any person whose work is not sure beforehand of a chorus of journalistic applause.

A CURIOUS result of this harsh treatment of sculptors is to be seen in the eccentricities to which the profession seems inclined to devote itself. It is said that if a person comes on all fours into the presence of a lion he will not be devoured, and American sculpture seems to be taking some singular attitudes to appease the beast of criticism, the sharpness of whose teeth it knows so well. In Boston, two clever sculptors have been wasting an immense amount of time over a work more appropriate for a tailor in constructing two philosophical figures—we can hardly call them human—in accordance with the average of an extensive series of measurements collected by physiological investigators. Any one who has seen the unpleasant pictures known as "composite photographs" can imagine the discomfort which such a task must impose upon a sensitive artist, even though he is sure that the novelty of the undertaking will disconcert the criticism which he dreads so much. In New York, prizes have recently been offered for the construction of similar curiosities, in the shape of "generalizations" of the "Greek," "British," "Oriental," "brawny," "spiritual," "athletic" and "graceful" types of male and female figures, to be represented by models in wax, clay or plaster. The task does not, indeed, seem a very difficult one, for it is differentiation, not generalization, that tries an artist's powers, but it is astonishing that any one should think such work to be sculpture. A few years ago a process was invented, and, we think, patented, for sculpturing portrait-busts and statues by photography. Six or eight photographs, of the requisite size, were taken at the same moment by cameras pointed at the subject at certain specified angles. The pictures were then fixed, one at a time, on a screen, and a mass of clay set up before the screen. A long tool, which was kept always normal to the surface of the screen, was then moved so as to trace the outline of the photograph, cutting out, as it did so, a corresponding profile from the lump of clay. This done, the next photograph of the series was fixed on the screen, and the clay turned around through the requisite number of degrees and the operation with the tool repeated. In this way, the clay was brought into a form which, from six, eight or twelve different aspects, had exactly the profile shown by the photograph of that view, and it was, therefore, only necessary to smooth down the polygonal edges of the figure to secure an accurate likeness. Under the present circumstances, it might not be a bad idea for some young sculptor, anxious for work, but in terror of the critics, to revive this process. The finishing of the figure would give his professional skill some exercise, and he could dodge the critics by laying anything they did not like to the process or the photographer, while the results would, at least, be more artistic than "generalizations."

THE Boston Society of Architects has followed up its good work of trying to lead the way in the improvement of the expanse known as Copley Square, by holding a public exhibition of the revised designs submitted in its friendly

competition. The exhibition seems to have proved interesting to the citizens, as well as to the newspaper men, who have expended a large amount of printer's ink in discussing the various projects. Best of all, however, it has interested the people who control the artistic and other destinies of the city, and the committee of the Society having the matter in charge has received a private hint that if a general desire should be shown to have the improvement carried out, the City Government would be found willing to make the necessary provision. In consequence of this suggestion, the committee requested the authors of the successful designs to elaborate them into drawings of a character somewhat more imposing than the original sketches, so that they might be again exhibited in the galleries of the Boston Art Club. To this second exhibition the attention of citizens who would like to see something done to improve the beauty of the Square is again particularly invited, and it has been arranged that visitors shall, if they are willing to do so, record their opinion of the different designs by ballot. This seems to us an excellent idea. It is not, perhaps, unknown to the student of the Latin grammar that a certain Greek painter, desirous of obtaining a frank expression of public opinion on his work, hung one of his pictures on the outside of his house, and concealed himself to listen to the remarks of the passers-by. That these remarks gave him occasion for a display of an elliptical subjunctive is of less importance than that there were plenty of them, and we do not doubt that they did him good. So with the Copley Square designs. It is very proper that, for example, the public should have something to say in regard to the diversion of the direct line of Huntington Avenue, which the committee of the Society, for artistic reasons, strongly recommend, and the plans, especially that of Messrs. Rotch & Tilden for a sunken area, should, and probably will, bring out various opinions, and in the end, the public, which has been admitted, so to speak, to the study of the designs, will find itself interested in seeing them carried out, much to its advantage, and to the promotion of the main object, the artistic improvement of the city by the public wish, under trained guidance.

WE mentioned, some weeks ago, that the Forestry Division of the United States Department of Agriculture has ascertained, by thorough tests, that the common belief of architects that the timber of pitch pine was injured by tapping for turpentine, was erroneous. Professor Fernow's more detailed circular on the subject gives further particulars which are of much interest. Not only is the strength unaffected by tapping, but the chemical qualities are not changed, so that there is no reason whatever to believe that the bled timber is less durable than that of virgin trees. Professor Fernow explains this by saying that the flow of turpentine is confined entirely to the sap-wood, the resins of the heart-wood, which, of course, constitutes the timber portion of the tree, being solid, so that they cannot be drawn out by tapping. In point of fact, the tests showed that the timber which had been bled for turpentine was stronger than that left untouched, but Professor Fernow accounts for this by observing that turpentine is generally drawn from trees growing in favorable soil, which produces better timber, as well as a more abundant flow of sap. As we have before mentioned, the agent of the Division, after travelling over a great extent of turpentine country, was unable to find a single person who could really discern any difference between bled and unbled timber. Some claimed to be able to do so, but failed to make good their claim; and Professor Fernow says that, although specifications often demand that nothing but unbled timber shall be furnished, the order is almost invariably filled with a mixture of both kinds, which is accepted without question. It is evident that to specify one thing, and accept another, is not very conducive to honesty among dealers, and Professor Fernow says, with reason, that the unfounded discrimination against bled timber, which has been practised by builders, architects and engineers for so many years, has "depreciated or discouraged the manufacture, and impeded the sale, of an article which answers all the purposes of construction and the unrestricted use of which is dictated by true economy." In another place, he adds that "This information is furnished in advance of the full report on the investigation in question, in order to remove as quickly as possible the unwarranted discrimination against the product of nearly one million acres of Southern pine, which are annually added to the total acreage in turpentine orchards," and he

thinks that the results of the investigation "should be worth several million dollars to the forestry interests of the South, permitting readier use and sale for a product that, left uncut, endangers the future of the forest by the destructive conflagrations to which it is specially subject."

BEFORE leaving Professor Fernow's forcible and earnest circular, we feel that we ought, for the third or fourth time, at least, to express the gratitude of the profession to him for the work which he has done in extending the knowledge of the proper cultivation and use of our timber trees. A great administrative department can perform such public services much better than any one else, as it can consider the whole field, and study commercial and industrial relations in a way which would be impracticable for a private investigator, and Professor Fernow has shown singularly good judgment in choosing for examination those points in relation to which information is most urgently needed. Every architect will remember the admirable Report on Building-stones of the United States, prepared in a similar manner many years ago, which is, even now, quoted as authority all over the civilized world; and the work of the Forestry Division, under its present management, bids fair to take a similar place among the classics of applied science.

THE *Revue Industrielle* quotes some interesting figures, which show that depression in manufacturing, and, consequently, decline in the value of what we should call industrial stocks, are by no means confined to this country. In Germany, where combinations of manufacturers to control the market were common before "trusts" were heard of in the United States, the shrinkage has been very marked. Leaving out of account altogether the weak or speculative companies, and looking only at the strongest and best-known ones, it appears that the value of their business, as represented by the market-price of their shares, has fallen, on an average, to less than half what it was three years ago. In 1889, the shares of the great Bochum Company, iron manufacturers, were quoted at 289 marks. At the end of 1892 the quotation was 118. In the same way, and probably from the same causes, the shares of the Dortmunder Union have fallen from 137 to 54; those of the Harpener Mining Company from 328 to 124; those of the Mechernicher Company from 291 to 114; and those of the Allgemeine Elektrizitäts-Gesellschaft, which corresponds pretty closely with our General Electric Company, from 236 to 134. The Gruson Works, among the metal-working companies, has maintained its prosperity best, possibly because much of its business has been done under Government contracts. The two great German steamship companies have suffered severely, the shares of the Hamburg-American Packet Company having fallen from 152 to 89, and those of the North German Lloyd from 186 to 82. In the case of the steamship companies, much loss of business was undoubtedly caused by the German cholera epidemic last year, but the decline had gone far before cholera appeared, the North German Lloyd shares being sold in 1890 at 139, and in 1891 at 94, this being almost exactly half of their value in 1889, and only twelve marks higher than the quotation of the cholera year.

IN England, the shares of the great metal-producing companies have suffered a decline even more serious. Those of the renowned Bolckow-Vaughan Company, which were quoted at £12 in 1889, and at £12½ in 1890, fell to £7 in 1891, and to £5 in 1892. Those of the Moss Bay Hematite Iron Company have fallen in the last three years from £8 to £1; those of the Rhymney Iron Company from £2½ to £½; those of the Steel Company of Scotland from £10½ to £4; those of the Teeside Iron and Engine Company from £1½ to £½, a shrinkage of eight-ninths; and those of the Tredegar Iron and Coal Company from £29½ to £½, a loss of ninety-six per cent. In dividends, there has been, naturally, more variation. Taking twelve of the great Sheffield Companies as an illustration, it appears that seven paid a larger dividend in 1892 than in 1889, three paid the same, and two, one of which was the Henry-Bessemer Company, paid less. Taking another important branch of manufacturing, it appears that, of the eleven companies which build railway cars in England, five paid a larger dividend in 1892 than in 1889, five paid the same, and only one lost.

COMMEMORATIVE MONUMENTS.¹—III.

COMMEMORATIVE STONES.



Fig. 13. Monument at Champigny, near Paris.

AFTER the war of 1870, which was so disastrous to France, it was determined to erect monuments in commemoration of the glorious sacrifices that had been made for the national defence. In the vicinity of Paris, accordingly, five small constructions were reared: namely, at Châtillon, Champigny, Le Bourget, Buzenval and L'Hay. The designs were chosen in a competitive contest opened in 1872; it was stipulated that 12,000 francs should be the maximum cost.

The monument reproduced in Figure 13 is by M. Vaudremer, and may be considered as a model of its kind. It stands on the hill overlooking the old road to Provins, toward the



Fig. 14. Monument at Châtillon, near Paris.

plateau of Cœuilly. The *stèle* itself is of Euville stone, the platform of sandstone, the border of granite, and the basement of rough stone. The total height is 5m. 65.

¹From the French of L. C. Boileau fils, in Planat's *Encyclopédie de l'Architecture et de la Construction*. Continued from No. 909, page 130.

The monument at Châtillon (Fig. 14), by M. Bruneau, affects the form of a pyramid on a quadrangular bastion; it is original and finely conceived. It is of stone from the quarries near the so-called Roche de Châtillon.

The monument of Le Bourget (Fig. 15), by M. Deslignières, is really such a stone as the programme called for.



Fig. 15. Monument at Le Bourget, near Paris.

Nevertheless, the artist has succeeded in giving it a noble character, as much by means of the excellent profiles as by the style of the inscription. It is of Belgian granite or stone of Soignies. The sculptor took advantage of all its possibilities in the various fashions adopted for the cuttings. It was inaugurated February 11, 1874.

"To appreciate the expression of the plan adopted," says M. Chipiez of the monument of Buzenval, "we must recall the state of feeling that prevailed in Paris in 1872. The author has attempted to symbolize the earnestness of our hopes and the bitterness of our disappointment." The obsidional crown is plaited and ready to be awarded, according to the ancient custom, to the general who shall lead his countrymen to victory. But, hope betrayed, the unfinished wreath is hung, open and untied, on the cippus set up on the battlefield, and which bears as its sole inscription the date of the fatal engagement.

Many other monuments of the kind have been erected on the battlefields of this war. They are mostly of the funerary order, as, for example, the one commemorating the battle of Coulmiers, by M. Coquart (Fig. 16). It consists of a crenelated stone border encircling a tumulus of earth, at the centre of which rises a stone six metres in height, on a square plan and tapering slightly. One of the courses projects sufficiently on all sides to indicate a sort of cross. On the circular socle are inscribed the names of the soldiers buried beneath. The ensemble has a religious aspect of noble character.

MURAL MONUMENTS.

Monuments to Giuliano and Lorenzo de' Medici, at Florence. In the mausoleum called the New Sacristy, built by Michael Angelo for Pope Clement VII (Giulio de' Medici), are two monuments (Figs. 17, 18), of similar architectural character,



Fig. 16. Monument at Coulmiers, near Paris.

one to Giuliano de' Medici, the other to Lorenzo. The statues adorning them, executed by Michel Angelo, are the well-known masterpieces, "Night and Day," "Twilight and Dawn"; they are nude figures half recumbent upon the sarcophagi. The princes themselves are represented by seated statues in niches,

Giuliano, as the General of the Church, holding the commander's baton, Lorenzo with his left hand beneath his chin



Fig. 17. Tomb of Lorenzo de' Medici.

and his elbow resting on his knee; the latter has been termed *il pensiero*. Giuliano had been created Duc de Nemours by the king of France, in 1516. Lorenzo, under Leo X, had



Fig. 18. Tomb of Giuliano de' Medici.

become Duke of Urbino, in 1519. It is well to note that these admirable works of art reproduce neither the features nor the

costumes of the two men; they are almost ideal figures, clad in armor of a slightly Roman, but eminently artistic conception, embodying rather the dominant qualities of a hero; one portrays the proud energy of a leader, the other, devotion to grand ideas or thoughtfulness. They date from 1534.

Westminster Abbey, rebuilt in the twelfth century and enlarged at several different periods, contains some hundreds of monuments erected in honor of kings and queens and of men illustrious in politics, religion, war, science, letters and the arts. It is a most interesting national Pantheon: every style of art has found a place here, from the twelfth century down to the present day. The oldest are in the form of tombs. The most important of the Renaissance period are sarcophagi covered with a canopy borne on columns, like those in the Abbey of St. Denis dedicated to François I, Louis XII and Henri II. But it is the monuments of the last century that may serve as models for modern architects.

One of the most interesting is that of William Pitt, Earl of Chatham. The statesman is figured as an orator, his statue



Fig. 19. Tomb of the Earl of Mansfield, Westminster Abbey.

being placed in a niche at the top of a pyramid. Two allegorical figures half-recumbent upon the sarcophagus represent Prudence and Fortitude. The attribute of Prudence is symbolized by a mirror in which a serpent is watching its own reflection; that of Fortitude, by a column. Two figures below represent Britannia and the Ocean. The first is seated upon a rock holding a trident, the other is playing with a dolphin; at the feet of the latter is an allegorical representation of Earth resting on a terrestrial globe, by the sculptor Bacon.

In the monument to the Earl of Mansfield, by Flaxman, the eminent jurist appears seated at the summit, in the robes of a judge. On either side of the pedestal which is semicircular in plan, is an allegorical figure; one, of Justice holds aloft a pair of scales; the other, of Wisdom expounds the law (Fig. 19). Between these, on the socle, is a trophy composed of a family escutcheon, a bundle of rods and a sword, the whole bound together by drapery. It is in the French, Louis XVI style.

The monument of Sir Peter Warren comprises a bust of the hero borne by Hercules, with a figure of Britannia, her head bowed toward the admiral. All the round relief parts stand out against an unfurled sail which forms the foundation of the

composition. The sculptor was Roubilliac, an artist of remarkable talent, born at Lyons in 1695; he was trained under N. Coustou. His best works are in England, among which may be cited the statue of George I and that of Newton at Cambridge, that of Shakespeare in the British Museum, and the monuments of Lady Elizabeth Nightingale and Handel in Westminster Abbey. There is also due to him the monument to the Duke of Argyle in the same place; the warrior and orator lies expiring at the foot of a pyramid on which History is tracing the story of his actions. Below, at the left, is Eloquence proclaiming his virtues: this figure is in a most noble and natural attitude and contrasts very happily with that on the right, Minerva with a lance in her hand.

Figure 20 reproduces three monuments; the one on the left is that of Major André. It was designed by Robert Adams and executed by P. M. van Gelder (1780). André, an officer in the British army during the War of Independence, was captured by the enemy, then termed rebels in England, accused as a spy, condemned to death and executed. The bas-relief

Florence. Santa Croce contains a great many interesting monuments, among which the first place should be given to that of Michael Angelo; there is a bust of the artist upon a sarcophagus, accompanied by allegorical figures representing Architecture, Painting and Sculpture, by Giovanni dell' Opera and Lorenzi and Valerio Cioli; the whole stands out on a marble wainscoting adorned in the upper part with a picture by the master and crowned by magnificent drapery held up by children. The monument of Leonardo Bruni, surnamed Aretino, by Bosselino, is one of the earliest of the Renaissance. That of Galileo, by Foggi, is conceived in a style corresponding to the French Louis XIII; a half-length figure of Galileo occupies a circular niche; in front is a sarcophagus of red and green marble, accompanied by two tall, standing figures. We should also note the unfinished monument of Leon Battista Alberti, and the tombs of Raphael Morghen, the engraver, of Marsuppi, of the naturalist Micheli, of the Minister Vincenzo degli Alberti, of the savant Lanzi and of the Bonaparte family. Machiavelli's monument, given in Figure 21, although less



Fig. 20. Tomb in Westminster Abbey.

sculptured on the sarcophagus shows him before the council of war presided over by Lafayette and Washington. The half recumbent statue with a lion at its feet, crowning the construction, symbolizes Great Britain. The central monument, in honor of Palmer Fairborne, Governor of Tangiers, who died in 1860 possesses no great interest. That of Colonel Roger Townshend, on the right, is, on the contrary, very fine. It consists of a pyramid in red marble, resting against which are two caryatides supporting a sarcophagus surmounted by a trophy. The caryatides represent Redskins. One is armed with a gun, the other with a tomahawk. The allusion is to circumstances in the war waged by the English against the French in America, called the Indian War, because many of the savage tribes took part in it as allies on one side or the other. The bas-relief depicts the death of the hero, who was killed in the battle of Ticonderoga (1750) as he was examining the position of the enemy's lines. Architect, Adams; statuary, Carter.

Tomb of Machiavelli, in the church of Santa Croce, at

important than many of the above-mentioned, may, nevertheless, be ranked among the best. An admirer of Machiavelli, Lord Nassau Clavering, had it erected in 1787. The seated statue of Justice is remarkably well executed; the sarcophagus is noble in style. We ask attention especially to the character of the composition itself, comprising merely, aside from the sarcophagus, an allegorical figure holding a medallion. It seems to us to furnish an excellent model, and it is surprising that it is not oftener followed now.

Why should we always insist upon depicting our heroes in a standing position? This mania determines the character of the productions or warps the judgment of artists in competitive trials. The modern style of dress is poorly adapted to decorative statuary. Trousers especially destroy the contour of the leg and always produce the most paltry effect. We very rarely see a statue of a celebrated man of to-day which is, we will not say beautiful, but simply acceptable. Often they are absolutely grotesque. But what can be expected? Whenever, in a competition, an artist of talent offers a representation

of the hero in the form of a bust or a medallion, the design is invariably rejected, whatever may be the merits of the allegorical figures accompanying it. The critics infer that the statuary did not think the great man worthy of a full-length

Paris (Fig. 22), the statue of the jurist is a very remarkable work; Chapu, the artist, has succeeded in turning the advocate's robes to the best account, and the way in which he has indicated the tribune without any detriment to the

Fig. 23. Monument to Henri Regnault, Paris.

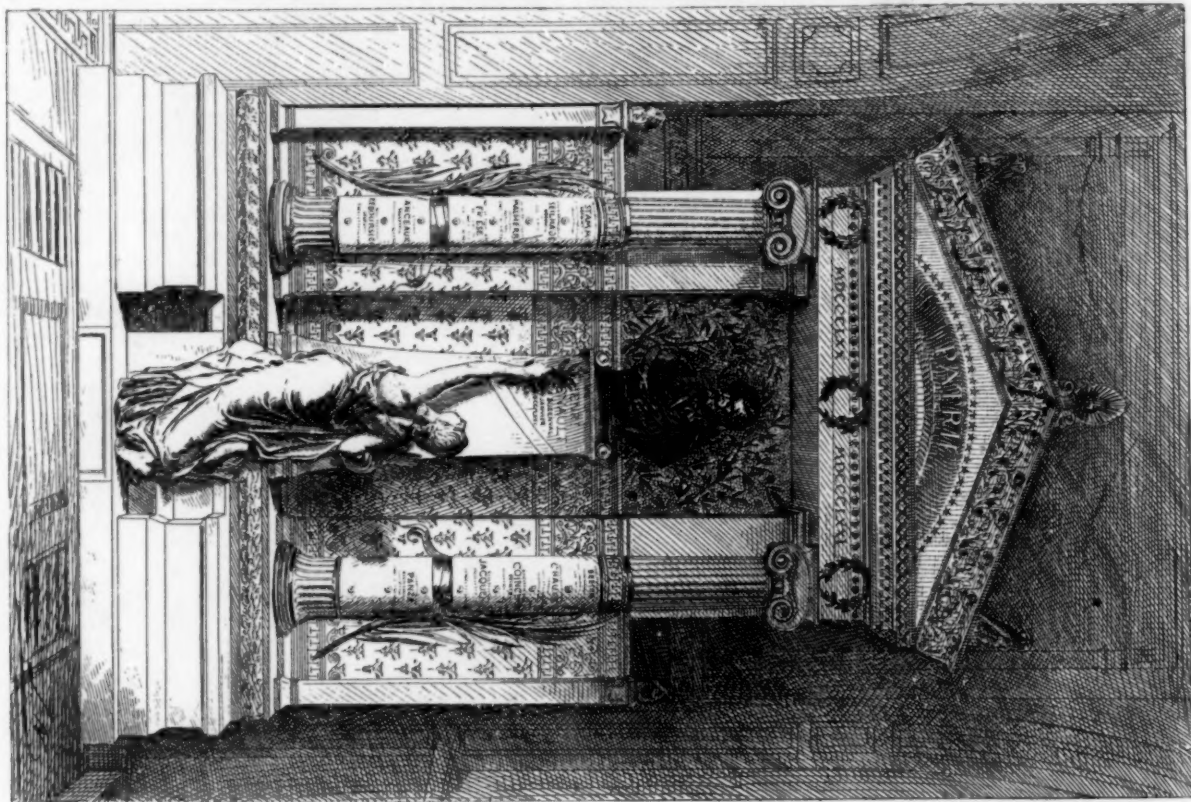
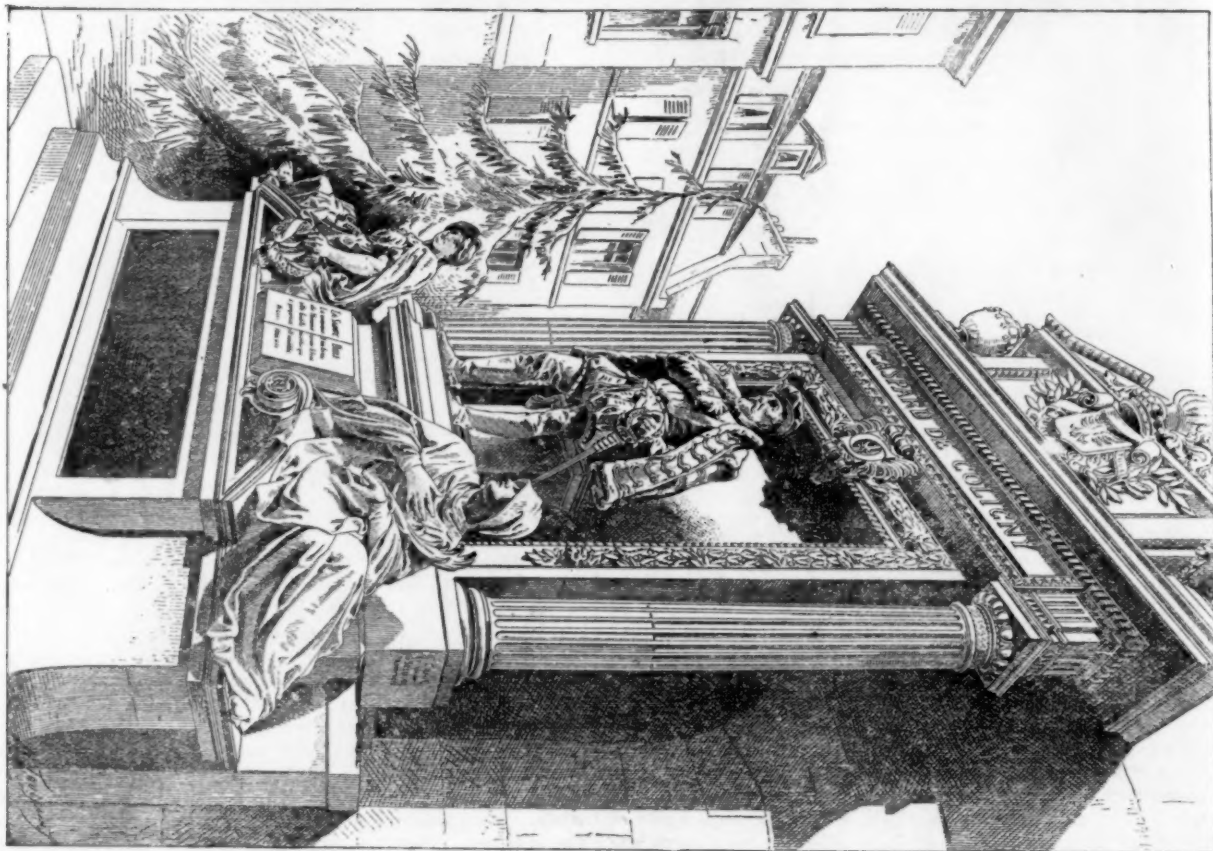


Fig. 24. Monument to Colligny, Paris.



statue, that he was unwilling to recognize his fame, and they set aside his composition for the most commonplace and weakest of effigies, provided only that it has legs.

In the monument to Berryer in the Palais de Justice at

ensemble is noteworthy. The seated figure on the left of the pedestal represents Fidelity, that on the right Eloquence. The architecture, by M. Duc, is conceived, like all of this master's productions, with extreme care, in a pure and modern

Classic style. It furnishes one of the best examples among mural monuments of this kind, in which the subject is indicated by a statue before a porch, as in the tombs of the Medicis.

The monument to Henri Regnault and other pupils of the École des Beaux-Arts who died on the battle-fields of 1870-1871 (Fig. 23) stands against the wall, at one of the angles of the galleries of the Cour du Mûrier, at the École des Beaux-Arts, at Paris. Aside from the bust of Regnault, which is in bronze, the whole is of white marble. The sculptured or graven enrichments are set off with gilt, and the background against which the bust is seen is a Venetian mosaic. Architects: MM. Coquart and Pascal; statuaries, M. Degeorge for the bust, M. Chapu for the figure of Youth. Date of the inauguration, August 12, 1875.

The architectural part was designed most carefully, with great freedom and in a modern Greek style. It is a masterpiece of its kind. Chapu's figure has no separate socle or plinth; on this account, its interposition gives that unconventional turn which the artists of the seventeenth and eighteenth centuries endeavored to give to allegorical statues of this kind. The pose and modelling possess the wonderful elegance of the works of antiquity: it is one of the finest bits from any school of modern statuary.

This monument to Coligny at Paris (Fig. 24) is erected



Fig. 21. Tomb of Machiavelli, Florence.

in the little garden that surrounds the Protestant house of worship called the Temple de l'Oratoire, in the Rue St. Honoré, against the apse wall of the church; it may be seen through the arcades of the Rue de Rivoli, which form a portico open on both sides at this point. The inauguration took place July 17, 1889. Architect, M. Scellier; sculptor, M. Crauck.

The attic is embellished with the coat-of-arms of the Coligny family: an escutcheon bearing an eagle, with the chief adorned with an earl's crown, surmounted by a helmet and surrounded with a collar of the order of Saint Michael. The dedication, "A Gaspard de Coligny," on the frieze, is inscribed in letters of gilt bronze on a slab of green marble. The back of the bay, against which the statue is seen, is of granite. The entire basement up to the statue is of white marble, like the statue itself and the half-recumbent allegorical figures on either side of the projecting central block. These represent Faith and soldierly Courage. An open Bible, also of white marble, completes the composition. The steps are of granite, while the rest of the monument above the socle is constructed

of Euville stone, in courses 50 centimetres in thickness; the columns are monoliths. The architectural part cost 45,000 francs, the statuary 75,000 francs, making a total of 120,000



Fig. 22. Monument to Berryer, Paris.

francs. The ensemble is excellent; the well-conceived details are in a style approaching that of Henri II.

[To be continued.]

ANOTHER ARCHITECTURAL KNOCKABOUT.—III.



It is a surprising fact that there are three if not four, so-called hotels on the Rock of Gibraltar. Being at a loss on which to decide and looking up the question in "O'Shea," who though flowery and verbose in his description of places and things is generally to be relied on, I hit upon the "Calpe Hotel" as being rather appropriate to the place. So accepting the kind, but expensive office

¹ Continued from No. 910, page 147.

of a half English and Spanish subject, to wheel our trunks and baggage on a little barrow, we walked along the splendid parade down a little incline, and discovered ourselves in the one main street, the Broadway, of Gibraltar; continuing along it, to near the outer gates, we stopped at an archway apparently coming out of a cliff. This on entering, however, we found to be a paved court, with four blank walls, whitewashed and covered with illuminated notifications of parades, fox-hunts, squadron manoeuvres, cock-fights and English and French steamship lines. At the end of the hall was a little wire ticket-office, apparently the cage of the *concierge*, and from its side ran the stairway through another arch to the floors above, where the greater part of the business of the little, far-famed English hostelry was transacted. Passing up these stairs we met mine host, who learning that we were strangers, and Americans, welcomed us warmly, and said that people of our nationality were always the most welcome to him. He gave us a big room: exactly how it was built, we never could find out; still there it was, and light in it also. Everything about our abode was rough and primitive, save the meals, which were the best I have had in Europe, and ill-prepared our digestions for the hardships they were about to encounter in Spain—the oleaginous dishes and garlicked *entrées*. We took many views on our Kodaks during the few days of our stay, but found afterwards, that we had unfortunately made composites of several unique bits, owing to the excitement that always more or less paralyzes the intelligence of the novice in photography. On developing what I had

their speed quite remarkable. Every one in Spain seems to be the enemy of the donkey, and as on narrow roads we passed a wayfarer, either in street or country throughout Spain, he would always strike the poor beast with his hand or stick, and it was never "*en règle*" to notice this, or become angry, as it was an accepted custom, and one which, throughout the trip, I could not prevent and over which I had many "scraps." We felt very small, as on our little beasts' backs we passed officers prancing along on great steeds, and looking up would smile faintly and try and look as if we enjoyed it.

Our plucky little animals carried us, however, to the very topmost part of the Rock, with no apparent effort, though George's began to show temper and a sluggish and obstinate disposition later on. We looked around from the glorious height, and could see for miles the shining pink shores of Spain, and away off to our left, the white little town of San Roque. Below us at the end of the neutral ground—a narrow stretch of sand between Spain and Gibraltar—we could catch the glint on the gun-barrel of the Spanish sentry, as he patrolled his beat, and looking down at the gates of Gibraltar we could also distinguish the rifle of the English guard as he tranquilly paraded to and fro. This aspect of war and the proximity of two armed powers, so very near, was most curious and interesting. As the day was very clear we could distinguish the shores of Africa, a faint blue streak on our left, and we took much interest in listening to the guard at the highest signal-station who told us of the tribe of monkeys (unknown in Spain), who have always inhabited the caves



cherished the hope would be an interesting series of views of a bull-fight in Spain—I discovered to my chagrin, that owing to my not turning the crank, previous to pressing the button, that the unknown quantity x —always represented as "doing the rest"—had not done it, and that eight choice pictures were depicted upon one film: bulls like centipedes, toradors resembling centaurs, and a conglomerate mass of excited humanity, looking like a race of people, as yet, I am thankful to say, unknown save to the habitual amateur photographer.

The venerable American Consul was very good to us: we straightway called, and he gave us, as he alone can, permits to all the sights, to the library, and finally put us up at the Gibraltar Club, where we were introduced to some rather companionable English officers and dare-devil middies, whose ships were then lying off the North Front. We vied with each other, in the English game of pool, or billiards; having to play on a table resembling a desert, with balls so small that one could hardly see them. The next day we decided to leave our Kodaks (I was also absolutely forbidden to sketch) and mount the "Rock" to view the surrounding horizon; so giving orders at the office for two fine donkeys, we got on our gaiters, and strode forth to mount our very diminutive quadrupeds. I winked at the groom and added a few coppers to this hint, and without a word being spoken, he insisted that I should mount the off donkey—this, needless to say, was by far the better animal. So off we started, the poor things jogged along, nearly crushed, as it seemed by our weight—our feet could be touched to the ground or not, as we chose, our steeds being of a bantam variety. Their gait was very easy, and

and fissures of the more remote parts of the Rock, only sometimes appearing in companies of from eight to fifteen. A book is kept at the station, and the days when they are seen are always recorded with their number. They never approach near enough to be caught, but jabber and gesticulate at a safe distance, seeming to represent in monkey form perhaps the ghosts, or the transmigrated souls of the original faithful band who died on this spot fighting for their own. These monkeys always appear to object to the English occupation, and after a violent discussion, with tails in the air, they disappear down some fissure, and are not seen again for weeks at a time. Where they live, or where they find their food is a question; some say that they have an underground passageway beneath the Straits to Africa, a passageway known to the Ancients (the Rock is full of huge and as yet unfathomed caves) others again think that when the primeval cataclysm and geological hub-bub took place, separating Gibraltar and the Mountains of the Moon, the progenitors of this little band were so fortunate as to view the event, and survive, albeit on the wrong side. If so, what interesting and vivid facts regarding the Deluge must be handed down in this little family and what an opportunity for Mr. Garner to settle a great geological question!

The only thing to refute this theory is the Darwinian: How would these monkeys have lived for successive generations so near the English town, and not have acquired a greater semblance to man with the added benefit and superior advantage of also becoming English men!

However, this may be, we turned the well-worn pages of the monkey chronicles, and wished we might catch a glimpse of some of them before making our descent. But on our downward march, George's donkey diverted our minds from the contemplation of any other quadruped — for trotting from one side of the road to the other, it would suddenly turn sharp around and begin the ascent again — finally losing patience, George proceeded to belabor the poor beast, till at last he started down hill on a gallop, turning his intelligent little head from side to side apparently taking in the situation of his rider behind, with a casual eye for the beauties of the scenery — suddenly, without a moment's warning, he leaped to one side, depositing George *en passant* in the middle of a ditch, on his back in the centre of a bush of cactus. We decided to ride horses after this, as they were very cheap (a really splendid animal could be hired for about five shillings a day), and give up bantam donkeys with preconceived ideas.

The boat to Tangier not sailing (owing to the rough waters in the Strait) for a day or two, we decided to mount horses and get our first look at Spain and hear the language in its native rendering. So procuring two splendid Arabs, we started gaily off through the gates, where we were stopped by the sentry and informed that if we were not within the town before 6.30, gun-fire, it would be impossible to enter anywhere; but assuring him that, as a special compliment to the Queen, we would return long before then, he saluted and we sped swiftly over the long stretch of neutral ground that lies between Gibraltar and Spain — here we touched our hats to the Spanish guard and officers and trotted through the town *en route* to San Roque, which is about seven miles back in the country. We were told that here we would find a pretty little church, so putting our horses to a good pace we galloped over a track that lay for ten miles before us — our horses' hoofs sometimes washed by the tide — while to our left, getting ever bluer and pinker as we receded, rose the great Rock. How its magnificent lines stood out against the glorious sky! The shipping at its base, so picturesque and full of color, as it lay riding quietly at anchor, or fastened to the pier, unloading cargo! Now and then we would pull up to watch the hauling-in of a seine by crowds of Spanish fishermen, clad in highly-colored coats. Into the surf they rushed, and attached to the hauling-line, little pulling cords — ropes about six feet long — to the ends of which were fastened blocks of wood, which, thrown over the hawser, wound around it, tying into a knot, thus locking line to line, so that the men could haul it far up the beach, when, coming to the limit of their line, they would unfasten the block of wood and rush back into the water to get a fresh lock. Thus they pulled the net until it lay upon the shining sand, full of every sort and condition of fish: we were much interested at the queer spectacle made: peasants from the country round about would come with donkeys, with paniers across their backs, which would be filled with fish for the price of a *peseta* or two. In one of the nets, containing its writhing, shining mass, was a small cuttle-fish: all seemed to avoid it, until one man struck it a blow on its head, stunning it, then taking it by the tentacles, beat it upon the sand for ten minutes, finally making a cut or two, turned the fish inside-out apparently, and carried the body home; for after all it was good eating, and the skin of the tentacles could be used for making excellent whip-lashes.

These fishing scenes would make an excellent subject for a picture, and if I were an artist, I could make an effective painting of this incident: the beach, its crowds of motley Spaniards and the fishermen with their colored blouses, the donkeys and net, flocks of seagulls, dashing down to pick a fish from the net, at which the men would shout, and with it all a background of the blue water and cloudless sky and Gibraltar rising grandly; while way off to the right lay the blue line of the African shore.

Continuing along the beach for a mile or so we came to a road turning sharply to the right, which we took, as directed, and ascending a steep hill we saw from the summit the white houses of San Roque, perched on the side of a small hill surrounded by green olive groves. Though the road here was atrocious, the splendid air made the ride a most enjoyable one, and as our beasts seemed to like it also, we flew along in the best humor possible. All this exercise made us very hungry, and as we neared the town I wondered how we might procure something, as I had hardly learned a word of Spanish at that time, and as we would probably be taken for "Englishmen officers," who are very much disliked, it would be as well for us not to do anything rash. As we trotted through the badly paved streets, the clattering of our horses' hoofs brought out a perfect swarm of children, and nothing but children: there was hardly a man to be seen, the women apparently doing all the work and what men there were must have been sleeping or smoking indoors. Every small boy tried to grasp our bridles, and we had to use our whips often as we rode aimlessly about trying to find a café. But there was none in the place that we could find, and as we were closely followed by a host of children I saw at last we must capitulate, as they (the kids) never left us for a moment, no matter where or how fast we rode. So selecting the most intelligent boy, I pointed to my hungry vacuum and said "*pan*" (Spanish for bread). With a wild "*buéno! buéno!*" "good! good!" — he seemed immediately to appreciate our desires, and tearing off with his hand on the bridle of my horse, with George following, he led us to — apparently, a private house, which proved to be as much of a hotel as the place supported.

On knocking at the door, out came the host, a good-natured looking Spaniard, and wished us "good day" I suppose, whereupon my boy rattled off a perfect torrent of information, which I hoped was

to the effect that we were starving, and that he had brought us there for food. The inn-keeper immediately clapped his hands twice before letting us dismount and soon out came one of the loveliest, though uneducated, faces I have ever seen. This girl held in her hands two glasses of Valdepeña wine, and as she handed them to us to drink, I caught sight of her splendid Spanish eyes and mentally decided that history was correct in its descriptions of Spanish beauty. I hesitated in taking the wine, not knowing where we were or what they might be doing to us, and told George to do the same. The Padrone, seeing our thoughts, said something quickly to his daughter (for so she proved to be), and without another word they each took a large drink from each glass before offering it again to us. Whereupon, with radiant smiles we drained them to the bottom. This was in fact a country custom, a reminder of the old stirrup-cup days, and as we dismounted and were led inside, we gave orders that our horses should be cared for. The host and his daughter then showed us into the dining-room, decorated with pictures of the country and bull-fights. Here we sat down and our host eyed us, expectant of our orders. But our embarrassment was painful, "George" said I, "what do you wish to have to eat?" "Oh, anything," he answered, "like ham and eggs and coffee." So I started in, goaded by hunger and spurred by necessity, on my first Spanish request. The coffee part was all right, but as for conveying the desire for "ham and eggs" it was too much for me.

Talk of French politeness! this Spaniard's face never moved a muscle, save to express a mournful contempt for himself in not understanding us: he had plenty of opportunity for hilarity for I pronounced egg in every possible manner, as well as "ham!" I had previously thought I knew the Spanish for this desirable mixture, but it was hopeless, and finally resorting to my sketch-book, I drew a hen sitting on eggs — this worked like magic; his beautiful daughter looked over my shoulder and smiled much to my edification, as I proceeded to depict a ham; I then made an elaborate water-color, of how ham and eggs looked when cooked, pointing to each of the uncooked articles in uncooked and then in cooked form, I came in strong on the latter, by the yellow of the fried egg — it worked perfectly and the look of absolute relief that went over my landlord's face (not to mention mine) was very pleasing. So off they rushed to the kitchen, and soon we had as fine a plate of ham and eggs as we had ever had at home. But without much meditation, we discovered that we were still hungry, George wanted a "bird or something," so hap-hazard, I drew every kind of game or animal that I could think of, including quail, duck, hen, dog, bear, antelope, beef and finally a hare, which hardly had I roughed-out than our landlord leaped again to the kitchen and soon brought in a finely-cooked and seasoned hare — redolent of garlic and oil and evidently prepared for his own dinner. Thus we had our first Spanish lunch — and though I never had again to have recourse to sketching-out edibles, still it proved that you could get a great many things without asking — we had some wine, and after making a sketch of the pretty daughter, she blushing beautifully while sitting, we prepared to depart, paying a very small price, it seemed, for all the fun we had enjoyed. Receiving a great many smiles from the family, and ennumerable "*gracias*" from its head, we were about starting off, when the pretty daughter ran out with a bunch of violets, in each hand, mine she gave to me last. Oh! if I only knew what she said then! but I could only look at her, and stupidly murmur, what I had heard them say "*buéno! buéno! mille gracias*"! Off we rode, it was getting late, for we had been lunching for several hours, but wishing to see the country further on, we turned our horses still from home, and came in a little while to the ruins of what looked like an old town, but as it was not sufficiently interesting to sketch, we retraced our steps (I had previously drawn the old church at St. Roque, which though rude and barbaric in its architecture, was picturesque in treatment).

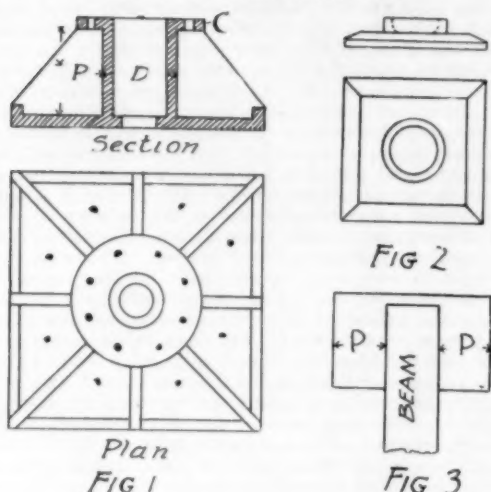
It was nearly six, when I suddenly remembered that we must be within the gates of Gibraltar before gun-fire; twelve miles must be ridden in half an hour! And we started off at a tearing speed, only to hear the boom of the gun, when still a long distance from our goal. When we arrived the gates were shut, we were refused admittance. Finally on sending to the hotel, our landlord came and identified us; but it was not for two or three hours, during which time, to keep warm after our heated race, against time, we walked up and down on the sands. We were glad to reach our temporary home in the old Rock, and retired early, quite worn out but having passed a most novel and delightful day. Before leaving Gibraltar, we attended a fox-hunt and went to a dog-show, the officers and residents of the place having a great many splendid beasts on exhibition.

F. L. V. HOPPIN.

[To be continued.]

THE SCHLOSS OF PLEISSENBERG. — One of the historical buildings of Leipsic, which has been visited by thousands of Americans, is about to disappear. The famous Castle, or Schloss, Pleissenburg, in whose rooms the debate between Luther and Dr. Eck took place, is to be torn down. The castle, which has been used for a barrack for one of the infantry regiments, has been purchased by the city and will make way for a new street to one of the suburbs. The schloss was built in 1217 by Margrave Dietrich after the siege of Leipsic by Frederick II of Hohenstaufen. The city paid the State 1,650,000 marks for the historic pile, which in reality is said to be worth 4,150,000 marks. — N. Y. Tribune.

PROPORTIONS OF CAST-IRON BEARING-PLATES FOR GIRDERS AND COLUMNS.



If a heavily-loaded column or girder should rest directly upon a wall or pier of masonry, the weight would be distributed over such a small area that in most cases there would be danger of crushing the masonry, particularly if it were of brick or rubble work. To prevent this, it is customary to put a bearing-plate between the end of the beam or column and the masonry, the size of the plate being such that the load from the column or girder divided by the area of the plate shall not exceed the safe crushing-strength of the masonry per unit of measurement.

The load per square inch on different kinds of masonry should not exceed the following limits:

For granite.....	1,000 lbs. per sq. in.
" best grades of sandstone.....	700 " " "
" soft sandstone.....	400 " " "
" extra hard brickwork in cement mortar.....	170 " " "
" good hard brickwork in lime mortar.....	120 " " "
" good Portland cement concrete.....	150 " " "
" sand or gravel.....	60 " " "

Example 1.—The basement columns of a six-story warehouse support a possible load of 212,000 pounds each; under the column is a base-plate of cast-iron resting on a bed of Portland cement concrete two feet thick: What should be the dimensions of the base-plate?

Answer.—As the plate rests on concrete, the bottom of the plate should have an area equal to $212,000 \div 150 = 1,413$ square inches, or 37 inches square. The column should be about 10 inches in diameter and 1 inch thick. The shape of the base-plate should be as shown in Figure 1.

The height K should be equal to the projection P , and D should be equal to the diameter of the column. The thickness of all portions of the plate should be equal to that of the column above the base: this is not so much required for strength as to get a perfect casting, as such castings are liable to crack by unequal cooling when the parts are of different thicknesses. The projection of the flange C should be three inches to permit of bolting the plate to the bottom of the column. It will be seen that in such a plate no transverse strain is developed in any portion of it.

THICKNESS OF FLAT BASE-PLATES.

For small columns and wooden posts with light loads, plain flat iron plates are generally used. They may have a raised ring to fit inside the base of an iron column, or for a wooden post, a raised dowel, $1\frac{1}{2}$ " or 2" in diameter. If the plate is very thick, a saving in the weight of the plate may be made by bevelling the edge, as shown in Figure 2, without loss of strength. The outer edge, however, should not be less than one inch thick.

When such a plate is used, it is evident that if the plate is to distribute the load equally over its entire area, it must have sufficient transverse strength to resist bending or breaking, and this strength will depend upon the thickness of the plate. It is difficult to make an exact formula for the thickness of such plates, but the writer has deduced the following formula which he believes will be always on the safe side and without any great excess of strength:

$$\text{Thickness of plate in inches} = \sqrt{\frac{w \times P^2}{1,600}}$$

in which w = the load on the plate divided by its area in square inches, and P the projection of the edge of the plate beyond the post or column. If we apply this rule to the previous example, we have $w = 150$ pounds and $P = 13\frac{1}{2}$ inches, hence thickness

$$= \sqrt{\frac{150 \times 182}{1,600}} = 4\frac{1}{2} \text{ inches.}$$

Therefore if we used a flat plate 37 inches square it should be $4\frac{1}{2}$ inches thick at the centre.

Example 2.—A wooden post 12 inches square has a flat base-plate 20 inches square; the weight on the post is 100,000: What should be the thickness of the plate?

$$\text{Answer.} — w = 100,000 \div 400 = 250 \quad P = \frac{20 - 12}{2} = 4$$

$$\text{Thickness} = \sqrt{\frac{250 \times 16}{1,600}} = 1.6 \text{ inches.}$$

The minimum thickness of such plates should not be less than $1\frac{1}{2}$ inches.

BEDDING.

Base-plates should be bedded or grouted in cement from one-half to three-quarters of an inch thick, the plate to be rammed down solid, true and level. Web-plates should have holes in the bottom, as shown in Figure 1, to show if the cement is distributed evenly under the plate.

BEARING-PLATES UNDER BEAMS OR GIRDERS.

The ends of heavily-loaded beams or girders should rest on iron plates, proportioned so as not to bring a greater pressure on the brickwork than 120 to 150 pounds per square inch, according to the quality of the brickwork.

The thickness of the plates must be such that they will not break under the load. This thickness can be determined by the same formula as given for flat plates, viz:

$$\text{Thickness in inches} = \sqrt{\frac{w \times P^2}{1,600}}$$

in which w = the total weight on the plate and P the projection on each side of the girder, as shown in Figure 3.

Example 3. A steel beam girder, 16 inches wide, carrying a distributed load of 176,000 pounds, rests on a brick wall or pier of hard brick in cement: What size bearing-plate should be used?

Answer.—The load on the plate would be one-half the distributed load on the girder, or 88,000 pounds. This divided by 150 = 586 square inches as the required area of the plate, which we will make 16 inches wide by 37 inches long.

The projection P on each side of the girder would then be $10\frac{1}{2}$ inches, and the thickness = $\sqrt{\frac{150 \times 110}{1,600}} = 3.2$ inches.

The plate should therefore be 3.2 inches thick in the middle, and bevelled to $1\frac{1}{2}$ inches thick at the outer edge.

Example 4.—A 20-inch steel beam of 20-foot span supports a distributed load of 60,000 pounds. The beam is supported by brick walls of ordinary quality: What should be the size of the bearing-plate?

Answer.—The width of the beam is $6\frac{1}{2}$ inches.

The weight on one plate would be 30,000 pounds, which, divided by 120, gives 250 square inches for the plate, which we will make 12×21 inches. The projection would then be $7\frac{1}{2}$ inches nearly,

and thickness = $\sqrt{\frac{120 \times 56}{1,600}} = 2$ inches.

Example 5.—A 15-inch light steel beam $5\frac{1}{2}$ inches wide carries a weight of 26,000 pounds: What size bearing-plate should be used for ordinary brickwork?

Answer.—Area of plate = $13,000 \div 120 = 108$ square inches. Size of plate, 9×12 inches. $w = 120$. $P = 3\frac{1}{2}$.

$$\text{Thickness} = \sqrt{\frac{120 \times 10\frac{1}{2}}{1,600}} = .9 \text{ inches.}$$

Bearing-plates should never be less than one inch thick, however, when of cast-iron.

BEARING-PLATES ON COLUMNS.

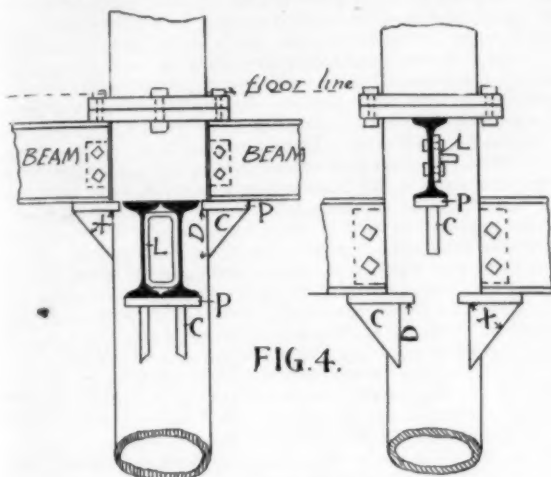
Figure 4 shows the usual method of connecting iron floor-beams and girders with cast-iron columns. The ends of the beam and girder rest on plates P cast on the columns, and the plates are supported by cast brackets C , so that no transverse strain can come upon the plate. For single beams, one bracket is sufficient; for double beams, or for wide beams or riveted girders, two brackets should be used. The ends of the beams and girders are fastened to the column by bolting to the lugs L , which are also cast on the column.

As there can be no transverse strain in the plates, it is evident that the strength of the support consists in the resistance of the brackets and plate to being sheared or sliding down on the column, and also on the resistance of the bracket to crushing. The thickness of the plate and brackets should not be less than the thickness of the body of the column, and this simple rule will generally insure sufficient strength for supporting the beams or girders. In case of very heavily loaded beams or girders, it would be well, however, to calculate the resistance of the support both to shearing and crushing.

Both the plate and bracket would offer resistance to shearing, but the writer advocates considering only the resistance of the bracket. The resistance of a single bracket to shearing is equal to the height D multiplied by the thickness of the plate, and the product by 7,000 pounds. Thus, if the length D is six inches (which should be about the minimum length) and the thickness of the bracket one inch, the

shearing area would be six inches, which, multiplied by 7,000, gives 42,000 pounds as the safe strength of one bracket.

The resistance to crushing may be found by multiplying the distance X by the thickness of the bracket and the product by 13,000. Thus if X is four inches and the thickness one inch, the resistance



to crushing would be 52,000 pounds. Such a bracket would support the end of a 20-inch light steel beam of 16 feet span under its full load; for heavier beams, the thickness of the bracket and also the length D should be increased. F. E. KIDDER.

TOPOGRAPHICAL AND ARCHITECTURAL HISTORY OF THE CITY OF MEXICO.—II.

THE INDIAN PUEBLO, TENOCHTITLAN, AND ITS CONSTRUCTION.



Cross-road Chapel at Mulheim, near Soest, Germany. From *Architektonische Rundschau*.

TENOCHTITLAN, in 1519, was neither the capital of a vast empire nor the centre of an advanced civilization. It was simply the chief pueblo of a military confederacy composed of three Aztec tribes, occupying that number of pueblos. In common with the tribes of New Mexico, Central America and Peru, the Aztecs were in the middle status of barbarism, marked by their use of stone and adobe brick in the construction of their buildings, their ignorance of the use of iron, and their retention of the breech-clout as the principal article of dress. The buildings described as "palaces" by Cortés and by a long line of subsequent writers, each outstripping his predecessors in the exaggeration of details, were simply such

buildings as were required for the transaction of tribal business, the storing of the common supplies of the tribe, and the communal dwellings of the various kins. There was nothing that we can learn of the social organization or government of the Aztecs to necessitate more than three classes of buildings: the mounds of worship, of which, according to most witnesses, there were many in the pueblo besides the great *teocalli*; the *tecpanes*, or official tribal business houses; and the communal residences. The House of Birds and the Zoological Museum and Gardens, of which we may read in descriptions of this Aztec "city," might be satisfactorily explained. Birds, for their rich plumage, and animals for their hides or for food, perhaps both, either for curiosity or for religious purposes were undoubtedly part of the tribute gathered up from all parts of the land into which the Mexican arms had been carried. As they were the common property of the tribe, public lands were set apart for them. Some building must have been provided for the accommodation of the birds. The beasts were doubtless allowed to roam within a wide enclosure. A House of Dwarfs is also mentioned by Spanish writers. Possibly these dwarfs were captives taken in war. The Indians of the mountains of Oaxaca are of low stature, and if existing in large number and kept in a separate building while being prepared for sacrifice, might easily have furnished the impressionable Spaniards with the basis for an elaborate account of a house stocked with dwarfs for the amusement of a royal voluptuary.

Market-places also existed. Markets were indispensable after the establishment of direct relations with the outside world. The name "*Tianquis*" has been preserved and applied to two localities in Tenochtitlan as well as to some portion of Tlatelolco. One of these market-places is alleged to have been south of the western causeway upon the site of the present *alameda*. There is every indication, however, that water covered that site. It was marshy ground after the conquest. Hence we conclude that the Indian market of San Hipolito was either directly upon the causeway, broadened for that purpose, or else that it was an establishment subsequent to the Spanish conquest. If the *tianquis* were a tribal institution, we would expect to find it near the centre of the pueblo, upon tribal ground.

The communal mode of residence precluded the existence of a poor class living in squalor. Some writers, indeed, remark upon huts of reeds, contrasted with the buildings of the rich, but such structures may have existed as the temporary booths for the shelter of the cultivators of the public lands, the herders of public animals, or of those engaged in the exchange of commodities in the market-places. Of the public lands we find that there were two kinds: lands whose crops were applied to the sustenance of the constructors, ornamenters or repairers of the public house or *tecpan*; and lands whose crops went to the head war-chief, his family and assistants.

The first sight of the *tecpanes* and communal residences, so excited the wonder and admiration of the conquerors as to lead them into all manner of extravagances of description. The conduct of the Conquistadores, however, was thoroughly inconsistent with their written reports. For what they described as a magnificent capital, containing a large number of marble palaces, and in beauty and extent impossible to describe, they ruthlessly demolished. Cortés, who must have remembered seeing magnificent Gothic cathedrals in Spain and perhaps the Alhambra itself, writes to his sovereign in regard to the "palaces" of Tenochtitlan, "I can only say that in Spain there is nothing to equal them." The promptness with which he destroyed every vestige of this magnificence, would indicate that there was little in the Indian pueblo worthy of preservation and that none of it was of substantial character. Free use had been made of burnt gypsum in plastering the exterior walls of buildings and in making floors. Glistening in the midday sun of that tropical clime, any white surface was likely to suggest marble, and it is no marvel that the wonderstruck Europeans, at first sight, supposed that they were looking upon a city of marble palaces. The despatches of Cortés were written before he had critically examined these buildings and corrected his first impressions. In fact, he never found time to make a very close critical examination. Other matters engrossed his attention forthwith. After the conquest, however, he discovered, what he forgot to explain to his imperial master that the pueblo contained nothing worth saving, nothing in the way of buildings adapted to the needs of Europeans. So the pueblo of Tenochtitlan was razed to the ground. The debris was applied to the filling-up of the canals and possibly also to the extension of the narrow island upon which the pueblo stood, which would imply the use of adobe as the chief building-material of the ancient pueblo, rather than porphyry, marble or *tetzontli*. The only salvage out of all the wreck consisted of a few sculptured stones, from the *teocalli*, deemed suitable for building in the subsequent city.

From descriptions we have of two structures in the ancient pueblo, by dint of much labor and by a careful comparison of facts now known concerning the Aztecs, we may adduce something like an intelligent account of the domestic and public architecture of Tenochtitlan. These structures were: (1) that in which Cortés, his European soldiers and his Indian allies were entertained in the fall of 1519; and (2) the so-called "Palace of Montezuma."

The site of the first has been identified as what is now the corner of Calles Sta. Teresa and Indio Triste. It was a *tecpan*, a large building of one story erected some forty years previously during the

¹ Continued from No. 905, page 72.

administration of the war-chief Axayacatl and occupied by him as his official residence; it was fully in accord with Aztec laws of hospitality that this house was placed at the disposal of the Spaniards, who, after considerable hesitation, had been invited to the pueblo. The custom of Indian society, practised among themselves and with strangers from other tribes, was to assign quarters to their guests and to supply them with provisions. The Aztecs accordingly emptied one of their largest buildings of its occupants and turned it over to the Spaniards for their occupancy.

Bernal Diaz writes that this building "was very light, airy, clean and pleasant, the entry being through a great court." Cortés called it "a very large and splendid palace," and refers to "a spacious saloon, in front of which was a court through which we had entered." With Herrera, who wrote late in the sixteenth or early in the seventeenth century, from documents preserved in Spain, begin the purely imaginative descriptions. It is only for testimony to the extent of the building that we quote from his account of the arrival of the Spaniards at their quarters: "They came to a very large court which was the wardrobe of the idols, and had been the house of Axayacatzin, Montezuma's father. . . . Being lodged in so large a house that, though it seems incredible, contained so many capacious rooms with bed-chambers that one hundred and fifty Spaniards could all lie single. It was also worth observing that though the house was so big, every part of it to the last corner was very clean, neat, matted and hung with hangings of cotton and feather-work of several colors, and had beds and mats with pavilions over them. No man of whatsoever quality having any other sort of bed, no other being used."

It would be valueless to quote later descriptions as they develop this one-story house, with its broad *patio*, into the gorgeous palace of an Oriental tale. Suffice it to say that the building was large enough to shelter the Spaniards and their Indian allies to the number of about 1,500 souls. Probably the *patio* was used by the Indian allies.

The site of the so-called "Palace of Montezuma" has been identified as that now occupied by the National Palace. It fronted the coatapantli on the east. Possibly it was on one side separated from the quarters of the Spaniards by the width of a broad street. Herrera's is by no means the most extravagant description we have of this "palace." Quite likely in its exterior appearance it differed little from the *tecpán*, but as the Spaniards saw it, it was being put to its intended use. It was, in fact, a "large joint tenement-house," wherein a hundred or more families consisting of the war-chief "Montezuma" (Moteczuma) with his gentle kindred—his clan brothers and clan sisters—united in a communal household. This household "was fed from common stores prepared in a common kitchen and divided from the kettle in earthen bowls, each containing the dinner of a single person," for the Aztec dietary only contemplated the preparation of one meal a day, with a quantity of food kept on hand for the refreshment of visitors. In this daily meal the men indulged first, and alone, the women subsequently.

The "new house" of Montezuma was probably thoroughly congruous with the rude manner of life existing in Tenochtitlan. A recent and very cautious writer, from whom we have already quoted in reference to this building,¹ who has carefully sifted and weighed all the testimony of the Spanish writers, thus describes it: "The external walls of the house were covered with plaster. From the description it seems probable that in the interior of the large rooms the faces of the stone in the walls were seen here and there, some of the red porous stone, some of marble, and some resembling porphyry, for it is not supposable that they could cut this stone with flint instruments. Large stones used on the inner faces of the walls might have been left uncovered, and thus have presented the mottled appearance mentioned. The Aztecs have no structures comparable to those of Yucatan. Their architecture resembles that of New Mexico wherever its features distinctly appear upon evidence that can be trusted. The best rooms found in the latter region are of thin pieces of sandstone prepared by fracture and laid up with a uniform face, without the use of mortar. Herrera had no occasion to speak of marble and porphyry in the walls of this house in such a vague manner and upon mere vague information." Halls were entirely unknown in Indian architecture, hence the spacious "halls," with which this and other Aztec houses are supplied, are a mere figment of the imagination.

Each communal residence bore blazoned upon its exterior walls the hieroglyph of the kin or clan occupying it. The eagle blazoned upon the "new house" of Montezuma, as mentioned by various writers, signified that the house belonged to and was occupied by the Eagle clan, that to which Montezuma or Montezuma belonged.

Tenochtitlan was the largest pueblo to be found in America and may have contained thirty thousand inhabitants; but only by the communal method of living could that large population have been accommodated in such a small space, and then only by the existence of a number of large communal houses. The buildings varied little from an established type. They were usually constructed on three or four sides of a court, and had flat roofs as Mexican houses now have, though mention is made by Clavigero, of houses having two stories, the second story receding from the lower, probably in terraced form. Such a thing as a house occupied by a single family, as we understand the word family, is unmentioned.

The peculiarity of the situation of Tenochtitlan may have occasioned some peculiarities in the formation of the streets and squares.

¹ The late Lewis H. Morgan.

"There were three sorts of broad and spacious streets," says Herrera, and he may be partly right in this, "one sort all water with bridges, another all earth and a third of earth and water, there being a space to walk along on land and the rest for canoes to pass, so that most of the streets had walks on the sides and water in the middle." Some traces of the intra-urban canals may still exist, and be indicated by two streets of the modern capital, within the borders of the old pueblo site, known respectively as Calle del Puente del Espiritu Santo, and Calle del Puente del Correo Minor.

Clearly the greatest architectural skill possessed by the Aztecs was bestowed upon their temples. In their domestic architecture they seem little advanced beyond the cliff-dwellers or other sedentary tribes of New Mexico. There are massive sculptures preserved in the National Museum of Mexico, formerly parts or appurtenances of the great *teocalli*, denoting a remarkable skill in the cutting of stone without the aid of any implement other than flint or obsidian, and also a wonderful skill in engineering in the transportation of huge blocks from mountain quarries to the lake pueblo. The exhumed fragments of the coatapantli reveal the accuracy of the name "serpent wall" thus given. But by far the most interesting sculptural relics of the Aztecs are the so-called "Calendar Stone," "Stone of Sacrifice," statue of the "goddess Teoyaoimiqui" and the "Indio Triste." Without entering into a discussion as to whether or not these sculptures have been misnamed, or attempting to decide for what purposes they were intended, it may be remarked that these huge blocks bear designs which could only have been wrought in the hard porphyritic basalt (Humboldt) by patient labor.

ARTHUR HOWARD NOLL.

(To be continued.)



ALTHOUGH the World's Fair was officially opened on the first day of last month by the President in the presence of many dignitaries, still it is but just in a condition that the ordinary mortal would consider ready for the general admission of the public. To be sure, the great buildings were finished last fall as far as their structural work was concerned, but, one and all, they have had to have a finishing coat of color on the outside, and the hundred-and-one odds and ends that had to be finished up have taken much longer than was expected, so that, even at this late date, there are finishing-touches here and there that are still requiring hundreds of workmen. The severe winter weather and the heavy spring winds have had much to do with this unavoidable dragging of work on the buildings themselves, while the installation chiefs, in the early part of the year, certainly did not give one-tenth of the energy to their work that would have been desirable, and which they have lately been showing. Of the smaller buildings inside the grounds, scarcely a single one, with the exception of the charming Japanese construction on the Wooded Island, was completed, or even very near it, on May 1st. Many of the State buildings were finished on the outside, but a glance at the interior of any of them showed much work still to be done. As for Midway Plaisance, that collection of most interesting "side-shows," to run the gauntlet of which will cost fifteen dollars per individual, work was even less far advanced than in the vicinity of the main buildings. To be sure, the Turkish mosque had been formally dedicated, and one or two performances were opened, but the Streets of Cairo, the German village, Old Vienna, the Javanese village and a dozen other attractions were only far enough advanced to show that something especially interesting for architectural students would eventually be found in this part of the grounds. Also the great wheel, nearly two hundred feet in diameter, in which, for a consideration, the public shut up in hanging-cages, is to revolve up into the air and down again, was still in only a partially completed state, and so enveloped in scaffolding as to scarcely give the idea that it was to be the mechanical wonder of the Exposition, and is expected to create an interest to rival that felt at Paris in the Eiffel Tower.

In the immediate vicinity of the grounds, but not connected with them, preparations are being made for a host of minor attractions, ranging all the way from fortune-telling and shooting at glass bottles to "Buffalo Bill's" celebrated "Wild West Show," and even the highest class of spectacular productions. As a representative of the latter class stands the immense building known as the "Spectatorium," which, it is to be hoped, will be ready for the public not later than July.² Here is to be represented in a most novel manner the great events in connection with the discovery of America, and so unusual is the edifice that, even in its present incomplete condition, it is quite worthy of special inspection.

² This enterprise has been definitely abandoned. — Ens.

It is said by the projectors to be the largest structure ever erected for dramatic purposes, having a frontage of five hundred feet, with a depth of nearly four hundred. A reference to the ground-plan [See Illustrations] gives a more accurate idea of the enormous size when it is borne in mind that the comparatively insignificant space devoted to the orchestra-stalls, with balcony and galleries above, will seat over five thousand people. From this it is practicable to judge of the immense size of the stage, or scenitorium, as it is called, and the space occupied by mechanical appliances. The construction proper is similar to that of the great World's Fair buildings. Upon post foundations a latticed framework rises, lathed on the outside and covered with staff, while the inside is finished either in wood, plaster or any other desired material. Over the portion devoted to stage and auditorium the roof-work is all carried by steel trusses, which are now just being put in place. The finished exterior has a strong touch of the Spanish Renaissance blended with certain features of the Romanesque, which, so far as one can now judge, appears to have worked out very satisfactorily. Special portions of the roof are to be utilized as gardens, and there is to be an observatory on top of the main dome. All arrangements of entrances, exits, coat-rooms, etc., seem to have been studied out with great care and success, but the most curious feature of all is the stage mechanism. Of course, none of this is yet in place, but a working-model in an adjoining building enables one to get fair conceptions of what a really stupendous and novel affair the spectacle will be that is to be shown in this new building. Throughout the entire representation vocal and instrumental music are to be the interpreters of the various scenes, which form a series of realistic tableaux, the scenery for which is not of the usual painted character, but is built and constructed largely of the "real things"—houses, trees, rocks, plants and sand, by which a vast advance in realistic portrayal is designed to be effected. The Spectatorium, as it is called, is one vast reservoir of water of over one hundred square feet, upon which will appear to the audience twenty-two different pictures or stages. They are, in reality, separate cars, moved by underneath cable power over iron tracks, which, it is said, will represent over six miles of railroad in the entire building. Upon these stages the pantomime will be acted, the effect being heightened and elaborated not only by music, but also by most curious effects in electric-lighting. All these mechanical features appear to have been studied out in the minutest detail, and present many novel ideas in theatrical construction. One of the most curious and interesting of these is the patent curtain of light which is to replace the ordinary drop-curtain. By a most ingenious manipulation of the lights the picture is concealed, and one seems to look at darkness with only a fringe of incandescent-light glows around the proscenium-arch. Thus a change of scene is made while the curtain is up, the outside lights hiding the stage. Especial study has been given to the effect of light for both day and night; the early dawn, the rising sun and the mid-day sun with shadows are represented, while the gradual appearance at sunset of the constellations, accurately depicted as they appear—the southern heaven with the falling stars, meteors and aurora borealis—are considered most remarkable. The mechanical portions alone are expected to cost in the vicinity of half-a-million dollars. For architects at least, one of the most satisfactory features of the interior arrangements is to be a gallery behind the scenes, where not only a favored few may witness much of the curious manipulation, but, in fact, probably every one who wishes to, as, in fact, over two thousand persons can be seated there.

The first of May has been more than unusually exasperating for architects trying to finish up work by that date. Aside from the usual difficulty of obtaining workmen at this period, the year 1893 has added to some other discomforts an unusual amount of delayed work, both at the World's Fair proper, and also much in the vicinity of the grounds. Extreme cold weather and storms put such a stoppage to the vast amount of building in that quarter that even a tremendous influx of outside workmen has not been able to make the supply equal to the demand. Plasterers and carpenters especially have had things their own way, prices as high as eight dollars a day being reported for plasterers. Excessive prices at the Fair Grounds have naturally drawn workmen away from the work going on down town, to which may be added several small but very aggravating strikes, altogether making it impossible to complete much work as expected. As a result especially noticeable several large office-buildings only about two-thirds finished are being occupied by tenants while workmen are at work all about.

In one of these buildings an elevator accident has just happened which only missed being a catastrophe, and as it was five persons were quite seriously hurt. The elevator having stopped at the eighth floor, and taken in as many passengers as could be well crowded into it, made one drop to the first story being only stopped four feet from the cement floor by the tardy safety-cable. Many of the passengers were hurt, several seriously, and had the car fallen the remaining few feet many deaths would have been the result. The accident was caused by the bursting of a small pipe running out of the cylinder, through which the water which supplied the pressure had escaped. Of course the elevator-men say everything had been tested as it should be, and that it was an accident that could not have been prevented. Still none of the elevators in the building had been examined by the city elevator-inspector, and no certificate as to their condition could be shown. Some of the elevators were running in the building

without any cage whatever around them, and so it does not look as if all precautions had been taken.

It is rather discouraging to admit that discord and dissension seem to have been lately the order of the day in matters directly and indirectly connected with the fair. One of the latter class has been over the colossal statue of Columbus recently unveiled on the Lake Front. Certain of our local newspapers have been very severe in their criticism saying that the bronze figure of the great discoverer only needed a hump on its back and an enlargement of the stomach to convert him into a veritable Punchinello. This, perhaps, is extremely severe. It is reported that the plan of the base was approved by one of the leading architects of the fair, but whether this be true or not it is ungraceful and apparently unstudied, and adds nothing to the general effect of the composition. Columbus himself when viewed from a point directly in front of the statue is less objectionable, than from any other point, it being evidently the most careful point of study of the sculptor. From the back and sides it is positively bad, and from no position does the composition possess that touch of genius which puts life into bronze or stone, and makes from the most commonplace subject a thing of beauty. It is much, very much, to be regretted that so large and prominent a composition should be exactly what it is, when in this particular place a really fine work might have been a delight to so many. The face of the statue, probably in aspiring to be strong, has resulted in something chiefly coarse. It hardly seems as if it could equal the face of the original in fine thoughtful energy, and in this case when so little is known of the exact features of the living discoverer, we might have hoped for an ideal face at least. It is a thousand pities for all concerned—for the sculptor, the monument committee and the public—that this work is what it is.

THE STORY OF THE BOIS DE BOULOGNE.



From the Musée de Lille, France.
From *La Construction Moderne*.

ALTHOUGH the Bois de Boulogne may be said to constitute the lungs of Paris, there are few people here, either natives or foreigners, who are acquainted with the history of this most vital feature of metropolitan anatomy. This is all the more astonishing inasmuch as the Bois plays a far more important part in the existence of Parisians, both rich and poor, than either Central Park at New York or Hyde Park in London. It is in the Bois that all the principal races are run. It is in the Bois that the rich take their daily airing on horseback, in carriages or on foot, and where the poor spend their holidays with their families, picnicking under the shady trees on the grass. Of all these, however, who pass through the gate of the Bois every day there are scarcely any who are aware of the fact that on the race course of Longchamps, right opposite the grand-stand, there is a large and ancient cemetery with numerous tombstones, the latter at a distance of a couple of feet below the surface of the ground. In the ancient maps of Paris it figures as the Cemetery of Boulogne, and the last sleep of those who lie there must be singularly agitated by reason of the noise and turmoil overhead, especially on the day of the Grand Prix and of the annual 14th of July review. Just where the two Longchamps race-courses form a junction there are the ruins of the tomb of a famous Russian General who died at the time of the occupation of our city by the allied troops after the battle of Waterloo. The windmill which forms so picturesque a feature of the park around the race-course dates back to the year 1648, and the crenelated and semi-ruined tower close by belonged in olden times to the Abbey of Longchamps, founded by the sister of St. Louis. In the eighteenth century a prima donna of the opera suddenly abandoned the stage to become a nun, and so superbly used she to sing the "Tenebres" that court and society were wont to flock to hear her on every Good Friday. The custom of driving out to Longchamps every Good Friday afternoon remained in force long after her death, until a few years ago, although the people by that time had forgotten the origin of the custom.

The Bois, as now laid out, is indebted for its existence to Napoleon III, who, on returning here after his long exile in England, determined to endow the good city of Paris with a park similar to those of the British metropolis. It was only, however, in 1858 that Napoleon and Eugénie together drew up the first plan, which was elaborated by the architect Vau, and I have seen one of the earliest drafts of the plan in which the streams and the lakes that now exist were painted in green by the hand of the Empress Eugénie herself. The lakes are entirely artificial, and the earth which was removed from their site has been used to construct the so-called Butte Mortemart. The huge rocks that adorn the Bois in such a picturesque manner were all brought down Seine from the Forest of Fontainebleau at an enormous cost. Hills were constructed here, valleys there, while the old straight drives and rides were converted into serpentine avenues, which now form a total length of 160 kilometres. It is difficult to realize that all this arrangement of the Bois is of recent

date and of so artificial a character. It all seems so natural, so thoroughly haphazard; and yet everything, down to the very location of each tree, was carefully provided for beforehand, and the whole Bois must be regarded as a perfect triumph of landscape gardening on a mammoth scale. It was only a few decades ago that King Louis Philippe, and King Charles X were wont to shoot partridges, hares and pheasants, which were preserved there for the use of the sovereign. It used at that time to form a part of the forest of Clichy, and with the exception of Longchamps, was very neglected, wild and abandoned. Nevertheless it is well to bear in mind that it was in 1802 that the first long trousers were inaugurated at Longchamps; that it was there too that the first balloon made its ascension in 1783; that it was at Longchamps in 1826 that the beard made its reappearance on men's faces after an absence of close on two centuries. It was in the Bois de Boulogne that potatoes were first grown in France. The number of duels that have taken place in the Bois is simply legion, one of the most famous being that between the Duke of Bourbon and the Comte d'Artois, who subsequently became King of France under the title of Charles X. The most picturesque features of the Bois visible from Longchamps are the exquisitely lovely château and gardens of Bagatelle, now belonging to the widow of Sir Richard Wallace. The château, notwithstanding its size, was built in less than sixty-four days, as the result of a wager between Queen Marie Antoinette and the Comte d'Artois, above mentioned.—*New York Tribune.*

PALMA.

IN a city so limited in area as Palma, crowded with sixty thousand souls, where the cock's shrill clarion is heard from the third or fourth story across the way, and sheep-skins drying in upper galleries give evidence of malodorous occupations, desirable apartments are not to be had for the asking, so we turned our faces in quest of a home towards the suburb of El Terreno, which had smiled a welcome on us as we entered the bay. This lovely hill-slope, against whose rocky base the sea gently surges, is the summer resort of the well-to-do Palmesans. The houses, built of sandstone, washed with soft tints, are of characteristic architecture, delightfully irregular, with broad porches and low, flat roofs, enclosed to form a balcony. They are set in terraced gardens of perennial bloom, surrounded by high walls, over which the prickly cactus lifts forbidding arms. In these secluded gardens the rich bloom of the pomegranate mingles with the exquisite green of the fig-tree, which is trained into a wide-spreading arbor capable of sheltering families of patriarchal magnitude. Pieces of white paper tied to the balustrades indicate by their position, at the end or in the middle, that furnished or unfurnished apartments are to let. These directed our footsteps, and, as the result of negotiations conducted with that fervid rhetoric and expressive gesticulation so dear to the Southern nature, we are established, with a balcony all our own, from which we command a view of sea, city and mountains of as rare a loveliness as it is enduring; and when, as the shadows lengthen, the goats come up to be milked, with the little kids gambolling beside them, and figures sharply defined against the evening sky walk upon the house-tops, and Phyllis and Corydon fling back to each other their antiphonal chant, we could fancy ourselves living in pastoral times were it not impossible to conceive of poet celebrating song so shrill, and were not the passing tram-car an irreconcilable object in such surroundings.

But on the height above us, under the shadow of the ancient castle of Bellver, days of romance and of chivalry seem near. Even six hundred years of varied fortune have not destroyed the beauty of this structure, supposed to have been destined as a dwelling-place for the Mallorcan kings. Tradition tells of song and dance and brilliant gallantry that went on within its walls, but history deals with it only as a fortress, and records the troublous times of wars, of sieges, of murders and of treasons. "The walls are circular, interrupted by towers, and rise from a deep moat. The massive "tower of the oath of fealty," isolated from the walls, is connected with them by a graceful bridge high above the moat. Under this tower are the subterranean dungeons which have hidden shining talents and noble virtues, for men famous in Spanish history have been sadly associated with Bellver. A memorial stone over the spot where he was shot, by order of Ferdinand VII, pays tribute to the virtues of Lieutenant-General Lacy, who died "a victim to his love of liberty." In the room where Jovellanos, a *litterateur* of more than Spanish fame, spent six years of his life, the Sociedad Económica Mallorquina has placed a commemorative tablet. The spacious, circular court-yard, surrounded by two galleries with groined roofs and graceful arches, is of exceptional beauty. On looking into the great well in the middle of the *patio*, a charming surprise greeted us in the form of a luxuriant mass of maidenhair fern covering the well-worn stones some distance down with its glistening fronds. The exuberant life of nature in this Southern latitude makes one forget the vicissitudes of time. Through the openings of pines, carobs and wild olives that keep their footing on the steep hillside one sees the rich valleys, carpeted with green and teeming with orchards and vineyards, the gay wild flowers rejoicing everywhere, the sapphire sky and sea—all steeped in a golden atmosphere that gives one a strange lightness of spirit in harmony with this youthfulness of nature.

The realistic character of the ceremonies of Holy Week, just passed, reminded us that we are in a country said to be even more Catholic than Catholic Spain. On the Thursday preceding Easter, a procession of figures in old-time penitents' garb (one walking bare-foot as a real penitent), priests and soldiers clad in mail, marched through the streets with lighted torches and solemn music, bearing aloft a crucifix (supposed to possess miraculous virtues), a crown of thorns, a scourge, a sponge dipped in vinegar—every emblem that could make real the event they celebrated. On Good Friday, the flags on the castle and the shipping in the harbor and throughout the city were at half-mast, while the streets wore a deserted look. The next morning, at a signal from the guns on the ramparts, the flags were hoisted, bells rung out, and preparations were made for a grand *fiesta*, to close with a bull-fight. The ancient custom of sacrificing a lamb was generally observed, and women and children were seen dragging their unwilling victims to the shambles. Bands of singers, with guitars and castanets, went about throughout the day and night making noisy joy over the Resurrection. On Easter Sunday a brilliant ceremony took place in the cathedral. Priests in rich white vestments, representatives of the noble families of Palma in evening-dress, and altar-boys with lighted candles, made the circuit of the vast building, bearing the figure of the victorious Christ. Through a long lane of kneeling worshippers the procession advanced until the figure of Mary was met, borne from the opposite direction. After making obeisance to the risen Lord, she turned and led the way to the high-altar.

The gloom of the great cathedral lends itself well to these observances, even its very beauty and impressiveness helping to keep alive that spirit of superstition which seeks to wall-in the mental horizon. Any effort towards greater freedom in religious matters is met here with fierce opposition. A pastoral letter was read in all the churches of the island, a few weeks since, charging upon Protestantism all the evils, material and social, of modern life. This onslaught received its impetus from a movement on the part of a handful of Protestants to build a small chapel in one of the outlying villages. This religious bigotry helps, too, to prevent the furtherance of much-needed sanitary reforms, ignoring natural causes, and urging the people to spend their energies on religious exercises. Truly, the spirit of the twentieth century must knock loudly to be heard in this far-away isle.—*S. G. in the N. Y. Evening Post.*



ENGINEER'S CLUB OF PHILADELPHIA.

AT the regular meeting, May 20, 1893, Mr. Thomas D. Whitaker stated that Mr. Lesley, in his verbal discussion, did not use the word "moistened," as it appears in the printed record of the meeting, page 9, line 17, and also that his own discussion on page 10 should read:

"I am burning cement in a rotary kiln, and have not found it to disintegrate.

"We all dampen the raw material before passing it into the kiln, so that the different ingredients cannot separate, and also to prevent the carrying-off of a large quantity into the stack.

"I would also state that at my works I add no limestone to the cement rock to make the proper chemical relations, as the rock is correct when taken from the quarry.

"By the use of coke in the dome kiln the cement is always subject to the defect of an excess of silicon, for coke has a residue of from five per cent to as high as thirty per cent, which is almost pure silicon, and more or less is taken up by the clinker when at a white heat, when the chemical combination is taking place in the kiln. The rest remains as an impurity in the cement."

The secretary presented a letter from Mr. E. L. Corthell, and a description of the visit of a party of French engineers to this country during the latter part of August, by which it was understood that they should be entertained by this Club while in Philadelphia. The matter will be referred to a Committee on Foreign Guests, that will be appointed at the meeting of June 3, in accordance with the President's suggestion, stated in the notice of the last meeting.

In answer to the question as to the rules prevailing among architects and builders for vertical pressures that can be safely borne by high masonry walls, it was informally stated by Mr. W. C. Furber that the rules which prevail among architects and builders for proportioning of high masonry walls are, to a large extent, empirical ones. These rules, under ordinary conditions, give safe results. All large cities, however, have building regulations which prescribe minimum thicknesses for various heights, and which are supposed to have been derived from observation and practice. There is, nevertheless, a marked difference in what each city considers sufficient. An empirical rule, which gives safe results under most circumstances, is to start at the uppermost story with walls one and one-half bricks in thickness and increase each story one-half a brick descending. These figures will do for warehouses and heavy buildings, but are too large for the ordinary light buildings.

Perhaps the most approved and generally accepted formula for

calculating the safe thickness for high masonry walls is that given by Louis de Coppel Berg, which is a modification of Rankine's formula for long columns; and while too long for complete insertion here, can be found in Berg's "Safe Building."

L. F. RONDINELLA, Secretary.



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

THE SPECTATORIUM, CHICAGO, ILL. MESSRS. W. L. B. JENNEY & W. B. MUNDIE, ARCHITECTS, CHICAGO, ILL.

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

SINCE the letter of our Chicago correspondent, published in this issue, which gives some description of this very interesting enterprise was written, we have seen an announcement in the public press that the financial condition of the undertaking was beyond the stage of possible amelioration and that the affairs of the Spectatorium Company had been placed in the hands of a receiver. This we take to be tantamount to the temporary, if not the absolute abandonment of Mr. Mackaye's spectacle.

CENTRAL FEATURE OF THE SPECTATORIUM, CHICAGO, ILL. MESSRS. W. L. B. JENNEY & W. B. MUNDIE, ARCHITECTS, CHICAGO, ILL.

PLAN AND SECTION OF THE SPECTATORIUM, CHICAGO, ILL. MESSRS. W. L. B. JENNEY & W. B. MUNDIE, ARCHITECTS, CHICAGO, ILL.

DESIGN FOR A MEMORIAL FOUNTAIN SUBMITTED IN THE ARCHITECTURAL LEAGUE COMPETITION, BY MR. EMERY ROTH, CHICAGO, ILL.

DESIGN FOR A MEMORIAL FOUNTAIN SUBMITTED IN THE ARCHITECTURAL LEAGUE COMPETITION, BY MR. J. M. UFFINGER, BROOKLYN, N. Y.

[Additional Illustrations in the International Edition.]

CARVED WOODEN CHOIR STALL: END OF THE XV CENTURY.

[Copper-plate Photogravure.]

THE IMPERIAL INSTITUTE: TWO PLATES.

It is not easy with a language like the English to find rhymes that will describe an important building with precision. When, therefore, Mr. Lewis Morris wrote in his ode for the ceremony on Wednesday—

Lo! the airy domes and towers arise
Clear on the vernal skies.

Not of our colder Northern Art sedate,
But lighter, blending East and West in one,
A flower of Fancy quickened by the sun,
Yet keeping still, to guard our Regal state,
The Lions at the gate.

Here, in the stately chambers everywhere,
And corridors with veined marbles, fine, etc.,

we must take the will for the deed, and excuse him if his description is not technically correct. The Imperial Institute can be made a great agent for the welfare of Great Britain and its dependencies. There is no doubt the building is worthy of so important a purpose. That was the general opinion at the opening, and there were many who were surprised that the architect's labors were not rewarded by some dignity.

THE JOHANNESBURG EXCHANGE, ORANGE FREE STATE, AFRICA. MESSRS. LENNOX-CANNING & GOAD, ARCHITECTS, JOHANNESBURG, AFRICA.

WE publish the design of this building which, with the House of Deputies at Bloemfontein, Orange Free State, designed by the same architect, and already published in the *American Architect*, represent the two most important buildings erected in South Africa since the Capetown Houses of Parliament were constructed many years ago. The greater portion of the building was constructed before the railway reached Johannesburg, and therefore the whole of the materials, except the bricks, had to be carried over three hundred miles of bad roads in wagons.



[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.]

A FORM OF CONTRACT BETWEEN ARCHITECT AND CLIENT.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—Although written contracts between architects and their employers are not often needed, yet when the service continues for more than a year, or when the employer is a corporation, with possible change of officials or agents, a written agreement is essential; unless the architect is willing to assume the risk of loss that may ensue for the lack of such a document.

The following is submitted as one form that has been approved by competent legal authority. It is intended to fully recognize the rights of both parties to the agreement; which all so-called contracts do not.

JOHN A. FOX.

The City of Oldtown, Massachusetts, by its Mayor, hereby employs Mr. I. Jones, of Boston, Mass., as architect of the proposed new building for a City-hall in said Oldtown. The said Jones is to make the customary drawings and writings necessary to procure competitive estimates from and to make contracts with builders for the work and materials for the said building and to properly represent and describe all parts of same, and said Jones is also to supervise the erection of said building during its progress until completion. Said Jones is to receive from said City of Oldtown in consideration of said services the customary fee of five per cent on the cost of the completed building. One-third to be paid him when the plans and specifications are ready for contract. One-third when the first-floor of the building is on, and one-third when the building is completed. Said Jones shall be entitled to no further remuneration except for alterations and additions to said building made by the written authority of said City by its proper representative. If the erection of the said building is abandoned or postponed, the said Jones shall be entitled to such equitable proportion of the said fee as may be agreed upon or be determined by arbitration.

If the said Jones dies or becomes incapacitated for professional service, he or his representatives shall deliver to the said City all plans and papers relating to the works and shall receive from said City an equitable proportion of the said fee of five per cent on the cost of the building.

The original drawings are the property of the architect and to remain in his possession, but he is to furnish all usual and necessary copies for use in the erection of the building and at the close of the work is to deliver to said City of Oldtown a full set of the general working-drawings and specifications for reference.

The said Jones for the said fee of five per cent agrees to render the aforesaid service as architect in the manner provided.

The printed schedule of the American Institute of Architects is attached to this agreement as evidence of custom only.

For the inhabitants of the City of Oldtown,
April 1st, A. D. 1880.

_____, Mayor.

{ SEAL }

Witness _____

_____, Architect.



RESULTS OF THE LIPPMAN PROCESS OF COLOR PHOTOGRAPHY.—M. Berget, of the laboratory staff in the department of physical research at the Sorbonne, has recently submitted at a meeting of the Photo Club of Paris some landscape negatives in color which the Messrs. Lumière have obtained by the method of M. Lippman. After many experiments the Lumières have succeeded in making gelatine-bromure plates that retain their sensitiveness long enough, and are of a texture sufficiently delicate, to permit the reproduction of colors; so that it was possible at the meeting of the society to see the marvellous results which these photographers have obtained. The pictures that you behold in these negatives are like aquarelles. Here is a cluster of flowers: roses, violets, jasmines appear in their proper colors, their real colors, with all their infinite delicacy of multiple and various tones. Everything is there, the green, the white, the blue, the red, the rose and the violet, with their subtle, velvety hues; everything is there except the fragrance of the flowers. Here, again, is a bit of park scenery with a sky of exactly-rendered blue, with gravelled pathways which one distinguishes with perfect clearness from the earth graded for the greensward; here is a ravishing little cottage, all bathed in sunshine—and what sunshine!—and here a vista under the trees made of sombre greens and light greens, the lights deliciously distributed, and the whole view giving the sensation of nature itself. Next was shown the photographic reproduction of a series of chromo-lithographs whose crude colors you see on the boxes of wax matches in daily use. Here is the Marshal Soult, or the figure so-called, who is depicted with his "frigate" hat, surmounted with a plume of superb white; "that tone of white," says M. Berget, "the reproduction of which is the culmination of color photography." Here are color photographs of colored caricatures, of the staring posters you have seen so many times on the walls that you recognize the familiar hues when the negative is exhibited under the oxy-hydrogen light. There was also shown a color photograph of a Japanese screen with the exotic coloring peculiar to that sort of painting. M. Berget gave on this subject the following explanations:

"Color photography has certainly just made a great step forward. The problem is to-day settled, for we have now films equally sensitive to all the colors. Observe the blues and the whites in the landscapes which have been shown us. In ordinary photographs the sky is, as you know, of a crude white; it is said to be solarized. In these new photographs the sky comes out with its own true blue. As to that white which is the resultant of all the simple colors in combination, it is admirably reproduced by the new films, because they are sensitive to all the simple colors alike. It must be said, however, that it still remains to accelerate the time of exposure, which is now from twenty-five to thirty minutes, while at first it exceeded an hour. It would be difficult to find a person obliging enough, or anxious enough to have his picture taken in colors, to remain motionless for a half hour in the bright sunlight. Another desideratum: Every color photograph now taken is unique, as was formerly the case by the daguerreotype process. We need to discover a method of making color prints on paper." — *From the Courier des Etats-Unis, May 9.*

TWO VANISHED KANSAS TOWNS.—It is a coincidence in Kansas history that two of her citizens who afterwards became United States Senators—Senator John Martin and ex-Senator John J. Ingalls—originally settled when they entered the Territory at towns which afterwards fell into decay and have since been obliterated from the map. John Martin cast his lot with Tecumseh, in Shawnee County, a settlement of much promise, the child of the pro-slavery party. It enjoyed the seat of the county government, the Federal Court, and the Government Land-Office, and was crowded with people, mostly Democrats. When the Pro-slavery cause failed and the Free-State people got in control of affairs, the town began to go down; the men went into the Confederate army, the women and children were sent South, and the houses were moved to Topeka, as were also the county seat, the Federal Court, and the Land-Office. The Santa Fé Railroad stops its local trains there, but does not maintain a station agent, and the only habitation on the old town site is a house labelled "Cash Grocery." The fate of Sumner, in Atchison county, where John J. Ingalls began his career in Kansas, was even more striking than that of Tecumseh. Tecumseh was a town of wood, while Sumner was a city of brick and mortar, graded streets, business blocks, schools, churches, and other evidences of New England thrift and culture. It once had a population of 3,000 inhabitants and was a fair rival of all the other river towns, until its hopes were destroyed by a county-seat election, which gave the prize to Atchison, its pro-slavery rival. Legend says that Atchison won by fraud, but be that as it may, the people accepted the situation and promptly began to pull up stakes and move to the victorious town, and to-day not a house marks the spot. The town site embraced several hundred acres, but it is now wholly covered by a heavy growth of young timber; blue grass has covered the scars made by the city engineer and street commissioner, and railroad trains rush by without whistling. — *Kansas City Star.*

THE PENNSYLVANIA RAILROAD STATION AT PHILADELPHIA.—It is also to be noticed that American stations, on the Pennsylvania Railroad at least, must now command admiration for their completeness and fine appearance, instead of being, as they were not many years ago, entirely ill-adapted for the service of the public. The vast number of tracks, crowded by miles of freight-cars, afford proof of the enormous carrying business which the company has to deal with; this feature is particularly striking on entering the Broad Street Station at Philadelphia. At this station, too, an engineering work of considerable interest is now being carried out by Mr. Percival Roberts, of the Pencoyd Iron Works. At present the station platforms are covered by two arched roofs of moderate spans, but a short time ago, the company decided that the width of the station should be increased and placed under one roof, the width of which will be 307 feet clear, a dimension exceeded only by two other famous structures—the Machinery Hall in Paris and the Manufactures Building at Chicago. Of course it was a matter of necessity that this alteration should be carried out without interfering with the constant traffic of the station, and accordingly the great span is being erected over, and clear of, the existing roofs, which will be removed after the completion of the new structure. In design the new roof will resemble very closely that of the Jersey City terminal-station of the same railroad company, but we may in passing refer to a small, though very important novelty, which has been introduced in the skylights which nearly cover the roof. Large areas of glass in exposed situations, and at a great height above the ground, are a constant source of expense for maintenance, and what is much more serious, a standing danger to the people on the platform beneath. These dangers have been practically obviated by the use of glass moulded upon round steel wire-netting. The process of manufacture is such that the netting is imbedded in the glass, so that fracture becomes practically impossible, and in any case must be limited to a very small area, and no broken glass can fall to the ground. It is, moreover, a curious property in this new glazing material that it can be bent without much difficulty, and in this way curved skylights can readily be made. — *Engineering.*

MUD IN THE CINCINNATI RESERVOIR.—A Cincinnati correspondent writes as follows to *Fire and Water*: Superintendent Willis P. Tharp of the water-works began a herculean task Monday, cleaning the mud out of the western division of the Third Street reservoir. The capacity of the great basin is something like 2,500,000 gallons of water. The reservoir is twenty-two feet in depth, and when the large volume of Ohio River water was drained out at noon, the superintendent was astonished to discover that the mud in the bottom was about eight feet deep. He expected to find four or five feet of sediment, the deposit of several years, but hardly anticipated learning that more than one-third of the capacity of the immense stone-walled basin was full of mud which has been pumped from the Ohio River into the reservoir. The task of cleaning the reservoir is a big undertaking and will require the work of at least thirty men for eight or ten days. To those who are not familiar with the old Third Street reservoir and its history some

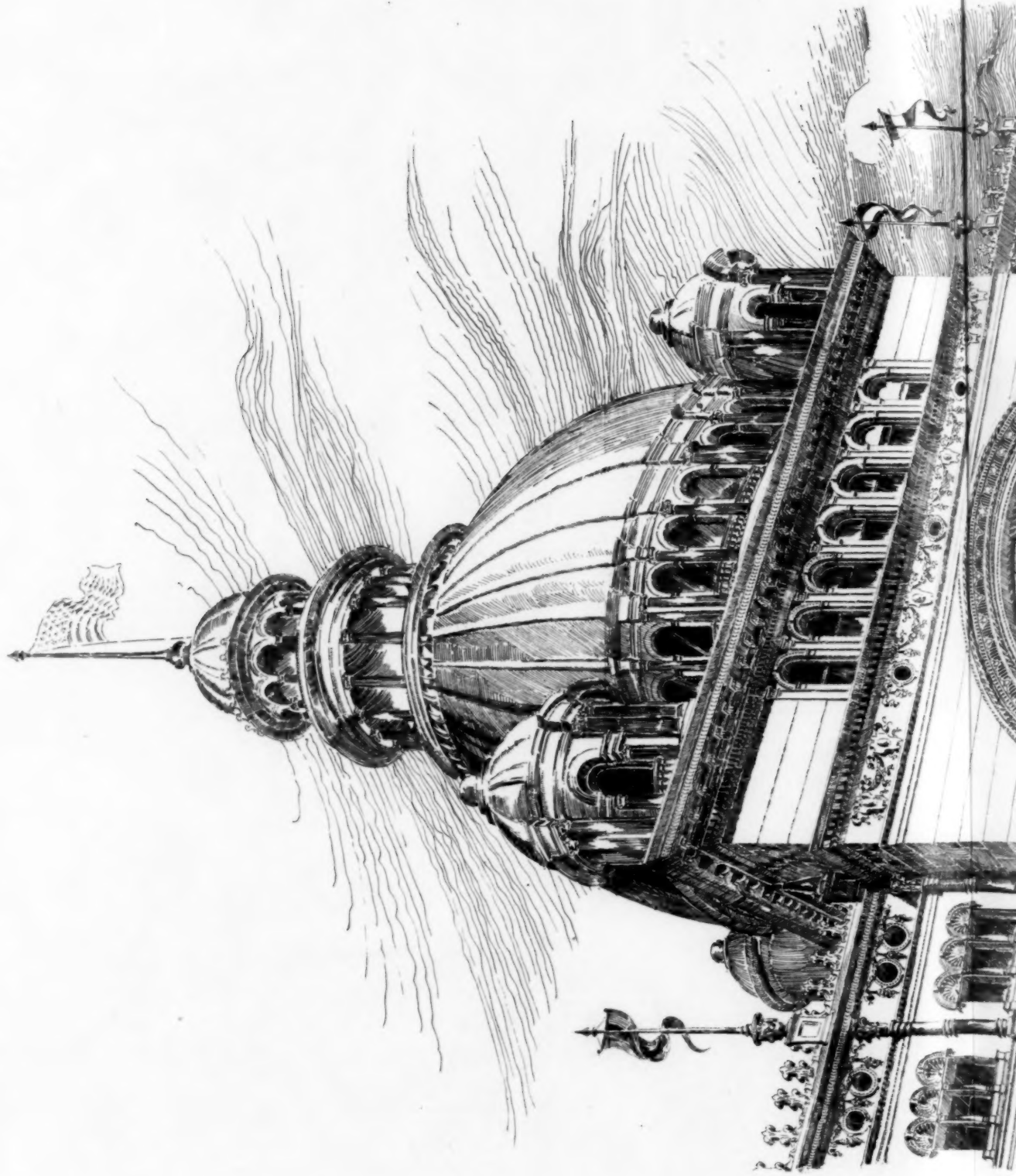
explanations will prove highly interesting. The reservoir itself is 175 by 112 feet in dimensions and is sub-divided into two basins, each with a capacity of 2,500,000 gallons.

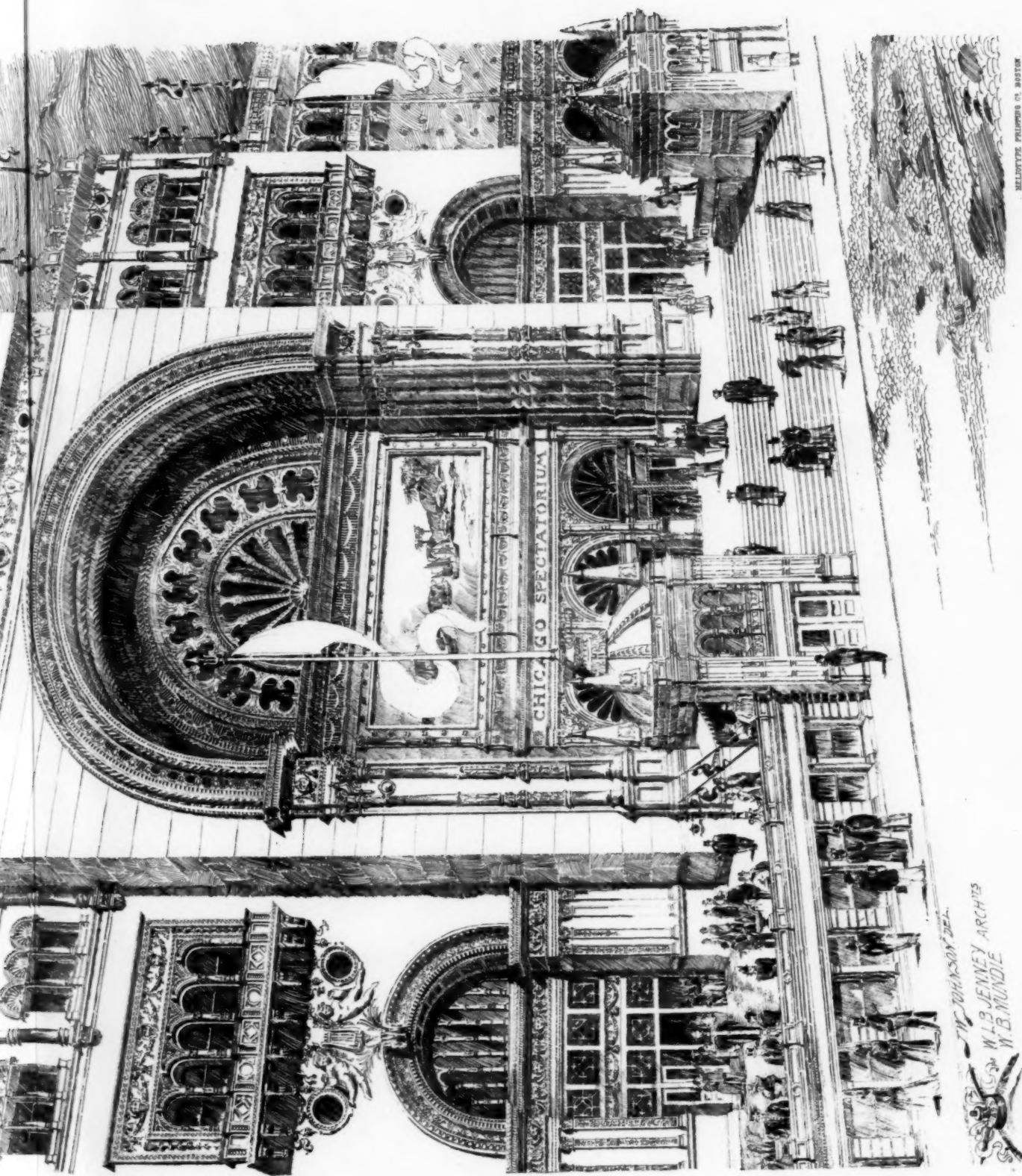
VALUE OF THE SPRUCE LANDS IN MAINE.—A timber expert makes the interesting statement that the spruce lands of Maine are to-day worth more than were the pine lands of fifty years ago, mainly because of the development of the pulp business. He estimates the value of wild lands at \$20 per acre, reckoning only eighty-five cords to an acre. There are nearly 9,500,000 acres of wild land in Maine, and assuming that only a quarter of this is covered with merchantable growth, the total valuation would be something like \$47,000,000. Some idea of the immense extent of wild lands in Maine may be gained from the statement that they would make a state twice as large as Massachusetts, twice as large as New Hampshire and Vermont combined, and thirteen times as large as Rhode Island. In Aroostook County alone there are nearly 3,000,000 acres, while in Piscataquis, an adjoining county, there are over 2,000,000; in Washington, another adjoining county, over 500,000; in Somerset nearly 2,000,000 and in Hancock about 400,000 acres. Penobscot the most thickly-settled county in eastern Maine has over 800,000 acres. — *N. Y. Evening Post.*

ARKANSAS ZINC.—In the rooms of the British and Canadian Exchange Club, Auditorium, Mr. James Mix gave lately a private exhibition of mineralogical specimens from Marion County, Ark. Among the specimens was a chunk from "the Governor Fishback," a 14,000-pound specimen of zinc ore now on exhibition in the Department of Mines and Mining at the World's Fair. The large specimen from Arkansas is 7 by 6 feet surface measurement and is 4 feet deep. It is the largest chunk of pure ore ever exhibited, and will yield 90 per cent refined zinc. There were also on exhibition some splendid specimens of "turkey fat," pure carbonate "black-jack," and all the various forms that zinc is smelted from in Arkansas. Only for the last sixteen months has this State been known as a zinc-producing one, but at present the output from the mines in Marion County alone is equal to that of any county in the old zinc-producing states. — *Chicago Tribune.*

TRADE SURVEYS

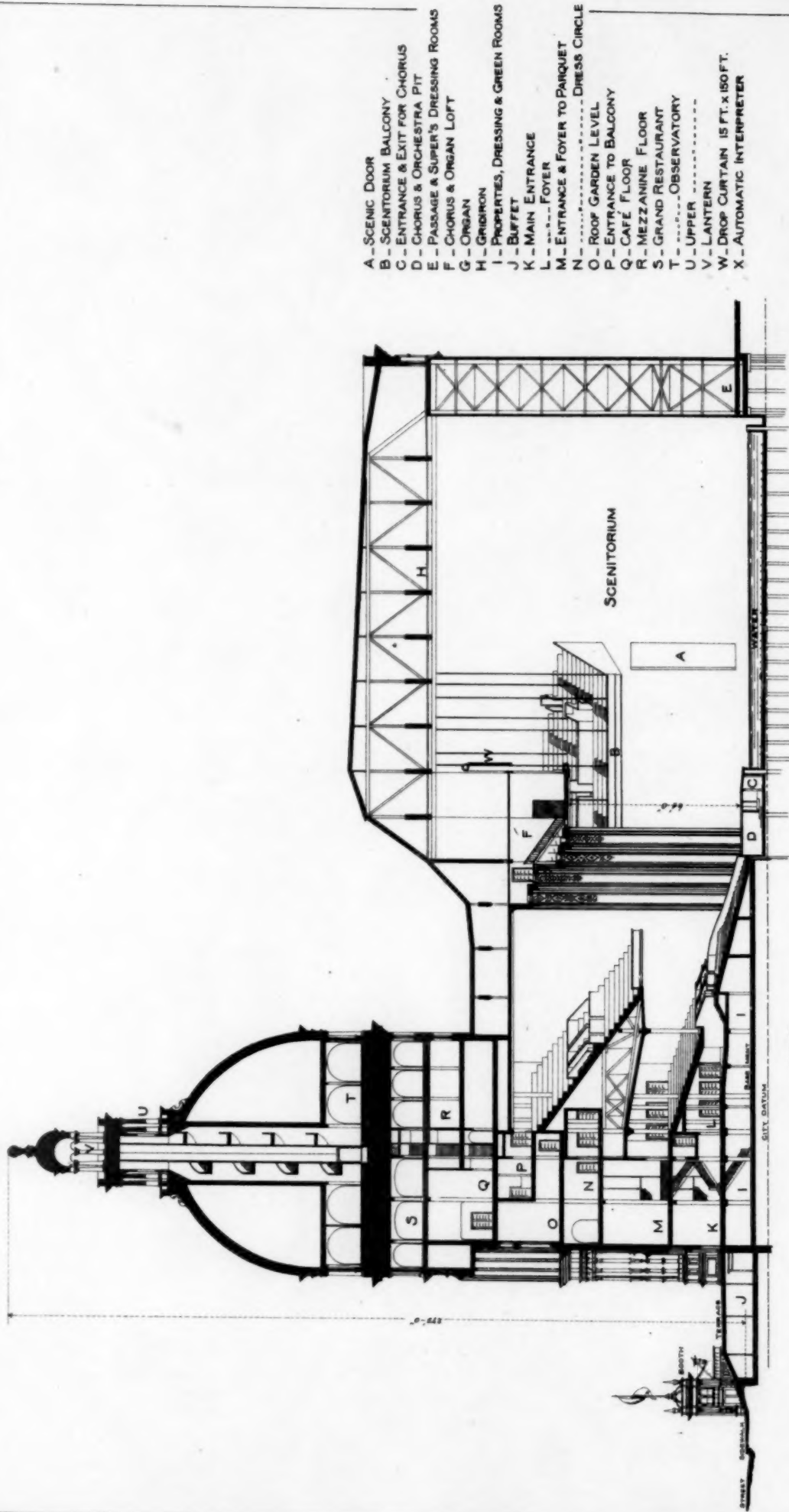
DISTRUST as to financial security is on the increase in banking and business circles, but, despite that fact, the daily press continue to say the stringency is a thing of the past, and confidence is galloping back. In point of fact, the causes of existing conditions have not exhausted themselves. Besides, some of the causes are not recognized. Other things supposed to be causes are not such. The causes at work are fundamental, and have scarcely any reference to policies, but to conditions of growth and to the development of underlying principles which as yet have received but poor notice or respect at our hands. The daily papers are full of trashy stuff relating to gold shipments, imports, exports, bank reserves, balances and surpluses, and all that, as though these stray facts on the ocean of trade were causing or influencing anything except to muddle the reader. As surely as the sun shines this country is emerging from defective conditions, or, rather, from the narrowness of the past. The tricks and combinations of money and credit lenders may tide us over the smaller difficulties, but the deeply-seated evils, if such they may be called, are not to be remedied by smart management nor the borrowing of a few millions of gold. The extent of the inconvenience due to the monetary stringency is only now beginning to be seen by Eastern lenders. It will next be seen in decreased distribution of merchandise, then in slower collections and increasing distrust. Already considerable business is tied up, such as orders for equipments, machinery, rolling-stock and the like. It is only of late that the toolers have stopped to look up from their toil to take notice of the talk of trade depression. They do not understand it, and would prefer to take and execute orders and go along as they have been. In other words, up to this hour the stringency and depression has been a bankers' panic. This country has never been so nearly out of debt, measured by volume of money invested, values were never so near their true and safe level, production was never under such perfect control, and producing-capacity was never at such a point. Industries and enterprises are taking root as never before, cost of living is lower than in the history of recorded prices, and yet there is deep and wide apprehension, apparently because there are not under our control enough pieces of yellow metal to pay balances with. As before stated, the trouble is—growth—growing conditions which must be met, not with pieces of metal white or yellow, but by the adoption by the Government of the same business principles practised in the counting-rooms of successful merchants and manufacturers. With regard to business, there is an increasing exchange, limited, however, by actual requirements. However prolonged the depression may be, it is improbable that a further reduction in prices will be brought about, unless in freight-charges in certain localities. The industrial managers think they have submitted to all they ought to or can. The commercial interests are certainly doing business on extremely narrow margins. The next danger that threatens is the disappearance of a few tens of thousands of small traders by a compromise settlement of twenty-five to fifty cents on the dollar. There is no protection against a superabundance of traders, and in every general depression they are squeezed out, only to reappear on the next tidal wave to struggle on while it is rising and disappear with its subsidence. This has been the history of trade for decades. Were it not for some such drastic processes as that now at work, there would be no limit to the number of traders. Looking rightly at these things, there is less cause for complaint than appears on the surface. Textile manufacturers have not felt it safe to expand production as yet. Boot and shoe makers are doing so. Machinery makers are everywhere busy. The iron trade is active. Coal-mining exceeds last year's figures. Paper-makers are complaining. Leather manufacturers are doing less than usual. Hardware manufacturers are holding their full quota of hands at work. Builders are crowding work in cities and towns, and those who supply material are pushed by builders' demands. Trade combinations exert less influence than two or three years ago, because the bitterness of competition has shown the limits and bounds of legitimate trade warfare. The farmers will have to put up with continued low prices for wheat, and perhaps even more sluggish markets than last year. With all these disadvantages, the condition of the great body of wage-earners and business men and the managers of great enterprises is better than in the years of higher prices and more fluctuating demands.





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TRANSVERSE SECTION ON CENTRE LINE

"THE MACKAYE SPECTATORIUM," CHICAGO.

W.L.B. JENNEY, ARCHITECTS.
W.B. MUNDIE,

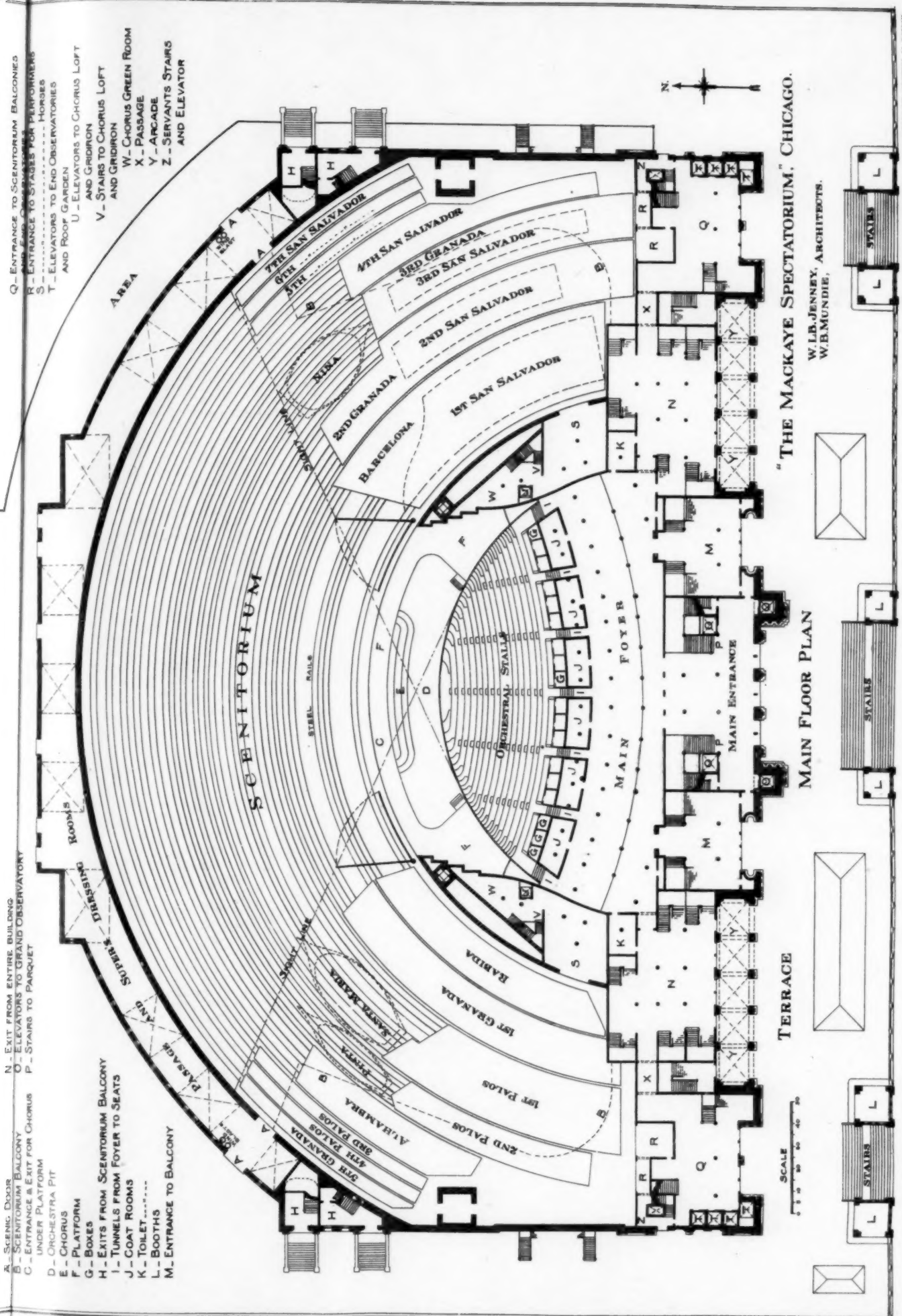
- A - SCENIC DOOR
- B - SCENITORIUM BALCONY
- C - ENTRANCE & EXIT FOR CHORUS
- D - CHORUS & ORCHESTRA PIT
- E - PASSAGE & SUPER'S DRESSING ROOMS
- F - CHORUS & ORGAN LOFT
- G - ORGAN
- H - GRIDIRON
- I - PROPERTIES, DRESSING & GREEN ROOMS
- J - BUFFET
- K - MAIN ENTRANCE
- L - FOYER
- M - ENTRANCE & FOYER TO PARQUET
- N - DRESS CIRCLE
- O - ROOF GARDEN LEVEL
- P - ENTRANCE TO BALCONY
- Q - CAFE FLOOR
- R - MEZZANINE FLOOR
- S - GRAND RESTAURANT
- T - OBSERVATORY
- U - UPPER
- V - LANTERN
- W - DROP CURTAIN 15 FT. x 150 FT.
- X - AUTOMATIC INTERPRETER

- Q - ENTRANCE TO SCENITORIUM BALCONIES
- R - ENTRANCE TO STAGES FOR PERFORMERS
- S - HORSES
- T - ELEVATORS TO END OBSERVATORY

- N - EXIT FROM ENTIRE BUILDING
- O - ELEVATORS TO GRAND OBSERVATORY
- P - STAIRS TO PARQUET
- Q - SCENIC DOOR
- R - SCENITORIUM BALCONY
- S - ENTRANCE & EXIT FOR CHORUS
- T - ORCHESTRA PIT

- A - SCENIC DOOR
 B - SCENIC BALCONY
 C - ENTRANCE & EXIT FOR CHORUS
 D - ORCHESTRA PIT
 E - CHORUS
 F - PLATFORM
 G - BOXES
 H - EXITS FROM SCENIC BALCONY
 I - TUNNELS FROM FOYER TO SEATS
 J - COAT ROOMS
 K - TOILET
 L - BOOTHS
 M - ENTRANCE TO BALCONY

N - EXIT FROM ENTIRE BUILDING
 O - ELEVATORS TO GRAND OBSERVATORY
 P - STAIRS TO PARQUET
 Q - ENTRANCE TO SCENIC BALCONIES
 R - ENTRANCE TO STAIRS FOR PERFORMERS
 S - STAIRS TO END OBSERVATORIES
 T - ELEVATORS TO END OBSERVATORIES
 U - ELEVATORS TO CHORUS LOFT AND GRIDIRON
 V - STAIRS TO CHORUS LOFT AND GRIDIRON
 W - CHORUS GREEN ROOM
 X - PASSAGE
 Y - ARCADE
 Z - SERVANTS STAIRS AND ELEVATOR

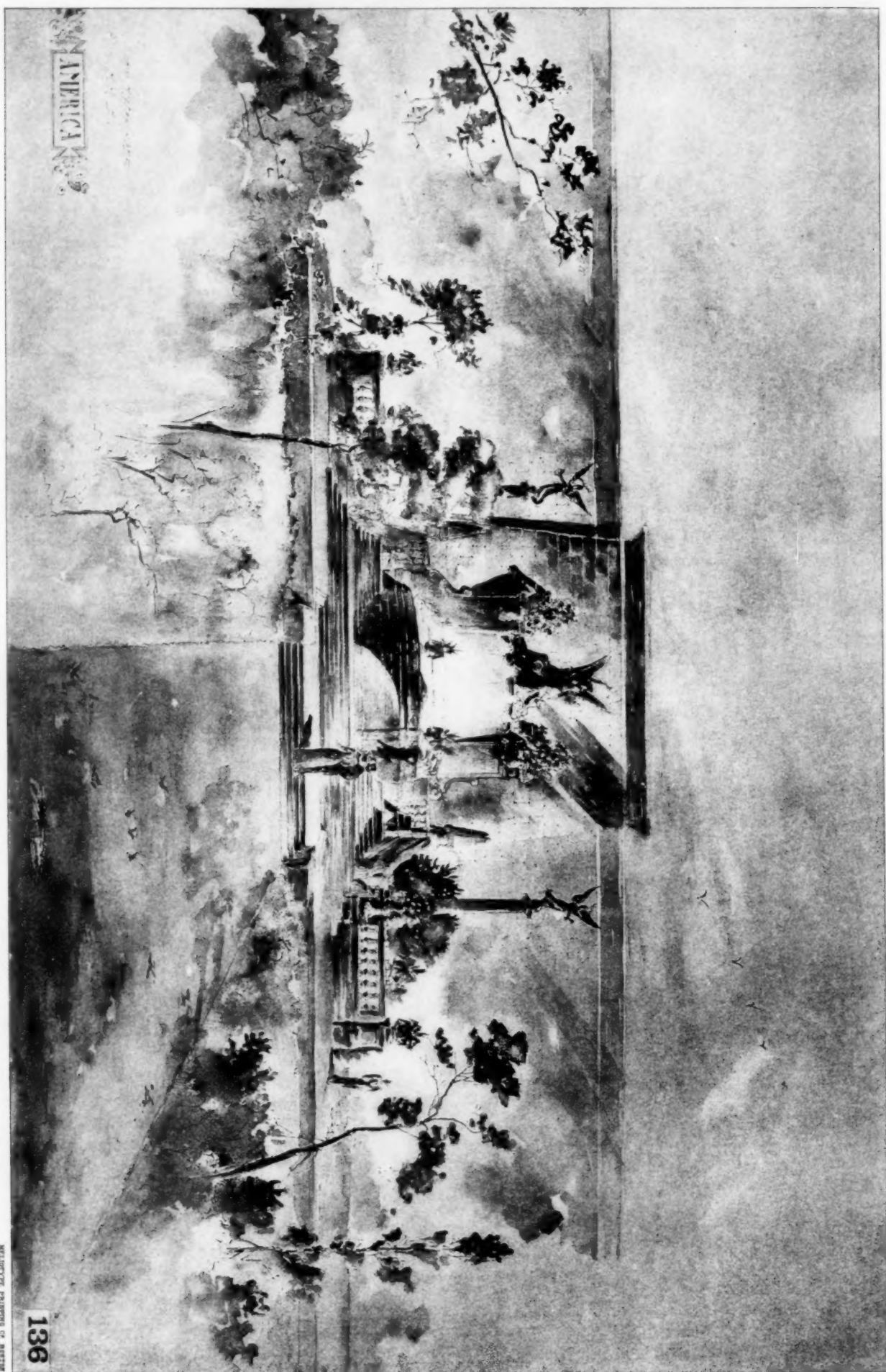


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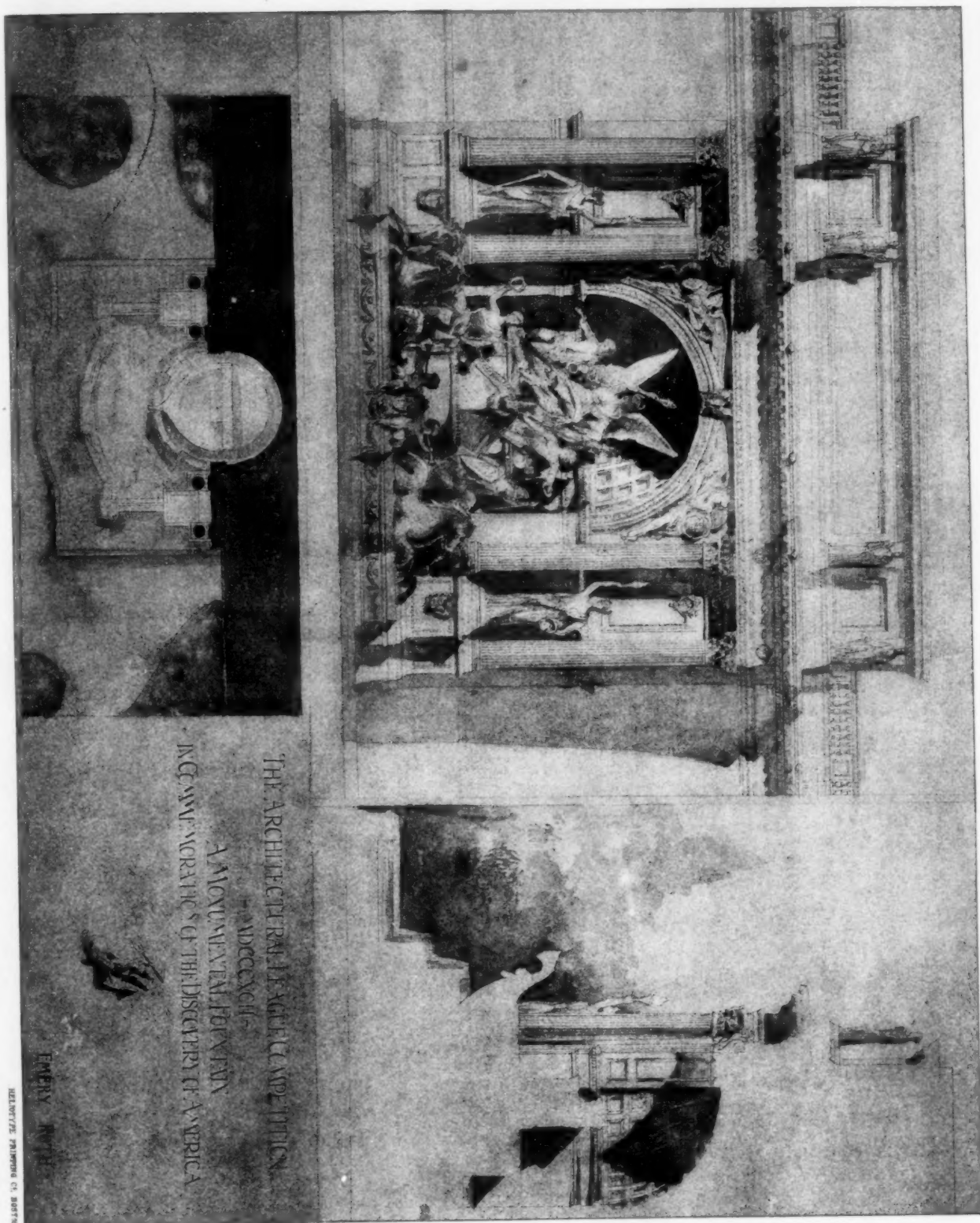
MAIN FLOOR PLAN

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DESIGN FOR A MEMORIAL FOUNTAIN • SUBMITTED IN THE
ARCHITECTURAL LEAGUE COMPETITION BY J. M. UFFINGER.

RELIQUARY FOUNTAIN OF BRASS



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