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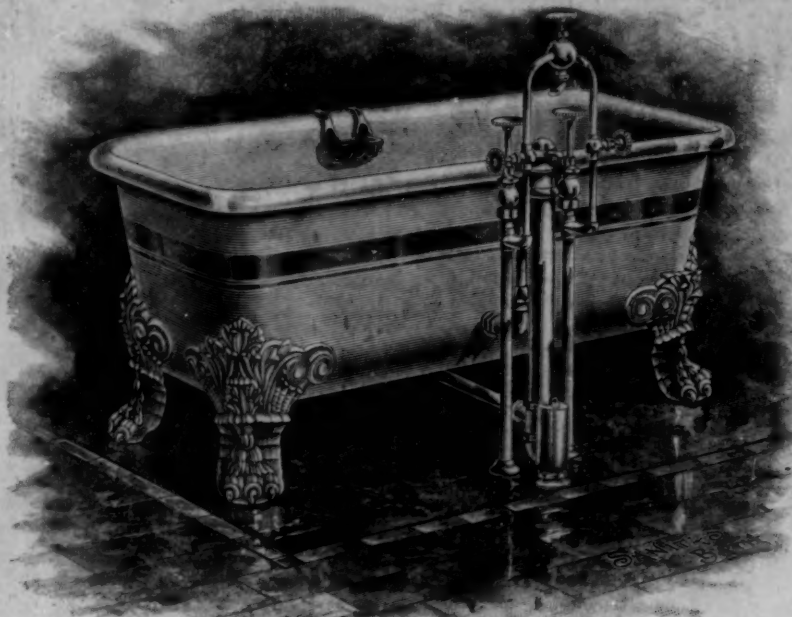
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VOL. XLII.

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DECEMBER 2, 1893.



SUMMARY:—

The Editors place this Journal on a new Basis.—Improvements to be controlled by a safe Conservatism.—The Large Number of Building Papers and the Waste entailed.—The Support due from our Subscribers.—Mayor Matthews of Boston and his "Hold-over" Architect.—The Designing of the Proposed City-hall for Boston.—Cement Washes for exposed Walls.—The Officials of the Paris Exposition of 1900.	105
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FROM this time forward, we regret to announce, there will be missed from our pages a name long and honorably known by those familiar with the best literature in the language. Finding it impossible to at once extricate themselves from the embarrassment in which the recent commercial depression has involved them, Messrs. Ticknor & Company, who for a number of years have been publishing this journal under a lease, have been obliged to surrender their leasehold and henceforward the *American Architect* will be conducted by its owners. At the same time a change in actual ownership also has been effected and the editors, who hold the controlling interest, have now associated with them as stockholders a large number of architects whose common aim and object it is, not to publish the journal for their selfish personal profit or for the greater exploitation of their own designs, but merely to lend the weight of their influence and more frequent assistance in aiding the editors to advance the journal to a higher plane of usefulness to the members of the profession in every part of the country—or of the world, for that matter. In what manner it will be possible to best avail of this new impulse must be determined later, when it has been discovered how much more willing the members of the profession at large are to join now in supporting and advancing this journal to a higher degree of common usefulness than when it was understood to be carried on by a publisher as an ordinary money-making enterprise. It has been so generally known that the *American Architect* was a prosperous and profitable piece of property that it has not been possible for us to feel aggrieved at a time of aloofness that we have felt of late growing up between us and the men we have for nearly eighteen years striven to serve. It was easy to understand that subscribers might feel that the first effect of a greater cordiality of coöperation would be only to increase the trade profits of the publisher, while it was not so certain that it would produce any secondary effects in the way of improvements which would be of direct benefit to themselves. If any one ever has entertained this idea, it was one entertained without warrant of fact, for the publishers have always done as much for the journal as any one could rightfully demand, while there have been times when they have generously sacrificed a greater part of their fair profits than was proper.

WHEN such a change takes place as that to which we now refer, it is usually made the occasion for a display of new energy, a making of radiant promises, an abandoning of old methods and the initiating of new "features," chief

amongst which is most frequently mentioned a "new suit of types" or a "new dress." We have no intention of making any glowing promises or initiating any radical changes at this moment. In the first place, the general tone of the times calls for a discreet conservatism, and in the next place, the obligation we are under to carry out the late publishers' contracts with their subscribers and advertisers is no slight handicap to what is, indirectly, a new start, so, while we have only the most amiable of feelings towards them, we can hardly be expected to give them better treatment under an existing contract than that contract calls for. We must at any rate await the opening of the approaching year, which we trust and believe will be a more nearly normal period than that which is just closing. If, however, an indication of our intentions is necessary, it may be enough to declare that it is our hope that, through and because of the broader professional base on which the journal now rests, it may be possible to make its average performance in the future equal what in the past has been its best.

THERE is one serious matter to which we must be allowed to refer. There are published in this country at the present moment somewhere between fifty and eighty "building papers"—we do not know with precision their birth-rate or longevity, so we state the situation broadly—and it is incredible that such a number of papers are needed by or are really useful to the building fraternity. Although it is a delicate matter, there is no good reason why we should not say that it would be a great benefit, to all but the few owners who get their living by these publications, if more than three-quarters of these periodicals could be persuaded to give up the attempt to "fill a want" which does not exist. There is enough of good and interesting material in this country to supply a few periodicals in so acceptable a manner that all parties concerned would be gratified and satisfied with the result, but when this same matter is, as now, parcelled out more or less indiscriminately amongst fifty or eighty periodicals, it is obvious that not one of them can be as satisfactory as circumstances otherwise would allow it to be. It is an unwholesome competition and a wasteful one, yet, as the promoters may possibly get a living out of them, it cannot be said that any of these ventures is not legitimate, while it distinctly can be said that there are very few of them which do not show capacity on the part of their conductors to do good work, if the opportunity allowed. But it is our sincere belief that there is no real promise of success for these struggling journalists. Out of fifty of these journals there are forty-five at least, any one of which is just as promising, just as likely to live and succeed as the others and not a whit more so. The struggle is inevitably to result in a survival of the fittest, but what a waste is entailed in the conflict and how unjustly are the ultimate survivors crippled meanwhile! It is not the subscription-lists of these journals that keep them alive, of that you may be sure: the breath of life is furnished by the short-sighted policy of advertising manufacturers and dealers, and until these can bring themselves to believe that, in a restricted field such as that occupied by the building fraternity, it will do them more good to divide their advertising appropriations amongst the leading journals than to give it out in small morsels to every one who applies for a share, the real usefulness of the leading journals to them will remain much less than it legitimately should be.

THE moral of the present situation, so far as our subscribers are concerned, and it is a moral upon which we desire to lay particular stress, is this: The nature of the commercial situation is such that some of our subscribers may not unnaturally feel inclined to practise a small economy by stopping their subscriptions altogether or by changing from the more expensive editions to the cheaper, without stopping to consider how such a course will act on us and react on them. The income from subscriptions is very far from being enough to meet the fixed charges of conducting even a much less expensive periodical than the *American Architect*, and so the income from advertising is a necessity—and incidentally we will point out that as the subscribers receive a large return from the advertising income, it is for their merely selfish interest to make advertisers clearly understand that they value

their coöperation. The advertising income is peculiarly sensitive to changes in the commercial situation and the recent panic has already inflicted on us a serious loss. The economy effected by an advertiser who by the stroke of a pen can stop the outgo of two or three hundred dollars is more natural and more legitimate than one which saves a twentieth of the amount by stopping a subscription. But little can be done at the moment to recover the support of the advertising manufacturers, so it is all the more desirable that the present subscribers should be brought to believe that their own permanent interest is largely involved in their aiding to maintain this journal at its present state of efficiency, at least, so that it may be able to make progress as soon as the business "boom" sets in, and may not find itself at that moment incapable of taking advantage of the situation through having to catch up with obligations already incurred. The fixed charges in the way of salaries and preparations to print the first copy of an issue are fixed and unalterable, whether the amount of the edition be big or little, and it is to enable us to meet these fixed charges that each present subscriber's loyalty to the common cause is at this time invoked.

WHEN a man in public life has proved by his deeds that the office he fills is one which is exactly suited to his capacities, it is a disgrace to our reputation as a self-governing people that he should be forced out of it against his will or allowed to leave it voluntarily, if in any way he can be induced to stay in it. Mayor Matthews, of Boston, has proved himself in his three years of active and useful service one of the best of Boston's long line of capable and upright mayors, and though it is not our habit to attempt to influence the movements of things political, we feel we must exert what little influence we may possess in the cause of his retention in the mayoral chair for at least three years longer. The masterly, if at times rather masterful, manner in which he has discharged his duties generally, would call for commendation under any circumstances, but there is one of his most masterful acts which we wish especially to applaud, and it is that this act may have its legitimate fruition that we hope to see him re-elected, at least, twice more. Before he came into office the interests of the city in all those matters that fall under the care of the City Architect had long been discharged in a particularly feeble way—not to characterize the manners and methods obtaining in that office in any stronger words. One of Mayor Matthews's first acts was to place at the head of the architectural department Mr. Edmund M. Wheelwright, a young man who had until then encountered in his professional work nothing of an unusual character, yet a man who was known by his friends to be admirably fitted for the public office he was called to fill. The effect of a good business administration of the city's building work was fairly startling the first year, when considered from the standpoint of economies effected and, naturally, this was not pleasing to the politicians at the City-hall, so that when in the following year Mr. Wheelwright's name came up for confirmation, the aldermen declined to confirm the appointment, and as the mayor declined to name anyone else and as such functionaries remain in office until their successor is appointed, Mr. Wheelwright has for the last two years discharged his duties as a mere "hold-over," retained in office first by the mayor's determination and second by the unqualified approbation of the intelligent public.

DURING his term of office Mr. Wheelwright has been called on to build an unusual number and variety of municipal structures and in almost every case he has acquitted himself with marked success, not only in the matter of economy and executive capacity shown, but still more in the matter of their artistic treatment. Consequently we believe that there are few places in this country where the new buildings belonging to the municipality bear such evident marks of refinement and artistic feeling on the part of their designer. The best piece of design that he has produced, one which we have once before characterized as one of the best pieces of designing produced in Boston in late years, is the design tentatively made a couple of years ago for a new city-hall on a proposed site near the top of Beacon Hill, and it is because the original project has lately been revived in such a form that a city-hall is likely, eventually, to be built there that we feel we ought to do what we can to make sure that Mayor Matthews and his hold-over architect may be continued in

office for at least three years more. Mr. Wheelwright has given proof in the work he has accomplished that he is capable of working up an already good design into a structure that shall impress observers by its refined sobriety as being exactly the sort of public building Boston ought to have.

A PARAGRAPH is circulating through the newspapers, which will bear repeating, with comments, for the benefit of more expert readers. The paragraph simply gives the formula adopted by the United States Lighthouse Engineers for a wash, to be applied to the walls of lighthouses, and similar structures, to keep out moisture. As now used, this wash consists of three parts Rosendale cement to one part sand, mixed with fresh water to the proper consistency for applying with a whitewash-brush, and well stirred during the process of application. The color will vary from brown to gray, according to the color of the cement and sand, but a little lime may be put in to whiten it, or it may be tinted with Venetian red. The wall on which the wash is to be used must be well wet before applying it. So runs the receipt for newspaper readers. For those who really wish to use a cement wash, and want it good, many details must be added. In the first place, the quality of the cement is of essential importance. Much of the "cement," or so-called "Rosendale cement" sold, particularly in country towns, is no better for this purpose, or, indeed, for any other, than so much mud. Even if originally good, it is kept until it has become air-slaked and worthless, but much of that sold at retail never had any value whatever, being simply used by country masons to fulfil contracts for "cement" work, without regard to the work itself. Bearing this in mind, tolerably good washes may be made with fresh Hoffman, Norton, Newark and Rosendale, or other first-class Rosendale cements, but far better ones are made with Portland cement, which, like the Rosendale, must be fresh, and of the best quality, or it will be useless for the purpose. In most cases, we should leave out the sand, and use only the neat cement, mixed with the proper quantity of water. There is no economy in using sand with the cement, but the reverse, as the clear cement can be put on in a coat nearly as thin as a coat of paint, while, if sand is mixed with it, a thickness at least equal to the diameter of the sand grains must necessarily be given to the coating. Probably this is the reason why the sand is required by the Lighthouse Engineers, as the extra thickness of coating insured by its use is of value in resisting the severe tests to which the wash is subjected. In any case, the direction to wet thoroughly the wall to which the wash is to be applied must be strictly followed. It cannot be too wet, provided the water is not actually running down the face of it, and, if it is not wet enough, the cement-wash is sure to chip off. Portland cement requires, if possible, a wetter surface than Rosendale, and, after the coating has set hard enough not to wash off, it is advantageous, in hot, dry weather, to sprinkle the surface, so as to insure the presence of sufficient water for the perfect crystallization of the cement. When well put on, such cement washes are of great value. It is quite common for the side walls of houses built in the middle of a block, before the erection of the adjoining houses, to absorb water, often to such an extent as to ruin the interior plastering and decorations. In such a case, a wash of Portland cement generally effects a cure, and at a fraction of the cost of two coats of paint, or of the treatment with hot wax which is sometimes adopted.

THE spot on which the Paris Exposition of 1900 shall be held is reported to be fixed, and the exhibition itself is assured, and active preparations for it have already begun. By order of the Minister of Commerce, on the recommendation of M. Alfred Picard, the Commissioner-General of the Exposition, M. Bouvard, the Inspector-General of Architecture to the City of Paris, has been appointed Director of Architecture to the Exposition; M. Delaunay-Belleville, President of the Paris Chamber of Commerce, is appointed Managing-Director, and Vice-President of the Committee of Directors; M. Dervillé, President of the Tribunal of Commerce, is appointed Associate Managing-Director, with special charge of the French section of the exhibition, and M. Huet, Inspector-General of Roads and Bridges, and Director of Public Works for the City of Paris, is to have charge of the parks, gardens and roadways, drainage, water-supply and lighting of the Exposition; while M. Grison, the Director of Finances of the Exposition of 1889, is to manage also the finances of that of 1900.

MUSEUMS.¹ — II.

A PROVINCIAL museum is rarely ever set apart exclusively for the fine arts. Usually, a library or a natural history collection is connected with it. However, certain cities, like Laval, have galleries reserved chiefly for sculpture and painting. The Museum of Laval (Figs. 7, 8, 9), includes

sculpture, of specimens of zoölogy, ethnography and archaeology, as well as a library. The plans given here, with the legend, show the distribution (Fig. 11). The picture-gallery, in the first story, is divided into three rooms, lighted from above. The whole building is excavated. The floors of the first story are laid on T-irons, with brick vaults. The area of these new galleries, in each story, is 512 square metres.

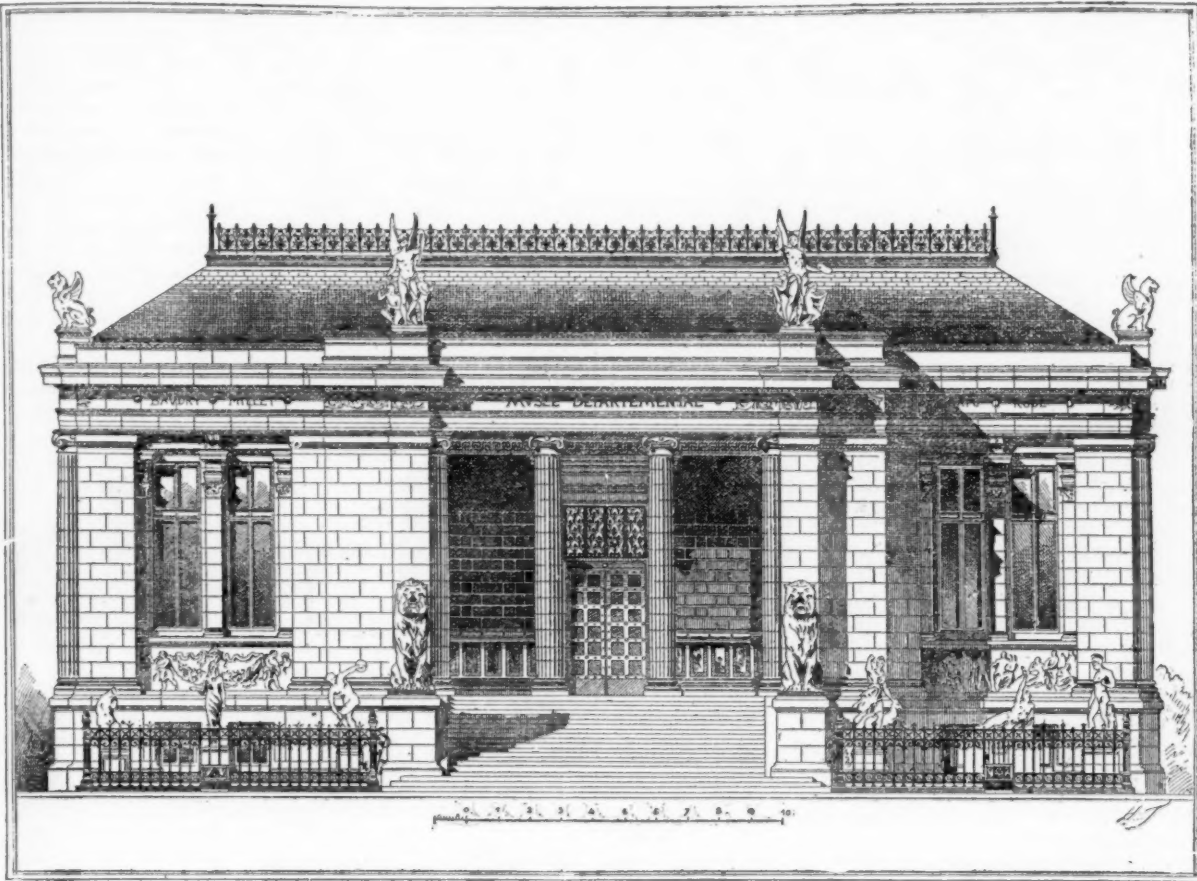


Fig. 7. Museum of Laval.

a peristyle with loggie for guards, a sculpture-gallery, three galleries for paintings, one longitudinal gallery for antiquities and casts, another devoted to archaeology and lastly a gallery similar to the sculpture gallery for the exhibition of architectural casts.

Among the finest provincial museums, from an architectural standpoint, is the Palace of Longchamps, at Marseilles, built by Espérandieu, who gathered inspiration from the advance plans of M. Bartholdi. It has a development of 135 metres on the front. In the centre is the *château d'eau* which distributes the waters from the Durance Canal; on the left is the Museum of Painting and Sculpture; on the right, the Museum of Natural History (Fig. 10). The picture-gallery contains nearly five hundred paintings.

At Rouen, one building is destined to hold collections of paintings and ceramics and a library. It contains six hundred pictures and was constructed by M. Sauvageot.

The Museum of Douai is less important; the works were too closely packed in an old convent, but the quarters have

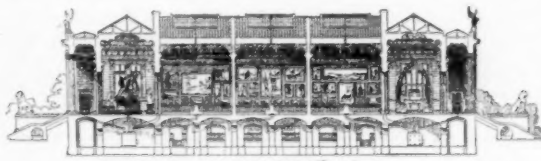


Fig. 8. Museum of Laval.

been recently transformed and enlarged by means of new galleries. The ensemble includes collections of painting and

A museum should always be built above cellars, in order to avoid the effects of dampness; it should be protected as far as possible from the danger of fire. The building should then be of incombustible materials, and careful provision should be made for water and the necessary relief stations.

As to the special dispositions required for paintings and sculptures, the only principle to be insisted upon is lighting from above. It is necessary also that the glazed ceilings through which the light is admitted should be double, so as to avoid any inconveniences that might arise from the breakage of glass and also to establish a cushion of air that will maintain a temperature suited to the canvases, which are equally sensitive to the heat of the sun and to too severe cold.

To show, moreover, what demands are made upon archi-

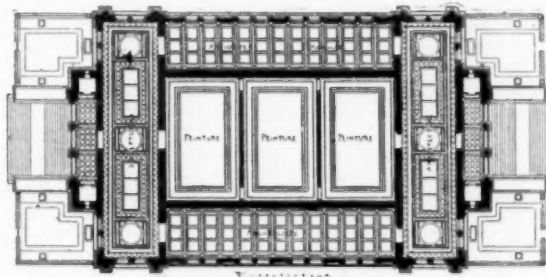


Fig. 9. Museum of Laval.

itects in the construction of a museum of fine arts, we give the conditions imposed for the construction of the two new museums of Nantes and Bayonne.

At Nantes, the total surface of the museum of painting and

¹ From the French of E. Rühlmer, in Planat's *Encyclopédie de l'Architecture et de la Construction*. Continued from No. 935, page 97.

sculpture is about 5,000 metres. It comprises an underground story, a ground-floor, a first-story and roofs. The space reserved for paintings is 2,700 square metres, corresponding to 900 linear metres of moulding. The lighting is from the roofs.

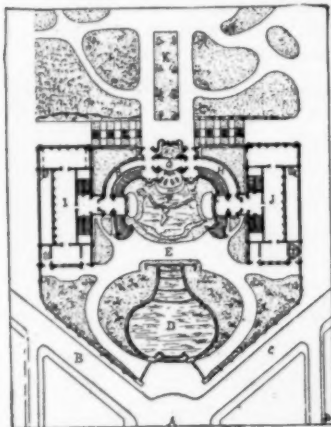


Fig. 10. The Palace of Longchamps, Versailles.

A. B. C. Approaches; D. Fountain; E. Terrace; F. Cascade; G. Château d'Eau; H. Colonnades; I. Museum of Fine Arts; J. Natural History Museum; K. Garden.

natural history museum, galleries for painting and sculpture, galleries of 600 square metres; and quarters for the concierge.

Museums not designed for painting and sculpture may present the most varied plans, according to the purposes which they serve. Light from above is not indispensable here, as the objects exposed are generally in glass cases which should be lighted on all sides. The disposition in long galleries, with bays on both sides is, therefore, the best and the one most usually adopted.

Such is the Museum of Religions at Paris (Fig. 12). The main façade is 70 metres long, the lateral 50 metres. To complete the triangle, there remain to be constructed the buildings which are to join these two. We have, however, indicated them in the plan. The edifice has three stories, connected by the angle rotunda in which are the administration-rooms and work-rooms, the office of the director and curator and the libraries.

We now attempt, in schools of art or applied art, to place within reach of pupils such collections as may guide them in their studies. The School of Decorative Arts is connected with the museum of the same name. The Gobelins, the manufactories of Sevres, Limoges and Aubusson possess, for the instruction of their artists and of the public, galleries in which the most remarkable productions of these various industries are exhibited.

At Aubusson, it was, however, impossible to install the museum by the side of the factory. In constructing it the foundations and a few walls of the old feudal castle were utilized. This is indicated in our plans (Fig. 13), in which

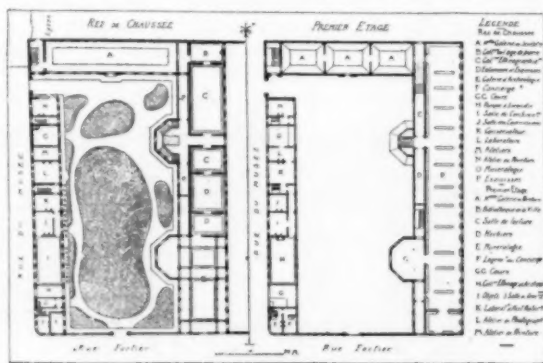


Fig. 11. Museum of Douai.

the simple disposition of the grand vestibule and of the exhibition hall of the tapestries will be remarked.

Before turning our attention to a last class of museums, we give the plans of a curious structure containing collections of every kind, artistic or industrial. This is the new museum of

South Kensington, at London (Fig. 14). It was instituted after the first international exhibition, and in it all sorts of things were collected, furniture, objects of art, libraries, etc. It has just been reconstructed after the designs of Mr. Webb,

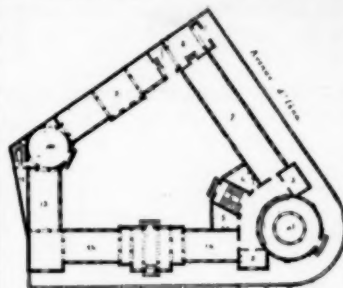


Fig. 12. Museum of Religions, Paris.

1. Rotunda; 2. Concierge; 3. Secretary's Office; 4. Water-closet; 5. Guard; 6. Stairway; 7. Lecture-room; 8. Corridor; 9. Chinese Room; 10. Vestibule; 11, 12. Service; 13. Japanese Room; 14. Extreme Orient.

with a convenient and symmetrical disposition. The legend of the two plans which we give indicates the great variety of the exhibits.

The artistic industries are not the only ones that attempt to connect their schools or manufactories with museums and collections. The technical sciences and industries also have their exhibition rooms.

One of the oldest institutions of this kind is the Conservatoire des Arts et Métiers, at Paris. It was founded in the time of the Revolution, on the site of the Abbey Saint-Martin-des-Champs. New galleries have been added to the former buildings, but they present no peculiar features,

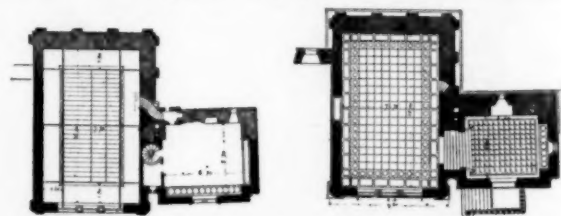


Fig. 13. Museum of Aubusson.

In them are exhibited the most varied industrial products and models. The lighting is sometimes from one side, sometimes from two; the latter is far preferable.

An industrial museum has been newly erected at Stuttgart: the centre of the composition is occupied by a large glass-

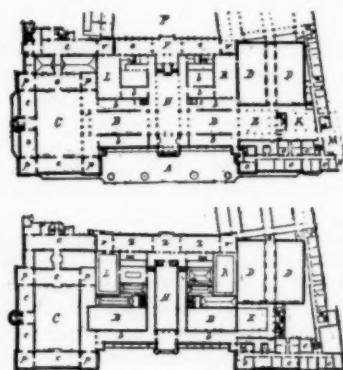


Fig. 14. South Kensington Museum, London.

A. Grand Entrance Court; B. Hall of European Art; C. Hall of Oriental Art; D. Architecture; E. Students' Exposition Hall; F. Gallery of Contemporary Industrial Products; G. European Collections and Entrance Hall; H. Unpacking Room; I. Library of Ancient Teachings; J. Open Court for Students' Work; K. Private Entrance; L. Present Quadrangle; M. Galleries of European Art; N. Galleries of Oriental Art; O. Management and Attendance; P. Pavilions; Q. Vestibules; R. C. D. E. F. H. Upper parts of the Divisions indicated in the Ground-plan; S. Galleries of European Productions; T. Galleries of Oriental Productions; U. Management and Services; V. Pavilions; W. Vestibules; X. Photographs and Catalogues.

roofed court for special exhibits. Around this are grouped the rooms for the permanent collections of the museum (Fig. 15). The edifice is in three stories. The legends indicate the distribution of the ground-floor and of the first-story. The second-story is mainly occupied by offices, work-rooms, secondary libraries, and the stack-rooms of the large library in the lower story immediately below them.

This museum, which is hardly finished, may be considered as a typical structure.

Several examples of museums will be found in this encyclopædia. Thus under "Modern Architecture" [American Architect for July 2, 1892 et seq] may be seen the Mappen Art Gallery at Sheffield (Fig. 4), South

Kensington Museum (Figs. 6, 7), Museum of Hanover (Fig. 20), Museum of Vienna (Fig. 32), of Budapest (Fig. 38) and of Neuchâtel (Fig. 42). The plan of the British Museum will be found under the head of "Libraries" [American Architect for October 17, 1891, Fig. 5]. The plans and views of the museums of Vienna appear under "Austrian Architecture" [American Architect for January 24 and February 7, 1891, Figs. 13, 30].

E. RUMLER.

ARTIFICIAL ILLUMINATION.

NUMEROUS and varied are the methods employed at the present day for obtaining artificial illumination. Leaving out of consideration the electric-light which occupies a position by itself, we may, broadly speaking, distinguish between solid, liquid and gaseous illuminants, of which the candle, the oil-lamp and the gas-flame are representative forms.

It would be interesting and instructive to trace the history of the different kinds of artificial light employed both in domestic and in street lighting at various periods of history, and to follow the successive improvements in lighting introduced by men of talent and inventive genius. It seems indeed a gigantic step forward from the crude methods of lighting employed by the ancients to the gas-light and the electric-light of the nineteenth century. But the glow of the camp-fire, the light from blazing logs, or from torches made of

century principally in the method of manufacturing the wick, which as the candle grows shorter in burning, is consumed and reduced to ashes, thus rendering the use of the "snuffers" of our grandfathers, which many of us still may remember, unnecessary.

The rude forms of lamps employed by the Romans and Etruscans have been gradually displaced by lamps of improved construction, with closed oil-reservoirs, improved wicks and variously shaped burners. Argand invented and developed the round form of burner and wick, the oil ascending from the reservoir into the wick and to the tip of the burner by capillary attraction. Carcel made further improvements by placing the oil-reservoir at the bottom of the lamp, where it would not throw a disagreeable shadow. In this form of lamp the oil has to be forced up to the wick by means of a pump, or in the later "moderator" lamp, by a spring acting upon a leather plunger. The liquid illuminant employed in these lamps was either colza oil, olive oil or some other vegetable oil.

Still later, and belonging to the present century, came the use of kerosene or mineral oil in lamps, this illuminant being a liquid improved by distillation and refining, which operations remove the more volatile, highly inflammable and, therefore, dangerous ingredients of the oil.

Equally as varied as the means employed for domestic illumination have been those in use at different periods of history for the lighting of streets, highways and public squares. In the larger cities the darkness of the evening hours was at first dispelled in a measure by the use of torch-lights, or of candles burnt in glass-lanterns, which were either carried by hand or hung out from windows. Later on, the candle-lanterns were replaced by oil-lamps, with wick and reflector, and these in turn were superseded by the introduction, at the beginning of this century, of coal-gas burned in street-lanterns, while to the gas-light now so universally employed, both for domestic and street lighting, a formidable rival has during the past ten years arisen in the electric arc-light and the incandescent electric glow-lamp.

Wonderful as have been the many and rapid improvements made in this last form of illumination, viz, the electric-light, it must be admitted that the progress of gas-lighting has been no less astounding. The present generation who have witnessed the ascent of the electric-light have become so accustomed to the use of the ever-ready gas-flame, that few are probably aware of the difficulties which beset the path of the talented men of science who created and introduced lighting by gas. It is a matter of historical record that when Murdock, one of the pioneers of gas-lighting, appeared in 1809 before the House of Commons Committee, he was asked by one of the members of the Committee, "Do you mean to tell us that it will be possible to have a light without a wick?" and upon his replying, "Yes, I do indeed," the same person replied, "Ah, my friend, you are trying to prove too much." We are also informed that Samuel Clegg, an engineer to whom the world is indebted for many important improvements in gas-manufacture and gas-distribution, was sarcastically asked by Sir Humphrey Davy, who considered the idea of public gas-lighting ridiculous, if Mr Clegg intended to take the Dome of St. Paul's for a gasometer. The great Napoleon laughingly remarked of gas-lighting, "*C'est une grande folie*," and Sir Walter Scott considered it a visionary scheme and expressed fears that "London would be on fire by it from Hackney Gate to Tyburn" [east and west extremities, then, of London]. Indeed, when the House of Commons was first lighted by gas, the astonished citizens of London were in such fear of burning their fingers when touching the gas-pipes for the conveyance of gas that they first carefully put on their gloves. When Westminster Bridge was first fitted up for illumination by gas-lamps, the lamplighters refused to light the lamps. In 1815, the London Fire Insurance Companies refused to insure buildings lighted with gas. To overcome their prejudices, Samuel Clegg invited the Underwriters to inspect the gas-works, and after explaining to them the process of gas-manufacture, and the method of storing the gas at the gasometer, he quickly took a pick and cutting a hole in the dome of the gas-holder, lighted the escaping gas without danger or explosion, and thus demonstrated to their satisfaction the comparative safety of the new light.

Many are the advantages of gas for household purposes, and its disadvantages are comparatively few, and for this reason it is probably more used in houses at the present day than any other form of artificial illumination.

Gas-light is relatively cheap, although kerosene oil, *per se*, is probably cheaper. But, in comparing gas and oil, one should not forget the additional cost caused by wear and tear and breakage of oil-cans, glass-chimneys and shades of oil-lamps. Gas-light is convenient, and saves domestic labor by being always ready for lighting, whereas lamps require preparation in filling and trimming the wicks, while time and labor are consumed in procuring candles or oil. Gas-light is superior in point of cleanliness to oil-lamps and candles, because there is no spilling of oil, no dropping of candle-grease, no greasy or oily hands from the cleaning of lamps; there is no smoking of candles, no offensive odor such as attaches to oils and fats.

Gas-light is brilliant, yet easily controlled, readily increased or diminished, and not difficult to manage by persons of ordinary intelligence. Gas-light is comparatively much safer than candles or lamps in which colza oil or kerosene is burned. The carrying about of candles or lamps, with the unavoidable danger from fire or from lamp explosions, is rendered unnecessary, as only a match is required to light the gas at the burner. Gas-light, finally, creates in

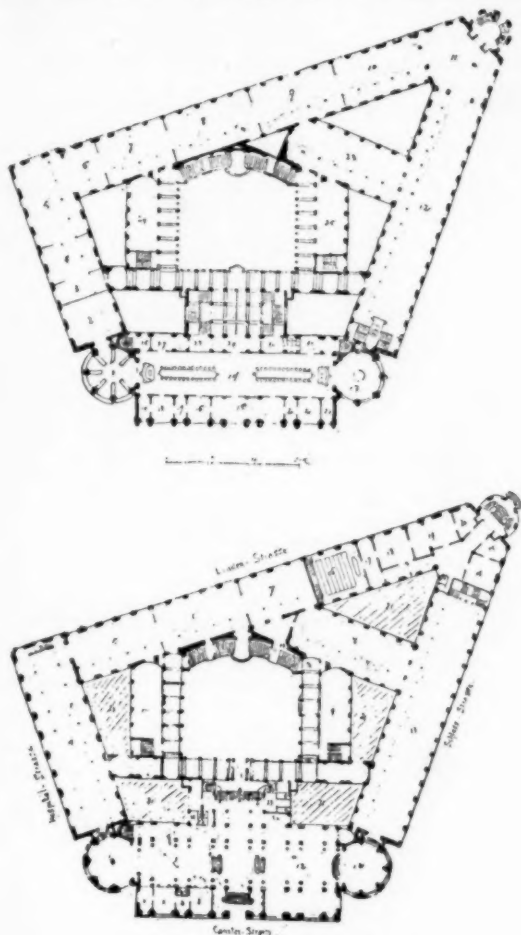


Fig. 15. Industrial Museum, Stuttgart.

Ground-plan: 1. Vestibule; 2. Offices; 3. Patents; 4. Machines; 5. Electro-technics; 6. Tools and Models; 7. Raw Materials; 8. Hygiene and Relief Services; 9. Chemical Products; 10. Woodwork; 11. Glass-roofed Court; 12. Exhibition of Decorative Art; 13. Agriculture; 14. Physical Apparatus; 15. Scales; 16. Chemical Room; 17. Preparations; 18, 19. Laboratories; 20. Inscriptions; 21. Courts; 22, 23, 24. Porter, Cloak-room. First-floor Plan: 1, 2. School Appliances; 3. Household Utensils; 4. Leather Goods; 5, 6. Metallic Productions; 7. Instruments of Precision and Weapons; 8. Ceramics and Glass; 9, 10. Textile Industry; 11. Printing and Graphic Arts; 12. Plaster Models; 13. Drawing; 14. Reading-room; 15. Newspapers; 16. Librarian; 17. Entrance; 18, 19. Secretary; 20, 21, 22. Clerks; 23. Construction and Civil Engineering; 24. Paper and Paper Manufacture; 25. Wooden Articles; 26. Guard; 27, 28. Books, Accounts; 29. Cloak-room; 30. Lavatories; 31. Despatching Room.

splinters of resinous wood, as exclusively employed by our forefathers, may even nowadays be found in use by the Indians and other uncivilized tribes. It may, therefore, be said that the means for artificial illumination employed at the present time are an indication of the more or less advanced state of civilization of a nation.

The burning log and the blazing resinous pine torch are the oldest and crudest methods of lighting. Oil was burnt by the Phenicians, the Greeks and the Romans in primitive forms of open-vase lamps, into which a cotton or flax wick dipped.

The Romans used the first candles in the form of rushes covered with wax or tallow, or of rope saturated with pitch or resin. These candles were gradually improved and formed, during the Middle Ages, the principal means of church illumination, and were likewise used in castles at court festivals. Later on, the smoky and ill-smelling tallow candle was replaced by the better forms of drawn or cast candles, made from sperm, paraffine, wax and stearine. The modern improved candle differs from the candles employed in the last

proportion to the light developed less disagreeable heat and is less unhealthful than candles or oil-lamps, where proper ventilation of rooms is provided. The increased illumination by gas-light in our streets, squares and parks, as compared with the former semi-darkness, has been a great protection to property and life, and the parks and alleys of our cities are not so much as formerly the haunts of the vicious and the criminal.

Incidentally I would call attention to the many other uses to which coal or illuminating gas has in recent years been put. Gas is used in heating rooms, heating sadirons, heating water; gas is employed for roasting, baking, steaming, frying, boiling and broiling; gas is adopted as fuel to drive small domestic motors, gas-engines of various kinds, gas and caloric pumping-engines, also for heating soldering-irons, and for various other industrial purposes, and, finally, it is extensively employed for artificial ventilation by means of gas-jets burning in exhaust-flues, or by the use of sun-burners.

More recently, with the arrival of the incandescent electric glow-lamp, much has been said about the injurious influence of gas-lights upon health, of the vitiation of the atmosphere of rooms, and of the destructive effects of gas, when imperfectly consumed, upon the furniture and decorations of a room, to say nothing of the smoking-up of ceilings and walls. But notwithstanding the rapid development of domestic electric-lighting, and notwithstanding also the recent return in dwellings to the use of oil-lamps, which on account of their softer and steadier light, are by many preferred for reading and sewing, and to the use of extensive and costly paraffine and wax candles in luxurious gilt or silver candelabras and sconces, a use dictated by the ruling fashion on account of the beautiful soft and mellow illumination obtained, the use of gas in dwelling-houses, offices and stores is undoubtedly so convenient and comparatively safe, that for many years to come it will constitute the chief means of artificial illumination.

To quote from R. H. Patterson's article on "Gas-burners and the Principles of Gas Illumination" in King's "Treatise on Gas": "Any one who learns from experience of human customs and affairs, will feel assured that gas-light, although perhaps with shorn honors, has still a long career of usefulness before it, and that the admirable improvements in its appliances made within the last twelve or fourteen years, will not be robbed of their usefulness by a shunting aside of the illuminant to which they have given a new economy and additional brilliance, and which still, as of yore, is of such vast and ever-ready service to mankind."

"Gas-lighting has undoubtedly been the most beautiful, and well-nigh the most useful triumph which human invention has yet achieved in the present century. For marvellousness it cannot vie with the electric telegraph; for utilitarian value it cannot rank with the steam locomotive and railways. Nevertheless, but for its commonness, even poetic genius would find a congenial theme in the process which evokes the 'spirit of coal,' and, converting it into a spirit of light, conveys it as an invisible fluid under our streets—rising from below, wherever required, in pillared jets, to displace the darkness of the night hours, and flood our roads and streets with a warm and comely radiance. No spirit of the mine, even in fairy tale, has so blessed mankind. Passing from our streets it enters our dwellings, both rich and poor, as an ever welcome and valued visitor, giving to the word 'home' a new attraction, brightening the dwelling, and enabling us to pursue our work, and to taste the enjoyments of common life, as if we could command the sweet daylight to attend us at our pleasure. Thanks to gas-light, there is no night in our dwellings save such as we choose for our own comfort. It has illumined the former darkness of our halls and crooked staircases. From the gaselier in the dining-room it has made sparkling the glass and silver on the festive board, and lit up the kind and jovial faces of the company, making banquet or homely board lightsome and merry; while in drawing-room or 'assembly' it has flooded the room or hall with a radiance but for which the dance would lose much of its gaiety, and beauty with its bright costumes would be shorn of its brilliance. In the bed-room, too, still more where there is helpless infancy or sickness—where child has to be watched, or some sore-pained and weary-hearted invalid has to be tended, longing at times for light to break the dull, drear monotony of night's darkness—there, too, has the 'spirit of coal' been a priceless boon; existing when not wanted, as a mere speck of light within the mellowed globe through which it shows softly as a spot of luminous haze; yet ever ready, on the mere turning of a tap, to spring instantaneously into full illumination."

WM. PAUL GERHARD.

PRAISE FOR AMERICAN ART AND ARTISTS.—Dr. F. Lippmann, who is director of the wood-engraving and kindred departments of the Royal Museum of Berlin, and was sent to this country by the German Government to visit the Fair and make a general report on the art exhibit, said recently to a *Tribune* reporter: "America stands at the head in wood-engraving for illustrations. Some of the work turned out here is superb. I consider that I am fortunate to be able to get such a fine exhibit for Berlin, and I am sure it will teach us a great deal. I believe the United States has a great artistic future. Already your painters are developing a distinctive style. But where you excel now is in the line of decorations, interiors, finely-finished furniture and the like. Then your metal-work is very fine."—*N. Y. Tribune*.

TOPOGRAPHICAL AND ARCHITECTURAL HISTORY OF THE CITY OF MEXICO.¹—III.

THE CITY OF THE CONQUISTADORES AND ECCLESIASTICS.



Seal of the City of Mexico. A Gold Shield surrounded by Nopal Leaves.

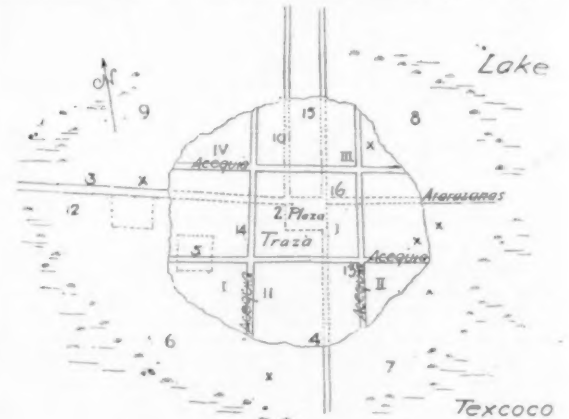
IN the Autumn of 1521, the island upon which Tenochtitlan had stood, was made bare of every vestige of the ancient pueblo and prepared to receive a city in accordance with the ideas of Cortés. It was contrary to the counsels of some of his followers, and in strange contrast with his usually good judgment, that the great Conquistador decided to build the new city upon a site invaluable to the Indians by reason of its defensive capabilities, but wholly incapable of meeting the needs of Europeans. The limited space secured for permanent occupation was enlarged by filling up the canals and extending the island in the direction of Atzacapotzalco.

It was not thus that a firm foundation for a city was to be found, however. The city of the Spaniards was built upon a marsh covered by a thin crust of light soil, and in this marsh the City of Mexico has been burying itself, little by little, for more than three centuries.

The plan upon which the city of the Conquistadores was laid out, was in accordance with Spanish customs. It was that of a quadrangle nearly in the centre of the island marked off by canals, or *acequias*. Within this was a concentric square. Around this square and still within the quadrangle, the Spaniards were to build their houses. The Indians, to whom also Tlatelolco was assigned, might build outside the quadrangle. The Spanish quarter was called the *traza*. The present Calle Refugio was formerly known as Calle del Acequia. It runs along the north side of the present municipal building. Not unlikely it marked the southern boundary of the *traza*. If the *acequias* were equidistant from the plaza, we may lay out the *traza* with reasonable accuracy, and find it not a very large place.

A portion of the *traza* was set off for the church, for government buildings and for crown lands, and the rest was divided by lot among the various leaders of the Conquest. Two important sites fell to the lot of Cortés, that of the "new house of Montezuma," and that of a *teopan* or communal clan residence, known as "Montezuma's old house"—the present southwest corner of Calles Tacuba and Empedradillo, directly west of the cathedral. Upon the first-named site Cortés built a large low house with four flanking towers, intending the same for his official as well as private residence. Herrera is authority for the statement that it was built of hewn stone and that 7,000 cedar beams were used for the interior.

The site of the *teocalli* was set apart for a Christian temple and, prior to 1523, a small church was erected thereon. On the authority of Clavigero, its foundations were "laid with the broken images of the Aztec gods." The present occupant of the site is probably the Sagrario. The municipal building upon the plot set



Plan of City of Mexico in Sixteenth Century.

- | | |
|--------------------------------|--|
| 1. Cortés's Palace. | 12. S. Diego. |
| 2. S. Hipolito Chapel. | 13. University. |
| 3. Hospital, N. S. Concepcion. | 14. S. Jose el Real. |
| 4. San Francisco. | 15. Encarnacion. |
| 5. San Juan Bautista. | 16. Archbishop's Palace. |
| 6. S. Pablo. | X. Various Churches and Convents Built in Sixteenth Century. |
| 7. S. Sebastian. | I. S. Juan Bautista. |
| 8. N. S. de la Asuncion. | II. S. Pablo. |
| 9. S. Domingos. | III. S. Sebastian. |
| 10. S. Augustino. | IV. N. S. de la Asuncion. |

apart for it, on the opposite side of the plaza, was not completed until about 1530.

The new city boasted of its wide streets and that it maintained the ancient causeways intact, taking care, however, to widen them. Particular attention was given to the causeway leading to Tlacopan. It was the first to be widened, the openings therein were filled-up,

¹ Continued from No. 911, page 163.

and house-building along its line was encouraged, that a line of defences might be obtained and a retreat might be made in case of necessity, without any such perils as those of the Noche Triste.

At the place of the opening in the ancient causeway that had precipitated the terrible fight of Noche Triste, one of the Spanish



Domed Church, Santiago Tlatelolco, Erected in 1543 and still standing.

survivors of that conflict erected an adobe chapel, which finally gained the name of San Hipolito. It was replaced towards the end of the sixteenth century by a more permanent structure and is now marked by one of the most prominent features of that portion of the City of Mexico.

Among the earliest structures to engage the attention of Cortés were the *atarazanas*, naval arsenals and forts, intended for the defence of the city from the lakeside and also for the preservation of the brigantines used in the siege of the ancient pueblo. There were probably two such structures, one near where now stands the Garita de San Lazaro, the other at Xoloc. The brigantines were preserved more as relics than as available naval defences, for the recession of the waters of the lake speedily began, and Texcoco is now more an enormous marsh than a deep mountain lake. Indeed, the location of one of the *atarazanas* near San Lazaro is an indication of a considerable extension of the island in that direction.

Further public works belonging to this period were the repairs of the ancient aqueduct, partially destroyed during the siege, the building of a hospital for lepers near San Lazaro, and the foundation of the church and hospital of Nuestra Señora de la Purísima Concepcion at Huitzillan.

The building of this city of the Conquistadores occupied four years. Motolinia, the Franciscan chronicler, pictures the scene, probably with general accuracy. He says that in the earlier stages of the work, more workmen were employed than in the building of the Temple at Jerusalem. They were the Tlaxcalan allies of the Spaniards and impressed by them for the work. He frequently refers to the enslaved children of Israel building the pyramids for the Pharaohs, yet writes of the songs never ceasing day nor night when the work was begun, attesting the fervor with which the Tlaxcalan slaves carried it on.

The arrival of the religious orders opened a new architectural epoch in the history of this strange city. The Franciscans, twelve in number, clothed with extraordinary powers from the Pope and the Emperor, arrived in 1524, and set out at once to erect a monastery and suitable places of worship for the natives whom they were to take under their spiritual care. For the erection of the monastery, Cortés provided funds, and allowed the use of hewn stone from the steps of the great *teocalli* to eke out the building material. The site appropriated was that traditionally occupied by the so-called House of Birds and Garden of Wild Beasts in the ancient pueblo. The buildings thus erected included, besides a church for the Franciscans, the chapel of San José de los Naturales, the first parish church of the natives. It is the only building of this period which we may venture to describe. It was designed to meet a peculiar demand and may have been unique among the ecclesiastical structures of the time. It was "a great arcade or shed, its vaulted roof upheld by stone pillars" instead of walls. It was so "constructed that not only might a great number of Indians be assembled under its roof, but that several thousands clustered round it might see and take part in its services." It seems to have had a greater degree of permanence than most of the contemporary structures, for it remained until 1769, and during its existence it was distinguished by cathedral privileges granted to it by Charles V and Philip II; and by the assembly therein of the first council of the Mexican Church. The Franciscan Church and the Chapel of San José formed the nucleus around which a large group of buildings grew up. The colegio de las Niñas was the next structure of the group to be erected in 1548. It marked the corner of the property belonging to the Franciscans.

Preserving the primitive divisions of the pueblo—Moyotlan, Teopan, Azcatlaco and Cuepopan or Tlaquechiuhcan—the Franciscans erected a church in each, and conferred upon them the names of the churches, respectively, viz, San Juan Bautista, San Pablo, San Sebastian, and Nuestra Señora de la Asuncion, since called Santa Maria la Redonda. The location of these churches indicates

the extension of the island and the bounds of the city far beyond the limits of the ancient pueblo.

Tlatelolco was likewise provided with a church, Santiago, marking the spot where the Indians had longest held out against the Spaniards in the defence of their pueblo. In 1543 this church was replaced by the present "domed church," built by royal order, which may be accepted as a fair specimen of ecclesiastical architecture in the City of Mexico in the middle of the sixteenth century. It shows an advance in the Spanish settlers towards substantial, if not elegant, buildings.

The Dominicans arrived in New Spain in 1526 and erected first a temporary monastery, upon a spot destined to become famous shortly afterwards; and in 1530, their permanent home in the immediate vicinity, replaced by successive buildings until the present century.

In 1533 the Augustinians arrived and in 1541 expended \$162,000 of the public moneys, appropriated to them by royal order, in the erection of their church and monastery. The Jesuits arrived in 1572 and before the end of the century erected several buildings in the northeastern portion of the city.

Without specifying the details of all the ecclesiastical activity of the sixteenth century in the new city, suffice it to say, that about seventeen churches and convents were erected in addition to those already mentioned, in different portions of the city, most of them upon sites still occupied by church edifices, and showing the extension of the original city far beyond the borders of the former island pueblo. The most notable of these were the church and monastery of San Diego, upon what was called the Tlanquis or market-place of San Hipolito; the Church of San José el Real; Oratorio de San Felipe Neri, near the centre of the city, its successor being known as the Church of the Profesa, and being one of the most prominent buildings in the city; and the church and convent of Nuestra Señora de la Encarnacion. The monastery of San Diego marked the limits of the city in the west. The grounds about it had but lately been reclaimed from the lake and were still marshy. The Inquisition, which had been established in the City of Mexico in 1571, had built a *quemadero* or *braser* (burning place for its victims), immediately in front of it. It is more than probable that each of these religious establishments possessed wide gardens in their immediate vicinity, and that the Spanish population was still confined to the *traza*, or had spread but little beyond it. There may have been clusters of native huts around each of the religious establishments.

The Bishopric of Mexico was created in 1527 and in 1545 it was advanced to the dignity of an Archbishopric. About the earlier date, the small church in the *traza* was replaced by a building used as a cathedral or pro-cathedral, and in 1530 the Bishop, Zumarraga, began the erection of an Episcopal residence near by. The name of Zumarraga is associated, however, not so much with construction as with destruction. To him is accredited the destroying of many relics of the former occupants of the Mexican Valley, which would have been invaluable to the archaeologist and historian. In 1573 the first stone of the present cathedral was laid, which, however, occupied nearly a century in its erection, without disturbing the pro-cathedral until the new building was ready for the use of worshippers. The new building was not ready to receive its roof until after the close of the sixteenth century.

The sixteenth century was marked by the erection of several humane institutions—the Hospital Real, an insane hospital, and one for lepers, and a foundling asylum; and by the erection of various buildings for educational purposes—the University of Mexico among them.

What progress was made in domestic architecture during the period under review, we have no means of determining. As colonists



School of Santa Cruz (now Military Prison) and Santiago Tlatelolco, Sixteenth-Century Building still standing.

were continually arriving from the Old World we may suppose that ample accommodations were found for such as chose to remain in the capital of the new country. It is estimated that there were 3,000 Spanish families resident in the city at the close of the century. This indicates the existence of a large number of dwelling-houses,

but there are other indications that the houses were not of an imposing character, and whatever architectural beauty there may have been about the city was due to its religious buildings, upon which immense sums of money were being expended.

The Government of the Conquistadores came to an end in 1528 and the city passed into the hands,



Comparative Elevation of Lakes in the Mexican Valley, in Relation to the City of Mexico.

Domestic architecture suffered, however, the houses of the people being less substantially built than the religious houses. These inundations brought the rulers face to face with the great question of hydrostatics. The Mexican Valley comprises several bodies of water, some of them being above the present level of the main plaza in the city, as follows: Zumpango, 5 metres; Xaltocan, 3.5 metres; San Cristobal, 3.35 metres; Chalco and Xochimilco, 3.2 metres; while Texcoco is only 2.11 metres below the level of the plaza. The only definite steps taken to protect the city against this constantly menaced overflow were the dikes of San Lazaro along the eastern borders of the city to keep back the waters of Texcoco. This was but following the example of the Aztecs. It remained for the next century to cope more successfully with this difficult question.

Towards the end of the century, when the eastern half of the present Alameda was laid out and set apart as a public plaza, the ground in the neighborhood was still low and marshy.

ARTHUR HOWARD NOLL.

[To be continued.]

MODERN ASYLUMS FOR THE INSANE.¹—VIII.

SEWERAGE VENTILATION ROADS.

IN many asylums a large proportion of the male patients are employed upon the farms, gardens, roads, etc.; the agricultural works executed by them are often of considerable value to the various institutions, whether regarded as a desirable bodily occupation leading to mental improvement, or as a profitable investment of their labor upon the land. Potatoes, cabbages and various vegetables, as well as hay, oats, rye, grain, mangel-würzel, etc., are produced for consumption on the estate, and are often an important consideration, having regard to the exceptional circumstances relating to the value of the labor of the insane patients and matters of a kindred nature. Even the care of dumb creatures, horses, cows, pigs, poultry, etc., is calculated in some instances to foster those habits of thought and consideration for others than self, which shed so salutary an influence over the daily lives of all; with many, sane as well as insane, it is an intense concentration of thought upon self that leads to so much misery; since occupation for mind and body is good for all, whether it brings in a pecuniary return or otherwise. Produce resulting from the works connected with an asylum and its estate can be made highly valuable by reason of the low cost of the patients' labor.

In many asylums sewage-irrigation of the estate is carried on with more or less success. Not less than one acre to each one-hundred-and-fifty patients should be provided, unless the land is very porous and is especially prepared to act as a filter. Irrigation should be with fresh sewage, the volume made each day being passed over some portion of the land and never stored in tanks. An area specially prepared should be provided to act as a sewage-filter for the light outflow of the whole asylum sewage.

Land requires to be specially prepared and worked for effective sewage-irrigation; and should be broken up to a depth of eighteen inches at regular intervals not exceeding two or three years, either by deep or double ploughing, or by spade labor, thus loosening and working the soil and subsoil so as to enable the sewage to become incorporated with the earth. In irrigation there must not be stagnation, either on the surface or among the subsoil. The land should be so laid-out that the "carriers" will distribute the sewage in a thin film over the whole surface, and the subsoil drains should be so deposited that they regularly remove the subsoil water: under such conditions as these the use of special disinfectants should not be necessary.

Porous loamy soil will filter sewage the most perfectly; sand and gravel are quicker in their action; heavy clay will, of course, not filter the sewage at all, but must be specially treated, trenched and prepared for irrigation purposes, then sewage will become purified by flowing over clay land.

Land of a porous character, if closely and deeply drained will

filter clarified sewage on a small area, but such land filter should be in duplicate, so that each filter may be at rest and in use alternately. It must be understood that this form of filter will only be required when the area of land under irrigation is small and insufficient for the proper disposal of the asylum sewage. As the earth possesses the power of extracting and absorbing from the sewage the manure it contains, if the dressings are proportionate in volume to the area, to the depth broken up and to the quality of the land, the sewage may be applied to the land throughout the year, containing, as it does, the elements of every field or garden crop which is grown. Compared with other modes of fertilizing, sewage-farming has its advantages.

Some of the works here referred to can be arranged and provided for after the asylum has been opened, and the male patients' labor can then be brought to bear in the execution of much of this preliminary work, as well as for the drainage-system of the estate as distinguished from that of the asylum buildings.

Draining may be defined to be the art of removing from the soil that water which it contains in excess. When the land is surcharged with water, the air is prevented from due access to the pores of the earth, and actions take place in the soil which retard the decomposition of putrescent matters applied to it.

The temperature of soil that is saturated is colder by several degrees in the spring, summer and autumn months than if the ground were dry, and when the saturation takes place in the winter, a portion of the warmer season must elapse before it acquires the temperature favorable to vegetation. The water contained in the soil may either be retained by the particles of the earth in cohesion, or may remain in the pores and interstices unable to make its escape. It is the latter condition that may be supposed to be injurious to the soil and growing plants; the art of the drainer is therefore directed, either to prevent this accumulation of water in the soil, or to remove it by forming for it outlets by which it may pass away.

The water, then, which reaches the soil and cultivated plants may either be that which flows along the surface or that which stagnates upon it, unable to find its way downward.

We are unable to draw a precise line of distinction between the water which saturates the soil from these two causes, but in common language we term the one surface-water and the other underground-water, and to the removal of the one we may apply the term surface-drainage, and to the other underground-drainage. All such works may well be placed in the hands of asylum patients if proper supervision be provided, and here it may be noted that in many asylums there are large numbers of farm and other laborers, bricklayers and persons who, having been engaged in building trades, could be made useful in out-door work on the asylum estates.

All tanks and reservoirs in connection with the drainage-system should be thoroughly well ventilated, and covered with a roof, and it is most highly important to urge the necessity of using the best materials procurable and the most perfect workmanship in connection with the drainage and sewerage works of the asylum; and that the works may be efficient, and remain so, when in use there must be unceasing intelligent care. Sewers, drains and water latrines should be flushed daily, dry earth-closets should be cleansed every day, and in the process of irrigation over the land, care must be taken that the land is not fouled on the surface and is not flooded beyond its powers of absorption, so as to prevent offensive exhalations to the injury and discomfort of the asylum patients and officials.

Pipes of cast-iron are so much stronger and so much more easily laid and maintained that their use for water drainage may be general. In the construction of sewers and water conduits the architect should arrange for occasional cleansing, such arrangements being provided for by man-holes, at which points all sewers or drains should be open, and every drain should, of course, be properly ventilated.

It must be remembered that the above remarks as to drainage bear special reference to the drainage of the estate as apart from the drainage of the buildings, a subject upon which we touched in a former chapter.

The purification of the air has been generally attempted by what is known as the "upward" system of ventilation, and many arguments against the "downward" system appear to be based upon the results obtained through the defective application of the latter, and the failure to remove the foul air from the room and renew the fresh air in a thoroughly efficient manner with sufficient continuity, as well as the inability to do so without unpleasant draught, which may under certain conditions be considered an evil as disadvantageous as lack of ventilation—the question to a great extent is an open one.

In the annexed figure we give an illustration of an ordinary mode of forming a window which would be suitable especially for "single rooms" and other apartments where a veranda may be placed against the exterior of the walls; by this arrangement a communication with the outer atmosphere may be secured above the veranda roof but the sashes below may also be used for purposes of ventilation. On the outside strong iron bars may be fixed where necessary, for preventing the escape of the patients, but in all arrangements great care must be exercised by the architect that the patients shall not be able to use projections, bars, etc., as a means of fixing up a rope, and that they shall not be able privately to

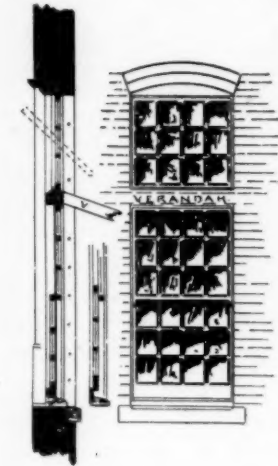
¹ By George H. Bibby, F. R. I. B. A., F. R. Hist. S., and Ernest A. E. Woodrow, A. R. I. B. A. Continued from No. 935, page 99.

abstract the sash-cords as a means of hanging themselves or for escape.

Anything which contributes to the impurity of the air within an asylum, where there is so great a chance, even under the most favorable circumstances, of contamination, ought to be brought within the reach of the best means procurable for its removal. Amongst the

impurities of atmosphere may be counted fog, inorganic matter, dust, micro-organisms, carbonic-acid, excessive moisture, excessive dryness, draughts, etc.

Means have been devised for cleansing the internal atmosphere of fog as well as of the accumulations of germs and impurities which accompany it, but it has been found most difficult, if not indeed impossible, to remove from the air, under all circumstances, inorganic matter in the form of smut and dust particles when it is remembered that a cubic inch of city atmosphere has been found to contain 7,000,000 of these dust particles, while air tested near the top of a mountain of great altitude contains 4,000 minute particles of dust to each cubic inch: we must not expect too much in the way of purification of the air in this direction in an asylum; we cannot pretend to



enter here into so large a question, which indeed is outside the scope of these papers, as the extent of the danger that may be apprehended from the presence of large quantities of bacteria in the air we breathe. But with regard to carbonic-acid gas the proposition has been laid down as follows: "That whereas the quantity of carbonic-acid is usually taken as a measure of the total impurities of the air vitiated by breathing, it is highly improbable that an increase in carbonic-acid and a slight diminution in oxygen would materially affect the death-rate: but that the presence of organic matter and micro-organisms in the air are in all probability far more important factors."

The excess of moisture in the atmosphere during warm weather, produces languor and lassitude, both of mind and body, which should be prevented where possible among the inmates of a lunatic asylum, especially as artificial means can be adopted to obviate this by proper ventilating arrangements. On the other hand, when in frosty winter weather the air becomes very dry and unpleasant for respiration, means should be devised for not only warming the air, but also for a certain and well-controlled supply of moisture, bearing always in mind that whatever system or apparatus for ventilation is used a complete absence of draught is essential.

Analysts have supplied us with ample means for correctly ascertaining the condition of the air within our buildings and we cannot appreciate their work at too high a value; it has been rightly suggested that analysts ought to be more frequently engaged in making analyses of the air in public buildings; it is equally needful that they should regularly perform the same in connection with the air breathed by the patients in lunatic asylums, at all periods of the year, and periodically report the results. Architects would then have reliable data to work upon and the asylum officers be armed with a foreknowledge of how to avoid the spread of infectious disease.

In adopting a means of artificial ventilation, the patients must not be disturbed by any sound of the slightest pulsatory motion of the air, nor of any noise by reason of the use of any mechanical appliance or fan; the system should be easy to maintain by day and by night, and be efficient in procuring a perfectly equable temperature at all times, under all varying conditions and atmospheric changes. The source of supply of fresh air must of course come from a quarter where there is no contamination whatever, and the whole of the air supplied must be heated or tempered in a manner so as not to interfere with the volume supplied, and it should not be dependent upon the condition or temperature of the atmosphere, whether the wind blow or the air be still, the supply should be maintained equally and in a known and defined quantity.

Whatever may be advanced for or against open fireplaces in lunatic asylums, it must be borne in mind that although they afford ventilation to a certain extent, yet if there are no open fireplaces the unpleasantness of carrying coal and removing ashes is avoided, and thereby a great saving of labor is acquired; there is also not the noise that usually accompanies the poking and renewing of fires, and the uneven temperature created by fires either newly lighted, just made up, burning brightly or burning low, is totally avoided; there is also the additional advantage where open fireplaces are not used, that pokers, tongs and shovels are not needed and are, therefore, not occasionally forgotten by the nurses and attendants, and so cannot fall into the hands of homicidal or suicidal patients. The danger of open fireplaces is obviously a subject for consideration, yet where such fireplaces are provided a certain class of patients seem to take a particular interest in their comfortable and homelike appearance, an item not to be overlooked, although so trivial in providing for the

recovery of the sufferers—this item, however, is, perhaps wrongly, more valued by the English than any other people.

We have enumerated several outdoor occupations which the architect may leave for the employment of the patients; there is yet another which may come under the supervision of the asylum architect or engineer—that is road-making. These officials have to arrange and provide for the several roads within the estate of the asylum, as well as, at times, for the approaches thereto. This involves a large expenditure, especially when the asylum is located in a district where labor and materials are scarce or unsuitable.

Some of the roads require to be laid in a most substantial manner, and this will be admitted when we consider how many thousands of tons of coal, provisions and materials, compelling traffic of a heavy nature, must pass to and from an asylum of even moderate dimensions. Some of the roads must be formed before the building of the asylum is commenced, to enable heavy masses of stone, bricks and building-materials to be brought to the site with due economy, unless indeed a branch railway be laid directly up to and onto the asylum site in connection with the nearest public railroad. This course has frequently been found the most economical, and contractors in England have often found it worth their while when executing such work to lay a line of rails of considerable length at their own cost, in order to save the cartage.

There are some authorities who are of opinion that it is better for a roadway to be undulating than level, it being contended that the horses are eased by the change of position of the harness and load, and that they are thereby less fatigued on a road with slight ascents and descents than on one that is of a dead level. There may be some foundation for the theory that a horse finds relief by having his harness and line of traction varied, but there can be no reason for asserting that an undulating road is preferable to a level one as a means of diminishing the expenditure of muscular power. It is quite true that level roads are sometimes more difficult for horses than undulating ground, especially on low levels, but this is not because the road is more level, but because it is generally more soft and wet, and so productive of greater friction than when on higher and firmer ground. There is no more exhaustive road than a sandy plain, but this is not because it is level, but because it is sandy and soft. Coachmen and others who extol the advantages of undulating roads do not, it may be believed, reason very deeply on the matter and wrongly ascribe to the beasts the satisfaction they themselves experience from a change of position, while the horses probably feel no other gratification than that which temporarily arises from the diminution of their burden on descending an incline.

Roads to asylums, both within the estate and without from the neighboring towns, should be as level as circumstances will admit and should be made with a hard and smooth surface, so as to resist the pressure of heavy loads.

Excavating and embanking are the means which of course must be resorted to for obviating the inequalities of level in the natural surfaces, the earth taken from the excavations being employed for the embankments. The removal of large masses of earth or rock is at all times an expensive process, but even in the formation for ordinary roadways it is too generally neglected; this when it arises from insufficiency of funds is to be regretted, but the first expense of the formation of a road is but small in proportion to the permanent loss of power from imperfect construction and cost of repair. There is no doubt that error in a great many cases arises through undervaluing the importance of level roadways and the effects of ascent and descent on the force of traction. The roads should be as straight as possible, and if made curved or winding to avoid inequalities of levels, the curves should not be sharp or sudden.

Many of the roads leading from the entrance-lobges of asylums to the main buildings are very beautifully planted with shrubs and trees of various descriptions, with borders of grass and flowers and frequently suggest the approach to the residences of the highest grades of society, passing as these roads do through magnificently wooded parks and scenery of extreme beauty.

It is not now usual to enclose the whole of the land attached to an asylum with high walls or specially unclimbable fencing, but this is absolutely necessary for the airing-courts near the main asylum, where the various classes of patients are divided and subdivided for the purposes of exercise, but to the airing-courts the fencing should be open ironwork, about twelve feet in height, so that the prison-like idea of high walls shall not exist. The airing courts may include tennis-courts, etc. and be planted with shrubs and flowers, but trees and large shrubs must not be allowed to afford patients opportunities for hiding, escape or mischief; the whole area should be freely in view of the attendants and nurses.

[To be continued.]

ON THE PRINCIPLES FOR LAYING-OUT CITIES.¹

THE building-plan of a city in the wider sense, or the street-plan in the narrower sense, ought not merely to satisfy the practical requirements of the traffic, of the building and of health; it ought also to be laid out on æsthetic principles, i. e., in such wise that it may give an impression of beauty in all its parts, or, what is

¹ Portion of a paper prepared for the International Engineering Congress of the World's Columbian Exposition by Herr J. Steuben, Baurath and assistant Burgo-master of Cologne.

the same thing, may awake in the beholder a disinterested satisfaction. As the fostering of beauty in all arts is the most eminent problem, so the beauty of the outward appearance in the art of building cities is of superlative importance. The art of city-building, which the city population everywhere comes in contact with, is more than any other branch of art-practice an art for the people. If, with the cultivation of beauty, the associated influence of heart and soul be aimed at, we may anticipate from the æsthetic perfection of the building plan of a city, a rich and blessed influence upon the stratum of city population inclined to rudeness. At the same time, however, as well for the cultivated as for susceptible minds in general, it is a spring of pleasures and enjoyments. The considerations of the beautiful relate to the perfecting of the streets and squares in themselves, and to their relation to the buildings.

a. *The Perfecting of the Streets and Squares.*—The streets should not be too long. Too great length of street wearies the eye, wearies the spirit and awakens a feeling of discomfort. The danger of this unpleasant sensation begins as soon as the length of the straight streets exceeds twenty or thirty times their width. Should, however, a change of direction be undesirable for practical reasons, there remains the remedy against the tiresome effect of subjecting the street to variations in its width and cross-section.

For the regulation of streets, straight lines ought not to be exclusively employed. Gentle curves which conform to superficial outlines or to natural boundaries may produce fine effects in the form of the streets. It is not necessary that the two sides of a thoroughfare should be always exactly parallel; a pleasant effect may follow, from the irregular widths of streets, at the opening of squares, a junction with older parts of the city, or natural obstacles of ground. The bow-shaped avenue is preferable to the polygonal form, or, strictly, a bow-like polygon of which single parts answer to the widths of the houses.

A street ought not to be conducted in straight lines over a summit; that is, convex changes of grade are to be avoided. The reason of the unbeautiful appearance of this sort of convex street lies in the apparent sinking of the buildings, wagons and people beyond the ridge of the street. Passing over a high point has to be accomplished by a bending of the street in plan and profile, the course of which the eye cannot follow beyond the ridge, or by means of breaking off the street at the summit. The interruption may be a vertical or a horizontal one; a vertical in the form of a monument, a plantation, a fountain, or the like which the eye cannot see beyond; a horizontal in the form of a crossing or dispersing place beyond which the direction of the street changes.

If the convex street is unhandsome, the concave profile creates on the contrary a special advantage. It affords to the street surface by day and by night a pleasing spectacle and may produce with artificial lights magnificent results.

The street surface ought not to be too wide, because the void does not satisfy the eye or the mind. If the street surface cannot or should not be beautified with rows of trees and garden-plots, a width is to be preferred restricted to traffic and health.

All portions of the street surface unnecessary to traffic are to be set-out with ornamental plants or artificial ornaments. Rows of trees and garden spaces have been already mentioned. Artificial ornaments consist not merely in monuments, graceful statues, water-jets, flowing fountains, gate structures, arcades and other works of architecture and sculptural art, but also in the tasteful and well-modelled improvements of requisite utility upon the streets, such as trading-stalls, waiting-rooms for street-railways, places of convenience, columns for posters, fire-announcers, drinking-stands, lamp-posts, candelabra, lanterns, street-signs, warning-boards, boxes for sweepings, enclosures and tree-boxes. To the artistic sense and artistic gift of form, pleasure is given by all these (for the most part subordinate) objects and thus they come to contribute to the pleasing and agreeable appearance of the street scene.

Finally, it is important in the improvement of the streets to provide for frequent change. This change should relate to street widths, the widths and arrangement of driveways and walks, the number and position of rows of trees, the artistic ornament, the garden surfaces in the streets and front-yards, the kind of house-buildings (closed or open, high or low buildings). Every street, or at least every prominent street, should be handled and improved for itself individually, so that it may afford a characteristic appearance. The wearisome and unhandsome uniformity under which so many modern streets suffer may be in this manner effectively avoided.

All the foregoing remarks upon perfecting the streets apply in greater measure to the public squares. They should not be too large, nor built exclusively on straight lines, nor have any summits; they should utilize the advantage of concave surfaces; they should be adorned with trees set out, with garden-plots and artistic ornaments, so far as the traffic and the considerations in the following paragraph permit it to be done; and they should present an individual variety in their setting-out.

The traffic squares decidedly require openings on all sides; their free surfaces serve the walking and driving travel. All other squares need a close-built frame of surroundings, because it is through this frame that the square is formed in an architectural sense; the wagon travel may be permitted around the border of the parks, but not across the open spaces of such squares.

b. *The Relation of Streets and Squares to the Buildings.*—The streets of the city are not merely for the purpose of serving the

traffic, giving an opportunity for the improvement of real estate, and by their air-spaces, plantations and accessories proving useful and beautiful, but they are also destined to bring our structures into agreeable position and effective grouping. The latter applies in an especial manner to monumental works of architecture and sculpture.

According to æsthetic laws, there are four different distances to be distinguished for viewing buildings and statues, viz., a distance equal to the approximate height of the work, which is specially suitable for observing the details of a structure; a distance equal to double the height, to view the whole work as a picture by itself; a distance equal to three times the height, in which the work, united with its surroundings, makes a part of the joint architectural idea, and a fourfold and greater distance, which only shows the grouping of masses and development of outlines, producing picturesque views of the city.

From which it follows, if a monumental edifice is to be erected within the ordinary street-lines, the width of the street should not be less in any case than the height of the contemplated structure; but it is better to bring the street to one and a half or twice the measure. Should the latter be impracticable for the whole length of the street, the widening should occur directly in front of the structure, by placing the structure back behind the street-line, in order to obtain front space and thus a distance of sight. Instead of setting back the structure, the corresponding place on the opposite side of the street can be set back, so that the open space is obtained on the other side of the street. In curved streets the concave side, to which the sight is always directed, is chosen for erecting monumental buildings, because more suitable than the more hidden convex side of the street.

But the appearance of a structure is more effective if in the original establishment, or the later completion of the plan of the city, the street-system is so laid out that a monumental work forms the objective point (closing point) of a street, or of several streets; and furthermore, an elevated locality is assigned to such buildings. The axial and elevated erection of monumental buildings enriches and beautifies the appearance of the city, and serves at the same time a practical purpose, as it makes it easy to direct one's way in the network of streets.

We should beware of too frequently occurring faults in the axial arrangement of streets and monuments, namely, of exaggerating the distance of view, and of obstructing the traffic. According to the aforementioned æsthetic principles, the monument already begins to lose its architectural effectiveness at a distance of four times its height; there remains only the effect of picturesque masses and outlines. But these, too, lose their signification if by a very great increase of vista the scale of objects is too much reduced. Statues are, on this account, particularly unsuited to street intersections, and architectural works, as a rule, should not stand free to view at a greater distance than such as corresponds to ten times the height. Also, a monument ought not to be of the kind to interrupt a line of traffic which would be compelled to go around the structure, in order to set forward again on the farther side in the same direction as before. The monument should rather occupy the effective street termination at which a natural turning aside or separation of traffic occurs.

Still more than the shaping of streets does the improvement of public squares stand mutually related in artistic effect to buildings and monuments erected on or near the squares. The destination of squares as traffic areas, as air reservoirs, and as shaded places of recreation stands subordinate to the question how they may serve as a place of setting up the more important works of architecture and monumental art. The erection follows so that the buildings and monuments take up a position either upon the area of the square, or they surround the square, or both kinds of erection are combined.

If the square is built up with a structure standing free all around, a space must be left open in front of the building at least of such width that it may serve as a plaza so as to offer the sufficient distance for observation. Here especially a distance equal to double the height is of importance. The other parts of the square have then merely a nearly neutral significance.

Instead of one front space, two or more are often arranged, in order—besides the front view—to bring into proper effect some other important aspects of the monument. With monuments of great extent this arrangement, which results in the division of the entire square into a group of squares, is specially judicious. In this connection care should be taken to secure the aspect of being in a closed frame to each one of the partial squares.

In a similar manner, too, should sculptured monuments, if they occupy a public square as a masterpiece, be so placed that the larger portion of the area should extend in front of the statue for its better observation, while the other parts of the square have a more restricted significance. The exceptions are such purely architectural monuments as columns, obelisks, fountains, etc., which are equally important on all sides. These may occupy the middle point of a square. Another kind of arrangement is adapted to an elongated place. It consists of a row of figures or monuments occupying the longitudinal axis, so that a masterpiece may adorn the middle point.

If the place is surrounded with several buildings, and has an open area, there arises the most distinguished creation of city construction. The most careful weighing of proportions is here especially important, in order to obtain the appropriate distances of observation. High structures come to stand at the ends, and low ones a

the sides, of a place. A space of view of double the height is essential to comprehend the form of an edifice; a threefold distance is necessary, in order to enjoy a general view of a group of buildings. It does not require symmetry in a geometrical sense; but the buildings should so surround the place that an artistic balance may everywhere prevail, that the enclosure may appear complete, and that the outgoing streets may not break up the design unfavorably. In many cases the breaks may be abolished or avoided by portals built over the street exits.

Also statuesque figures standing along the sides are suitable to complete and embellish the surroundings of the place. To every work can the just distance of view be thus afforded, while it contributes in general form to the artistic effect of the whole.

The combination plan of building upon and around the parts of a square is truly difficult, but still is accompanied by the loveliest artistic effects, if it fulfils the æsthetic considerations which govern the erection of building and monumental work in the various positions. It requires great exercise of a well-developed artistic feeling to strike the right thing. This feeling alone decides in a so-called picturesque, that is, irregular, laying-out of a place and free groupings. These often occur, too, in modern, practically managed city plans where it depends upon bringing into harmony historical structures with new creations.

ABSTRACT. — I. PRACTICAL PRINCIPLES.

a. The city traffic demands the laying-out of radial, ring, diagonal and by-streets, as well as business squares and focal points. A mere rectangular system is unfit for a street-plan.

The laying-out of street-railways is to be regarded. The profile of the streets should be the flattest possible, but drained, the embankment not to be too high. Excavations are to be practically avoided. The width and cross-section of streets should answer generously to the amount and kind of traffic.

Also for traffic not done on the streets (railroad and water-way traffic) the lay-out of the city must have a care.

b. The blocks formed by the network of business streets are suitable for city construction. Sharp-angled corners are to be rounded off. Within the blocks the property lines are to be swung into rectangular position by either voluntary exchange or legal compulsion.

The lay-out of the city has to provide blocks of different sizes in suitable places, such as are requisite for business operations, private houses, rented houses, stores and workmen's dwellings.

Also, blocks and parts of blocks are to be provided in suitable size and place for erecting public buildings.

c. For reasons of health, the city ground must be free from overflow, or protected; the soil must be kept dry and clean.

An underground system of sewers is indispensable to the removing of atmospheric precipitates, the domestic and industrial waste-water and human excreta.

General provision of good drinking-water is necessary.

A sufficient provision of atmospheric light and of direct sunlight is to be provided by a judicious orientation of the streets towards the cardinal points and a generous width of the streets; but, better still, by a rational arrangement of the habitations within the blocks. For night-lighting the electric-light is preferable to gas.

The providing of the city with fresh air requires, besides sufficient width of streets and size of yards, open squares in the street-system and gardens in the building blocks, further, such districts as will allow only separate buildings to be erected; and, finally, shade-trees on the streets, squares and separate parks. The plantations, consisting of rows of trees and garden levels, serve not merely to purify the air, but cause the city population to take bodily exercise, and afford recreation and refreshment.

The city lay-out has to provide special districts for industries injurious to health or annoying, and has to lay down local restrictions.

II. ÆSTHETIC PRINCIPLES.

a. The elegant development of the streets requires the restriction of street-lengths, the variation of straight and curved street-lines, the avoidance of convex and the preferring of concave changes of grade, the avoidance of street-spaces all too wide and vacant, the setting-out of the streets with horticultural and artistic decorations, and, furthermore, the individual handling of single streets, but not in a pattern-like way.

For the elegant development of places the same points-of-view are to be regarded. Convex shape of ground and excessive size of vacant levels are to be avoided; individuality of formation to be aimed at, and, so far as the design permits, a close-built frame of surroundings to be provided and the open spaces to be kept free from carriage-roads across them.

b. For obtaining an elegant proportion between the streets and places on the one hand and the buildings on the other, the following rules are useful: Choice of street-widths not narrower than the height of buildings; arrangements of spaces in front of important structures; preference of the concave side of streets; putting prominent structures in an elevated position and at the objective point of one or more streets, while avoiding, however, the embarrassment of traffic and exaggerated visual distances; furthermore, placing a structure upon an open square, so that a front space, or several parts of a square, suitably enclosed and of sufficient size, may be kept free for observation of the structure; placing one or more mon-

umental buildings on or around an open place, so that suitable visual distance is everywhere afforded, an artistic equilibrium produced, the enclosure of the picture made complete and its disintegration avoided.

Monuments of figurative art are not to stand at the middle point of a square; this is permissible only for all-round homogeneous works of architectural art. Arranging them in rows on the longitudinal axis is seldom judicious, while standing them around the border is frequently so, and the bringing about of a correct distance for observation is necessary.

For the irregular arrangements of a picturesque kind, there is no other rule than artistic feeling.

THE CHATEAU DE RAMEZAY, QUEBEC.

THE attention of Canadians interested in historical subjects has been aroused lately by the step taken by the Quebec Government in selling at public auction the old historic Château de Ramezay, one of the last surviving relics of the French regime in Montreal. The Government was driven to this step in order to secure money for its depleted treasury, and to dispose of property which brought in no revenue. The announcement that the old building was to be sold, and probably demolished, awakened the activity of the Antiquarian and Numismatic Society, and the members set actively to work, to save the building. After an active propaganda among the citizens generally, the Society succeeded in inducing the civic authorities to secure the old relic, and it is now to be converted into a museum of Canadian relics.

The château stands on Notre Dame Street, opposite the City-hall, and, having been built in the earliest times of the settlement, is naturally a primitive-looking building. It was built substantially, however, and has withstood the action of time remarkably well. It is well preserved in every respect, and looks to be good for another century. It is of one story, with a mansard, and is surrounded by a garden inclosed with a railing. The interesting part of the building is that contained underground.

The building is divided into various halls and rooms, and the walls bear traces of their having been built by a bygone generation. The roof, which was particularly well-built, has sheltered Benjamin Franklin, Carrolls of Carrollton, Brigadier-General Wooster, Mr. Chase, besides many illustrious men belonging to France, England and Canada. It has been the headquarters of these three countries in Canada at various periods. It was built about the year 1704 by Claude de Ramezay, Seigneur of La Cesse, Boisfleurent and Monnoir, Knight of the Military Order of St. Louis, who had formerly been Governor of Three Rivers, and was later on appointed Governor of Montreal. M. de Ramezay was the father of J. Bte. Nicolas Roch de Ramezay, who signed the capitulation of Quebec. The château was visited by Charlevoix in 1721. After the death of M. de Ramezay in 1724, the château remained in possession of his heirs until 1745, when they sold it to the "Compagnie des Indes," by whom it was made the principal post for their fur traffic with the Indians. After the capitulation of Montreal, in 1760, the building was purchased by Mr. Grant, and later on by the Government, prior to April, 1762. After the conquest it was chosen as the official residence of the Governors. During the American invasion of 1775 it was occupied by the American Brigadier-General Wooster, and in 1776 by his successor, Benedict Arnold, who held a council there with Benjamin Franklin, the two Carrolls and Mr. Chase.

About the year 1784 the château was repaired by the Baron St. Leger, who made it his residence for some time, and afterward it was occasionally occupied by the Governors who visited Montreal. During the existence of the Special Council in Montreal, from 1837 to 1841, and after the city became the permanent seat of Government, from 1843 to the fall of 1849, the château and adjacent buildings were used for the officers of the Executive. From the end of 1849 till the winter of 1856 it was used as a Court-house and Registrar's office.

From the end of 1856 until 1868 the château proper was occupied as the headquarters of the Superintendent of Education for Lower Canada, and in 1868 it was handed over for the use of the Jacques Cartier Normal School. When the Normal School moved into the new building on Logan's farm, the château became the headquarters of the Montreal branch of the Laval University, and remained so until the creation of the Magistrates' Court, which occupied it during the whole time of its existence jointly with the Circuit Court, whose sittings still take place there. As familiar as the public is with the general appearance of the old château and its surroundings, very few among the present generation have had an opportunity to visit its interesting vaults and subterranean corridors. On entering these sombre recesses one fancies himself to be within the walls of some mediæval castle. The arched ceilings, the dim light coming from the side windows, the solidity of the walls and the huge door leading into the dungeons fill the mind with awe. The underground construction of the building fully justifies its appellation of "château," as will be readily seen on inspecting the wine cellar and the iron door to the dungeons.

The château was the scene of a sensational incident in the exciting days of 1849, when the Parliament Buildings in this city were destroyed by a mob of Britishers who objected to the passing of the Rebellion Losses bill. As Lord Elgin drove along St. James Street

to give the royal sanction to the bill he was pelted with stones and rotten eggs by the Tories, and he sought refuge in the Château de Ramezay. As soon as his Excellency had entered the building the crowd tried to follow him, but young Coursal, who later became the member of Parliament for this city, and other French Canadians barred the entrance. It was only under a powerful escort that the English representative could make his way out of the place.

The Government intends to contribute to the museum, and promises have been received of contributions from various foreign countries. Prince Roland Bonaparte has already made a valuable contribution. — *N. Y. Times*.

AN APPLICATION OF THE NEW INSURANCE SCHEDULE.

UNIVERSAL Mercantile Schedule Rate on the new fireproof office building of the Continental Insurance Company, 44, 46 and 48 Cedar Street, New York City.

Key-rate of City, 26 $\frac{1}{2}$ cents.

Deficiencies: 288, part stone front, 1 cent; 295 and 296, height, 7 cents; 299, elevator and staircase, 1 cent; 311, narrow street, 6 cents; 314, lighted with electricity, 1 cent; total, 42 $\frac{1}{2}$ cents.

Deductions: 314, 342, 345, 348, 31 $\frac{1}{2}$ %; also 184 and 185, 25 $\frac{1}{2}$ %.

Exposure charge, 2 cents. Total, 24 cents, for insurance to the extent of 15% of the value.

For 50% insurance, the rate would be 11.92; for 60%, 10.44; 70%, 9.24; 80%, 8 $\frac{1}{2}$ cents, or 33 cents for five years.

The building is constructed throughout on the most approved fire-proof principles. The upright or vertical supports, story-posts and columns are of cast-iron, with the beam-bearing brackets cast in one piece with the shaft, no rivets. This use of cast-iron for the uprights instead of wrought-iron or rivet construction is an important feature, as the latter would be certain to rust, especially when covered up, as the law requires, by fireproofing material, where rusting could not be detected and might result in the wreck of a building without warning. The side walls are four inches thicker on each story than the building law of New York requires. The elevators and staircases are cut off by fire-walls in a separate shaft. The lighting is by electricity, all the wires being protected in patent brass-tubing lined with hard-rubber insulation. No building in the country has a safer system of electric-lighting, wiring and insulation.



BROOKLYN INSTITUTE OF ARCHITECTS.

THE first annual meeting of the Advisory Board of the Department of Architecture of the Brooklyn Institute was held on the 10th ult., at the home of Prof. F. W. Hooper. The paper read and discussed was "The Influence of our Life on Architecture" by Mr. Thomas Hastings, architect. It was a carefully-prepared argument. The Department has these meetings monthly, held at the houses of the members, and they are exceedingly instructive and genial.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

ENTRANCE TO THE CINGALESE BUILDING, WORLD'S COLUMBIAN EXHIBITION, CHICAGO, ILL.

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

HEAD-HOUSE FOR THE PUBLIC BATH SYSTEM, MARINE PARK, SOUTH BOSTON, MASS. MR. EDMUND M. WHEELWRIGHT, CITY ARCHITECT, BOSTON, MASS.

NEW ORGAN-FRONTS FOR ST. LUKE'S CHURCH, GERMANTOWN, PA. MR. GEORGE T. PEARSON, ARCHITECT, PHILADELPHIA, PA.

PROPOSED BUILDING FOR THE LITHGOW LIBRARY, AUGUSTA, ME. MR. W. S. ALDRICH, ARCHITECT, SOMERVILLE, MASS.

BRADLEY MEMORIAL CHAPEL AND GATE-LODGE, FORT HILL CEMETERY, AUBURN, N. Y. MR. J. A. SCHWEINFURTH, ARCHITECT, BOSTON, MASS.

[Additional Illustrations in the International Edition.]

FRONT VIEW OF THE STAIRCASE IN THE COURT OF HONOR OF THE OLD HOTEL DE VILLE, PARIS, FRANCE.

[Copper-plate Photogravure.]

Does any one remember the staircase in the Cour d'Honneur of the Old Hôtel de Ville at Paris, that building which has been one of the chief victims of the various social revolutions? Formerly it enjoyed a reputation which the inspection of these illustrations will prove was thoroughly deserved, although the details were, perhaps, a little too rich and somewhat out of character with the architectonic sobriety of the court-yard itself with its sumptuous ordonnance. But what a pretty little structure it is, taken by itself, and how all the curvatures of its construction everywhere give the most enticing perspectives! The fountain arranged in the middle and below the double revolution of that staircase itself added to the ensemble a note of richness and originality which is almost unique in the annals of architecture. There are many still living who remember the luxurious fêtes of Baron Haussmann and the marvellous decorative effects obtained by colored-lights playing over the waters of this curious fountain. Clearly the ordonnance of these colonnettes, with their tormented forms which support the strings of the stairs is subject to criticism, for here lies the chief fault of this charming work, which would have gained considerably if one could have seen simplified all these details which savor something of the faded belle. However this may be, one must bitterly regret the destruction of this fine and charming piece of work, which it was not thought fit to preserve at the time of the restoration of the whole building.

SIDE VIEW OF THE SAME.

[Copper-plate Photogravure.]

THE DRAWING-ROOM, IMPNEY, DROITWICH, ENG. MESSRS. J. TRONQUOIS AND R. PHENÉ SPIERS, ARCHITECTS.

THE REREDOS, GLASGOW CATHEDRAL, SCOTLAND. MR. JOHN HONEYMAN, ARCHITECT.

THE HOTEL DE VILLE, PRAGUE, BOHEMIA, AFTER A DRAWING BY SAMUEL PROUT.



A TREATMENT OF SEWAGE BY ELECTRICITY.—The system of electrical sanitation which M. Hermite tried with striking results in Rouen in 1889, has been adopted upon a large scale in Le Havre. A correspondent of the *London Standard* in the latter city writes: "This system is based upon the electrolysis of sea-water. The electric current decomposes the chloride of magnesium, while the chloride of sodium serves as a conductor. The result is a liquid disinfectant of great power. It is almost odorless, leaves no residuum when used for purposes of flushing, and is perfectly inoffensive. The solid matter in sewage is instantaneously consumed in this solution, as well as all organic matter. What is left is simply an odorless and troubled liquid, incapable of fermentation, and containing only a few phosphates, the salts of ammonia and the salts of the disinfectant. There are two classes of microbes—anaerobic organisms, which exist without air, and aerobic organisms, requiring air to live. On the first action of this chloride compound is simple. As their name indicates, they cannot live in the presence of oxygen. Their extinction, therefore, is swift and sure. The destruction of the microbes which require free oxygen to support life is equally certain. They are consumed instantaneously by the corrosive action of the gas. At Le Havre, H. Hermite has found the opportunity for which he has long been waiting. There is sea-water in abundance, and an enterprising municipality. A central station has been constructed, supplied with the necessary electric plant and convenient tanks, in which the disinfectant is prepared in sufficient quantities. By a simple arrangement of pipes and ducts this is distributed through the streets like water or gas. It can also be laid on to the houses, which, when once supplied with the disinfectant, help to purify the main drain, instead of adding, as is now the case, to the general contamination. — *N. Y. Evening Post*.

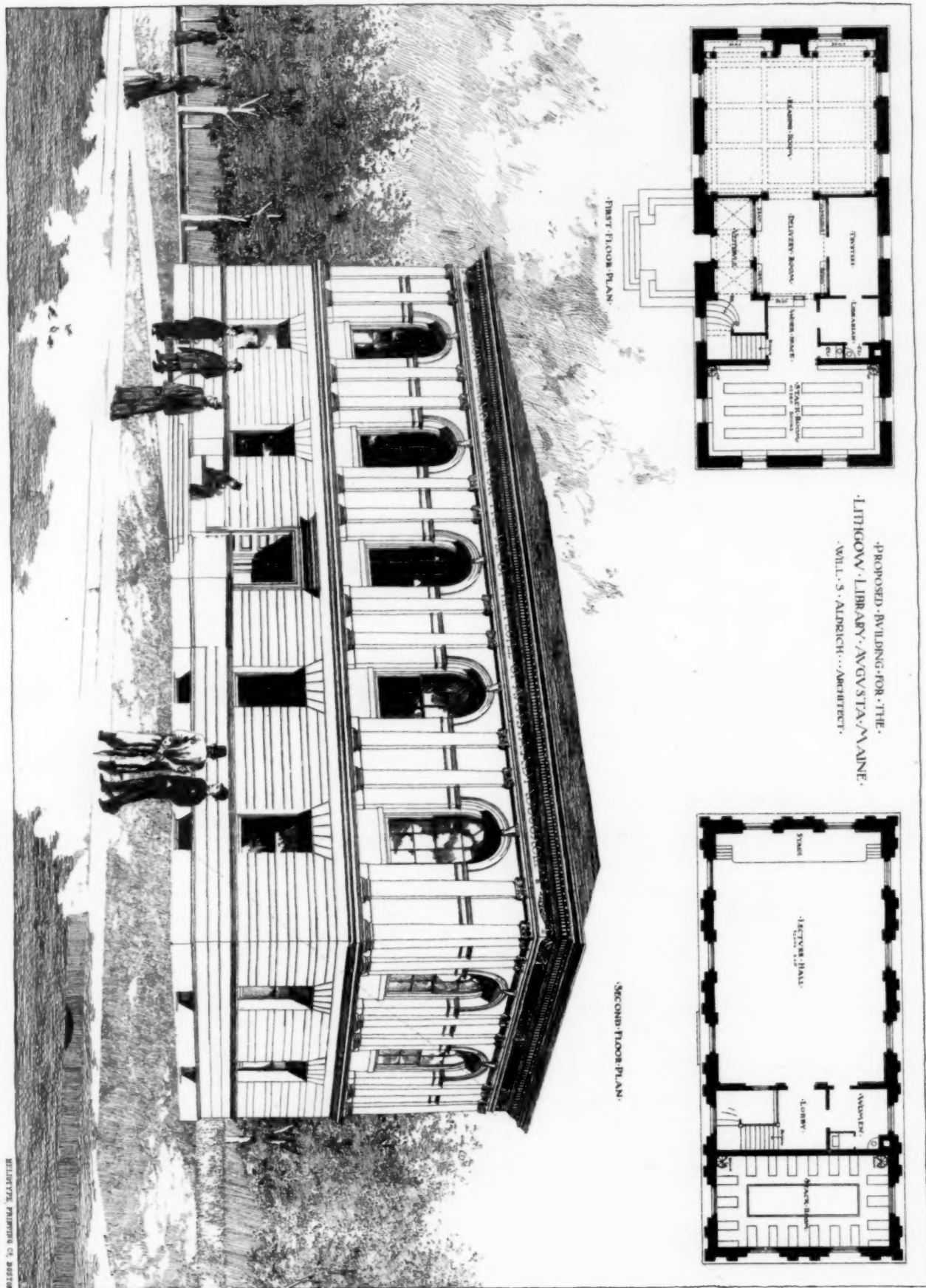
THE FRESCOES IN THE MANCHESTER TOWN-HALL.—The late Ford Madox Brown, last or next to last of the original Pre-Raphaelites, had much to bear from critics who did not at all admire his frescoes in the town-hall of Manchester, England. Now that he is dead, bad luck pursues these questionable works of arts. Cracks have appeared, the descriptive cards have soiled the pictures in spots, vandals have chipped them with umbrellas, and the charwomen have rubbed their dusters over the paint while cleaning the stonework. To many Britons these frescoes give great pleasure, and the Chairman of the Committee on Art belonging to the Royal Manchester Institution has memorialized the Mayor to save them from ruin. He thinks that people will come some day to Manchester expressly to see the frescoes of Ford Madox Brown, and will curse the generation that allowed such works of art to be defaced. — *N. Y. Times*.

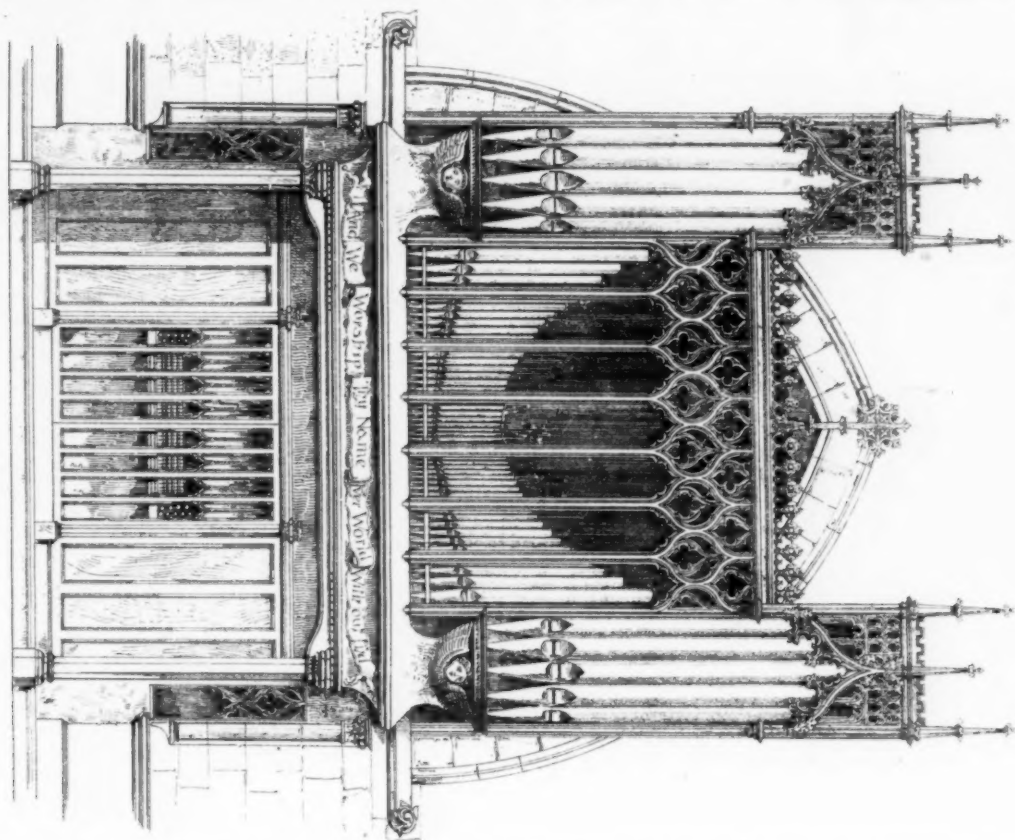
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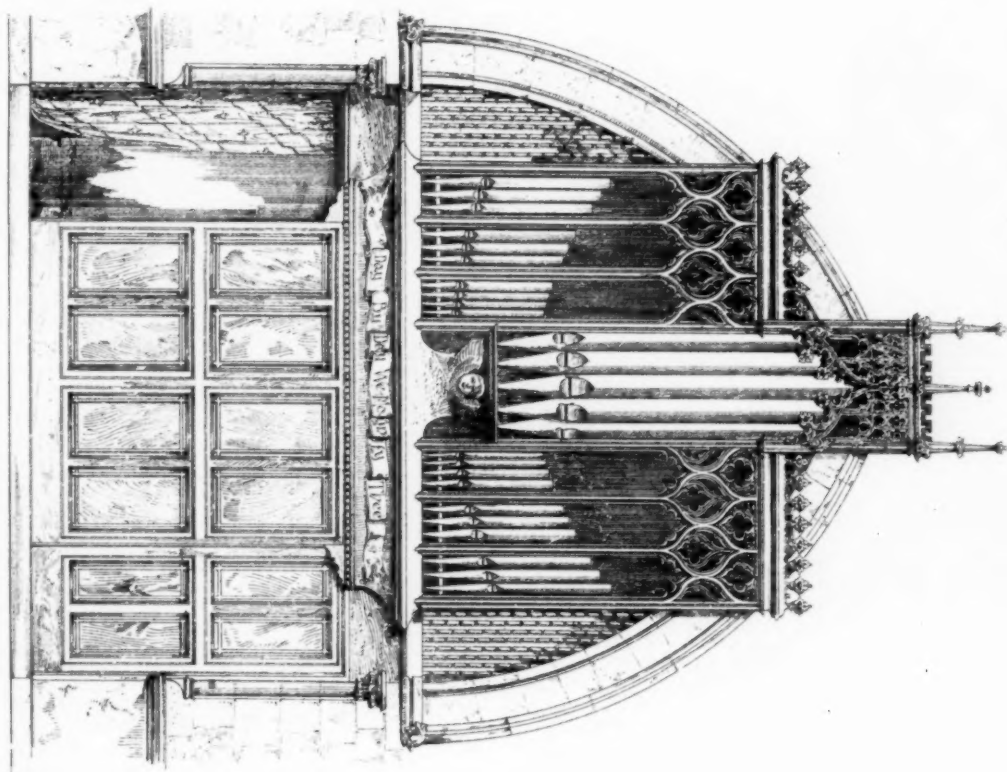
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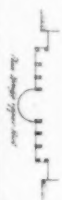




South Organ Loft, St. John's Church, Philadelphia.
Geo. T. Benson, Architect.



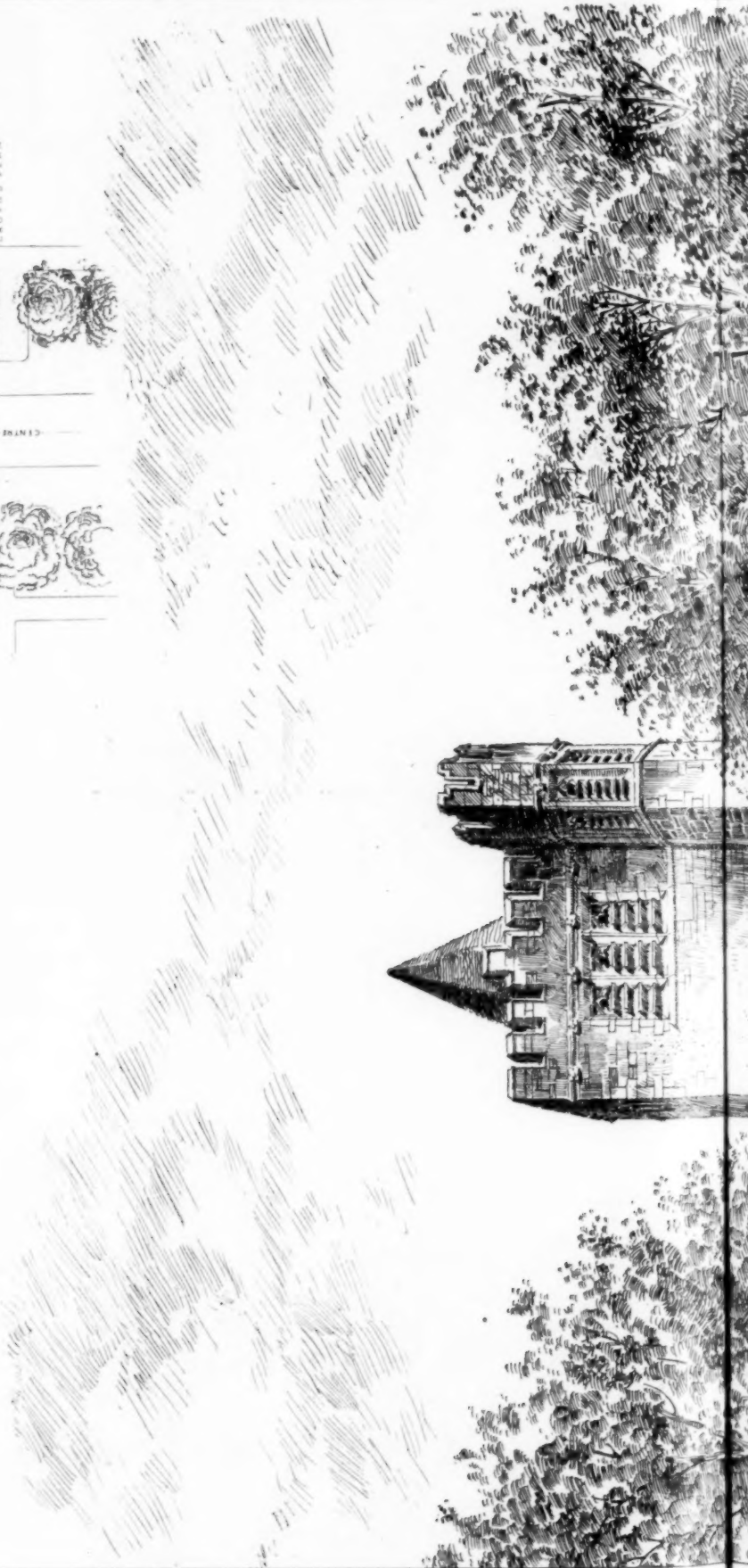
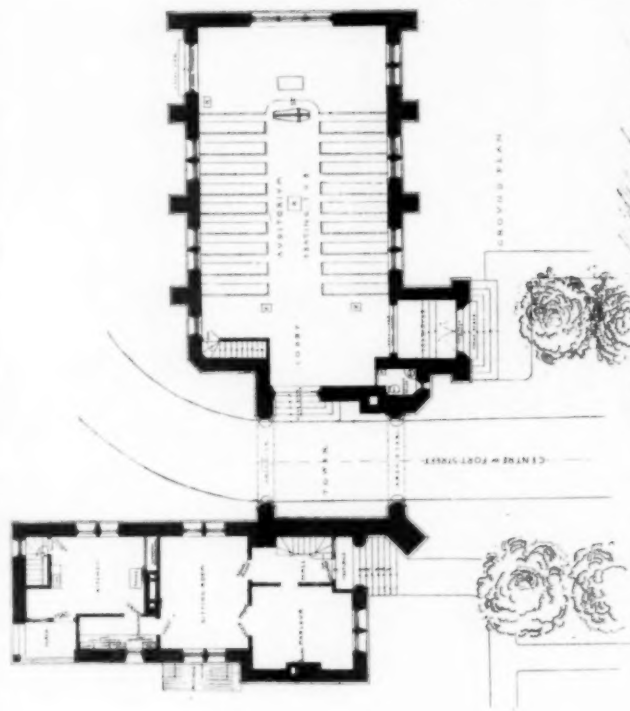
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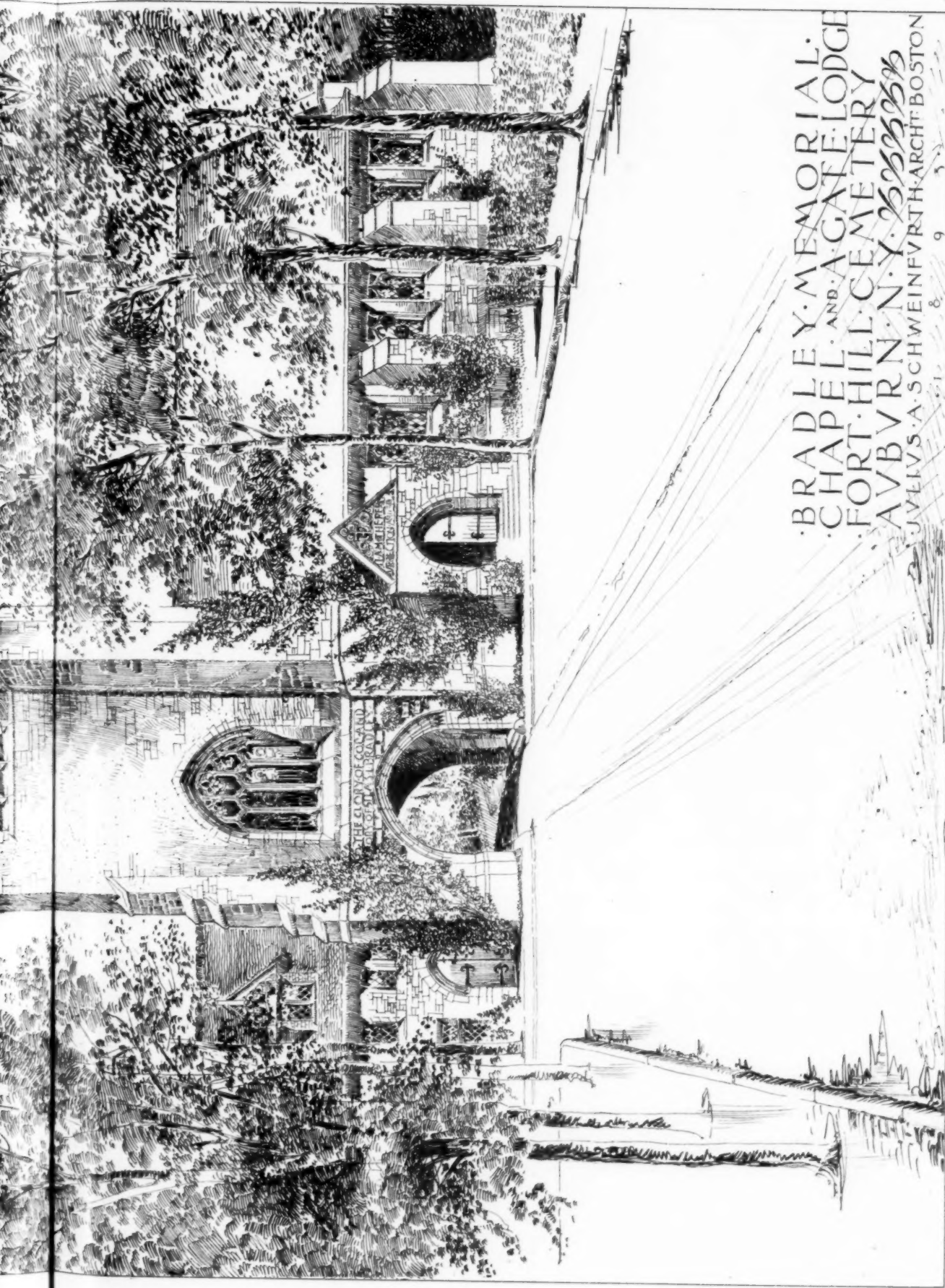


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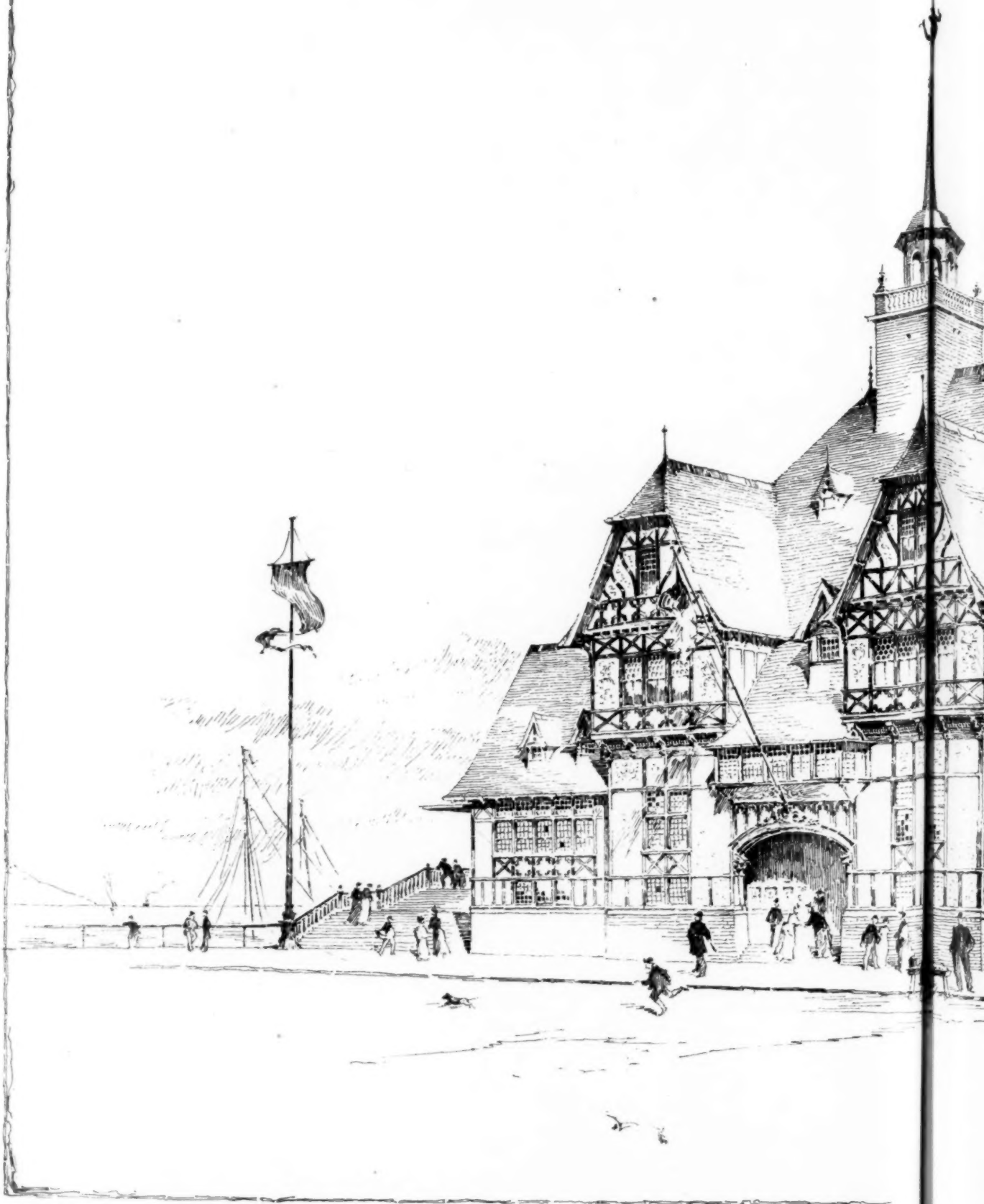
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CHAPEL AND A GATE LODGE
FORT HILL CEMETERY
AVBVRN N.Y. 1855
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HEAD-HOUSE FOR PUBLIC BATH SYSTEM — MARINE PARK SO. BOSTON

EDMUND M. WHEELWRIGHT ... CITY ARCHT.

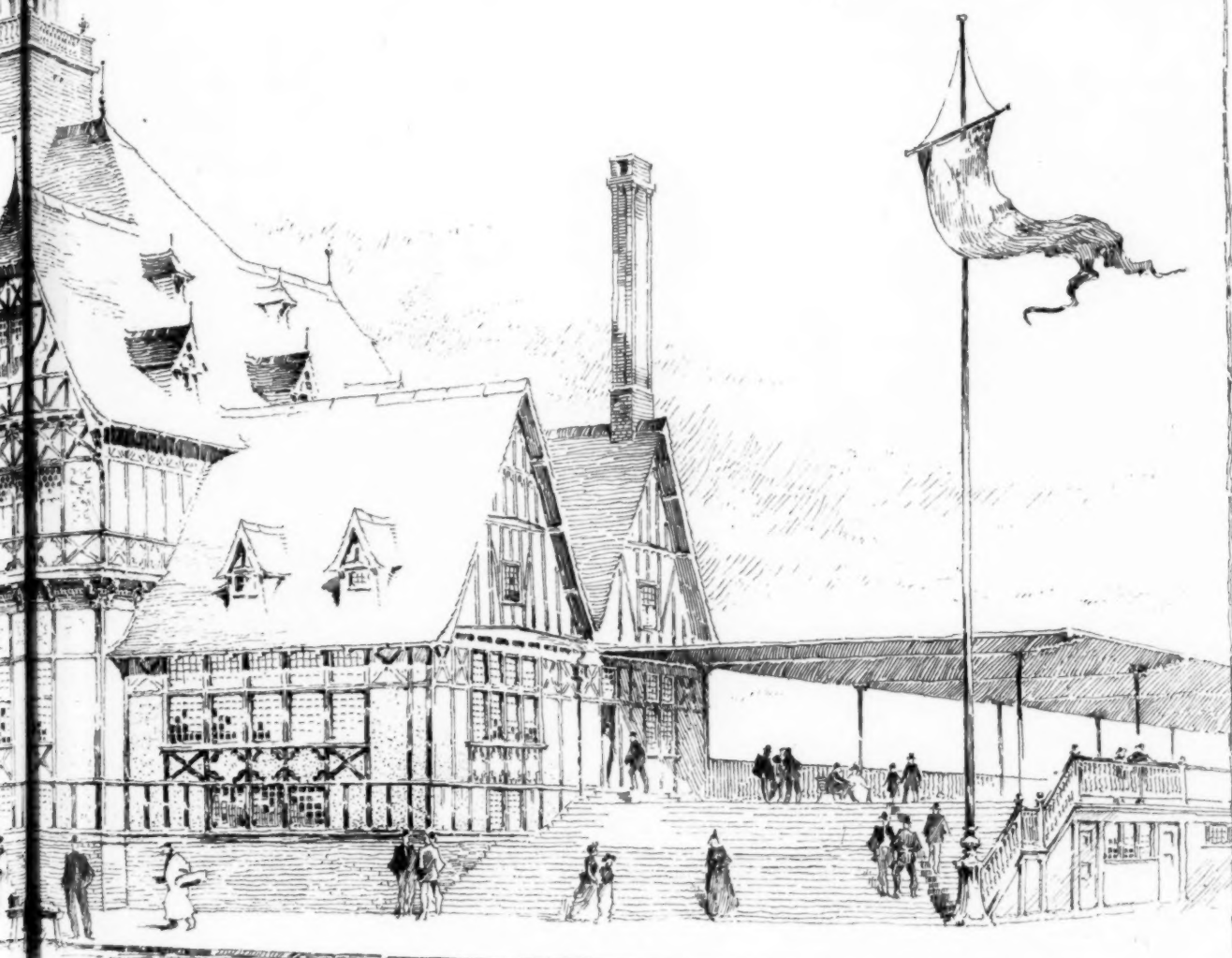
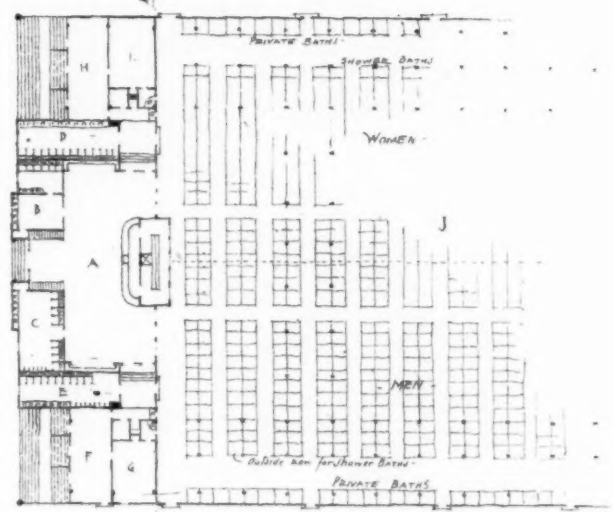


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