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THE hand of the corrupt politician, in straits to find means of replenishing his finances, is, we fear, to be seen in the amendment to the building-laws proposed in New York, which provides a term of imprisonment as the penalty for violation of the building-code. Few people not familiar with New York understand how widespread corruption is there, how enormous is the annual sum extorted by means of it from citizens, and how large is the number of people who have no other means of support than their share of it. Like the New York bribery-laws, which, by making the offering of the bribe a criminal offence, simply enable the receiver of it to extort a larger sum than he could otherwise do, a building-statute, providing imprisonment for violation, instead of, or in addition to, a fine, would put it in the power of inspectors, instead of overlooking an alleged technical violation for a consideration varying from a glass of beer to a ten-dollar bill, to hunt up the owner, the architect and the builder, and offer them their choice between handing over fifty dollars apiece, and spending some time in jail, on his complaint, until their case could be heard. Fourteen years ago, although the penalty for violation of the building-laws was only a fine, inspectors were permitted by law to make arrests, and these ingenious gentlemen soon discovered the advantage of calling upon a parsimonious owner or builder on Saturday afternoon, too late for him to obtain bail, and dragging him off, or threatening to drag him off, to the Tombs, to spend his time there until the bail-commissioner's office was opened on Monday morning. The proposed new law would, under present conditions, be infinitely worse than the old one. Every architect who has built in New York knows that it is next to impossible to avoid some technical violation of the building-laws, which are by no means free from the suspicion of being made intentionally vague and ambiguous in certain places. In cases under the charge of architects, the inspector's directions, or his interpretation of the law, are, as a rule, complied with at once, and the matter ends without profit to the inspector and the gang behind him; and the boodle-hunters have been obliged to rely for their profits from this source mainly on the third-rate speculating builders, who could afford to pay something, although not a very large sum, for connivance at a real violation. Under the proposed amendment, the plunderers will be able to reach the honest and respectable people, who, having no desire to violate any law, and being always ready to correct any unintentional error, could not be laid hold of under the present statute, but can, presumably, be brought to terms by the prospect of summary incarceration at the pleasure of their persecutors.

MR. FRANKLIN W. REED, Assistant Forester on Mr. Vanderbilt's estates in North Carolina, writes to the Boston *Transcript* to say that, in his judgment, Massachusetts affords a better opportunity than any other State for profitable forestry. In North Carolina, while timber can be scientifically grown, it can hardly be sold. The Vanderbilt estates, being near the city of Asheville, have been able to sell firewood at a profit, but, last spring, several thousand oak-trees were cut down in the same forests and stripped of their bark, which was salable for tanning, while the trunks so stripped were left on the ground to rot for lack of a purchaser. In the same way, as Mr. Reed says, the forest belonging to Cornell University, while managed with great skill by Professor Fernow, shows little sign of being profitable, simply because it is so far from a market that the timber from it cannot be sold; and he tells us that Professor Fernow has been enterprising enough to induce some manufacturers of wood-alcohol to establish a plant in the neighborhood of the tract, for the purpose of having a customer for the cord-wood taken from it. Of course, as the country is settled, and facilities for transportation, particularly by canals or rivers, are extended, forest-products will find a profitable market; but, in the meantime, Mr. Reed points out that Eastern Massachusetts already has, what is lacking in North Carolina and in the Adirondacks, an unlimited market for timber of all kinds side by side with cheap waste land suitable for tree-growing. It may surprise some of our readers to learn that a large part of the flooring now used in Brockton, the Bridgewaters and other old towns within twenty miles of Boston, is cut from pine-trees which have been planted on sites cleared of trees two hundred years ago, cultivated for a few generations, and then abandoned, to be reclaimed by the present generation for growing the same trees that the Puritans cleared away with axe and fire. It is true that this second-growth pine brings a much higher price now than the best clear pine did in the same market before the Revolution, but this simply shows that pine-forests have again become profitable in Massachusetts, and, in all probability, will continue so for centuries to come. For cord-wood, which is almost a waste product in forest-culture, consisting of the thinnings of the trees, the market in Eastern Massachusetts is unlimited at three times the prices that similar material from the Vanderbilt forests will bring in Asheville; and the railroads are ready to take, to an unlimited extent, larger trunks, suitable for ties, of which many thousands are now cut in the second-growth forests of Plymouth County. It is true, no doubt, as Mr. Reed says, that there is too much talk about forestry in proportion to the work actually accomplished; but the people who own the young Massachusetts forests, and get a comfortable income from them, are not likely to be the ones to call very loudly upon their neighbors to go into the same business, and the object of talking is to point out to others who own barren land the advantage of reclaiming it, and thus of bringing back to the country of the Puritans something of the prosperous activity which it needs so much.

A SCHEME which is, we fear, rather impracticable has been proposed by the united action of seven of the principal societies for municipal improvement in the United States, consisting in a proposition that the authorities of the St. Louis Exposition of 1903 shall arrange their buildings in such a way as to give an idea of what a model city should be, showing not only the best forms of street-planning, tree-planting and park arrangement, but also exhibiting the most improved apparatus for street-cleaning, garbage-disposal, water-supply and so on. The great objection to such an undertaking is that a space would be required far greater than would be available in the Exposition grounds, and that this space, to represent in any adequate way a modern city, must be furnished with buildings which would be of little or no use for the purposes of the Exposition. The noblest piece of municipal art in the world is probably the Place de la Concorde, in Paris, from which the visitor looks northward, between the Garde-Meuble and the Automobile Club, through the Rue Royale to the Madeleine; eastward, over the garden of the Tuileries, to the palace; westward, through the Champs-Elysées to the Arc de l'Etoile, and southward over the Seine. The Place de la Concorde itself was made to form the centre of these varied views, just as the Rond-Point de l'Etoile forms the centre of another set of vistas. The vistas would be incomplete without the central space, and it would be equally so without them; yet, to reproduce such a piece of street-planning alone would require a tract of land at

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least a mile square, and the street-plan would be very incomplete without the lining of palaces, which would be out of the question in St. Louis. It is proposed to hold, in connection with the Exposition, the fourth International Congress of Public Art, and this suggestion is an excellent one. The first Congress of the kind, in Brussels, was extremely successful, its proceedings having attracted the attention of the whole civilized world. The second, held in Paris last year, lost something of its effect in the midst of the brilliancy of the Exposition; but the third, to be held in Turin next year, close to the very home of municipal pride and civic enthusiasm, ought to be of special interest; and a fourth, in St. Louis, would offer still another set of novel ideas to the members. It will be remembered that the city of Paris made itself the special patron of the Public Art Congress of last year, assigning it a place of meeting in the Hôtel de Ville, and giving a splendid entertainment to its members. It might not be amiss for the city of St. Louis to do the same; and if it has no magnificent Salle des Fêtes to receive its guests in, it can at least show them the sincere Southern hospitality, to which, with the help of some such volunteer commission of experts as the seven societies propose, a grace might be added of which the citizens would long be proud.

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SOME one has been good enough to send us for publication several photographs, specimens of the contributor's work doubtless, which we cannot make use of for the simple reason that no letter of advice accompanied them, while the photographs bear upon face or back no means of identifying either building or designer. It will facilitate our acknowledgment, at least, if the sender will be good enough to send us the needed means of identifying the buildings and himself. All we can do to address this notice to the proper person is to say that the case bore a New York express-label and that two of the photographs it contained are framed and glazed.

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OWNERS of real-estate in New England, as well as master-painters, should take notice that, by the joint action of the New England Insurance Exchange and the Boston Board of Fire Underwriters, the use of painters' torches for cleaning old paint off woodwork is forbidden, and, if a loss occurs in consequence of the use of such torches, there is likely to be great difficulty in collecting indemnity. It may be observed that the owner of a building who sends word to a painter to refresh the paint rarely knows, or can know, unless he leaves his business for several days to watch the workmen, whether torches are used or not; and it is hardly fair to take his money for premiums and refuse to give him any equivalent, basing the refusal on assertions as to the use of torches, the truth of which he has no means of verifying. Property-owners, particularly owners of dwelling-houses, are very well aware of the fact that they pay, in general, in premiums, more than twice as much as the total indemnity which they collect in case of loss; and they look with disfavor on anything which has the air of a trap to avoid payment of the indemnity for which they have contracted. Undoubtedly, the use of torches on painted woodwork is dangerous, and should be forbidden; but it should be prevented by punishing those who employ such torches, and not by plundering innocent people who have no thought of using torches, and who, in most cases, would have no other evidence that they had been used on their property except the word of the party profiting by the assertion.

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THE cause of Public Ownership of Public Utilities has received a slight shock from the announcement of the lease, for twenty years, of the municipal gas-plant at Toledo, Ohio, to a private corporation, at sixty-five hundred dollars a year. Some ten or fifteen years ago, this shining example of the value to citizens, possibly not to all the citizens, of publicly owned gas-plants was constructed, the taxpayers' property being pledged for the purpose, by municipal bonds, to the amount of one million dollars. The works were built, for something more than the amount of the bonds, and put in operation with great enthusiasm on the part of the politicians. Since then they have barely paid operating-expenses, much less interest on the bonds; and, as the interest on the bonds had to be paid, it was added annually to the deficit, so that the interest-charge, on account of the plant, is now forty-seven thousand dollars a year. Whether the influential citizens who got an income from the gas-works have had enough, or whether they thought that the supply showed signs of failing, does not appear, but the experiment has now been finally abandoned, and the taxpayers, deducting the sixty-five hundred dollars annual rent for the plant, will have to raise forty-one thousand five hundred dollars a year hereafter, to pay for a lesson in municipal economics. Toledo is not a very large city, and the burdens of taxpayers are already so heavy that it will not be surprising to see a quiet transfer of its more solid inhabitants within the next few years to places where poll-tax payers are not encouraged to proceed with fifes and drums and torchlight displays to help themselves by millions to the property-owners' money, under some political pretext. If any community proposes to enter the business of gas-lighting, or transportation, or the supply of electricity, it is good American doctrine that those who furnish the money, that is, the property-owners, shall have the exclusive right of deciding whether the enterprise shall be undertaken, and, if it is undertaken, of carrying it on.

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READERS of the newspapers will remember that the granite blocks of Stonehenge have shown signs of movement of late, and steps have been taken by the owner, Sir Edmund Antrobus, to strengthen them. The great trilithon above what is known as the altar-stone, which has leaned for centuries, has now been raised to its proper position, and a new foundation of concrete put in to keep it in place. In digging around the base of the stones, for putting in the concrete, a large number of stone axes and hammers were found, together with chips of the granite of which the monument is composed, indicating, almost with certainty, that the structure belongs to the Stone Age. If further excavation should confirm this discovery, the views of archæologists in regard to Stonehenge and the similar monuments scattered over Europe will have to be revised. For many years it was supposed, without, apparently, any clear evidence, that Stonehenge was older than the Pyramids of Egypt. Afterwards, excavations in some of the neighboring mounds brought to light bronze implements, and it was assumed, also without much evidence, that similar implements were used in constructing the central monument, which would thus belong to the Bronze Age, a period in Britain probably somewhat later than the pyramid-building epoch in Egypt. Now, the fact that stone implements, which have not been found in any of the neighboring mounds, abound in the soil around the trilitha of the monument, while no bronze tools whatever are found there, gives good reason for believing that Stonehenge is far more ancient than the mounds which dot the plain around it, and which seem to be the burial-places of people to whom the principal monument was sacred, perhaps purely from its antiquity.

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IT is curious that modern antiquarian research has come to deal, to a very great extent, with the remains of races which had no written language, and of whom, in consequence, we can know nothing except by inference or by tradition. Very recently, excavations have been made in the Danube provinces, which have brought to light objects very similar to those found at Mycenæ and Tiryns, and on the coast of Asia Minor. It is only about twenty years since such objects, when brought up from the tomb of Agamemnon by Dr. Schliemann, seemed as strange as if they had been brought from another sphere. Now they have been found over a territory so large, and in regions so situated, as to make it reasonably certain that the people who made them were of the race which Homer celebrated, and whose exploits, as familiar to our children as the deeds of George Washington or John Paul Jones, were performed ages before the invention of letters; and archæology, not content with this, has unearthed the birthplace of Zeus, and made careful maps, on the spot, of the Labyrinth which Dædalus, in the intervals of flying through the air with his artificial wings, built for King Minos, who had only one eye in the middle of his forehead, as a cage for the bull-headed Minotaur. That the Cretans, not very long after the age of King Minos, invented, or appropriated from some one else, the art of writing is very probable, but what was the character and mode of life of the people who lived before them, and who, as is now certain, were rich, active and energetic, we may never know, unless, indeed, the yet undeciphered inscriptions of the Mayas and the Etruscans may throw some light on the subject.

## SOME PHASES OF EXPOSITION-MAKING.[1]

LIKE Trilby, the Pan-American Fair poses for the "altogether"; whether in every detail so successfully as Du Maurier's immortal mixture of Irish and French loveliness, let others tell. Whether from the soles of its feet to its golden hair; whether, for instance, from the depths of the Grotto, — and how far that is below the dream of Capri we pictured in our imagination, none seeing it now could ever guess, — to the tip-top of the Goddess's torch, — a lady, some one has whispered, "perhaps too tall, and not poised just right," which Trilby was not and always was; whether, in fact, head, neck, body, arms, hands, legs and feet are each so perfect as only to invoke praise, does not so much matter as does the fact that, as an "altogether," huge in size and of abnormally rapid growth, the Pan-American Fair is acknowledged to be, by those competent to decide, artistically, a success hardly to be anticipated. That this is so reflects credit, a lot of it, somewhere. To relieve any sense of consciousness or nervousness on the part of any individual here present who fears that the secret that he did it is about to be let out, let it be clearly understood that the credit in this instance is hard to trace to its lair; if you should go gunning for the man who was responsible for this success, you need not carry any ammunition, for you will never come near enough to the game to bring him down. The simple reason is that he does not exist. A composite photograph of the author must include the faces of architects, sculptors, painters, and business and professional men, — an interesting portrait of what can be done by the hearty coöperation of many artists and many workmen working upon the same scene with many different tools, with many different methods, and through many different mediums. Whatever glory lurks about the achievement must therefore be divisible; the olive wreath must be carefully taken apart, and be large enough to furnish leaves for many *boutonnières;* while the laymen to whose unpaid mercies have been committed the organization and carrying through of this Buffalo "altogether" claim the reflected glory of having presented to the allied arts of architecture, sculpture, painting and gardening an opportunity for doing what they have done in the way they cared to do it, and absolutely unhampered except by the limits of time, space and money incident to the task of producing in a short time and for a certain sum an exposition suited to the aims and uses of such an enterprise.

The doing of an unusual thing is always worth remarking; sometimes the thing is interesting in itself, sometimes not. In the case of the making of the Buffalo Exposition all of those engaged in the work must acknowledge a degree of interest perhaps never felt before in any undertaking, while for them the thing they have done is surely unusual, for it will probably come into the lives of few of them again. To tell some of the details of the doing of the unusual and interesting work upon which many of us have been engaged during the last three years is the aim of this paper.

Probably the most harmonious event in exposition-making is the first meeting of the unfortunate enthusiasts who unanimously declare in their innocence and inexperience that an exposition they will have; and such awful and sudden judgment as is meted out to these innocent and inexperienced men, who speedily and permanently become targets for trouble until the deed is done, is hard to reconcile with the idea of a fair-dealing Providence which pretends to serve up a reasonable amount of justice, even to a misguided community committed to the giving of a great international show; for, believe me, however uncertain success may be in any or all of its departments, hard work, disappointment and trouble are as certain as the date fixed for the opening day, and the unpreparedness of the show on that long-dreaded day which at one time seemed remote and which so quickly drew near. And yet it may, perhaps, be equally certain that most of these same unfortunate men, when all is over, have a secret longing to try it just once more, in order that they may have the opportunity of correcting the more serious of their many mistakes, and of doing the thing in the way their experience leads them to think it ought to be done. It is with some such feeling that this paper is written; in the hope that the practical experience of the last three years, devoted chiefly to exposition-making, may serve to point out some phases of the work which, coming within the layman's view, may be of interest to an audience like this, learned in the lore of building great and little things — a few things built for the glory of God, and many things which unfortunately stand as monuments to a compromise between conscience and client.

And first of all, after the stockholders had chosen by ballot a board of twenty-five directors, and from these an executive committee of nine members had been selected, arose the question of where the Exposition should be located. All those having sites to offer were asked to produce them at a given time, with certain descriptive data regarding them, together with the terms upon which they could be leased, and they were expected forever after to hold their peace, an article which they were evidently not used to handling, for they could not hold it at all. Some eighteen sites were offered. An expert committee, consisting of Messrs. Burnham, Olmsted and Manning, were asked to examine and to report on these sites. This they did, and the site recommended by them as their second choice finally was selected, not however until the town had been divided into two violently opposing factions so partisan that it did not seem possible ever to reconcile them. But the accumulation of other troubles soon caused even this violent conflict to be forgotten. Wonder is often expressed that the Lake-front was not selected, which was the first choice of the experts, and is the spot which would suggest itself as the proper site, embodying, as it does, the one natural and distinctive beauty of the city of Buffalo. Unfortunately, the only available Lake-shore site was what is known as the Front. The objections to this were the necessity of filling in a large section of land lying under water, insufficient breakwater protection against the encroachment of the waves, violent winter winds, making winter building-operation difficult, the intersection of the site by the New York Central Railway, and a summer pest of sand-flies frequenting this locality. Fortunately for the sanity of the Exposition management, these obstacles prevailed, and the present site was selected.

The work of the organization and control of the department having charge of the designing and building of the entire Exposition, including all the physical work within the Exposition fence, was committed to a sub-committee of three, called the Buildings and Grounds Committee, chosen from the members of the Executive Committee. The necessary preliminary information in regard to the whole Exposition question was chiefly gained by the present Director of Works, who was sent to Chicago and Omaha to study thoroughly the methods employed by them, their successes and failures, and much valuable advice and information were also obtained through the kindness of Mr. Burnham and of Messrs. Kimball and Gibson. After the size and scope of the Exposition had been to some degree determined upon, the members of the Building Committee were confronted with the rather difficult task of selecting the architects who should build the Fair. This task was not an easy one. That the world was full to overflowing with lawyers was well known to them; that doctors were more than a drug in the market was equally well known; that in the ordinary walks of life — in the narrow paths, in the shady, crooked lanes, in the bright, broad road where the going is so very easy and the company is so very pleasant — men may be seen scurrying along, trampling upon one another with little regard to the consequences, was equally apparent. But that the world was so peopled with eminent architects we had never before realized. However, the choice was made with all the light that could be obtained, and with the serious and earnest purpose ever kept in view of doing for Buffalo and the Pan-American Exposition the very best thing that could be done. The Exposition as it stands to-day, with the almost unanimous voice of approval which it has called forth, is the best justification for the wisdom of the choice that was made. Equally important was the selection of a director of works. Contrary to the the advice of every member of your profession, an engineer was chosen. Not that we did not realize that an architect was equally well or perhaps better equipped by his training for the position, but because no architect was available who had the time and necessary executive qualities for the task. The wisdom of the selection of the present Director of Works has never been questioned. But of this more will be said in estimating the results of the work.

The eight architects selected met first in Buffalo on the 17th of June, 1899. At this meeting Mr. John M. Carrère was chosen Chairman, and the duties of the Board defined as follows: —

"The eight members of the Board are to control and supervise all matters of design and art which have to do with the buildings and grounds. They are to design personally the block-plan and the important Exposition buildings, but not any buildings of a permanent character. Their services are to comprise plans, elevations, and full-sized details of ornamentation, but not construction details, local supervision, or administration.

"Also that the Supervising Architect is to be appointed by the Buildings and Grounds Committee from a list submitted by the Board of Architects. The Supervising Architect is to have charge of the executive management of the Architectural Bureau of the Department of Works."

The Buildings and Grounds Committee presented certain information and suggestions to the Board, among which were the following: —

A list of the main structures to be built, with floor-space required for each, was given, the names being, Manufactures and Liberal Arts, Agriculture, Electricity, Transportation, Machinery, Mines and Forestry, Graphic Arts, Temple of Music, Ethnology and Horticulture. These buildings were required to contain 640,000 square feet. A Stadium to seat 20,000 persons, in which it was proposed to give athletic contests of all kinds, horse and cattle shows, automobile races, etc. As built, it seats comfortably 12,000, which was felt to be amply large, and has so proved. An Office and Service Building, a large number of minor structures, band-stands, restaurants, boiler and power house, barns, public-comfort stations, Photograph Building, etc.; data in regard to State and Foreign buildings, the United States Government Buildings, and New York State Building.

In addition to the information given the Board of Architects covering the requirements of the Exposition as regards the number, kinds and sizes of buildings, the following suggestions were made among others: —

"The suggestions as to the area allotted to each department are approximate only, and in laying-out the buildings for such department, two or three adjacent structures may be erected instead of one, if the architectural scheme is improved thereby."

Full details for the laying-out of the Midway were given, and the aims and ideas of the Committee were set forth in the following suggestions, which seem to be particularly prophetic of what was actually accomplished in the completed Exposition: —

[1] A paper by Carleton Sprague, Member of Executive, Buildings and Grounds, and Fine-Arts Committees, Pan-American Exposition, read at the Thirty-fifth Annual Convention of the American Institute of Architects at Buffalo, October, 1901.

"The general scheme suggested is one of formal landscape-gardening, with a very great display of loggias or colonnades, with terraces and places for people to sit. Shallow basins of such grade that the water will quickly run away from the fountains.

"Some of the buildings in the form of interior courts with fountains, statuary and flowers.

"We would also say that electricity should be the key-note of the Exposition, from the fact that we are promised 10,000 electrical horse-power from Niagara Falls, and that the exhibit of electrical machinery, etc., should be the most extensive ever gotten together.

"And, in conclusion, the feeling of the Committee is that public interest in expositions proper has more or less passed away; that it is, therefore, desirable to create a plan which shall be beautiful to the eye and which shall afford entertainment for the visitors."

Such was the chief information given in writing to each architect, and while these are fresh in our minds it will be interesting to compare with them some of the actual results. The main structures contain only 4,000 more square feet than the 640,000 square feet allotted for them. All of the minor structures proposed were built, except the garbage-crematory, custom-house and sheds for empty cases. Of course, many more buildings were found to be necessary, chief among these the Electric Tower, the Propylæa, Triumphal Bridge, the large Transportation Building and Railway-station on the north, the Bazaar Building and the Acetylene Building. In all there were built by the Exposition Company ninety-three separate structures, including four engine-houses, six sanitary-buildings, fifteen stock-barns, two ordnance buildings, four pergola buildings, four pergolas, three band-stands, five entrances, two guard-houses, four kiosks, and fifteen bridges. A total of twenty-eight separate buildings were erected by foreign governments, United States Government, States, fraternities, and private exhibitors, while fifty-eight structures were built by concessionaires; a grand total of 179 buildings, all begun and completed practically within twelve months, the main buildings being put up, in actual working-days, as follows: —

| | |
|---|---|
| Temple of Music | 230 days. |
| Horticultural | 281 " |
| Electricity | 239 " |
| Art Gallery | 116 " |
| Railway | 129 " |
| Stadium | 164 " |
| Agriculture | 174 " |
| Ethnology | 208 " |
| Manufactures | 220 " |
| Machinery | 213 " |
| Electric Tower | 291 " |

With the risk of boring you with figures, the following statistics are added, to give you some faint idea of the vast amount of work required in the Department of Works in order to complete the Exposition.

There is transmitted to and installed on the grounds 5,000 horse-power from Niagara Falls. There are seventeen fountain-pumps with a capacity of 34,000 gallons per minute; three fire-pumps with capacity of 2,250 gallons per minute; five feed-water pumps with sufficient capacity for 9,500 horse-power in boilers; thirty separate steam-engines, rated at 5,000 horse-power, and twenty-three separate boilers.

There are 12,000 feet of main sewer with several thousand feet of lateral connections; 49,000 feet of water-lines for fire-protection, and 75,000 feet of domestic water-lines.

There are 3,000,000 feet of electric-wiring; 200,000 incandescent and 900 arc lights.

Pavement was laid as follows: 149,000 square yards of asphalt, 151,000 square yards of macadam, and 4,950 square yards of brick pavement. About 200 carloads of cinders were used; the canals and mirror lakes measure 7,263 feet in length. There have been used 200 bay-trees in tubs, 500 cedar-trees in tubs, 1,400 palms and ornamental plants, 9,000 other trees, including poplars, maples, etc., and many thousands of shrubs; about $20,000 was expended in flower and vines.

At the first meeting of the Board of Architects a general exchange of views was had. It was made clear to the individual architects that the Exposition management wholly committed to them the designing and ornamentation of the buildings and grounds of the Exposition, with the clear understanding that only the highest artistic aims were to be sought, and that an artistic success meant their success and theirs only, while any failure would be laid at their doors, and that they should be unhampered and aided in their efforts by every means within the control of the management. We kept our promise, and they more than fulfilled our ideals, high as these ideals were. The second meeting of the Board of Architects was held in New York City on July 12, 1899. The eight members were present, also Mr. James K. Taylor, United States Government Architect, and Mr. George L. Heins, architect, of the State of New York. Following the suggestions of the first meeting, some members of the Board had prepared more or less elaborate block-plans, those offered by Mr. Peabody and Mr. Cook being carefully worked-out, embodying the chief buildings to be erected and the general lay-out of the grounds. After a full discussion it was decided that Mr. Peabody's plan seemed to offer a working-scheme, and his plan was the basis upon which the final scheme was developed. Minor suggestions and alterations were adopted, and, finally, it was moved by Mr. Carrère "that Mr. Peabody be requested further to develop the block-plan for further discussion at the next meeting, to be held July 21, at the same place and hour, and that all the plans submitted at to-day's meeting be handed to Mr. Peabody." At the next meeting, July 21, in Buffalo, Plan A, originally designed and subsequently elaborated by Mr. Peabody, and brought by him to this meeting, was "recommended to the Pan-American Company, subject to further study and development." These were the meetings at which the artistic fate of the Exposition was being woven for good or ill.

At this meeting the division of the buildings into eight groups for the purpose of allotment was made, and it was decided that "the designs presented for any of the eight allotments or other buildings are not to be held as accepted until each has the approval of a majority of the members of the Board of Architects." Also, "that the style of buildings be of a free Renaissance, with apparent roofs and overhanging eaves; that the general line of eaves be 50 feet above the floor [which was subsequently changed to 45 feet]; that the pitch of the roofs be approximately 30 degrees; that very extended treatment of outside surfaces with color and sculpture be recommended; that sketches be made to one-sixteenth scale, and copy of plan be made and sent to each architect, and all sketch block-plans be sent to the architect who has block-plan." The meeting then adjourned to meet one month later, August 22, in Boston, and the Buildings and Grounds Committee were left to struggle with the question of the allotment of the different groups. A solution of this difficult task suggested itself, a means of arriving at a result satisfactory to all concerned which proved most happy; indeed, a kindly fate has hovered over us almost always, with only very occasional and very short periods when she need to blush or hide, or pretend not to hear. The Committee asked each architect to express in writing two preferences from the eight allotments, and also to recommend to it the other men whom he considered best fitted to design the other work. You can imagine the relief it was to the Committee, after tabulating these preferences, to be able to write in notifying each architect of his allotment as follows: —

"The Committee is gratified that the individual preference of each architect as expressed in the lists submitted to the Committee on Friday last has been followed, so that each is allotted either his first or second choice of the various groups of buildings. The allotment also follows the wishes of the whole Board of Architects as expressed to the Committee in the same lists."

It might be added that all the architects were too modest (whatever their secret longings may have been) to elect to build the Electric Tower, while all but one were united in advocating the selection of its author, Mr. John G. Howard. By this allotment the block-plan was put into the hands of Mr. John M. Carrère, and all the subsequent elaboration of that plan, with the almost endless problems involving both construction and design in developing, building and finishing all the details of buildings and grounds, fell to his share; to him and to his associate, Mr. W. W. Bosworth, who spent his entire time in Buffalo from August, 1900, to June, 1901, fell the important, difficult and harrassing task of deciding all the innumerable questions involved in the development of the artistic side of the work.

It would be tiresome to follow the meetings of the Board of Architects further. The designs as finally sent to the Construction Department at Buffalo had been freely criticised and harmonized at these meetings, each architect modifying his design for the harmony of the whole, and this attitude is largely responsible for the satisfactory results. At different times different features were suggested and adopted, notably the canals, which so admirably frame the picture, and provide a charming voyage of pleasant discovery by day or night in gondola or launch, and the Propylæa and the Triumphal Bridge.

The Department of Works at Buffalo, at the head of which was Mr. Newcomb Carlton, made all the construction and working drawings, decided upon the materials to be used, and assumed all responsibility for the stability of the structures, besides having the laying-out of all sewers, water and gas mains, electric-conduits, all excavations, planting, propagating of plants, etc., shrubs, flowers, vines, etc., and to do this a very large and complicated organization was necessary. A man was never found who filled the place of supervising architect successfully, and this important place was practically filled by the Director of Works, with such assistance as Mr. Carrère could give, and how much and valuable that was his frequent visits to Buffalo in this labor of love fully testify — not to forget the equally valuable and efficient work of Mr. Bosworth when he became a resident of this city.

Fortunately, the making of expositions has developed a new profession, a body of men trained to the needs of the exciting task of building these temporary temples of trade and merrymaking. In every department men skilled in certain important duties are to be had, and in no department is the value of such skill greater than in the Department of Works. Mr. Henry Rustin, in the Electrical Department, is wholly responsible for the creation and installation of the enduring twilight glory of the Exposition, with its many thousands of evening stars. In it we see for the first time architecture, sculpture and color, trees and flowers, shrubs and vines in a new atmosphere, a new enhancing radiance, and each beholder acknowledges freely and gladly a great personal debt to the author of so much beauty. Mr. Henry Weatherwax, as chief draughtsman, brought the experience of many expositions to the service of the Construction Office, and had charge of the force which made the construction drawings and details of all the buildings. In his office a force of

draughtsmen were employed who worked in all 8,315 days from September, 1899, to June, 1901. To him, to the Chief Engineer, Mr. S. J. Fields, and to Mr. J. H. Murphy, Chief of Construction, is due the credit for the stability of the work which, in process of construction, looked so frail to the inexperienced eye. Mr. Rudolph Ulrich wields the wizard's wand: his work at Chicago and Omaha, and again here in Buffalo, entitles him to the highest praise. He has learned from nature secrets unfolded to few men. Under discouragements of soil and season, calculated to dismay a lesser man, early and late he worked to entice the unwilling growth of grass and trees. The results he obtained in an incredibly short time are the wonder and delight of every visitor. But to the Director of Works, Mr. Newcomb Carlton, under whose charge all these men were, the chief praise is due. Early and late he has worked. For two years he hardly left the grounds of the Exposition. Youth, added to conspicuous ability, fearlessness and integrity, just and firm, courageous and undismayed — these are a few of the qualities which enabled this man to come triumphant out of a contest in which the odds against him were well-nigh overwhelming. An engineer by profession, his success is a fair proof that the training to carry out a scheme of building wholly architectural may be safely left to a man of another profession, provided he be a man who appreciates the importance of preserving the artistic side of the work, and is endowed with that priceless quality which we call executive ability. It would seem that the experience and results here in Buffalo should lead your profession to hesitate to declare so strongly as you did in the beginning of this work, that a knowledge of architecture was an absolute necessity in the equipment of a man who was to organize and direct a great building enterprise. In this, as in most things in this world, the man is more than the training.

It is well known to you how the sculpture on the grounds and buildings was secured. Chosen by his fellow-sculptors, Mr. Karl Bitter originated the whole scheme, allotted the work, hired great rooms, and organized his workmen, who enlarged the figures and groups. By the Exposition Company he was allotted a certain sum for his work, and within that sum, and before the time of opening the Fair, his work was done, and admirably done. It would be difficult adequately to speak of what his work has meant to the Exposition. He has the satisfaction of a difficult thing done splendidly well.

Mr. C. Y. Turner, chosen, too, by his fellow-painters, undertook the task of coloring the buildings. His was an undeserved fate. Each architect was cheerful over the coloring of every building but his own. In the color of his own offspring's attire he naturally took great interest, and then the argument began. To reconcile with his own clearly defined scheme the views of so many different men was no easy task, but it was done by Mr. Turner, with the same patience and desire for the success of the whole work which has characterized the entire Exposition work.

In recalling those whose work has done so much for the success of the Fair, appreciation of the coöperation of Mr. J. K. Taylor, author of the U. S. Government Building, must be expressed. In every way, and at all times, he was ready to harmonize his work for the good of the whole.

And thus the Pan-American Exposition was built, and in its building and in its completion there are things which invite remark.

The planning, designing, building and finishing of the entire work occupied practically two years, from the spring of 1899 to May of the present year. It was only accomplished because the seasons were unusually favorable and because the work was pushed toward the end with little regard to anything but speed. These two years were, in my judgment, just twelve months less time than that in which, taking into consideration the building operations only, — and it will be observed that this paper is limited to a discussion of this phase of the work, — the building of an exposition should be undertaken. It is to be doubted whether a longer time than three years would be of any additional value. It would be difficult to keep up the enthusiasm and energy necessary for such an enterprise were the time extended further. The Exposition last year at Paris, with its marked incompleteness on the opening day, proves that plenty of time in which to prepare and do the work is no guaranty that it will be finished on time. A great length of time, therefore, is not to be sought, but too little is a great handicap to the best success. Three years may be divided properly as follows: The first months will naturally be consumed in the selection of architects and in making the block-plan of the Exposition and deciding upon the main features; then will follow the work, during the first summer and fall, on the site, to prepare it for its buildings, including all necessary excavations for waterways, laying sewers, water-mains, electric-conduits, etc. The ground should be ready the first fall for the planting of the greater part of the large trees which are to be used, giving these trees two seasons in which to establish themselves, instead of only one, as was the case in Buffalo. During this same period designs are being made for the buildings and grounds which can be harmonized and perfected so that during the winter and spring the construction-office may get out the working-drawings and the plans be complete and ready for the estimates by contractors early in the second summer. The actual work may then be begun, foundations put in, and the buildings so far advanced as to be ready for the second winter. The third building season will find them and the grounds ready for the staff and ornament, so that the whole exposition will be practically complete, as far as being ready for the installation of exhibits, by November or December first.

The advantages of this programme are self-evident, the chief one being the question of expense. It is not necessary to tell this audience what the additional cost is of a building operation so hurried that a large amount of overtime is involved, where, through inability to get bids, day-work must be resorted to, and where your evident helplessness incites your loyal workmen to strike, as they did again and again in Buffalo, in spite of *bona fide* agreements to the contrary, until plasterers were paid fifty cents an hour for eight hours' work, and a dollar an hour for overtime and Sundays. It is probably true that the Exposition would have saved much more than half a million dollars could all the work have been contracted, and the endless strikes handled with more deliberation. The value of the artistic side need not be dwelt upon. It is a little less than highway robbery to "hold a man up" for a design for a monumental tower and force him to stand and deliver inside of sixty days. But in spite of the experience of others, St. Louis proposes to build her Fair before the spring of 1903, and she will do it — (we Americans are terrible fellows, and delight in a record broken) — but it will be done at a sacrifice of considerable artistic success and at an additional cost which would be wanton extravagance in anything but exposition-building.

The director of works in any exposition must have unusual qualities, and it is difficult to find a competent man who is free to devote his entire time to the work. If he can be found, and is a member of your profession, so much the better; but, as has been said before, this does not seem to be very important; it is, however, of the greatest importance (and in this respect we greatly suffered in Buffalo) that the man in charge of the development and finishing of the block-plan should give up his entire time to the work, and become a resident, for the construction period, of the city where the exposition is built. Daily and hourly questions involving the adjustment of matters of design and construction arise which require immediate decision, failing which annoying and expensive delays result.

The chief fault with the Pan-American buildings as practical exposition buildings was the difficulty experienced in the installation of exhibits. It is simply impossible to make exhibitors get their exhibits to the grounds and in place in time for the opening day. The apparent unpreparedness in Buffalo on May 1 was not due to any great extent to the fact that the buildings and grounds were not finished; practically they were complete. The difficulty was that all exhibits had to be hauled by teams through the grounds to get them to the buildings. The weather was wet, and in spite of plank roads the asphalt pavements were ruined, and had to be repaired extensively again and again. It was the middle of July before the exhibits were in place, and the teaming, the unsightly plank roads and the broken pavement naturally led the visitors to believe that the Fair was unfinished. Every exposition building should have a back-door arranged for the reception of exhibits, and this should never be lost sight of in planning the work. Had we been foresighted enough in Buffalo it would not have been difficult to do this by providing suitable approaches to the entrances on the north side of the Agricultural and Electrical buildings, and on the east and west side of the Manufactures and Machinery buildings, respectively. Had this been done, the Fair would have been finished, as far as viewed by strangers, a month earlier than it was.

As a result of the work in Buffalo, a very strong argument is added in favor of entrusting all the landscape-plan connected with any large undertaking involving both architecture and landscape-gardening to the architect only. No painter would be satisfied to rely on another to frame his picture. He must have the frame made by another, but the design, material, color, etc., lie with him; so, too, the architect must have the skilled aid of the landscape-gardener, but the latter must be the servant and not the master.

It has been interesting, too, to note the effect of the strict adherence to "scale" in the Buffalo Fair, and the difficulty people have, therefore, had in determining the relative sizes of this Exposition and the World's Fair. Many residents of Chicago, and, therefore, very familiar with the great size of the White City, have said that the Pan-American was as large, when in reality the Liberal Arts Building alone in Chicago covered twice the area of the seven main buildings in Buffalo put together. Let us hope that the scale of the Exposition, so carefully and happily worked out here, may bear fruit, and that a stop may be put to the ruin of a creditable piece of architectural work by the greed or stupidity of adjacent builders. It is interesting to note, too, how the very smallness of the poplar-trees on the canal-dykes and the narrowness of the canals themselves increase the apparent size of the vistas and adjacent buildings. Indeed, one of the chief values of expositions is lost if a decided impression is not left by them on the popular taste for good building and, in this instance, for good gardening. The shop-windows of any great city, its museums and galleries and its various industries are a world's fair, such as was given in Philadelphia in 1876, but our American city streets have little to teach the passer-by of the influence of good architecture. Chicago in 1893 was a revelation to them, and the effect of its buildings probably will never be sufficiently appreciated.

What will be the effect on popular taste of what has been done in Buffalo? Departing as far as possible from what was the chief charm of the Chicago Fair, the picturesque structures here are sure to leave a mark on public taste, while in the formal landscape-work there is an object-lesson which is probably entirely new to the majority of visitors, and can only result in improvement in this branch of garden-work in a country where the formal method has been practically unknown. But the red tin tiles and the red, white and blue

doorways are dangerous object-lessons. There is a flippancy about them likely to catch the popular taste, and it will require some firmness on the part of your profession to restrain clients who are inoculated with this picturesque "culture." It begins to look as though the pergola was about to take the place in popular affection recently occupied by the now dethroned bicycle. Looking back a hundred years hence to the American architectural work of the beginning of the twentieth century, it seems assured that as the culmination of Greek art was known as the Age of Phidias, this time will be known of the Age of Pergolas — no home happy and no back-yard complete without one. Gentlemen, excess in anything is to be deplored — be kind to us and yourselves, and use the pergola in moderation. Looking back again a hundred years hence, there will be traced, as the advance of Roman conquest can be traced by the succession of Roman arches which marked its course, the advance of American architecture by the procession of its attendant poplar-trees. But, perhaps, the influence of the poplar and the pergola will not be as lasting as it now promises.

But, seriously speaking, the effect on popular taste following our Buffalo Fair cannot fail to be beneficial. The work was undertaken in all seriousness by the projectors of the enterprise, and with an earnest desire to produce a useful and beautiful result. It is encouraging that a body of business-men should undertake it in this spirit; it should be encouraging to your profession and to all artists that this spirit is abroad; it argues well for the future. A community, like an individual, cannot set itself too high a standard, for although it may often fail in reaching it, every effort is ground gained, and each step brings it nearer the artistic goal which has seemed so far away on the horizon of our American life. If the opportunity given your profession here in Buffalo has been of any encouragement to you, it will be some return for the debt due to the architects of the Pan-American Exposition from the city of Buffalo for their devoted interest, their unflagging zeal, and splendid success in the work now drawing to a close.

## VENTILATION BY ASPIRATION.[1] — VII.

IN a foregoing part of this paper I spoke of the tendency of all aspiration-systems to induce air-currents into the building from all sources, proper and improper. In my design I have taken special precautions against this danger. The quantity of air which in winter enters buildings through the ground is far more than is suspected. From actual tests I am able to state that a flue in an interior (that is, one favorably situated) chimney containing 100 square inches of cross-section is not more than sufficient to carry off all the ground-air in the case of a house covering 1,500 square feet of land, and where the foundations are of stone laid in cement on a compact clay soil. No law requires drains in open land to be laid air-tight. It is well known that they are almost never tight. Consequently, the persistently acting force of aspiration (I have found it to be as much as 1-16 inch of water 50 feet from a building) draws the air down the sewer-manholes, along the sewers to the branch-drains, out of the joints of the drains into the ground, and thence to the houses. I have succeeded in establishing the cause of a sort of malarial or intermittent fever, invariably recurrent in certain individuals on returning to a certain house, and where the attending physician had applied to me to test the drainage, to proceed from the ground-air, the plumbing and drains near the house being in perfect repair. After taking steps to intercept and carry off the ground-air in accordance with my suggestions the fever disappeared and never returned.

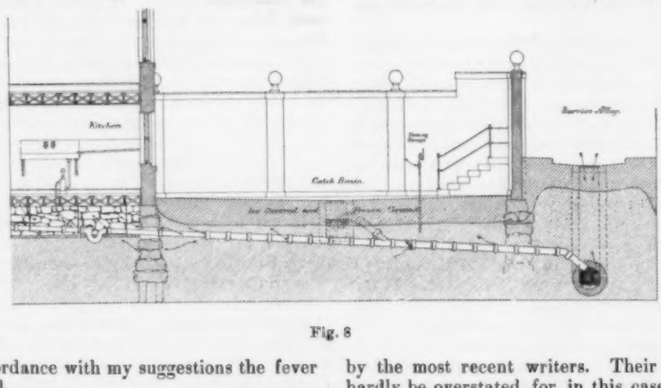


Fig. 8

These conditions are shown in Fig. 8, where, when the ground is covered with ice, their effects become more serious. This state of things, especially the bad location of the main trap, which should be in a vault outside, is not suspected by the physician and sanitarian, much less by the architect and layman, who often wonders why the air of his own climate should be so pernicious that he must fly from it to distant regions. The truth is that his journey affords a means of escape from the constant stream of sewer-air that is pouring into his house throughout the entire winter season. This subject deserves fuller treatment, but to discuss it here would lead us too far from our chief topic.

To make it sure that no air shall enter this school-house except through the appropriate inlets, I have provided that the entire basement-floor shall be covered with an air and water tight surface, plastic also, to allow for slight settlement. Besides this precaution, I have arranged an air-drain to be used to intercept and carry off ground-air and surface-water in addition, and which does not connect directly with any sewer. There are several catch-basins, etc., which are usually connected to the drain, being trapped, of course. But these traps dry out sometimes, as I have actually found them in some of the newest and best examples of plumbing in school-houses. Therefore, I will not have them so connected, but all of them are carried to a trapped catch-basin into which all the rain-water is discharged. They are all trapped here, and to make them still more safe, the main drain leading to the catch-basin (which is also the air-drain) is connected to the hot flue on the girls' side of the basement. The other hot flue is reserved for the urinals. In summer, when there is no boiler-fire, the small furnace at the base of the chimney is fired; there must be always one fire or the other alight; the extinguishment of one fire is the signal for lighting the other. But it is never necessary to have both fires going at one time. These precautions make it certain that no foul, malarious air can enter the structure, except what goes straight to the chimney. All these details, including in addition the catch-basin and mode of entering the several drainage-pipes therein, urinal and ventilation of cloak-rooms, are shown in Fig. 6 [see Illustrations in our issue for October 12], the several drawings thus covering a complete system of sanitation.

A common trouble with natural and aspirating systems is the pressure of the wind upon the exposed air-inlets, causing too much air to enter in some and too little in others. Here is another place where the inexperienced will suggest that nothing is easier than to close the dampers. Yes, indeed, and they will stay closed. The weak ones, under similar circumstances, wide open, yet short of air, and actually subject at times to a reverse current, can be opened wider still, I suppose on the same principle. To avoid these pernicious defects, the inlet is placed at the top of a shaft where the wind cannot produce a pressure upon it. Two inlets would be better, one on each side of the house joined by a tunnel passing across and under the cellar. Such a double inlet would effectually protect the ventilating movement from the influence of the worst wind-storms. The inlet in the scheme which I have designed to illustrate these principles is carried up above the ridge of the roof. The chimney or outlet shaft measures 62 feet from the top of the heater to the bottom of the louvred openings. If the house were two-storied, I should advise it to be full 70 feet to this point and, to make plenty of room for ducts, the basement should be 12 instead of 10 feet high, at least in the rear extension, or the foul-air ducts could be placed in tunnels underground.

It will be observed that there are two distinct systems of aspiration; a small one, but having greater power, acts continuously. It aspirates air from all the water-closets and urinals through suitable openings purposely provided, and it also intercepts all air from catch-basins and especially from plumbing trenches and chases, the ground-air drain, etc., as already described. The supply of air to keep this system going when the main system is quiescent is derived from leakage into the building from all sources, and its action is to promote a general movement in the direction of the outlets which it specially serves, while the spaces in which they are placed, not having any definite air-supply, become the ducts to convey away this aspirated-air borrowed as overflow from the corridors, and thus all foul air therein produced is swept away and can by no means penetrate to any other part of the house. The lavatories, in other words, are the pathways of the outgoing air, especially that part which has the more powerful aspiration. The other aspirating-system is that for ventilating the building as a whole, and is only to be in use when the house is occupied. These general principles were announced by me in the *Scientific News* in 1879, but have been accepted very slowly. They have not reached Europe at all, and even in America are only referred to by the most recent writers. Their value in hospital practice can hardly be overstated, for, in this case, the aspiration is so managed that the flow of air is always from the corridors towards the rooms, with a maximum aspiration from lavatories, etc. Thus, contaminated or infected air can never pass from one room to another. The addition of a plenum makes such a system complete, as well as secure against the fortuitous action of wind or the disturbance caused by opening windows, the bane of aspirating-systems.

The urinals are flushed intermittently. This is accomplished by a reservoir extending the whole length of the range of urinal-stalls; it has a weir for its front edge, worked in the stone and made perfectly level from end to end. The reservoir stands full all the time, at the point of overflowing. This is brought about simultaneously along the whole length of the weir by the flushing action, which at the first compresses the body of air in the upper half of the partly submerged copper cylinder. The latter has a slit along its under side through which the contained water escapes when the air above it is compressed, causing an effect that may be likened to the rising of the tide in the reservoir. A moment later, the action ceases; the compressed air exchanges its place with new water from the tank, and the apparatus is ready for a repetition of the process. The ventilation is thorough, and for general simplicity and cleanliness, this type of urinal cannot be surpassed.

A few words may be said about one or two other details shown in

[1] Continued from No. 1346, page 16.

the drawings. The foot-warmer is placed in a well-lighted alcove in the hall; it is intended for drying the shoes and clothing of any rain-soaked children. There are steam-pipes under the seat to facilitate the rapidity and thoroughness of the process without producing a chill. The vapors from damp clothing are received in the open space at the upper part of the alcove, which has two special ventilating-flues. The same general principle is employed to dry the clothing left in the cloak-rooms during school-hours.

In the construction of the building, the only novelty apart from the ventilating features is the metal base and corners used as borders to the plastering. Inspection of the drawing shows that settlement of the floors from shrinkage of the beams is provided for by a close sliding joint of metal, which cannot become in any way a receptacle for dirt or dust. In finishing the rooms, there are to be no angles whatever, except around the doors and windows where surfaces can be readily kept clean. This construction would be an effectual stop against fire and vermin, and would appear to be very desirable for hospitals.

Architecturally, the style of the building seems almost unnecessarily severe. This characteristic makes the attachment of a high tower all the more incongruous. Nevertheless, it must be conceded the effect is much less so than would have been anticipated. The shock to the eye caused by this artistically inappropriate vertical elongation is relieved by the metal ornaments at the ridge, ornaments which may serve as lightning-rods, or lightning-rods that may serve as ornaments, but whose real function is to soften and lead up to the ventilating-tower. This rather crude preliminary trial shows that the problem is not beyond the reach of the skilful architect, and that the scheme is capable of artistic treatment.

The system of ventilation which has been set forth above in accordance with the law of uniform expenditure of fuel, which was stated in an earlier part of this treatise, has been presented in its simplest form. But there is nothing in the principles on which it is based which is hostile to its modification. For example, each, or any one, room could be treated separately and be equipped with its own primary and secondary heaters and a distributing valve. Or, under the principles of my graduated system of steam-heating, there could be one general distributing or switch valve, the requisite supply to each heater being assured by secondary throttles on the principle of the fractional valve. The mode of accomplishing this is too technical for explanation in this place, but can be readily understood by the accomplished engineer. In working out such a scheme, I regard it as important to adhere to a single inlet tower and large underground duct for the fresh air, and a main chimney into which the branch outlet-flues should discharge, the connection being preferably in the attic.

It must, however, be kept always in view, that the practical value of a system of ventilation lies chiefly in the concentration of management and a diminished number of parts requiring frequent attention and adjustment.

In conclusion, the system which has been above described commends itself for the following reasons: —

First, the warming. This is treated as simply a method of restoring the heat as fast as it is lost through walls and windows by radiation and convection. It is a complete, integral system, having no relation at all to the ventilation, applied in the most effective way, and with careful regard to the comfort of the occupants. The heating-surfaces are not massed, but spread out along the exposed parts of the building, nowhere developing much heat, but opposing the entrance of cold at every point where it would be likely to appear. It is possible to regulate the temperature of each room separately, no matter how many radiators it contains, by manipulating one steam and two air valves, or by one fractional valve.

Second, the ventilation. The regular movement of air for the purpose of ventilation, while in its turn entirely distinct and separate from the heating, is, nevertheless, reduced to a form of heating in which, however, the heating of air for comfort is only an incident, and is so combined with it that the entire management is concentrated in the manipulation of one valve, and the position of this is determined by the reading of the thermometer that gives the temperature prevailing out of doors. Mixing-valves are dispensed with altogether. Adequate force for ventilating movement is assured for all states of weather, under conditions that guarantee the highest possible economy.

Finally, there is no system of ventilation by aspiration but this which contains a provision for regulating the temperature of the shaft in accordance with the conditions of the weather and its unceasing change. This important detail is either always left to the judgment or guess of the attendant, or fixed permanently, regardless of season and temporary changes of temperature. In the proposed scheme, although a separate process, it is made a part of the regular action of the heating, which, it must be observed, is also exactly adjustable to weather conditions, being managed along with it in one operation, so that if the heating is right, the ventilation will be right; and, since the former is sure to receive attention, the latter cannot be overlooked. Through a multiplicity of details to be cared for by several persons who ought to, but do not, act in concert, an inevitable confusion leads to negative or abortive results. This is the case in most systems of aspiration, except when the weather is favorable to a particular example, when its ventilation may be nearly perfect. Every building of that kind demands a certain state of weather to make its ventilation operative. Such schemes are not worthy of the name of ventilation; they are only processes whereby a certain thing happens "weather permitting."

When the usual methods, their indefiniteness of purpose and their deficiencies are contrasted with the simple and direct processes of this scheme, in which not only is the entire control concentrated in the hands of one person, along with ample power to produce a desired result at all times, but is so conditioned as to compel a proper adjustment of the apparatus, the plan seems to offer decided advantages. I venture to hope that its novel features may not draw attention away from these promised benefits, but add rather to their interest, leading to a realization of the project in an actual trial, and the eventual establishment of aspiration in its appropriate sphere as a scientific and reliable method in ventilation. FREDERIC TUDOR.

[The end.]

## ILLUSTRATIONS

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

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WE hope that the publication of these views may have some effect on American engineers and the public at large, and induce them to design more masonry bridges and less frequently injure a picturesque view by the insolent introduction of merely utilitarian iron spider's webs.

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## COMMUNICATIONS

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

### "A GOOD COMPETITION-PROGRAMME."

NEW YORK, N. Y., October 8, 1901.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

*Dear Sirs,* — In your issue of October 5th, page 6, may I beg to differ with you in the heading "A Good Competition Programme," and express my regrets that a programme unnecessarily wasteful of the architect's resources and strength should have that publicity and endorsement which is apt to cause its repetition in other programmes of competition.

I believe the American *Architect* wishes and strives to promote what is best for architects, but if the Editor had the labors and expenses of an architect's office to meet and had the practical results, the aftermaths, that follow such efforts where only one can win, unless he were provided with abundant outside capital, he would soon cry "Enough!"

I suggest to you as an improvement upon this "good competition programme" the programme, which I think probably was formulated by Professor Ware, for the Utica Library.

A limited competition, however, is not always desirable, at least not at the outset, because such may shut off what might have been best. A first competition calling for just three drawings — a main-floor plan one-sixteenth scale, a second-floor plan one-sixteenth scale, a perspective view one-sixteenth scale, all in lead-pencil only, to be followed by a limited *paid* competition with sufficient money to pay for your "good competition programme" — that is what the architectural profession needs to-day from a public that I am sure would not tempt us to be the worst gamblers living, if they knew what such heavy competition programmes cost.

The omission of the perspective was advised at a convention meeting of the A. I. A. at which I was present, and since that time it has been omitted in many competitions from the influence of that body. It is, I believe, a most grievous mistake, resulting in one competition that I know of in the adoption of a plan and exterior where the side and the front of the building as constructed are so dreadfully out of balance and out of proportion that I am sure no intelligent committee could have been thus caught had they seen the two façades in their perspective relation.

Elevations are only necessary to the working-drawings which follow a competition — they can be readily omitted from preliminaries — but a perspective view is vital.

Your "good competition programme" calls for a detailed estimate of cost. This is a builder's business. It is not desirable for any of the designs except the one that wins, and if that one cannot be built for the figure, no toning down, no revising allowed, no winning by fraud, it should at once be relegated to the rear. To ask architects to spend what would require as much time (to make an honest estimate) as to make the design, taking out quantities, computing details of labor, all of which are out of his line of business, and to ask this of all the designers where only one estimate has hope of being the slightest use or value is monstrous!

It is true in this competition five architects are paid, but the amount is inadequate for what is asked of them, and if it were enough, why call for work that is of no value to any one — a detailed estimate (!) when the design itself may be brushed aside at the first glance with "That is not what we want."

Respectfully yours, A. B. JENNINGS.

[WE did not characterize the programme in question as wholly admirable or faultless, and, with all regard for our correspondent's views, we still consider it, as such things go, a good one. — EDS. AMERICAN ARCHITECT.]

## NOTES & CLIPPINGS

PHILADELPHIA'S NEW FIRE-MAIN SYSTEM. — After Philadelphia's new fire-main system is finished it will be very complete when viewed from a safeguarding standpoint. Even in its temporary form, this high-pressure system will give the properties far greater protection than was asked for. The original estimate of $700,000 was to include a pumping-station along the Delaware, to supply water at much higher pressure than any fire-engine could maintain. But as only $300,000 was procured, it seemed to be wiser to use that sum in the laying of the mains first and delaying the building of the pumping-station till later. The pipes can be put to use as rapidly as they are laid in sections by connecting them with the three fire-boats, "*Ashbridge*," "*Stokely*," and "*Stuart*," on the river-front. The portions of the system east of Fourth Street, we are told, would have been in service already but for unforeseen and unavoidable delays in procuring castings of special curves and joints at street-intersections and elsewhere. Owing to the unusual high pressure of 400 pounds to the square inch, these mains have to be absolutely perfect. In one case the authorities had to reject forty consecutive sections because of trivial flaws or variations from the specifications; but as the foundrymen are now more familiar with the style of work needed, they are getting better results. When the connections at the river are made, which, it is expected, will be done very shortly, the completed portion of the system can at once be utilized. Had the pumping-station been built first, that money would have been tied up without any return to the city until more money was appropriated to lay the mains. The department will include in its estimates for next year $300,000 or more for the completion of the system, and out of that amount, it is confidently said, will come a sufficient sum to construct the pumping-engines. — *Fire and Water.*

THE WIDOW'S PREROGATIVE. — But monuments shrink, too, at times. The widow of a French Deputy came the day after the funeral to consult a great sculptor on the subject of a monument for her husband's tomb. The sculptor suggested a portrait-bust. "Only a bust," she cried indignantly; "I wish at least a statue with allegorical figures." A week later, when the sculptor had the model of the group well in hand, came a note saying that she had decided that the bust, after all, would be in better taste. For some weeks the artist worked on the bust. At length the young widow arrived on the arm of an *attaché* of Legation. She opened her lorgnette and inspected the bust. "It is very like him," she said finally, "but a bust is so commonplace; a bronze medallion would be in far better taste." The monument actually bears a medallion in bronze, under the niche intended for the full-length statue of the Deputy and his appropriate allegories. — *N. Y. Evening Post.*

"RENEWABLE" INCANDESCENT-LAMP. — The cost of renewing lamps is a serious consideration with many a would-be user of electric-light. A "renewable" electric incandescent-lamp was exhibited recently in England. It is an ordinary lamp of excellent make, averaging more than the usual life, and with an efficiency of between 2½ to 3 watts per candle-power. Its use certainly saves current, but that is, after all, its least advantage. Thanks to improvements under various processes, and more especially to the adoption of a very novel and ingenious mode of fastening the filament, a new filament can be fitted to the lamp, thereby saving the platinum, cap, bulb and wires; provided, of course, the bulb is unbroken. This can be done as often as needed. The result is that the lamps are renewed indefinitely at just one-half their original cost. All the user of a 5 to 25 candle-power lamp, costing twelve shillings a dozen, has to do, when it gives out, is to send it to the company and they will put in a new filament and send it back as good as new, at a charge of twelve cents. — *Boston Transcript.*

LEAD DOWN-SPOUTS AT ST. PAUL'S. — At St. Paul's Cathedral, the workmen have taken down, repaired, and refitted one of the large and heavy original lead water-pipes which Sir Christopher Wren placed in shafts constructed within the massive walls of the building. The walls are in some places no less than 20 feet thick, and Wren made in them a series of shafts, 3′ x 2′ in size, the primary purpose of which was to carry off the rain-water from the roof. With this object he placed large leaden pipes 8 inches square in the shafts, reaching from the roof right down to the crypt; and it is one of these which has been taken down, repaired, and replaced — no slight task, when the size and length and weight are considered. The shafts are also fitted with step-irons, so that men can ascend from their workshops in odd corners of the crypt, up to the roof, without rearing a ladder outside. — *Building News.*

THE DELPHI STADIUM. — The French excavators at Delphi have laid bare the Stadium for races and other athletic exercises which the Greeks hewed from the rocks and provided with stands for spectators at a cost that loomed large for such small communities. The length is 178 metres and the width 28. The cost of the undertaking has been found engraved on stone, with all the items drawn out. In order that the foot-races should be fair, hollows were made in the rock where the contestants had to keep their feet until the signal was given. There is provision for eighteen runners. In connection with this Stadium a new god has been discovered, whose name was Eudromos, or "Happy Race." His temple was found to one side of the big triumphal portal through which processions entered the Stadium. An inscription states that wine must not be taken inside his temple. As the contestants probably sacrificed in this temple to Eudromos in hope of a happy outcome of the race, the prohibition of wine may mean that the bad effects of stimulants on athletes was recognized 500 years before Christ. Any one caught with wine about him in the temple had to pay five drachmas, and the person who informed might claim one-half of the sum. — *N. Y. Times.*

FRENCH MONUMENT AT WATERLOO. — Eighty-six years have been allowed to elapse before a monument has been erected to the honor of the French soldiers who fought at the Battle of Waterloo, says the London *Times*. Now, however, M. Henri Houssaye, the Member of the French Academy and eminent historian, with the Count de Mauroy and M. Gustave Larroumet, has bought a plot of land at the junction of the high-road from Brussels and that from Planchenoit, near the famous farm of La Belle Alliance, which was the centre of Napoleon's position in the battle. This ground has been offered to the military society "La Sabretache," which has opened a subscription for the erection of a monument, and has succeeded beyond all expectation. The French sculptor M. Gérôme has produced a striking piece of work. The principal figure represents a dying eagle, with one wing broken and drooping by its side, and the other extended, but pierced with bullets; one claw firmly grips the French flag, while with the other the dying eagle defends the colors, on which are inscribed the words, "Austerlitz" and "Eylau." It typifies France wounded, but defending herself, intrepid to the last. The eagle measures two metres in height, and the extended wing three metres twenty-five. The entire monument with pedestal and bronze is fifteen metres high, and is very impressive. It will stand out with fine effect in the beautiful fields surrounding Mont St. Jean. It had been hoped that the monument would be unveiled this year, but, as this was impossible, it will be dedicated on June 18 next. — *Exchange.*

LONDON MAIN DRAINAGE. — In a paper on "London Main Drainage," read before the Sanitary Inspectors' Association, Sir A. Binnie stated that one of the difficulties to be met in draining London lay in the fact that out of the 121 square miles concerned, ten per cent, or 12 square miles, lay below high-water level. Until 1855 the sewage of London was discharged directly into the Thames by a series of sewers running practically at right angles to the course of the river. The pollution was great, and, consequently, the Metropolitan Board of Works constructed a series of intercepting-sewers, which collected the flow which would otherwise have passed direct into the Thames, and delivered it at Barking or at Crossness. Pumping was required at Abbey Mills, Grosvenor-road, and Deptford, the highest lift being 36 feet, at Abbey Mills. Until 1888 the sewage was passed without treatment into the river at Barking and Crossness, but since then it has been treated in settling-tanks by a chemical precipitation process, in which four or five grains of lime and one grain of sulphate-of-iron are added to each gallon of sewage. As originally designed, the works were intended to deal with 150,000,000 gallons of sewage per day, the sludge yielded being 3,000 tons. At the present date the actual quantities treated are 132,000,000 gallons at Barking and 98,000,000 gallons per day at Crossness. — *Illustrated Carpenter and Builder.*

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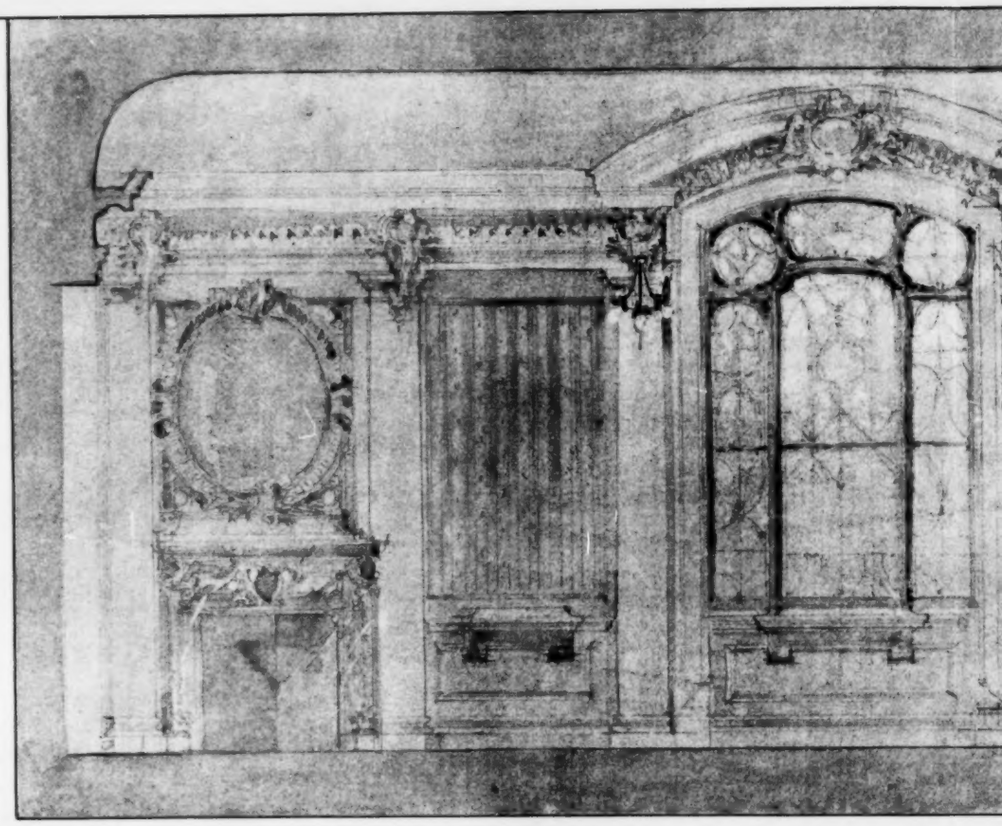

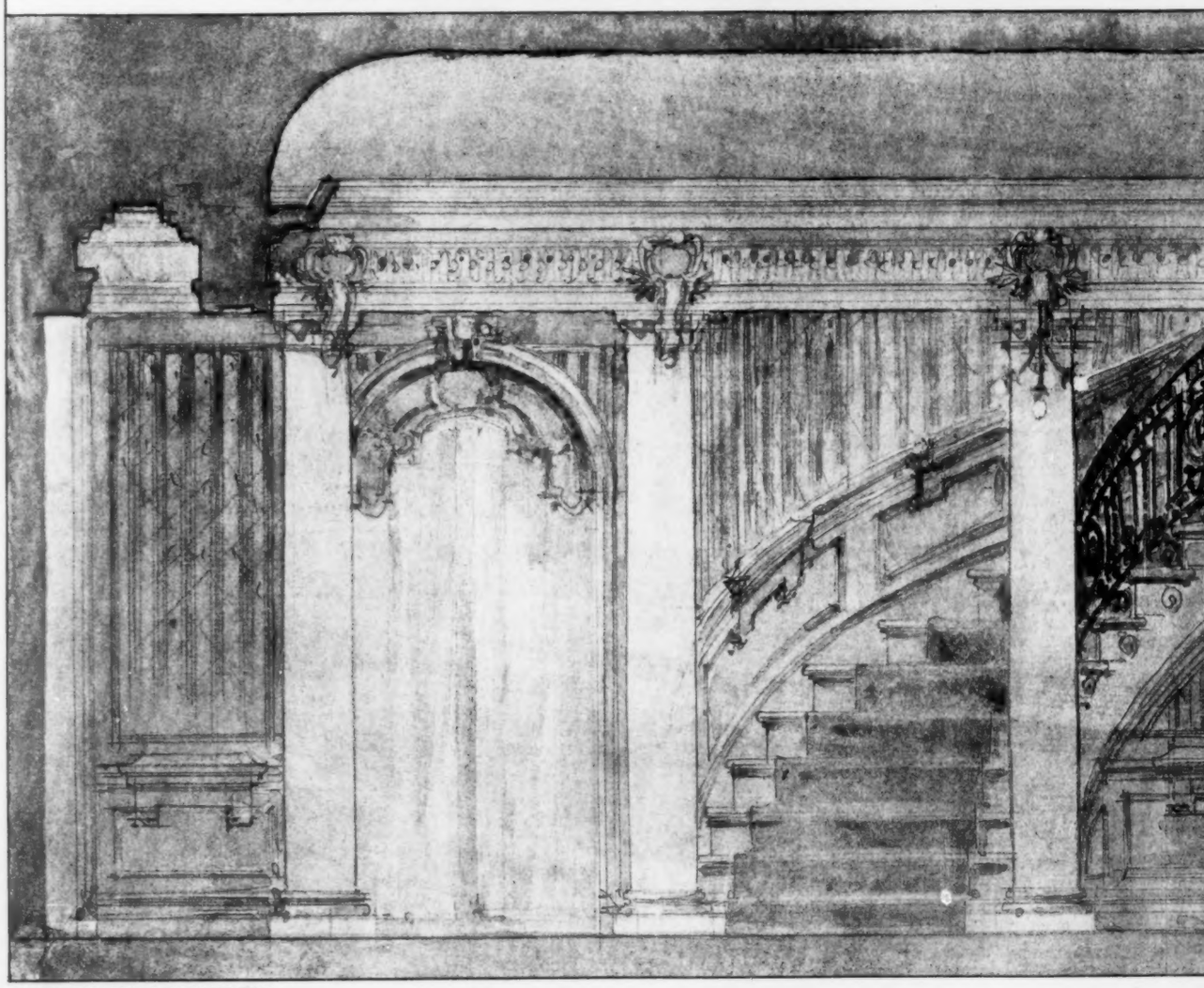

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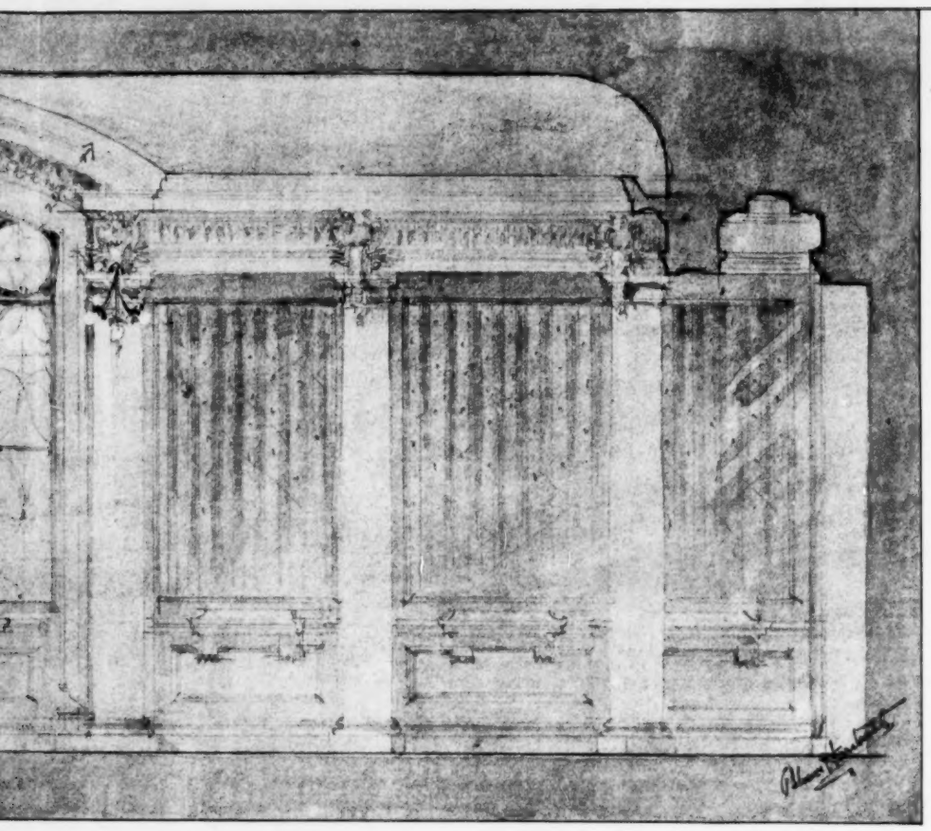

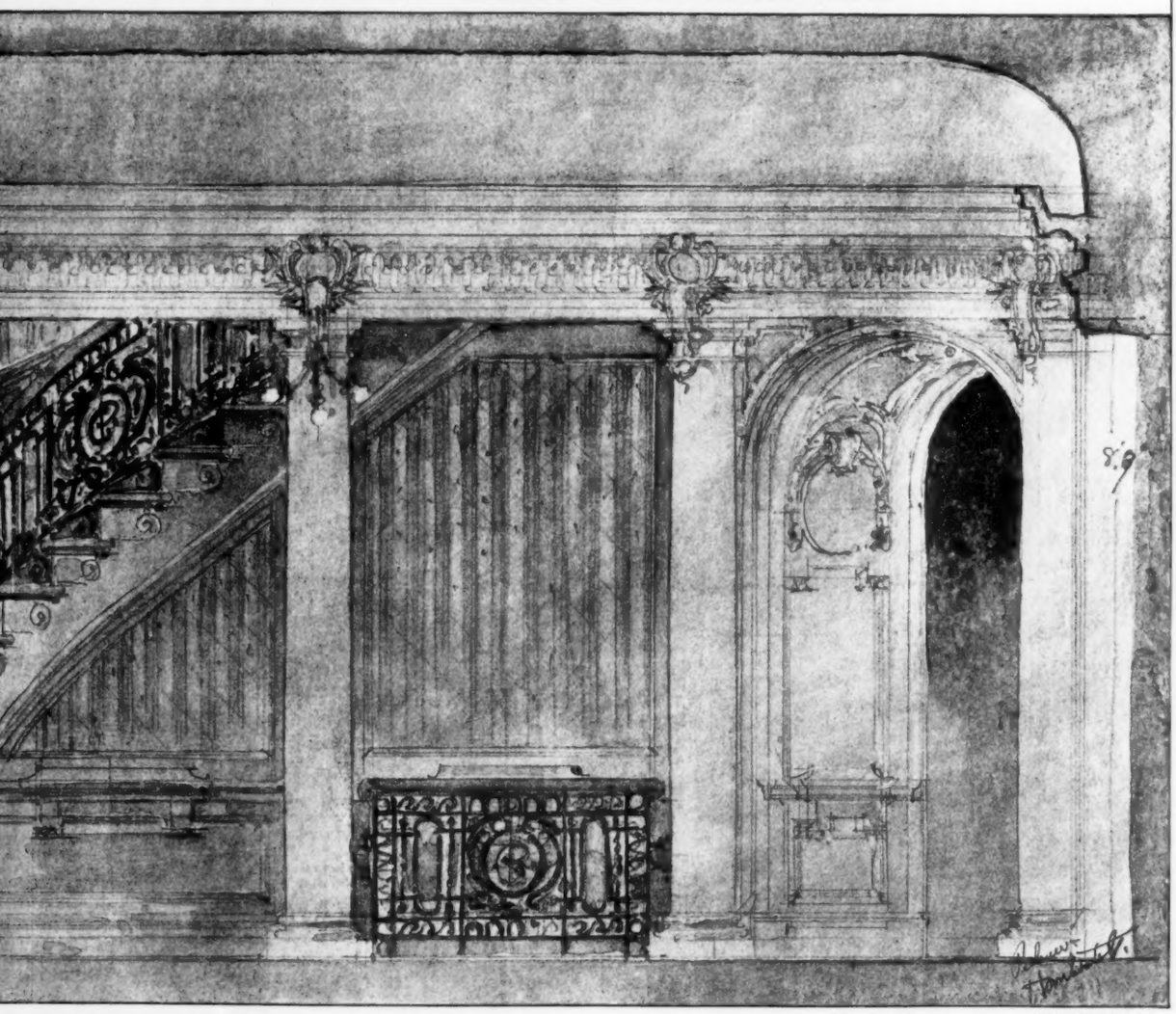

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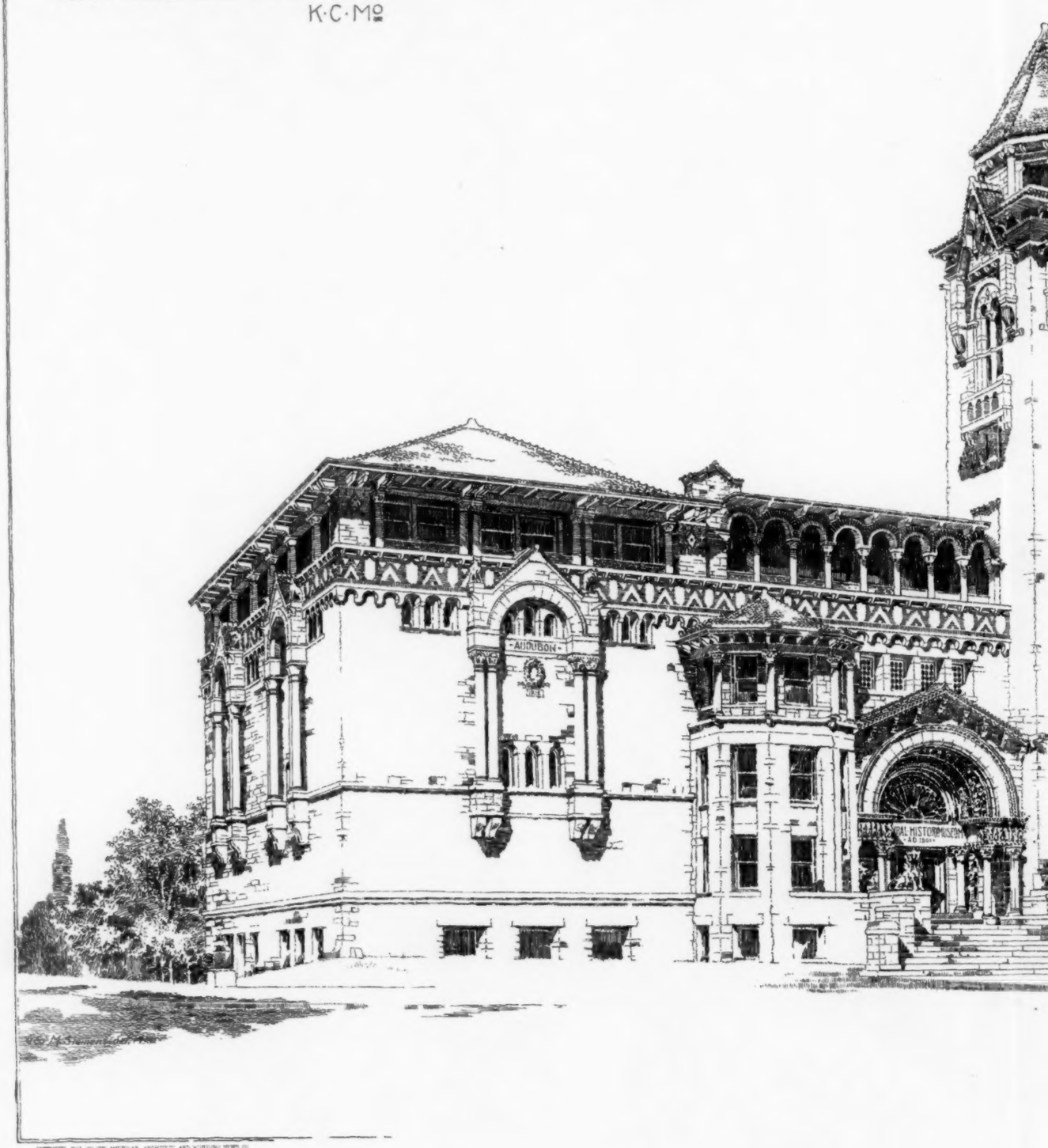


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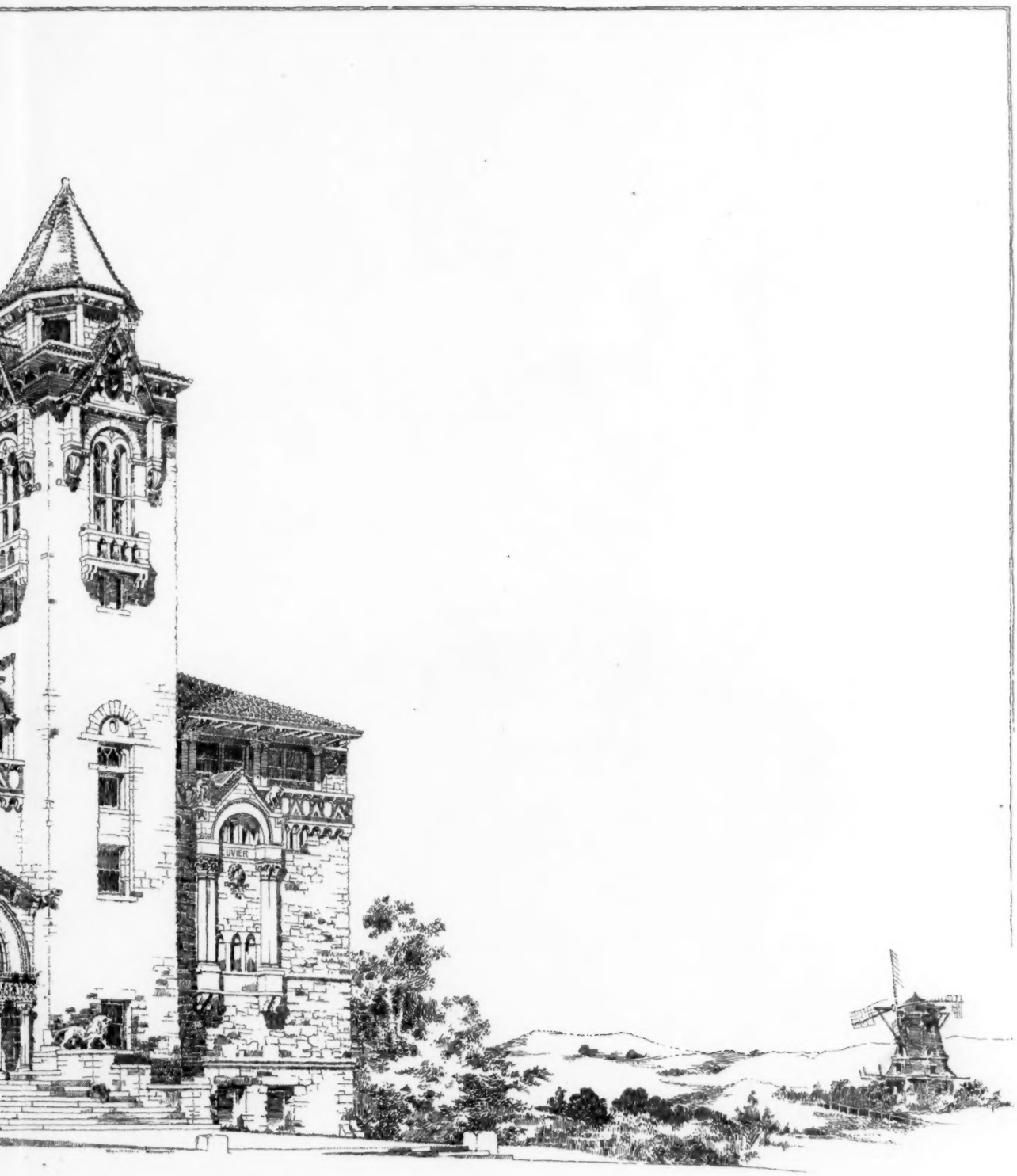
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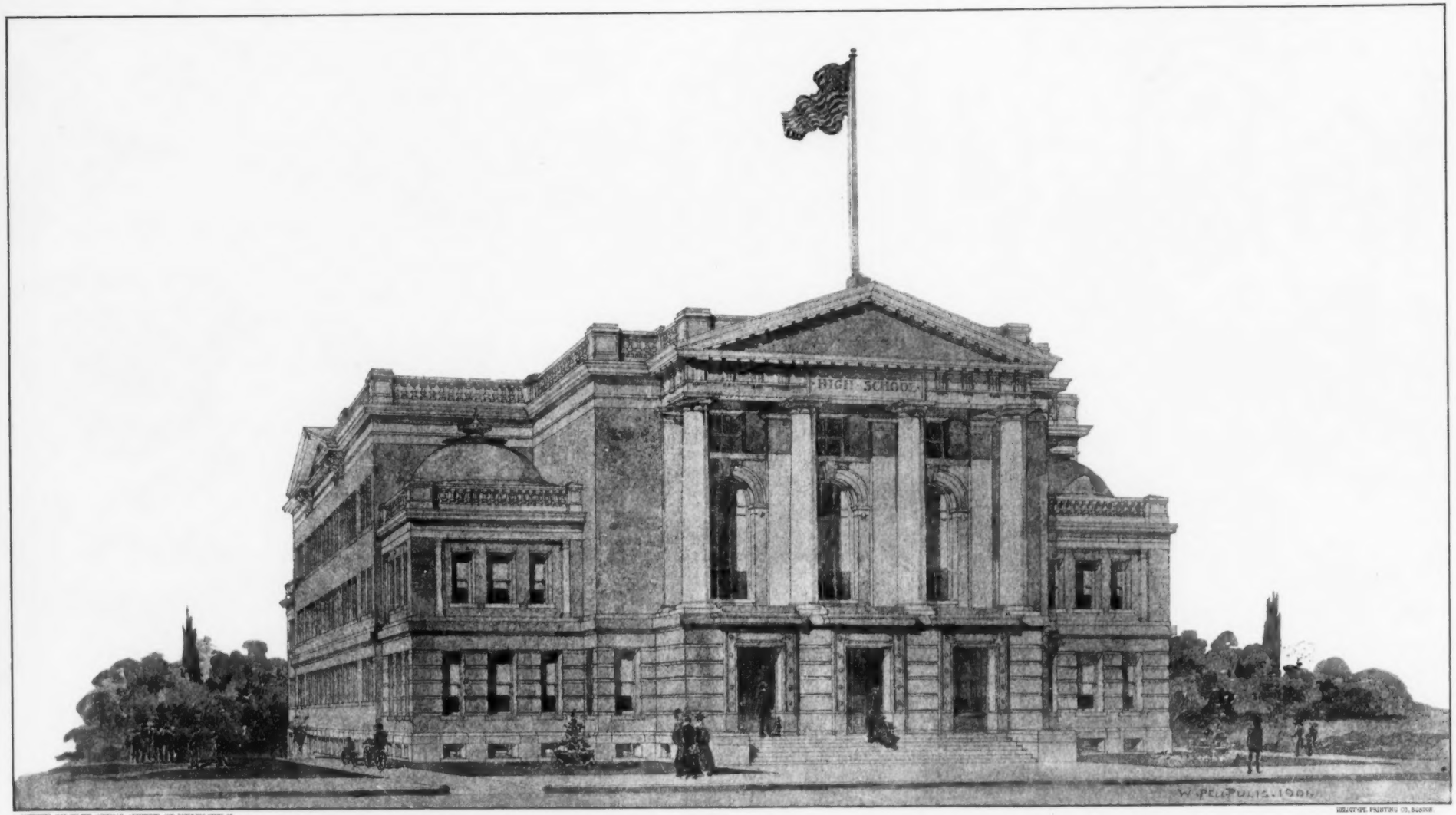


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| Pennsylvania Hospital, Philadelphia, Pa. | " 1755 |
| Carpenters' Hall, Philadelphia, Pa. | " 1770 |
| Independence Hall, Philadelphia, Pa. | " 1729 |
| Faneuil Hall, Boston, Mass. | " 1741 |

and others.

## CHURCHES

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|---|---|
| King's Chapel, Boston, Mass. | Date 1749 |
| Seventh-day Baptist Church, Newport, R. I. | " 1729 |
| Christ Church, Alexandria, Va. | " 1767 |
| Christ Church, Philadelphia, Pa. | " 1727 |
| St. Paul's Chapel, New York, N. Y. | " 1764 |
| Old South Church, Boston, Mass. | " 1729 |
| First Church, Hingham, Mass. | " 1681 |
| St. John's Chapel, New York, N. Y. | " 1803 |
| First Congregational Church, Canandaigua, N. Y. | " 1812 |
| St. Peter's P. E. Church, Philadelphia, Pa. | " 1758 |
| Gloria Dei Church, Philadelphia, Pa. | " 1700 |

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| Mappa House, Trenton, N. Y. | " 1809 |
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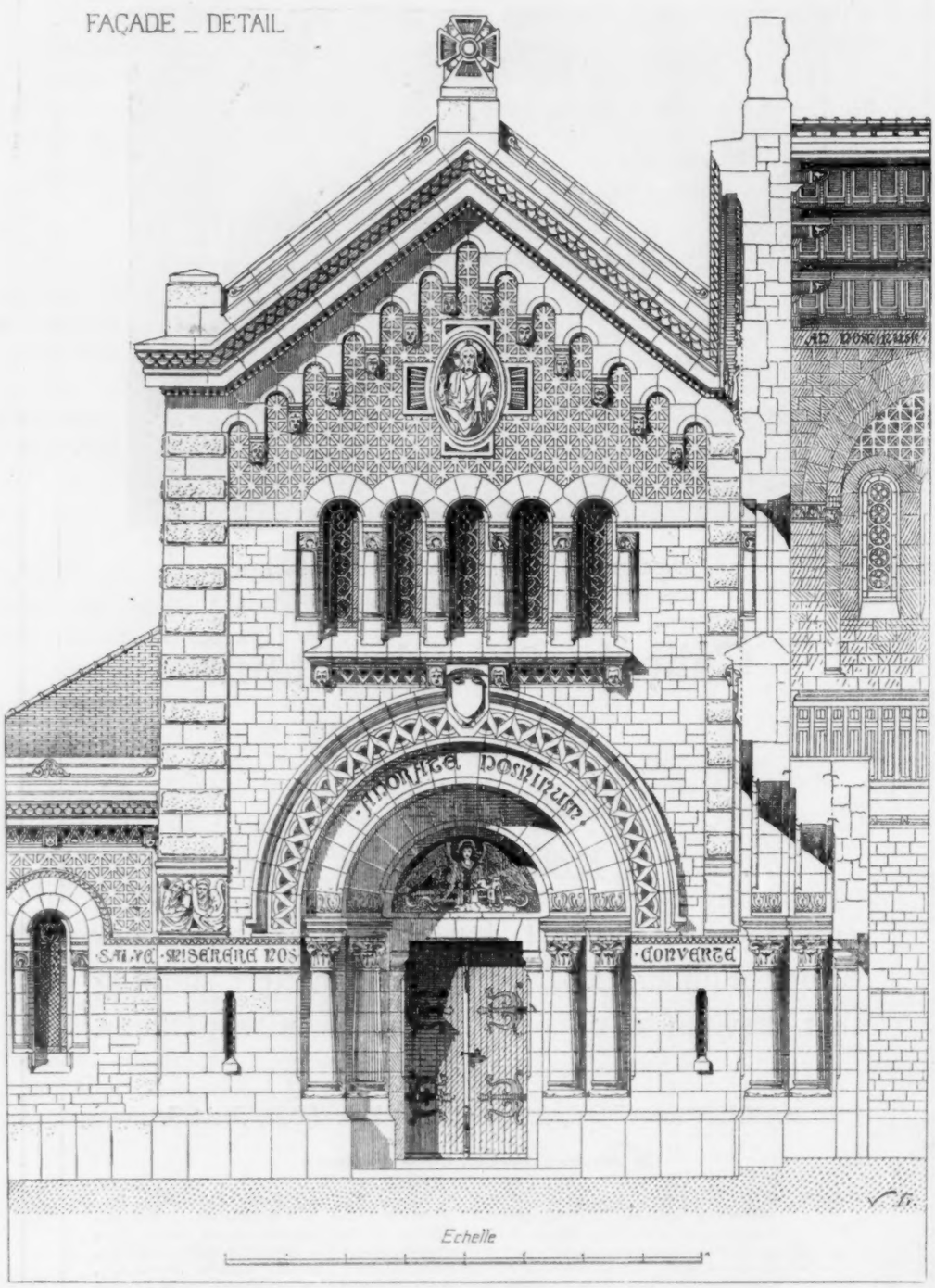


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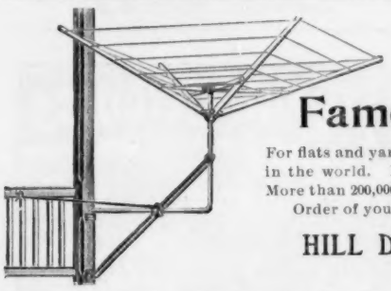

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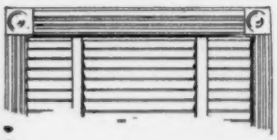

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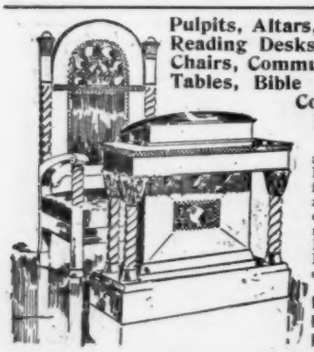

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## BUILDING INTELLIGENCE.

(Reported for the American Architect and Building News.)

*[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]*

### ADVANCE RUMORS.

**Allegheny, Pa.** — Reports state that Wolfendale & Schutte will build a four-story brick and stone hotel, costing $35,000, at 209 Federal St.

J. P. Bailey, 435 Fourth Ave., Pittsburgh, has made plans for an eleven-story apartment hotel, to be built here. It will be constructed of brick, terra-cotta and steel, have marble and tile work, billiard-rooms, bowling-alley, etc., and will cost $300,000.

**Atlanta, Ga.** — The plans of J. H. Dinwiddie, Equitable Building, have been selected for the proposed $50,000 Central Congregational Church.

**Austin, Tex.** — The plans of O. J. Lorehn, Binz Building, Houston, have been selected for a $40,000 building for the Deaf and Dumb Institute.

**Benton Harbor, Mich.** — The Pere Marquette and the Cleveland, Cincinnati, Chicago & St. Louis railroads have accepted plans for a new $40,000 union depot to be built here.

**Bessemer, Ala.** — A wheelbarrow factory is to be erected on 25th St., to cost $25,000. Mr. James G. Newbegin, of Blue Bend, Ill., is the promoter of the enterprise.

**Birmingham, Ala.** — The Southern Club will erect a new building during the winter.

The Title Guarantee and Loan Co. will erect a seven-story office-building at the corner of 3d Ave. and 21st St.

**Boston, Mass.** — The Boston Water Power Co. has sold to Mrs. Paul Thorndike a lot of land on the Tremont-Street entrance to the Fenway and a proposed new street. This lot, on which a beautiful residence will be erected, adjoins the estate of Mrs. Jack Gardner.

**Bozeman, Mont.** — It is stated that a new high school costing $30,000 is soon to be erected.

**Brightwood, Mass.** — The cornerstone of the St. James Methodist Episcopal Church, at the corner of Main and Dover Sts. was laid recently with impressive ceremonies.

**Cambridge, Mass.** — Ground is being broken for a new dormitory at Harvard, between Mt. Auburn and Winthrop Sts., on Boylston St. The building, which is being erected by Isaac McLean & Son, will be ready for occupancy by the beginning of next year. It will be a four-story structure of brick and brownstone, having 16 suites, two double and two single on each floor. It will be handsomely finished in quartered oak with mosaic tiled floors.

**Champaign, Ill.** — The Elks propose erecting a three-story club-house and armory; cost, $20,000.


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### BUILDING INTELLIGENCE.

*(Advance Rumors Continued.)*

**Chicago, Ill.** — A $20,000 apartment-house is to be built at the corner of Oakley Ave. and W. Adams St., after plans by Frank Schoenfeldt.

Howard Shaw has designed a residence for John B. Drake, Jr., to be built in Calumet Ave., near 21st St., at a cost of $30,000. It will be three stories, 60′ x 70′, of pressed brick and terra-cotta, with elaborate interior. A two-story brick stable is included in the cost.

It is stated that the three-story dwellings fronting south on 12th St. West, and adjacent to the Illinois Central Station, will shortly be torn down and an eight-story office-building erected on the site. The structure will have ground dimensions of 60′ x 100′, and will cost in the neighborhood of $120,000.

Treat & Adler have prepared plans for the first section of a club-house for the Ravisloe County Club at Homewood; cost, $50,000.

Plans have been prepared by Jas. Gamble Rogers, 1314 Ashland Block, for a stone edifice for the Hyde Park Baptist Church, to be erected on Woodlawn Ave. and 56th St.; cost, $65,000.

**Clinton, Mass.** — St. John's Catholic Church on Union St. has voted to put chime-bells in their church at a cost of $10,000. Rev. J. J. O'Keefe, pastor. Contract not let.

**Cody, Wyo.** — Plans have been completed by A. W. Woods, Lincoln, Neb., for a $20,000 two-story brick and stone hotel, for Col. W. F. Cody. It will have composition roof and steam heat.

**Hancock, Mich.** — Architect Charles Fink, 427 Milwaukee St., is preparing plans for a three-story brick and stone opera-house to be erected on Quincy St.; cost, $50,000.

**Harrisburg, Pa.** — An appropriation of $50,000 has been made for a State hospital for the insane.

**Helena, Mont.** — Edward Wagner has the contract for the erection of the A. M. Holter Building at Main and 6th Sts. It will be brick, two-story and basement; cost, $40,000.

**Homestead, Pa.** — Mr. Leopold Vilsack has purchased a site for the erection of a $75,000 office-building.

**Jamaica Plain, Mass.** — Kendall, Taylor & Stevens, 87 Milk St., Boston, have prepared plans for the Faulkner Hospital to be erected here at a cost of about $100,000.

**Jersey City, N. J.** — St. Mary's Roman Catholic Church has purchased property at the corner of Erie and 3d Sts. for the erection of a new church to replace that damaged by the recent tornado. Work will shortly begin.

**Kansas City, Mo.** — The St. Anthony's Home for Infants proposes erecting a maternity hospital, to cost $20,000.

A $200,000 brick warehouse is about to be built at 1317-19 St. Louis Ave. for Lucy H. F. Douglass.

Dr. O. P. Coats will build a $20,000 stone dwelling at Thompson St. and Gladstone Boulevard.

Plans have been prepared by J. G. Braecklein, Junction Building, for a synagogue for Keneseth Israel; estimated cost, $20,000.

**Lincoln, Neb.** — Plans have been prepared by A. W. Woods for a four-story brick, stone and fireproof annex for the Lindell Hotel. It will have composition roof, steam heat, and will cost $20,000.

**Manchester, Va.** — The new R. C. Cathedral to be erected here at a cost of $250,000, will be the gift of Mr. Thomas Ryan, of New York.

**Mason City, Ia.** — Plans are being laid for the erection of a Y. M. C. A. building to cost $30,000.

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## BUILDING INTELLIGENCE

*(Advance Rumors Continued.)*

**McKeesport, Pa.**—W. F. Wilson, Yester Building, has completed plans for the new $45,000 schoolhouse.

**Minneapolis, Minn.**—The cornerstone for the Swedish hospital has been laid by Rev. Olaf Bodien, president of the association. J. & W. A. Elliott, contractors. L. A. Lamoreaux, architect. Cost, complete, $50,000.

E. J. Donohue, St. Paul, has prepared plans for a church to be erected by the Ascension parish on 18th Ave. N. and Bryant St. It will be 70′ x 140′, of pressed brick, stone trimmings, Gothic in style. Rev. J. Harrington, pastor. Cost, $40,000.

**New Castle, Ind.**—Reports state that the Methodists are planning to build a new church at Indiana Ave. and 14th St., to cost $50,000.

**New Haven, Conn.**—L. W. Robinson, Exchange Building, has prepared plans for a $40,000 brick building for the City Missionary Association.

**Newport News, Va.**—The Warwick Brewery Co. will erect a building to cost $150,000.

**New York, N. Y.**—The sum of $1,000,000 is to be expended by the New York Historical Society in the erection and equipment of a new building, the plans for which have just been completed. The site will be on the land owned by the society for several years on Central Park West, including the entire block between 76th and 77th Sts. and the building will cover 125′ x 204′. The middle portion of the building – first to be erected – will cost $400,000, of which $100,000 is already subscribed.

The entire block bounded by 58th and 59th Sts. and 11th and 12th Aves. has been purchased by the Subway Construction Co. John B. McDonald, manager. The old buildings will be torn down as soon as possible and a large power-house and central plant erected.

Work will soon begin on the eight-story brick, stone and iron warehouse, 40′ x 84′, which the Waverly Realty Co. will erect at 10 and 12 Christopher St., after plans by Architects Jardine, Kent & Jardine, 1262 Broadway, at an estimated cost of $50,000.

The Church of the Holy Communion, 20th St. and 6th Ave., contemplates erecting a parish club-house adjoining the church in 20th St. The plans for the proposed building have not yet been drawn, but they will call for a house to cost about $500,000. It is said that everything possible will be done to make the parish club-house one of the best in the city. It will contain a gymnasium, a swimming-pool, reading-rooms and a hall which will seat about 1,000 persons.

**Omaha, Neb.**—It is stated that the Crane Co., of Chicago, has bought the northeast corner of 10th and Harney Sts., and will erect a four-story brick warehouse and office-building thereon in the spring; cost, $60,000.

A $50,000 apartment-house is to be erected by J. C. Barnard at Leavenworth St. and Park Ave. It will be three-story, with slate roof, containing 18 apartments.

**Ottawa, Kan.**—It is stated that Wm. Stranchon, of the Indiana State Life Insurance Co., contemplates the erection of a $20,000 hotel.

**Pensacola, Fla.**—The Louisville & Nashville R. R. Co. will erect a two-story warehouse on Central Wharf, to cost about $500,000.

**Peoria, Ill.**—Bernard Cremer will erect a nine-story fireproof office-building at Main and Jefferson Sts.; cost, $300,000.

**Philadelphia, Pa.**—Plans have been drawn by Henry Dagit, 435 Chestnut St., for a $60,000 school and hall for St. Elizabeth's R. C. Church, to be erected on 23d St. and Montgomery Ave.

Hales & Ballinger, 1200 Chestnut St., have prepared plans for the proposed plant of the Crane Ice Cream Co., to be erected on Filbert and 18th Sts.; cost, $50,000.

It is reported that the Frankford Real Estate Trust & Safe Deposit Co. has commissioned Stearns & Castor, Stephen Girard Building, to prepare plans for its new home, to be erected on Frankford Ave. and Unity St. It will be granite, 25 feet high, and measure 35′ x 135′.

**Pittsfield, Mass.**—John Thompson, of Lenox, is to erect a $12,000 Colonial dwelling at Commonwealth and Dawes Aves. Plans by Allen & Vance.

**Portland, Me.**—The committee on public buildings has authorized Architect Fassett to make plans for the construction of a new almshouse. Members of the committee will visit Providence, which has a model almshouse, and perhaps other cities, in order to have a fine building here. The appropriation

## BUILDING INTELLIGENCE

*(Advance Rumors Continued.)*

for the construction will probably be made by the next city council.

**Portland, Ore.**—Report states that it is probable that the $50,000 appropriated from the $1,000,000 Centennial educational fund of the Cumberland Presbyterian Church of the United States for educational purposes in the Oregon synod will be used in the establishment here of a Cumberland Presbyterian College.

**Princeton, N. J.**—The Thompson-Starret Co., 51 Wall St., New York, N. Y., have the contract to erect a $100,000 dormitory for Princeton University.

**Providence, R. I.**—The contract for the new parish house for St. James's Episcopal Church was signed a few days ago and work will be begun upon it at once. For some years the church has been considering the need of a new parish house. The plans were drawn by H. K. Hilton, and call for a two-story brick building, 50′ x 64′; cost, $9,000. Contractor, E. K. Watson, of Nayatt.

**Reading, Pa.**—John Flynn, architect, 1209 Harrison Building, has prepared plans for a new Roman Catholic Church at this place, for which about $75,000 will be expended.

**Richmond, Va.**—Hodges & Leach, Baltimore, Md., have drawn the plans for the $200,000 hotel to be erected here by Mrs. A. D. Atkinson, of the Lexington Hotel.

**Rochester, N. Y.**—Plans have been completed by J. Mills Platt and Leon Stearn, Chamber of Commerce Building, for a $150,000 Masonic Temple to be erected at Clinton Ave. and Mortimer St. Contractors, H. H. Edgerton and F. L. Hughes.

**Rumford Falls, Me.**—The Continental Paper Bag Co. has commenced building a new three-story warehouse having a floorage of about 100,000 square feet. Also the bag-factory is to be extended 180 feet.

**Rutland, Vt.**—A fine three-story railway station of pressed brick with terra-cotta and marble trimmings will be erected here at a cost of $100,000 for the Rutland Railroad Co., from plans furnished by Arthur H. Smith. General contract not let and arrangements not yet made for any portion of work or materials needed. Architect has entire charge of all details.

**Saginaw, Mich.**—The Independent Order of Foresters will erect a $75,000 temple having a seating capacity of 4,000. Address H. A. Savage.

**San Antonio, Tex.**—A $20,000 addition will be built to Travis Park Methodist Church.

**Spokane, Wash.**—A $30,000 Masonic temple will be erected on Riverside Ave. and Jefferson St.

**Springfield, Mass.**—The corner-stone of the St. James Methodist Episcopal Church, which will stand at the corner of N. Main and Dover Sts. was laid recently. The church will be Gothic in style, with pointed arches, windows and doors. The material will be red brick, with Longmeadow brownstone trimmings. The chief feature will be the tower on the southwest corner, which will be 15′ x 15′ and 58 feet high. The contract for the building has been awarded to W. D. McKenzie. Date of completion, February 15th.

### FACTORIES.

**Brooklyn, N. Y.**—*De Kalb Ave.*, cor. Steuben St., four-st'y & cellar bk. factory, 60′ x 100′, gravel roof, steam; $32 000; o., Morris Building Co., 26 Broadway, N. Y.; a., W. B. Tubby & Bro., 81 Fulton St., N. Y.

### HOSPITALS.

**Boston, Mass.**—*City Hospital Grounds*, Ward 12, three-st'y bk. hospital, 45′ x 137′; $125,000; o., City Hospital; a., J. Mulcahy, 66 State St.; b., F. G. Coburn & Co., Tremont Building.

### HOUSES.

**Boston, Mass.**—*Grove St.*, nr. Blue Hill Ave., Ward 20, 8 three-st'y fr. dwells., 25′ x 55′, flat roofs, furnaces; $40,000; o., a. & b., G. W. Johnston, 342 Blue Hill Ave., Dorchester.

*Everett St.*, nr. Adams St., Ward 25, three-st'y fr. dwell., 26′ x 58′, stoves; $5,000; o., P. McGovern; b., J. A. McIsaac, 5 Washington St., Cambridge.

*Dakota St.*, nr. Geneva Ave., Ward 20, three-st'y fr. dwell., 27′ x 48′, flat roof, furnace; $5,500; o., a. & b., D. F. Riley, 30 Speedwell St., Dorchester.

*Francis St., No.* 60, Ward 19, three-st'y fr. dwell., 26′ x 59′, pitch roof, furnace; $6,000; o., J. Donovan; a. & b., J. C. Spillane, 217 Walnut Ave.

*Templeton St.*, nr. Florida St., Ward 24, 2 three-st'y bk. dwells., 22′ x 48′, flat roofs, stoves; $12,000; o. & b., Isaac Schurman.

*Falcon St.*, nr. Glendon St., Ward 1, 7 two-st'y

## BUILDING INTELLIGENCE.

*(Houses Continued.)*

bk. dwells., flat roofs, hot water; $35,000; o., Sarah A. McCloskey; a. & b., J. A. McCloskey, 47 Warren St., Roxbury.

*Gibson St., No* 16, Ward 24, three-st'y fr. dwell., 25′ x 48′, furnace; $5,000; o., Ellen M. Hanlon; a. & b., T. H. Hanlon, 1721 Dorchester Ave.

*W. Fourth St., No.* 416, Ward 15, two-st'y fr. dwell., 24′ x 38′, flat roof, stoves; $5,000; o., C. H. Lawrence; b., Daly Bros., 271 Eighth St., S. Boston.

*Lindsey St.*, nr. Greenbrier St., Ward 20, two-st'y fr. dwell., 33′ x 40′, pitch roof, furnace; $5,000; o., a. & b., L. A. Belyea, 84 Callender St., Mattapan.

*Pomfret St.*, nr. Corey St., Ward 23, 2 two-st'y fr. dwells., 34′ x 48′, pitch roofs, furnaces; $11,000; o., J. S. Bailey; b., W. B. Rolfe, Temple St., West Roxbury.

*Washington St.*, cor. Gaylord St., Ward 20, three-st'y bk. dwell., 50′ x 60′, flat roof, steam; $15,000; o., Sarah Davidson; b., W. A. Davidson, 84 Greenwood St.

*Mt. Vernon St.*, nr. Dorchester Ave., Ward 16, 3 three-st'y fr. dwells., 24′ x 66′, flat roofs, stoves; $15,000; o., Boyd & Berry, 11 Grampian Way, Dorchester.

*Hampden St.*, cor. Maiden Lane, Ward 17, 6 three-st'y bk. dwells., 20′ x 45′, flat roofs, stoves; $25,000; o. & b., Simon Harvitz, 31 Spring St.; a., C. A. Halstrom, 43 M St., S. Boston.

*Lawn St.*, nr. Hayden St., Ward 19, three-st'y fr. dwell., 24′ x 46′, flat roof, stoves; $5,000; o., Jas. Daly; a., S. Rantin & Son.

*Commonwealth Ave., No.* 480, Ward 14, four-st'y bk. dwell., 25′ x 95′, flat roof, furnace; $25,000; o., E. C. Stanwood; b., Whidden & Co., 43 Milk St.

*Hampden St., Nos.* 93-97, Ward 17, 2 three-st'y bk. dwells., 22′ x 45′, flat roofs, stoves; $10,000; o. & b., M. J. Gorman.

*Cornell St.*, nr. Bellevue St., Ward 23, two-st'y fr. dwell., 33′ x 45′, pitch roof, furnace; $5,500; o., C. A. Webber; a. & b., E. F. Freeman, Humphrey St., Dorchester.

**Brooklyn, N. Y.**—*Rugby Road*, nr. Beverly Road, two-st'y & attic fr. dwell., 33′ x 46′, shingle roof, steam; $7,500; o., D. Alvord, Albemarle & Marlborough Roads; a., J. J. Petit, 186 Remsen St.

*First St.*, nr. Prospect Park, 4 three-st'y & base. dwells., 20′ x 48′, steam; $36,000; o., W. Flanagan, 69 Seventh Ave.; a., P. J. Collum, 67 Clermont Ave.

*Bay Thirty-second St.*, nr. Benson Ave., two-st'y & attic fr. dwell., 32′ 6″ x 34′ 6″, shingle roof; $5,000; o., C. C. Hayes, Bay 16th St. & Bath Ave.; a., C. S. Haviland, Bay 10th St. & Bath Ave.

*Rugby Road*, nr. Albemarle Road, two-st'y & attic fr. dwell., 34′ x 48′ 4″, shingle roof, steam; $10,000; o., C. E. Potts, 334 Jefferson Ave.; a., J. J. Petit, 186 Remsen St.

*Ninety-fourth St.*, cor. Nolans Lane, two-st'y & attic fr. dwell., 28′ x 37′, shingle roof; $6 500; o., J. D. Pils, 1705 Broadway; a., C. Infanger, 90 Glen St.

*Rugby Road*, nr. Albemarle Road, two-st'y & attic fr. dwell., 24′ x 41′ 6″, shingle roof, hot air; $5,000; o., Dean Alvord, Albemarle & Marlborough Roads; a., J. J. Petit, 186 Remsen St.

*Flushing Ave.*, nr. Marcy Ave., three-st'y bk. dwell., 25′ x 30′, slate roof, steam; $13,000; o., Brooklyn Heights R. R. Co., 168 Montague St.

Three-st'y st. dwell., copper roof, hot water; $50,000; o., Horace Pratt; a., Chas. Brigham, 12 Bosworth Pl.

**Monadnock, N. H.**—2½-st'y fr. dwell., 26′ x 60′, pitch roof, steam; $7,500; o., E. F. Henderson; a., T. M. James, 27 School St., Boston.

**New York, N. Y.**—*Lafontaine Ave.*, nr. Quarry Road, two-st'y fr. dwell., 24′ 9″ x 58′; $5,000; o., Sophia Halpin, 2305 Bathgate Ave.; a., Wm. Guggolz, 1307 Bathgate Ave.

*E. Sixty-second St., No.* 6, four-st'y bk. dwell., 27′ x 74′, tile roof; $75,000; o., Wm. Halls Sons, 39 E. 42d St.; a., Welch, Smith & Provot, 11 E. 42d St.

*Decatur Ave.*, nr. 201st St., two-st'y fr. dwell., 22′ x 48′, shingle roof; $5,800; o., Wm. H. Estwich, 124 W. 133d St.; a., Geo. M. Huss, 1285 Broadway.

*W. Ninety-second St., No.* 62, five-st'y bk. & st. dwell., 22′ x 78′; $50,000; o., Benj. E. Jones, 199 Hoyt St., Brooklyn; a., Brower & Gayle, 310 W. 109th St.

*Cauldwell Ave.*, nr. 156th St., 7 two-st'y bk. dwells., 20′ x 55′; $70,000; o., K. Masche, 13th St. & 4th Ave., Williamsbridge; a., Cunningham & Bullard, 148th St. & 3d Ave.

**Northeast Harbor, Me.**—2½-st'y fr. dwell., 44′ x 52′, shingle roof, steam; $6,000; a., W. H. Hunt, Lynn, Mass.

2½-st'y fr. dwell., 28′ x 52′, shingle roof, hot air; $5,000; o., C. C. Perry; a., W. H. Hunt, Lynn, Mass.

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## BUILDING INTELLIGENCE.

(*Houses Continued.*)

**Somerville, Mass.** — *Norwood Ave.*, nr. Broadway, 2½-st'y fr. dwell., 26′ x 48′, pitch roof, furnace; $5,000; o., Mrs. Galvin; a., Rob't Bennett, 9 Bennett St., Medford.

**Worcester, Mass.** — *Cedar St.*, two-st'y fr. dwell., 39′ x 53′; $7,500; o., F. L. Dean; b., W. E. Putnam.

### OFFICE-BUILDINGS.

**Brooklyn, N. Y.** — *Pennsylvania Ave.*, nr. Fulton St., four-st'y bk. store, offices & lodge-room, 44′ x 95′, plastic slate roof, steam; $20,000; o., Tyrian Lodge, No. 618, F. & A. M., Liberty Ave., cor. Wyona Ave.; a., Harde & Short, 3 W. 29th St., N. Y.

**New York, N. Y.** — *Greenwich St., Nos.* 114-122, seven-st'y bk. office-building, 64′ x 115′; $200,000; o., Louis M. Bailey, 113 St. John's Pl., Brooklyn; a., Jardine, Kent & Jardine, 126 Broadway.

*Sixty-fifth St.*, nr. Broadway, six-st'y bk. office-building, 55′ x 90′; $65,000; o., John L. Miller, 330 W. 79th St.; a., Julius Munckwitz, 247 W. 125th St.

### STABLES.

**Boston, Mass.** — *North St.*, cor. Commercial St., three-st'y bk. stable, 30′ x 100′, comp. roof; $10,000; o., A. J. Kaine, 63 Charles St.; a., F. A. Norcross, 110 Tremont St.

**Brooklyn, N. Y.** — *Johnson St.*, nr. E. 8th St., two-st'y bk. stable, 20′ 6″ x 23′, gravel roof; $1,300; o., I. Zimmerman, 173 Ocean Parkway; a., F. Wunder, 99 Broadway.

*Vermont St.*, nr. Atlantic Ave., two-st'y bk. livery stable, 40′ x 95′, gravel roof; $2,500; o., A. F. Snelling, Atlantic & New Jersey Aves.; a., J. Bauer, 76 Junius St.

**Newton, Mass.** — *Gray Cliff Road*, Ward 6, one-st'y stable, 26′ x 32′, stoves; $1,300; o., S. E. Foster; b., D. A. Ferguson.

**New York, N. Y.** — *Perry St., No.* 31, four-st'y bk. stable, 25′ x 95′; $9,000; o., James Hughes, 370 W. 11th St.; a., J. W. Cole, 403 W. 51st St.

### STORES.

**Boston, Mass.** — *Centre St.*, nr. Park St., Ward 23, one-st'y fr. store-building, 45′ x 57′, flat roof, stoves; $3,000; o., C. H. Smith; a. & b., R. J. Yeo, 25 Ball St., Roxbury.

### THEATRES AND HALLS.

**South Framingham, Mass.** — *Kendall St.*, three-st'y fr. theatre, 55′ x 100′, asphalt roof, steam; $20,000; o., J. W. Gorman; a., F. W. Maynard, 226 Tremont St.

### WAREHOUSES.

**Boston, Mass** — *Marginal St.*, cor. Lewis St., Ward 2, seven-st'y bk. warehouse, 73′ x 78′, flat roof; $70,000; o., Nat'l Dock & Warehouse Co.; a., Peabody & Stearns, 53 State St.; b., W. H. Keyes & Co., 95 Milk St.

**Malden, Mass.** — *Main St.*, six-st'y bk. storage warehouse, 45′ x 60′; $12,500; o. & b., W. M. Bean, 496 Main St.; a., F. J. Willard.

### MISCELLANEOUS.

**Lawrence, Mass.** — *Chestnut St.*, four-st'y bk. orphan asylum, 72′ x 170′, slate roof, steam; o., Gray Nuns of Lawrence; a., W. P. Regan, 296 Essex St.

**New York, N. Y.** — *Lexington Ave.*, 25th to 26th Sts., one, three & seven-st'y bk. armory, 197′ x 335′; $450,000; o., City of New York; a., Horgan & Slattery, 1 Madison Ave.

**Worcester, Mass.** — One-st'y bk. & st. car-house, 265′ x 586′; $70,000; o., Worcester Consolidated St. R. Co.; b., Gerry & Northrup, Boston.

## PROPOSALS.

**SEWER AND WATER SYSTEMS.** [At Ft. Lincoln, N. D.]

Office of Chief Q. M., St. Paul, Minn. Sealed proposals will be received at this office **until October 25, 1901**, for the construction of an extension of sewer and water systems at Ft. Lincoln, N. D. Plans and specifications may be seen and blank proposals with full instructions, had upon application here, or at the office of constructing quartermaster, Bismarck, N. D. GEO. E. POND, C. Q. M. 1347

Treasury Department, Office Supervising Architect, Washington, D. C., October 9th, 1901. Sealed proposals will be received at this office until 2 o'clock P. M., on the 8th day of November, 1901, and then opened, for furnishing the heating apparatus complete in place for the U. S. Court-house and Post-office building at Altoona, Pa., in accordance with drawings and specification, copies of which may be had at this office, or at the office of the Superintendent at Altoona, Pa., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1347

Treasury Department, Office Supervising Architect, Washington, D. C., October 12th, 1901 Sealed proposals will be received at this office until 2 o'clock P. M., on the 2d day of December, 1901, and then opened, for furnishing the heating apparatus complete in place for the U. S. Post-office at Clinton, Iowa, in accordance with drawings and specification, copies of which may be had at this office or at the office of the Superintendent at Clinton, Iowa, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1348

Treasury Department, Office Supervising Architect, Washington, D. C., October 14th, 1901. Sealed proposals will be received at this office until 2 o'clock P. M. on the 3d day of December, 1901, and then opened, for the installation of a conduit and wiring system for the U. S. Post-office building at Clinton, Iowa, in accordance with the drawings and specification, copies of which may be obtained at this office or at the office of the Superintendent of Construction at Clinton, Iowa, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1348

**LIBRARY.** [At Ft. Wayne, Ind.]

Bids are wanted **October 31** for erecting a public library. ALLEN HAMILTON, chmn. bd. school trus. 1348

**JAIL.** [At Akron, O.]

Bids are wanted **November 7** for erecting a jail. Address COUNTY COMMISSIONERS. 1348

**LOCKHOUSE.** [At Devols Dam, O.]

U. S. Engineer Office, Zanesville, O. Sealed proposals for rebuilding lockmaster's house at Devols Dam, Ohio, on Muskingum River, will be received here **until November 5, 1901.** Information furnished on application to Assistant Engineer Edmund Moeser, at above office. E. H. RUFFNER, major, engineers. 1348

**STOREHOUSE.** [At Ft. Monroe, Va.]

Ft. Monroe, Va. Sealed proposals for constructing double barracks and guardhouse here will be received **until November 4, 1901.** Information furnished on application. C. P. TOWNSLEY, quartermaster. 1348

**GUARDHOUSE.** [At Ft. Banks, Winthrop, Mass.]

Ft. Banks, Winthrop, Mass. Sealed proposals for constructing guardhouse at Ft. Banks, Mass., will be received **until November 2, 1901.** Information furnished upon application. A. B. PUTNAM, assistant quartermaster. 1348

**ELECTRIC-LIGHT PLANT.** [At Hazelhurst, Mass.]

Sealed bids will be received **until November 1, 1901**, for the construction of an electric-light plant to cost about $35,000. E. M. COOK, mayor. 1348

Treasury Department, Office Supervising Architect, Washington, D. C., October 9, 1901. Sealed proposals will be received at this office until 2 o'clock P. M. on the 28th day of October, 1901, and then opened, for the installation of a conduit and wiring system for the U. S. Court-house and Post-office building at Altoona, Pa., in accordance with the drawings and specification, copies of which may be obtained at this office or at the office of the Superintendent of Construction at Altoona, Pa., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1347

**STEAM-HEATING PLANT.** [At Governor's Island, N. Y.]

Sealed proposals will be received here **until October 24, 1901**, for installing steam-heating plant in quartermaster's storehouse, Governor's Island. Information furnished on application. S. R. JONES, Q. M. 1347

Treasury Department, Office Supervising Architect, Washington, D. C., October 3, 1901. Sealed proposals will be received at this office until 2 o'clock P. M. on the 24th day of October, 1901, and then opened, for the installation of a conduit and wiring system for the Extension of the U. S. Post-office and Custom-house at Newport, R. I., in accordance with the drawing and specification, copies of which may be obtained at this office or at the office of the Custodian at Newport, R. I., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1347


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Treasury Department, Office Supervising Architect, Washington, D. C., October 1, 1901. Sealed proposals will be received at this office until 2 o'clock P. M. on the 23d day of October, 1901, and then opened, for furnishing the heating apparatus complete in place for the U. S. Custom-house and Post-office and extension thereof at Newport, R. I., in accordance with drawings and specification, copies of which may be had at this office or at the office of the Custodian at Newport, R. I., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1347

**CONSTRUCTION.** [At Ft. Leavenworth, Kan.]

Office Constructing Quartermaster, Fort Leavenworth, Kan. Sealed proposals will be received here **until October 26, 1901**, for constructing the following buildings, including plumbing, heating and electric wiring; six infantry barracks, 1 band barracks, 1 artillery barracks, 1 artillery stable, 1 artillery gun-shed, 1 artillery guard-house, shop, etc., 1 bachelor officers' quarters (24 sets), 14 double sets lieutenants' quarters, additions to and alteration in 1 barrack building 45, and repairs to porches of barracks 46, 47, 48, 49 and 50, at Fort Leavenworth, Kan. Full information and blank forms of proposal furnished on application to this office. Plans and specifications may be seen here; also in office of depot quartermaster at Chicago, St. Louis and Omaha. CAPTAIN D. E. McCARTHY, quartermaster. 1347

**GATE-HOUSE.** [At Boston, Mass.]

Sealed proposals will be received at the bureau of yards and docks, Navy Department, Washington, **until October 26, 1901**, for constructing a fireproof store and brick entrance building at the navy yard, Boston. Appropriation, $23,500. Plans and specifications can be seen at that navy yard or at the bureau. MORDECAI T. ENDICOTT, chief of bureau. 1347

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## PROPOSALS.

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**STOREHOUSE.**
**[At Ft. Terry, N. Y.]**

Sealed proposals for constructing, plumbing and electric-wiring double, frame noncommissioned officers' quarters and ordnance storehouse at Fort Terry, N. Y., and ordnance storehouse at Fort Michie, N. Y., will be received here **until October 31, 1901.** GEORGE A. NUGENT, Q. M. 1348

**BUILDING.**
**[At Springfield, O.]**

Bids will be received **until November 1** for the Administration Building at the Ohio Pythian Home at Springfield, O.; the work including the following: Excavating, foundation, cut stone, concrete, brickwork, plastering, roofing, iron and steel, painting and glazing, tile, fireproofing, woodwork, gas, plumbing, sewer, heating and ventilating, electrical-work, p unge-bath. Plans will be on file with Wm. C. Kersher, Dayton, O.; Building Exchange, Cincinnati; Rob't Love, Steubenville, O.. R. M. LeFevre, Springfield, O., and at this office. FRANK L. PACKARD, archt. 1348

**SCHOOL-BUILDINGS.**
**[At Leavenworth, Kan.]**

Sealed proposals will be received **until November 4, 1901**, at the office of Wm. P. Feth, architect, for the erection of three school-buildings for the City of Leavenworth, Kan. Plans and specifications may be seen at the office of Architect JNO. M. GABLE, clerk of board of education. 1348

**SHOP AND OFFICE-BUILDING.**
**[At Boston, Mass.]**

Sealed proposals will be received at the bureau of yards and docks, Navy Department, Washington, **until November 2, 1901**, for constructing two brick and steel buildings at the navy yard, Boston. Estimated cost, $121,000. Plans and specifications can be seen at the navy yard named or at the bureau. MORDECAI T. ENDICOTT, chief of bureau. 1348

**HOSPITAL BUILDINGS FOR THE MOUNTAIN BRANCH, N. H. D. V. S.**
**[Near Johnson City, Tenn.]**

Office of the National Home for Disabled Volunteer Soldiers, Rooms 932-4 New York Life Building, 346 Broadway, New York City, October 10th, 1901. Sealed proposals will be received at this office **until 12 M. Monday, the 11th day of November, 1901**, for furnishing materials, labor, etc., for the construction of hospital buildings at the Mountain Branch of the National Home for D. V. S., near Johnson City, Tenn. Plans and specifications can be seen, necessary information obtained and blank forms for proposals procured on application to this office or to the architect, J. H. Freedlander, 244 Fifth Ave., New York City, or at the office of the Superintendent of Construction near the site of the work. The Home

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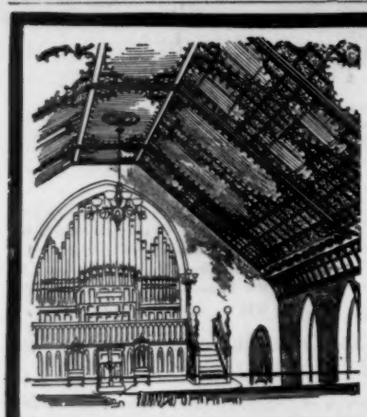

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**ARCHITECTURAL METALWORK.**
Mullins, W. H., Salem, O.

**ART METALWORK.**
Art Metal Construction Co., Jamestown, N. Y.
Ludlow Saylor Wire Co., St. Louis, Mo (mon)

**ARCHITECT'L ORNAMENTATION.**
Lombard & Co., A. P., Boston

**ASPHALT.**
Neuchatel Asphalte Co., New York

**ASPHALT ROOFING.**
Warren Chemical & Mfg. Co., N. Y.

**AUTOMATIC SPRINKLER.**
Internat'l Sprinkler Co., Phila., Pa.

**BLINDS (Venetian).**
Burlington Venetian Blind Co., Burlington, Vt.

**BLUE PRINTS.**
Moss, Chas. E., Boston.
Spaulding Print Paper Co., Boston (eow)

**BOILERS (Side-Feed).**
Gorton & Lidgerwood Co., New York.

**BRICKS (Red Oxide).**
Wisconsin Graphite Co., Pittsb'g, Pa.

**CALIFORNIA REDWOOD.**
Carlisle, Pope & Co., E. A., New York.

**CAPITALS.**
Lombard & Co., A. P., Boston

**CAPITALS (Carved).**
G. T. Nelson Co., The, Columbus, Ohio

**CARVING.**
Lombard & Co., A. P., Boston

**CEMENT.**
Alsen's Cement Works, N. Y. (eow)
Atlas Cement Co., New York
Thiele, E., New York

**CEMENT PAVING.**
Stamsen & Blome, Chicago, Ill.

**CHLORIDE ACCUMULATOR.**
Electric Storage Battery Co., Philadelphia, Pa.

**CLOTHES-DRYER.**
Hill Dryer Co., Worcester, Mass.

**COMPOSITION ORNAMENT.**
Lombard & Co., A. P., Boston

**CONDUCTORS.**
American Steel Roofing Co., The, Cincinnati, Ohio

**CONSERVATORIES.**
Lord & Burnham Co., Irvington-on-Hudson, N. Y.

**CONTRACTING.**
Flynt Building & Construction Co., Palmer, Mass.
Rutan, William L., Boston.
Southard, R. P.

**CONTRACTOR AND BUILDER.**
Rutan, William L., Boston.

**CORDAGE.**
Samson Cordage Works, Boston. (eow)

**CREOSOTE STAINS.**
S. Cabot, Boston

**CUTLER PAT. MAILING SYSTEM.**
Cutler Mfg. Co., Rochester, N. Y.

**DEAFENING QUILT.**
Samuel Cabot, Boston, Mass.

**DECORATORS.**
L. Haberstroh & Son, Boston.

**DOORS.**
Kinnear Mfg. Co., The, Columbus, O.

**DOORS (Interior Finish).**
Carlisle, Pope & Co., E. A., New York.

**DRAUGHTSMAN.**
E. Eldon Deane, New York.

**ELECTRIC SIGNALS.**
Elevator Supply & Repair Co., New York.

**ELEVATORS, ETC.**
Morse, Williams & Co., Philadelphia.
Whittier Machine Co., Boston.

**ENGINES (Hot-Air).**
Rider-Ericsson Engine Co., New York.

**FAUCETS.**
Union Brass Works, Boston, Mass.

**FILING DEVICES.**
Art Metal Construction Co., Jamestown, N. Y.

**FILTER.**
Loomis-Manning Filter Co., Phila., Pa.
Scaife & Sons, Wm. B., Pittsb'g, Pa.

**FIREPROOF DOORS.**
Kinnear Mfg. Co., The, Columbus, O.

**FIREPROOFING.**
Johnson Co., E. V., Chicago, Ill.

**FIREPROOF LATHING.**
Hayes, Geo., New York.

**FIREPROOF SHUTTERS.**
Kinnear Mfg. Co., The, Columbus, O.

**FLOOR POLISH.**
Butcher Polish Co., Boston.

**FLUSHOMETER.**
Kenney Co., The, New York.

**FLUSH-VALVE.**
Peck Brothers Co., Chicago, Ill.

**GALVANIZED IRON.**
American Sheet Steel Co., New York

**GATES.**
Wm. R. Pitt, New York (mon)

**GRATES, ETC.**
Wm. H. Jackson & Co., New York.

**GREASE (Graphite).**
Wisconsin Graphite Co., Pittsb'g, Pa.