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THE rival schemes for elevated-railroads in Boston have both received their quietus for this year by the report of the legislative committee, "leave to withdraw," which was accepted by the legislature. Meanwhile, it is at least a great gain to have a respite of another year to consider the transportation question. Outsiders have their minds generally made up that, whatever the counsel for the horse-railroads may think, it would be a good thing to be able to travel to and from the suburbs and outlying parts of the city with greater comfort and rapidity than is now the case, and, *per contra*, they are sure that the running of an elevated-railroad track in front of the upper windows of the dwellers on our streets would be an intolerable nuisance, which the New Yorkers may be willing to endure, but whose imposition without compensation on their fellow-citizens would and should arouse all the indignant public spirit of the inhabitants of Boston. Nevertheless, two years from now the new Back-Bay Park will be completed, and the "residential quarter" of the city will have begun to invade Longwood, Corey's and Parker's Hill, and the question of rapid transit from these new districts will become pressing, so that Boston will do well to see if some timely recognition of the want cannot be made in the laying out of this region, so as to save it from the possibility of future disfigurement. The problem of passenger travel is not solved, but brutally cut, by elevated roads; underground ways, which are infinitely preferable for all except the passengers, are hardly practicable in the greater part of Boston, and an almost virgin field is offered to the labors of inventive genius. Possibly a modification of the "arcade" plan may present the best solution, and if this should be so, some slight variation, in the grading, raising, for instance, the level of the sixteen-foot intermediate passage-ways between the streets, which are so popular in the city, to a height sufficient to cover a low arcaded road, could be easily provided for, if it were thought of early enough.

THE suit of Mr. E. E. Myers of Detroit, against the State-house Commissioners of Indiana, for damages for the mutilation of his plans, and on account of the manner in which the award was made, to which we referred last week, has been decided in favor of the defendants; the jury having been instructed by Judge Gresham of the United States Court, to bring in a verdict to that effect. This decision, compared with the general disposition of Courts in architects' suits to see that the professional men have their rights respected, shows pretty plainly the contempt with which such scrambles as the Indianapolis competition, and those who take part in them, are regarded by the world outside. It will be remembered that Mr. J. K. Wilson was directed to remodel Mr. May's plan, which stood fourth in the opinion of the judges, to make it conform to the requirements, which none of the designs perfectly fulfilled. He did this, though under protest, and soon after the award was made to Mr. May, and Mr. Wilson was invited to share with him the duties of architect to the Commissioners, which, however, he seems to have declined to do. In all this, unfair as it seems to Mr. Myers, whose plan stood higher than Mr. May's, and to the other competitors, it does not appear that the Commissioners dreamed they were doing anything out of the way. They knew Mr. May to be a good architect; his plan was at least fourth in merit; and feeling that it was in their power by employing him to secure beyond doubt a good building, they naturally managed to do so, rather than risk themselves in the hands of a distant and unknown designer. This is, in our experience, the usual way in which such bodies understand their duties. It is only a few days since we were innocently told of a "competition" for a large building to be erected this season. The Committee, we were informed, had promised the work to Mr. X. whom they all knew; but architects were to be "allowed" to send sketches, which several had asked leave to do, and from these sketches they hoped Mr. X. would be able to work up a fine design. What Mr. X. said to this arrangement we did not hear.

THE rumors of defect, or settlement, in the stone-work of the Albany Capitol which have been floating about for some time, took form late last week in a statement before the Assembly that the sand-stone abutments in the grand corridor were cracking, and a considerable number of the members visited the spot, to find the statement correct. Every one of the piers, the New York papers report, on which the corridor arches rest, has "given way;" that is, we suppose, cracked; the most serious defects appearing in the piers which fall under the granite pillars of the Assembly Chamber. "In several cases," the *Evening Post* asserts, "the sandstone has the appearance of crumbling, on account of the weight resting on the piers." This must probably be taken with a grain of allowance, for it is hardly likely that a building in which Mr. McAlphine, Mr. Fuller and Mr. Eidlitz, have successively been employed, would be designed without ascertaining the crushing strength of the stones employed, and the weights to come upon them. We hope for further information soon: meanwhile, we are glad to see that "the subject is likely to be brought to the attention of the architect and builder." That seems indeed judicious.

THE steam-heating people find the New York aldermen very complaisant, a second company having received permission, over the mayor's veto, to lay pipes in much the same way, and under much the same restrictions, as General Spinola's, which has already begun operations. Still another corporation is applying for the same privileges, with apparently a prospect of the same success. This last company, under the Prall patent, proposes a scheme a little different from the others, and more formidable than either, consisting in the delivery, not of steam, but of superheated water, which will be of course under great pressure, and ready to flash into steam with the force of an explosion on the pressure being suddenly relaxed. Such a mode of high-pressure hot-water heating is used to some extent on a small scale, both in England and here; but is, we think, generally regarded by those in the business here as dangerous, and enormously strong wrought-iron pipes are used for the small calibres of the house service. Very possibly pipe can be made strong enough for the street-mains, but such a matter should not be left to chance. It would be cheaper to have the pipes rigidly tested by a city official, before laying than to shoulder the cost of an explosion or two in the public streets, compared with which the blowing up of a boiler would be trifling.

THE labor troubles do not spread very rapidly, probably for the reason that sufficient employment offers for all who want it, and individuals find it easy to make their own agreements with their "bosses," a system much more congenial to American independence and self-reliance than the sheep-like subjection to the orders of a Union which foreigners attempt to import into our large cities. From their point of view, the Unions in New York have been quite successful, the piano and cabinet makers having generally recalled their men at advanced wages. Mr. Herrman's cabinet-makers, taking advantage of his being distressed with contracts, obtained a still more signal victory, since their employer agrees henceforth not to object to his men leaving the factory to drink beer during working hours. Why they should not have required him to furnish the beer, which certainly would be cheaper for him we cannot see. The Cohoes strike continues: five thousand work-people,

it is said, being idle, not for the sake of advancing their wages, but because a certain foreman, whom few of them ever saw, has turned out of the mill, for good cause, another workman, equally unknown to them. It would be natural to respect such public spirit, if it were not so often the result of a dullness and incapacity for thought which finds the blind and stupid following of designing leaders easier than the exercise of common sense, and were it not also for a suspicion that a class which tries to cure all its troubles by leaving off work, possibly feels an enjoyment in the idleness itself with which few Americans will sympathize. The San Francisco farce gets less serious and more contemptible every day. We are glad to see that the Citizens' Protective Union has turned its energies to carrying the election of this week, with, it seems, a successful result.

The antics of the sand-lot leaders continue, although with more caution. Some of them calling upon their followers to take up arms much in the same fashion as Kearney, who used to bring upon the platform the rope with which he proposed to hang the bond-holders, would, no doubt, be as much astonished as he to find that any one thought they were in earnest. The San Francisco and New York troubles are curiously connected by a proposition which was made to the piano-manufacturers, to furnish Chinese workmen at fifty cents *per diem*, who, it is alleged, will become expert hands in a month. The operatives scout this idea; but however it may be with Chinese, it is unquestionable that the Japanese cabinet-makers and workers in wood not only equal but far surpass the Caucasians. It will be remembered that the interior of the steamship Gallia was almost entirely finished by Japanese workmen, brought to England for the purpose; and perhaps the competition of Asiatics may yet be formidable to our citizens on the Atlantic as well as the Pacific slope.

New York people as a class have at least one good trait; that, while they are prone to live unheeding in the midst of frightful abuses, so long as they are not immediately concerned, when their attention has once been effectually called to a particular one they set about reforming it with a single-hearted zeal and energy equal to that which they at ordinary times bestow exclusively on their own business. The improved-tenement-house fever, which began none too soon, spreads apace, and we hear from all sides rumors of new structures, which, so far as we can judge by descriptions, and now and then by a drawing or sketch, are, to say the least, creditable both to the architects, who have answered with signal success the sudden call for their services in a new field, and to their employers, whose business-like charity, with its clear-headed calculation of the cost of these efforts to improve the condition of their fellow-men, is so characteristic of the place. Some of the later plans, we are glad to see, avoid the balconies, or open galleries across the front, such as those, for instance, of Mr. White's building in Brooklyn, which are pleasant in theory, but being in practice liable to be hung with clothes and bedding, to say nothing of the promenading of the tenants, are apt to give a frowsy look to the front, not inviting to the better class of applicants for rooms.

The Philadelphia Park Commissioners and the Permanent Exhibition Company seem to be in a fair way to establish a *modus vivendi*, by means of mutual concessions. It has been made so evident that without the help of popular entertainments of some kind the exhibition cannot succeed, that the committee now propose to rule out only dancing, balloon-ascensions, fire-works and cannon-firing. These may, however, be made the subject of special sanction, on occasion. Sunday entertainments, it is understood, will not be permitted. If reports are true, perhaps before the controversy is finally settled, the Main Building will have so far succumbed to time and neglect that it will not be worth while to repair it. If the Sydenham Palace, with its ceaseless round of entertainments, its noble situation, and accumulation of objects of interest, reached by quick trains from all the underground stations in London every few minutes, barely earns enough to pay for keeping its own roof tight, the Fairmount building, if the process is once allowed to begin, may quickly fall into a state of dilapidation which in its case would be hopeless. We see no encouragement, either in reason or experience, to believe that an enterprise for industrial education which requires to be bolstered by entertainments or other outside attractions is of any value for its original purpose.

The Royal Institute of British Architects has taken up the subject of the regulation competitions, and one branch of the question, the employment of a professional architect on the committee of award, is being pressed upon their notice by the the preparation of a memorial, praying them to take some action whereby architects generally may agree not to compete in cases where such an expert is not employed. The number of architects who would bind themselves not to compete on other terms may be inferred from that of the signers of the memorial, which, we are glad to see, has already a hundred and twenty names, including the highest in the profession, with good prospects of obtaining more. With some honorable exceptions, the practice of competitions is as degraded in England as here, and we trust that the profession will arouse itself at last to an effort commensurate with the evils which it is sought to ameliorate or cure. By a singular coincidence, thy St. Louis Institute of Architects at their last meeting took up the same subject, and a schedule was reported, which had already been signed by twenty-five architects, to regulate open competitions for architectural work. We should be pleased to have this fashion spread.

Captain Eads continues to advocate his ship-railway across the Isthmus, and seems to gain listeners. After all, strange as the project seemed at first, the difficulties seem not to be insurmountable, and there is a kind of gigantic simplicity about the scheme which is rather fascinating, if it only seemed to be worth doing. Once lifted on the rails, it is at least as easy to imagine a ship and cargo, weighing perhaps 3,000 or 4,000 tons, safely supported by a system of wheels which would distribute the load equally over the substructure, as a building forty or fifty times as heavy, and irregularly loaded, supported uniformly on piles or piers, each of which presents but a limited resistance; yet the latter is done every day. The preliminary lifting seems the most difficult part to provide for; but with the experience in managing ponderous masses, acquired in the transportation of the enormous blocks of *béton* and concrete used for the Port Saïd breakwater and the Dublin Wall, blocks which weighed in some instances three hundred and fifty tons each, it would be rash to predict that the task is impossible. The question of course is whether when it was accomplished it would justify itself, and this we doubt. The whole tendency of modern industrial improvement is towards spending money liberally on first appliances to secure the utmost ease of operation in the end, — to the extension of plant for the saving of labor. In the light of this tendency, the Isthmus schemes seem to class themselves, for their promise of usefulness, in this order: first, a sea-level canal, second, a canal with locks; third, a ship-railway.

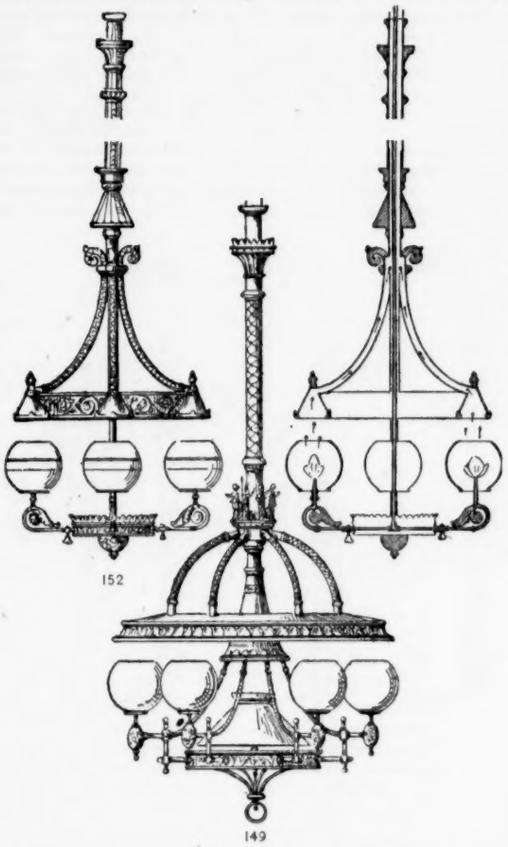
A story has been circulated in Boston during the past week, that the price of spruce lumber, the staple timber for framing in that vicinity, was to be advanced to an enormous extent about the first of April. The proposed advance was said to be five dollars per thousand feet, which, added to the present price, would bring the cost of that material nearly to the highest point of war times; almost doubling its value within six or seven months. If any of our readers have been alarmed by this report, we will venture to advise them to take courage. Of all varieties of lumber, spruce is the least likely to maintain an inordinate advance. Its market is comparatively limited, white pine generally taking its place outside of New England, while, unlike white pine, the supply of which has limits already visible, the spruce lands of Maine and New Hampshire are only outlaying parts of the vast Canadian forests which lie behind them, and will last for ages to come. Again, this season, when the last year stocks are getting low, and the frost still keeps back the new crop, is usually one of high prices for spruce, and to force them much higher just as the rivers were opening, would be a difficult thing to accomplish. Very possibly a small rise may occur, especially if the season is late; but we shall be surprised to see anything more serious this Spring.

VENTILATION OF GAS-BURNERS.[1]

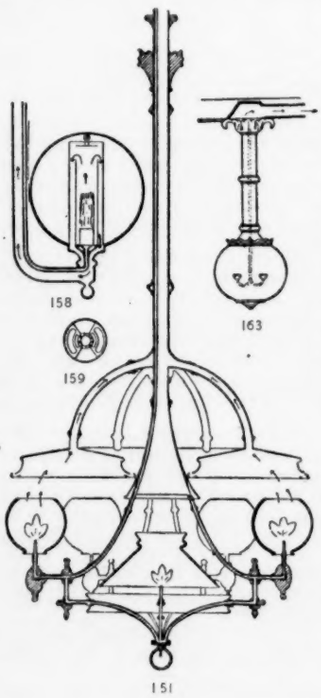
Where an open fire-place is used, the foul-air exhaust is of necessity at the bottom of the room. The supply must therefore of necessity be from the top downwards; for, as we have shown, if the air enter cold it would otherwise pass off through the fire-place open-

[1] This paper, by the writer of the Open Fire-Place articles, will be incorporated with them in their separate form.

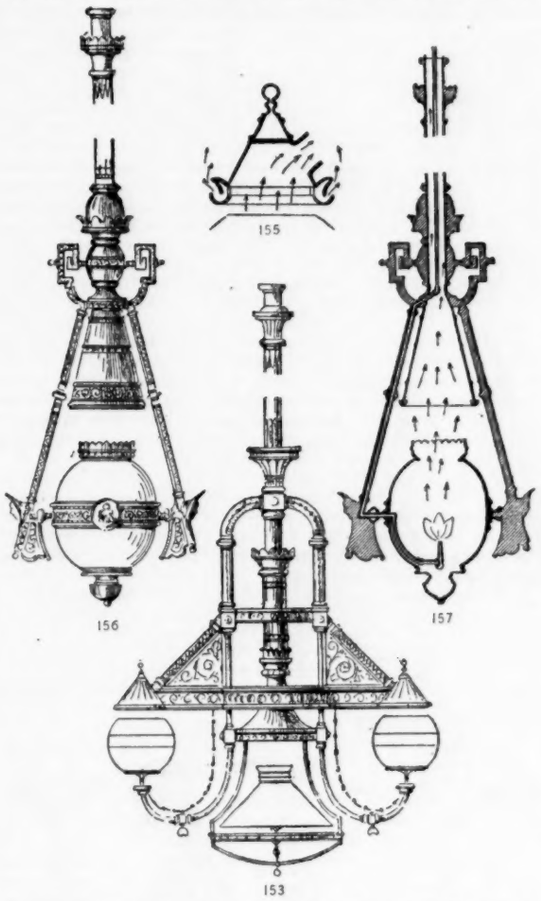
ing without ventilating the room, and if it enter hot it would rise at once to the ceiling, wherever the inlet might be located. To serve for both, as for summer or winter use, as well as to avoid discharging



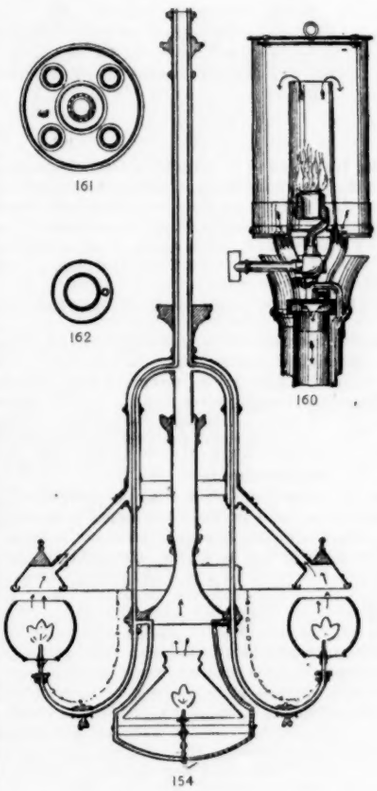
directly upon the occupants, it must be at the ceiling. To prevent contamination of this air by the gas-burners, it is necessary that the products of combustion should be removed at once upon their generation *at the level of the burners*, by ventilating ducts connected with each burner. It is urged in objection to this, that the appearance of the ventilating ducts would be unsightly, and that no one would consent to have so clumsy a contrivance in his house. But the space occupied by the ventilating flues need be no greater than that ordinarily taken up in the designs of gas-fixtures by meaningless scrolls and hollow casings applied solely for the purpose of increasing the apparent weight and size of the pipe and improving its contour.



Figs. 149 to 157 represent ventilating chandeliers designed by the writer. The first two are for the Adams Nervine Hospital, now being built by him at Jamaica Plain. Fig. 149 is for the dining-room, having eight globes surrounding a central reflector. A section of this chandelier is given in Fig. 151. A bell is formed over the central burner, from which ascends the main ventilating flue enclosing the gas supply pipe. Another bell encircles this, and carries off the gas products from the eight globe burners. Eight branch flues, one over each burner, connect this bell with the main ventilating flue. The branch flues are double, as protection against heat. The diameter of the inner branch flues is three centimeters each, the outer coverings are four centimeters, that of the main flue eight centimeters.



It is important that the flues should be only large enough to carry off the products of gas-combustion, and no more: otherwise the warm air of the room will be carried off with it and wasted. The lower rim of each bell is provided with a small gutter to catch the pure return water of condensation. Fig. 152 gives a section of the parlor chandelier, where each bell is separate from the rest. In this six burners are used. The flues are of the same size as in the dining-room chandelier. Both of these designs are kept very simple, in accordance with the instructions of the building-committee. Fig. 153 gives a somewhat more elaborate design for a small chandelier with two burners and a reflector. This is shown in section in Fig. 154. Fig. 155 gives the bell in detail with the condensation gutter. Figs. 156 and 157 give a view and section of a hall pendant. These designs are intended to be

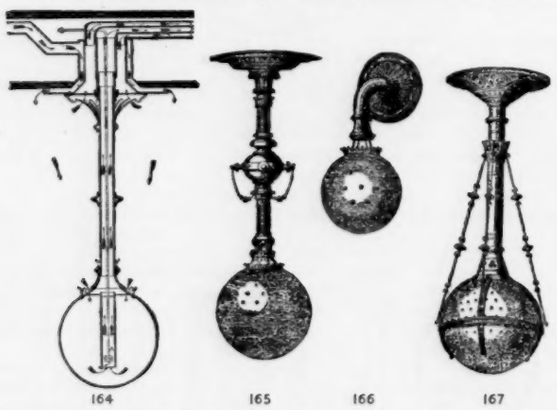


executed in brass, fire-gilt. The bells are to have an inner lining of sheet-iron, with an air-space between it and the brass-work, for the free passage of cool air, to prevent the brass-work from becoming discolored by heat. Or the bells may be made of annealed glass.

Figs. 158 and 159 represent an old form of ventilating burner, invented by Faraday in 1840, applying the descending draught and the argand burner with chimney and globe. The glass-holder is made to carry a second chimney larger than the first, and closed at the top with a double cover of mica. The air to supply the burner enters below the flame, through the two triangular spaces of the holder shown in Fig. 159, feeds the flame as it rises in the inside chimney, and then passes down between the two chimneys, and escapes through the exhaust flue attached to the bottom of the outer chimney and holder, as shown by the arrows. The usual form of globe may be used over the whole, or a special form of globe constructed for the purpose, with the top closed, may be adopted as in the figure. If the exhaust-tube connects with a cold flue, it is necessary to heat the ascending part in order to produce an initial draught. Fig. 160 represents the same device under a somewhat modified form. The fresh air has free access to the inner chimney from below, and returns after supporting the combustion through four branches uniting into one exhaust tube, connected with the space between the two chimneys. The plan of these four branch exhaust-tubes is given in Fig. 161, and the plan of the main exhaust-tube below, with the envelope surrounding it for ornament, is given in Fig. 162.

This system has been applied in France to the foot-lights of theatres. It has the advantage of lessening the chances of fire catching the dresses of the actors, as well as of maintaining the purity of the air of the stage, — a consideration of peculiar importance for actors and singers, the products of gas-combustion being particularly injurious to the throat and lungs.

Another form of ventilating gas-burner, now much used in England, is shown in Fig. 163. The air enters below the globe, and passes out above and also at the ceiling. This exhaust at the ceiling should be closed for the reasons already given, only the lower opening being used. Fig. 164 gives an arrangement for supplying fresh air to the room in addition to the offices performed by the fixture represented



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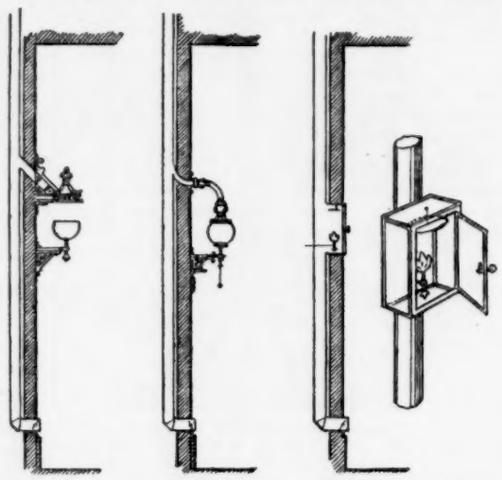
by Fig. 163. Figs. 165, 166, and 167 give various forms of the same device. In London at the present time ventilating chandeliers are used very largely in public buildings. These were originally made in the form of a vast bell or hood, covering the entire chandelier or crown of lights. But by this arrangement a strong shadow was cast on the ceiling by the cover. The inconvenience was remedied by using mica slate, instead of opaque material, in the construction of the bell, the sheets of mica being supported in an open-work metallic frame.

For the single burners of the Adams Hospital, the writer has had constructed a form of ventilator shown in Fig. 168. A little bell is placed over the burner, and connected by means of a small tube about five centimeters in diameter, with a larger flue, ten centimeters in diameter, descending to the floor. The large flue is provided with a damper near the floor, by means of which the ventilation produced by the heat of the burner may be controlled. The bell and small pipe are double, to prevent injury by heat.

Another form, represented in Fig. 169, he has designed for and used in a private dwelling-house, now nearly completed, on Dartmouth Street, Boston. In this, a glass globe is used over the burner, and the hood is brought down to the globe, and may be bent down so as to come in contact with it, or it may be slightly raised so as to leave a very small space above the globe for the admission of air. The effect of this arrangement is quite pleasing. The surface of the globe may be ground, cut, or colored to represent the petals of a hanging flower, the ventilating tube being the stem. The gas in this case is lighted by electricity. Still another and simpler form is given in Fig. 170. This he adopted to ventilate a number of bath and toilet rooms, in a house built in Salem in 1879. It consists of a square glass box, Fig. 171, connected with the main ventilating flue in each room to be ventilated, and holding the burner. The supply of air in this case comes entirely from the lower opening. To avoid flickering, the box must be brought forward in such a manner that the current of air passes by without striking the flame.

"The existence of sulphur compounds in burning gas is to be regretted as a nearly unavoidable evil; the only remedy seems to be the discharge of the products of combustion through chimneys or flues." — *Lincoln.*

According to E. S. Wood, "The sulphurous and sulphuric acids which are produced in burning, may injure delicate structures, such as books, gilding, silks, etc., that may be exposed to the air of a room in which gas is burned. Where large quantities of impure gas are burned, it causes a rapid destruction of textile fabrics, with a very acid condition of them. This was especially noticed in the large public libraries of London, many years ago; the covers of many of the books in the Athenæum Club-house, the College of Surgeons, and elsewhere, becoming destroyed by the sulphuric acid from the burning



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gas. The amount of this acid was so great that it could be easily tasted by applying the exposed portions of the books to the tongue."

It is well known that the products of combustion of gas are highly injurious, and sometimes fatal, to flowers and plants. These rapidly fade in crowded ball-rooms, and plants growing in our houses for ornament become sickly and feeble where they are not protected from the corrosive influence of the acid gases.

"Nearly all of the sulphur is converted into sulphuric acid, which is a vapor readily condensed on the walls and other objects contained in a room. Gas not unfrequently contains 30 grains of sulphur per 100 cubic feet, which in burning gives rise to 90 grains of sulphuric acid; and this is the amount which would be produced by five four-foot burners during five hours." — *Lincoln.*

But besides carbonic and sulphuric acid gases, we have the dreaded carbonic oxide gas, which escapes into the room in considerable quantities (Parkes) whenever gas is partly burnt. This often happens with the varying pressure in the mains.

FOUNDATIONS IN COMPRESSIBLE SOILS.[1]

It is indispensable to a Chicago architect to have some knowledge of this kind of foundations; for if he has none, he is, as many have been, incompetent to erect large buildings with any kind of success. Chicago has neither rock, nor gravel, nor dry sand. The surface of the ground is level, the only elevation being a sort of slight dune on the shore of the lake, which rises about five feet above the ground on which the city is built.

The substratum throughout is a substantial bed of hard blue clay, which has a decided dip towards the lake, so that, while ordinarily from two to four feet below the surface, it is beyond ordinary reach on Wabash and Michigan Avenues, and all along the shore of the lake for a space of about 600 to 1,200 feet. Here the soil is a fine sand, pure or mixed with clay. The bed of the river is dug in the clay, and its level is about three feet below the original surface of the ground, which now is from six to eight feet below the level of the present streets.

Primitive Chicago was erected on this low and wet ground; and to keep the ground below the buildings dry, the principal streets were excavated with a dip toward the river. When, in 1856, the present system of sewers was begun, it became evident that the streets must be raised to prevent frost from injuring the sewers. This is the origin of the higher grades of streets which were adopted in 1857. Against my urgent solicitations, which were accompanied by a map, the streets in many parts of the town were laid too low, but were raised to a level with the higher streets, along and near the lake, after the great fire had destroyed the buildings.

With the exception of the old Tremont House, erected 1850–51, the construction of larger buildings began in 1852, shortly after the

[1] A paper by Mr. Frederick Baumann read at the last convention of the American Institute of Architects.

time of opening the celebrated Lemont quarries, which afford us a dense limestone in blocks of almost any size and thickness. In 1853 I had charge of erecting the two tallest buildings in the city, both with fronts of the new Lemont stone. Knowing that the so-called "hard-pan" (surface stratum of the blue clay) was after all of but a yielding nature, I spread sand upon the clay, and laid thereon two courses of oak plank. The buildings showed no cracks, and were apparently sound; but it did not escape my observation that the corner-piers, particularly the lower part of them, had moved out of their vertical line. This circumstance at once changed my views, and when in the following year I erected a fine building for the (now defunct) Marine Bank, I constructed its foundations by the rule of independent piers, as I choose to call it: I estimated the weights of the different piers and masses of masonry, and laid the foundations accordingly. The result was satisfactory, so that I had no occasion ever to depart from this principle with a view to arriving at better results.

Having thus given a sort of history of the theory of foundations which prevails in Chicago, and which is treated in my pamphlet, I will proceed to this theory itself.

We all know that a piece of plank, of uniform density, floating on the surface of a body of still water will present a level plane. Now on loading this plank with a weight it will assume a dip — a departure from the level — unless this weight is so placed that its centre of gravity will be in a perpendicular line erected upon the centre of gravity of the plank. Shift the weight away from this centre, and the plank will assume a greater and greater dip, till at last the load will slide off. We all know this: it is self-evident, and needs no further proof.

Now let us assume in the place of this water any building ground, be it mire, quicksand, clay, loam, sand, gravel, rock. Let us further assume, in the place of this plank and the weight thereon, the base of a foundation with the masonry upon it, and the question is whether the case has become a different one. There is as, everybody will perceive, but one answer to this question: The case is precisely the same, for we know that matter, of whatsoever kind or nature, is compressible. The hardest rock is in fact compressed by the slightest weight, though in a degree infinitesimally small. But in practice, particularly in building-practice, we have no dealings with magnitudes of infinitesimal character. We deal with magnitudes which we can measure with very common instruments, such as rules, plumb-lines, and spirit-levels. What therefore we pronounce plumb, level, and of this or that dimension, is really only approximately so. We pronounce a building mechanically perfect in case its horizontal lines are nearly level, and its vertical lines nearly plumb. In this condition a building may justly be pronounced mechanically perfect, for it presents this appearance to our senses.

Considering in this practical light the strata of soil upon which we have to erect our buildings, we pronounce rock (of sufficient density and thickness) incompressible, gravel almost incompressible, and dry sand very slightly compressible. Any ground of this sort may be treated at random without visible hurt to the structure thereon erected. We may cover it with a uniform stratum of concrete, put thereon the bases without much calculating, and the result will be a good one. Thus it occurs that the plain laws of nature may be left unattended to and unobserved, without harm.

The case, however, is different when buildings are to be erected upon loam, clay, or mire. Here the law of nature makes itself dominant. The weights must be correctly estimated, and foundations made in proportion. More than this: the centre of gravity of the pier estimated must be put in perpendicular line over the centre of gravity of the foundation. Concrete can not here be put over the ground at random, though it might be put advantageously upon proper places. The softer the ground, the more correctly must be made the estimation and distribution of weights. The same is the case with buildings whose foundations are but narrow in proportion to the weights thereon placed.

At first sight it would appear, that the width of foundations is of little account so long as the distributing of weights is very correctly done. It would seem then, that, the only effect of narrower bases would be a comparatively deeper sinking of the structure.

This, however, is not, and can not be, precisely the case. When we go beyond a proper measure in this direction, we shall not see our building settle with exact uniformity. There are three reasons for this fact: —

First. It is practically impossible to make an exact distribution of parts and estimate their weights with sufficient accuracy. Many buildings are very complicated, and what is worst with them is, that many, oftentimes very heavy, parts of the structure do not enter during the process of erecting, but are applied afterwards. Interior columns, for instance, might receive but one-fourth of their load during construction and three-fourths after the roof is finished.

Second. It is not correct to assume that ground of uniform appearance is precisely of uniform density, nor is it safe in extreme cases to assume a uniform appearance. We are dealing here, in the best cases, with an approximation, and where we meet with palpable diversity in this direction, we shall find ourselves constrained to let the differences of density enter into our calculations. What then we shall arrive at will, in the happiest cases, be but an approximation, of a nature somewhat vague. Such exceptional cases, however, are not of frequent occurrence; there are none in Chicago.

Third. Compressible soil is not precisely compressed in proportion to the weight thereon placed, nor is it certain that different areas of the same soil suffer exactly the same compression, though proportionately loaded.

If, for instance, the ultimate compression of ground under a base four feet square is 1 1-2 inches when permanently loaded by a weight of 24 tons, it does not follow that a weight of 48 tons would cause a depression of 3, and 72 tons one of 4 1-2 inches. Here the facts have been, as I have had the opportunity of observing, that greater weights cause a proportionately greater depression. A 4 x 4 foot stone, loaded with what I estimated at about 64 tons, went down about 4 inches during the construction of the building; at the time of occupation the parts were made level by placing an iron block of 4 inches thickness under the column; but some two years afterwards the point showed again a depression of about 4 inches. Again the level lines were restored. Yet when I last saw the place a few months before the great fire, and probably seven years after the construction of the building, it appeared to me again 4 inches depressed. Many other similar cases I could mention were it necessary.

It would in the same way appear to me, that areas of great difference in size are not compressed exactly as the ratio of weights thereon placed. A base 4 x 4 feet loaded with a weight of 24 tons will receive an ultimate depression of 1 1-2 inches, when properly placed upon our "hard-pan," but it would always seem to me that bases of smaller area were more, those of larger areas less, depressed. I am not aware that this point has ever been brought to a proper test, and therefore abstain from being very positive on it. After the great fire I undertook to urge upon our Board of Public Works the importance of making proper tests, on all the various points, upon the Court House Square, but without success.

These foregoing three reasons will suffice to teach us, if our good sense did not, that under any circumstances it is best to allow the smallest possible weight of superstructure to the unit-measure of base. Thus if it were possible in a case to load the square foot of base with only a quarter of a ton weight of superstructure, there would be a very slight depression of the ground, such as would hardly be at all noticed. In practice, however, it rarely occurs that such broad distribution of bases is possible, nor would it be necessary to incur the larger expense therewith connected. It is practicable to arrive at a very perfect construction with a ton of superstructure upon a square foot of base, and this measure is now pretty generally taken. We have become a little more lavish in this respect, and disliking to take 1 1-2 tons, when the extent of ground permits us as well to take only one ton, we make the bases fifty per cent broader. Still, if it must be, we take the 1 1-2 tons and even more. The City part of our new Court-House is, if my information is correct, calculated for 2 1-2 tons upon the square foot of base. The result will show how proper or improper this is.

I hold to the belief that here in Chicago, where the ground is of so limited density, it is not good practice to construct buildings so massive that their foundations can not be spread out enough to limit the load to 1 1-2 tons upon the square foot. I believe it to be better, if the height can not be kept down, to construct lighter walls, purposely so light, that the prescribed limit of weight will be kept. A building with dropping keystones, broken lintels, cracked walls, is, after all, but little better than a wreck, and no precaution should be spared to avoid such occurrences.

The U. S. Custom House, so extensively mentioned in my pamphlet, is now receiving its plastering. Its foundations are concrete and dimension-stone thereon. The first warning as to its safety was given three years ago by the winter's frost which had been carelessly allowed to reach the ground below the concrete. The walls were subsequently constructed lighter, yet the results of constructing its foundations contrary to the common-sense rules laid down in this paper, are very plain to the passer-by. Keystones have dropped, lintels and arches are broken; corners are deviating from the plumb-lines: all of which defects would not be there, had the concrete been omitted, in its character of an "equalizer," and foundations been laid strictly in accordance with the common-sense rules laid down in my pamphlet and here briefly and independently repeated.

Frederick Bauman.

THE ILLUSTRATIONS.

DWELLING-HOUSE FOR E. TORREY, ESQ., DORCHESTER, MASS. MESSRS. CABOT AND CHANDLER, ARCHITECTS, BOSTON.

This house, now building, is on the corner of Melville Avenue, and Washington Street. The first story is to be of Roxbury-stone, the jambs and arches of Philadelphia moulded brick. Carved brick is to be used to some extent, as is seen on the large chimney in front. The second story will be of wood, and covered with cut shingles, while rough-cast plaster will form the panels in the gables. The inside finish of the first floor of the main house will be of quartered oak, with the exception of the sitting-room, which will be of cherry. The large stained-glass window, together with a carved brick fireplace in the hall, will form a prominent feature. It is expected that the house will be completed by the first of October. The contractors on the work are as follows: S. H. L. Pierce, carpenter; Horace James and James Driscoll, masons; Thomas Mahon, plumber; James F. Cleary, plasterer; and J. B. Hand, painter. The carving of both brick and woodwork will be done by John Evans, while the landscape-gardening is in the charge of Ernest W. Bowditch.

DETAILS OF THE SAME.

RULES OF MEASUREMENT OF MASON-WORK IN CHICAGO.

We shall be pleased to receive criticisms of the following rules, the expression of a custom founded in equity, and prevailing in Chicago from its earliest days, which have been compiled by the "Chicago Masons' and Builders' Association."

If to furnish and lay one thousand brick in a plain dead wall costs ten dollars, another piece of brickwork of equal cost must be measured as of the same contents, even though it does not take one-fourth as many bricks.

The plain dead wall, in stone as well as brickwork, is taken as the standard, and the more difficult, complicated, ornamental, and hazardous kinds of work are measured up to it, so as to make the compensation equal. To illustrate: if in one day a man can lay two thousand bricks in a plain dead wall, and can lay only five hundred in a pier or arch in the same time, the cost of labor per M in such work is four times as much as in the wall, and he is entitled to extra compensation; but instead of varying the price, the custom varies the measurement to compensate for the difference, and thus endeavors to secure a uniform price per M for all descriptions of ordinary brickwork, instead of a different price for the execution of the various kinds of work.

This is the principle underlying the system.

If any new rules, or new applications of old rules, should be found in the following, we can only say in their recommendation, that we have carefully considered them in all their bearings, endeavoring to secure equal justice to owner as well as contractor, and that they will form the standard for deductions, as well as for compensation for extra work.

THE UNITS OF MEASUREMENT OF MASON'S WORK.

For excavation, the cubic yard; for concrete foundations, the cubic foot; for concrete floors, the superficial foot; for dimension-stone footings, the superficial foot; for dimension-stone bridge masonry, the cubic foot; for dimension-stone surface dressing, the superficial foot extra; for rubble-work, the cubic foot; for rubble-work surface dressing, the superficial foot extra; for brickwork, common, the one thousand brick; for brickwork, pressed, the superficial foot; for tuck-pointing, cleaning fronts, the superficial foot; for plastering plain surfaces, the superficial yard; for plastering cornices, the running and superficial foot.

EXCAVATION.

To be measured and computed by the actual amount of material displaced — no allowance for rehandling.

CONCRETE.

Foundations. Measure actual contents.

Floors to be measured by the superficial foot of surface between walls.

No deduction for tile drains; nor for any pier, chimney-breast, pilaster, or other projection of walls, of ten feet or less in area.

DIMENSION-STONE.

Footings to be measured each course separately. No deductions for drain or other openings under walls two feet or less in width.

Bridge masonry. Compute actual cubic contents.

Surface dressing of all kinds, extra.

RUBBLE-WORK.[1]

Footings[2] to be measured by actual cubic contents.

External walls. Girt building, and add thickness of wall for each external angle.

Intersections of partition-walls, two feet or less in width, to be measured double; if wider, add four cubic feet to actual contents of every intersection, for each foot in height.

For *each corner* of wall of more or less than ninety degrees, add one foot six inches to length of wall.

For *round walls* add one-fifth of length to girt measure.

All *projections* such as *chimney-breasts, piers connected with walls*, and *pilasters*, to be measured actual cubic contents contained therein, and one cubic foot added thereto for each corner, for every foot in height.

Independent square piers to be measured by the same rule.

Polygonal and round pier work at special rates.

Recesses and slots to be measured solid, and in addition thereto allow one cubic foot for every foot in height.

Stone arches are classed as cut-stone work.

Deduct contents of window, door, and other openings, measuring from top of sill to spring of arch, and add two feet of wall for each jamb, for every foot in height of opening.

No deductions to be made for cut-stone trimmings and lintels.

BRICKWORK.[3]

Every superficial foot of "one-half brick (or four-inch) wall" to be estimated at seven and one-half bricks; of "one brick (or eight-inch) wall," at fifteen bricks; of "one and one-half brick, or (twelve-inch) wall," at twenty-two and one-half bricks; of "two brick (or sixteen-inch) wall," at thirty bricks, etc. Increase the number of bricks by seven and one-half for every additional half-brick in thickness of wall.

External walls. If sixteen inches thick or less, girt building, and add thickness of wall for each external angle.

When thicker, add to actual contents of each corner one and one-half cubic foot for every foot in height.

Allow for wall ends as for corners.

Round walls. Sixteen inches thick or less. For circular walls of radius sufficiently large to obviate the necessity of using specially moulded or cut brick, add one-fifth of length to girt.

When thicker, allow for sixteen inches of such wall, as per above rule, and measure all in excess as straight work.

Cut or moulded circular work at special rates.

Bevelled corners. For each corner of wall of more or less than ninety degrees, add one foot six inches to length of girt.

Partition-walls. Sixteen inches thick or less. Intersections of partition-walls (bonded together in any manner, not abutting) to be measured double.

When thicker, add one and one-half cubic foot to actual contents of every intersection, for each foot in height.

Partition-walls connecting with stone walls to be measured one foot into such wall.

Chimney-breasts and pilasters. All flues and hollows in chimneys, four feet and less in area, to be measured solid.

When larger, deduct one-half contents of flue.

For all chimney-breasts and pilasters add eight inches to face for each corner, and multiply length so obtained by width (projection).

Detached chimneys in buildings, and plain chimney-tops, to be measured solid, and one-half of one cubic foot to be added for each corner, for every foot in height.

Chimney-stacks at special rates.

When square, find cubic contents, measuring hollow walls solid, and deducting flue.

When round or octagon, take length of diameter for side, and measure as though it were square.

Independent piers to be measured like chimneys.

Hollow walls to be measured solid.

Stone fronts backed with brickwork. Deduct thickness of ashlar from width, and figure like ordinary walls.

Gables and wall-tops. Wherever clipping of brick is required, add to actual contents the length of line of clipping by one foot, by thickness of wall.

Cornices and belts. If of running courses only, multiply length by height (greatest girt, in and out), by greatest projection.

If enriched (by corbels, brackets, or panels), multiply other dimensions, as given, by greatest girt length.

Ledges. Multiply length by height by greatest projection.

Projections. All other projections, if of four inches or less, to be measured four inches; if above four inches and not exceeding eight inches, to be measured eight inches; if above eight inches and not exceeding twelve inches, to be measured twelve inches, etc.

Gauged work at special rates.

Openings. Openings to be measured from top of sill to spring of arch, and shortest distance between brick jambs for width.

No deductions to be made for openings of two feet six inches or less in width.

One-half of contents to be deducted of openings from two feet six inches to six feet in width.

For openings of more than six feet in width, allow one foot six inches by thickness of wall, by height, for each jamb.

Slots, panels, etc. No deductions to be made for slots, chases, niches, panels, or other recesses of four feet or less in width; if wider, deduct contents, and add two cubic feet of wall for every foot in height.

Trimmings. No deductions in measuring brickwork for cut-stone or other trimmings, bond-blocks, timbers, joists, or lintels.

Arches, not gauged.

In vaults, multiply length of chord at spring of arch by height from chord to extrados by thickness of arch.

In walls, find contents of arch by same rule, and add to wall measurement.

In sewers and tunnel-arches, multiply length of extrados by thickness of arch.

Floor-arches and brick-paving to be measured by the superficial foot, and by rule given for measuring concrete. Deduct well-holes.

Brick-nogging. Measure as ordinary brickwork. Deduct full openings — no studding.

Cutting in of joist and other holes, by the piece; of slots, panels, and recesses, by the lineal foot.

Toothing, etc. When ordered by owner or his superintendent to tooth, rack, or block, in consequence of delay of iron, stone, or other material, that mason-work may connect with, such toothing, racking, or blocking shall be measured as extra work, as follows: increase girt length of such line by one-half, and multiply by one foot, by thickness of wall.

PRESSED BRICKWORK.

Measure all exposed surfaces of brick by the superficial foot.

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[1] *Corner* is used for salient angles of wall, and *angle* for re-entering angles.

[2] Footings are all such foundation courses, not exceeding sixteen inches in height each, as are wider than the body of wall above.

[3] Different cities make different bricks; in reality the products of no two brick-yards are entirely alike in size, nor, for that matter, are all bricks burned in the same kiln. The necessity of acknowledging some standard for purposes of mensuration and calculation is obvious. In these rules the dimensions of a brick are understood to be two by four by eight inches. We therefore speak of four-inch walls, meaning the width of one brick; of eight-inch walls, meaning the width of two bricks; and of twelve-inch walls, meaning the length of one and width of another brick, etc., — although the actual width of wall will be more or less in excess of these measures.

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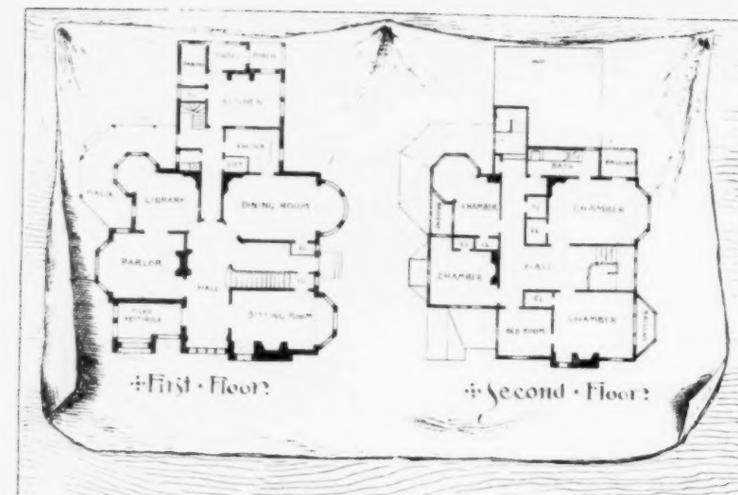
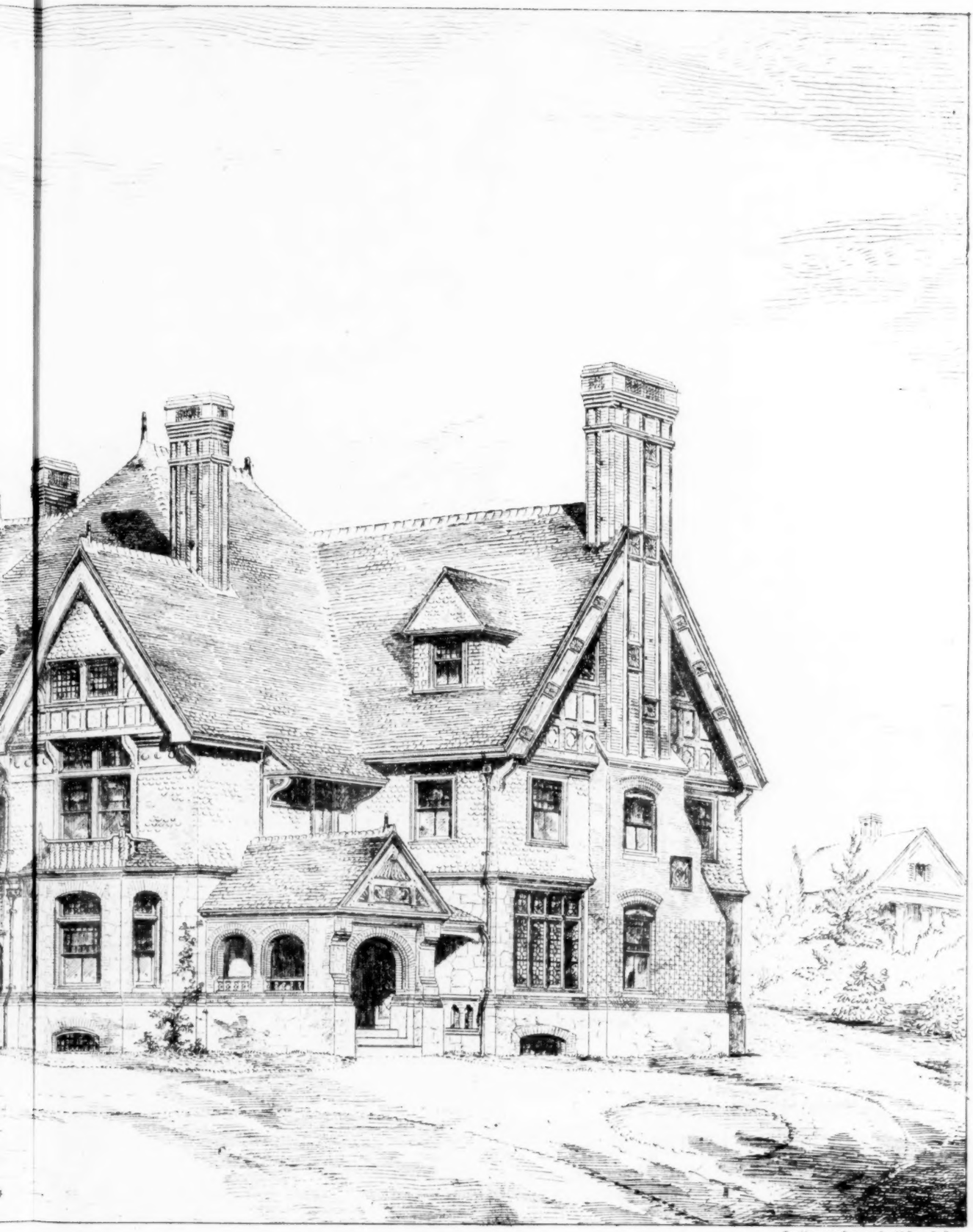


DESIGN of HOUSE
for E. TORREY, Esq.
Corner Melville Ave and
Washington St. Dorchester.

Cabot and Chandler Archts.



THE HELIOTYPE PRINTING CO. 108 PEARL ST. BOSTON

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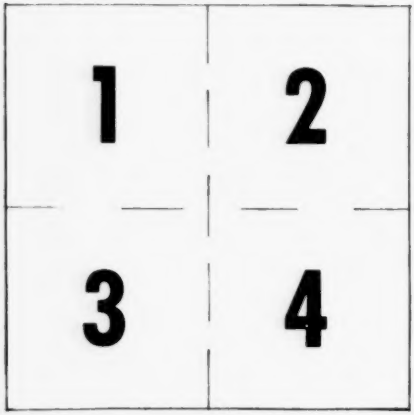

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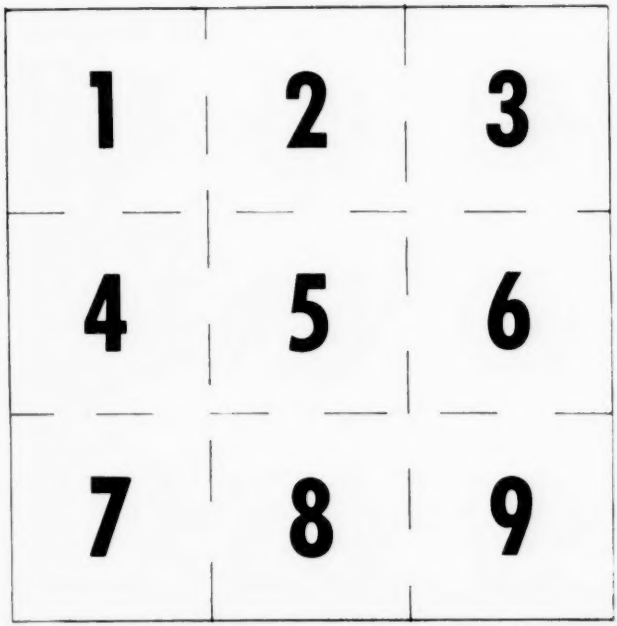

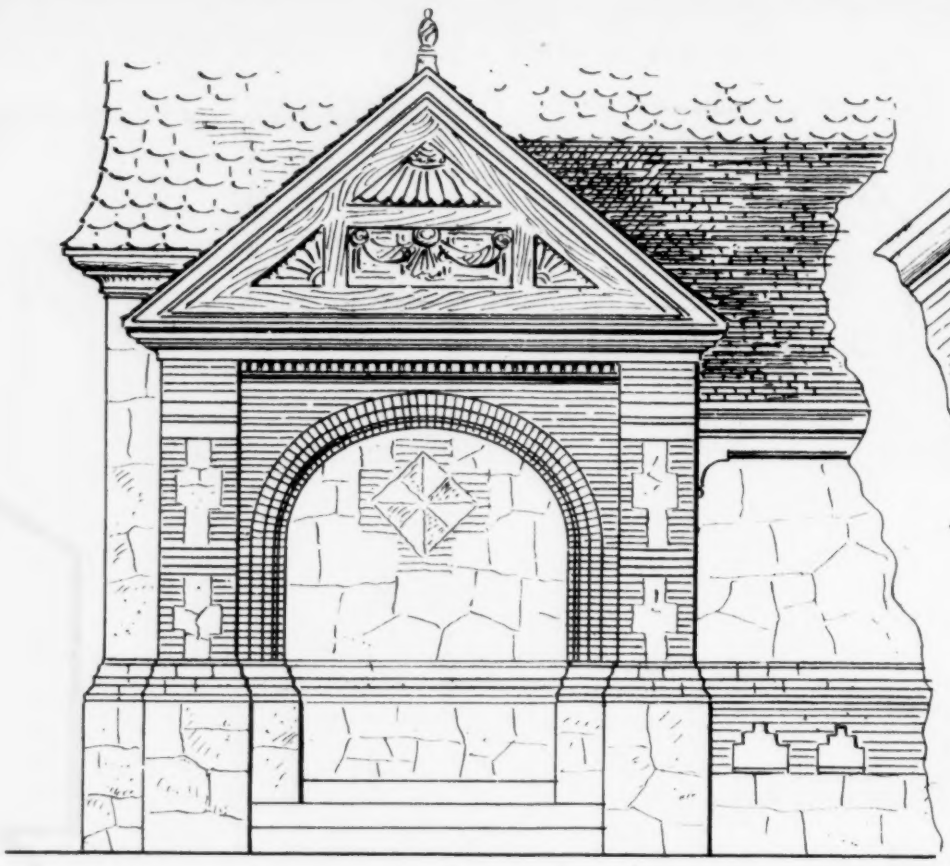

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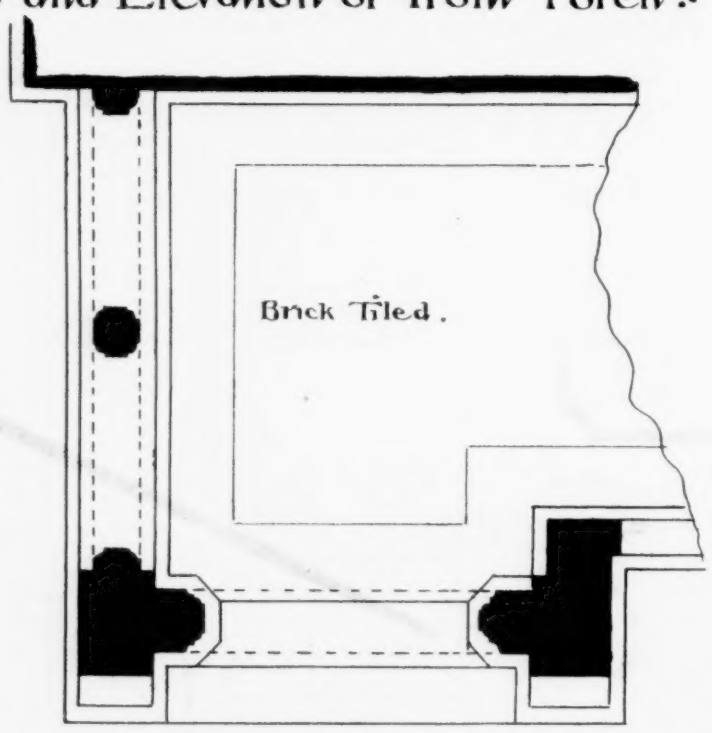

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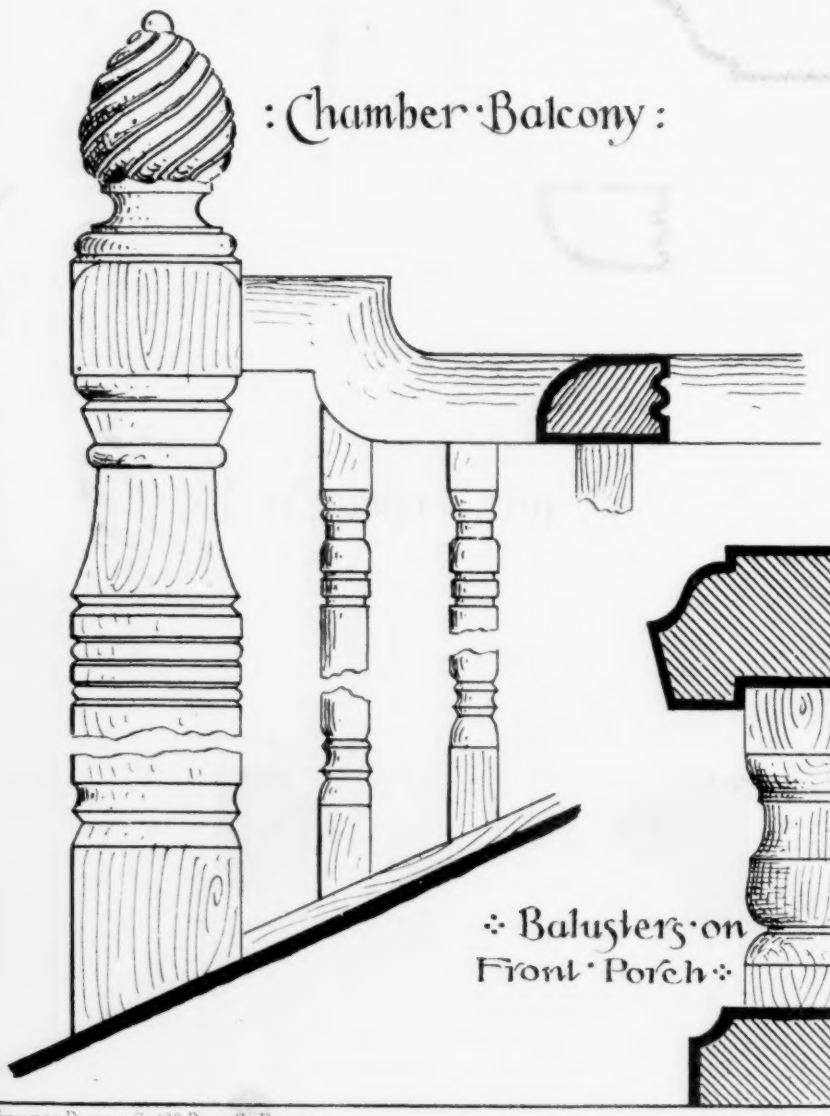

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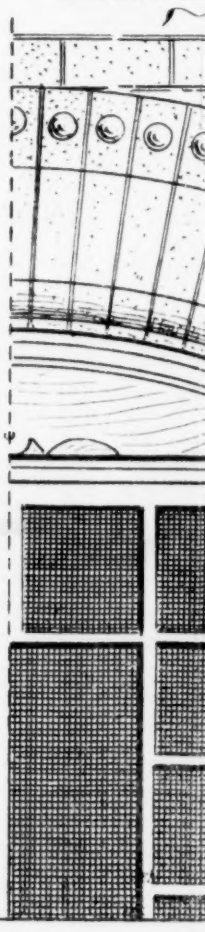

THE HELIOTYPE PRINTING CO. 126 PEARL ST. BOSTON.

: Porch · Panel :

Inside Architrave

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Projection · on Front · Gable :

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Carved Brick

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CARVED: BRICK.

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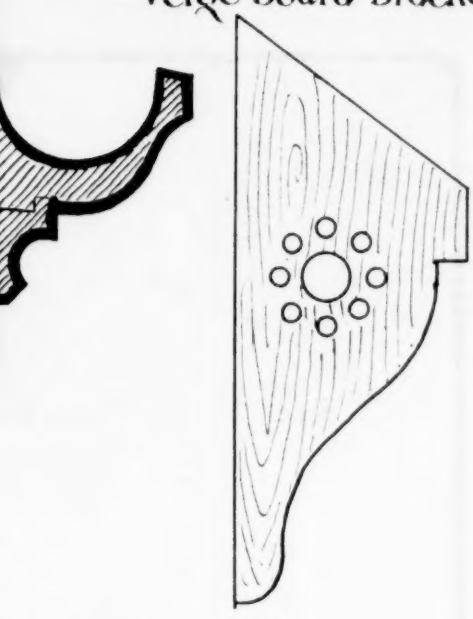
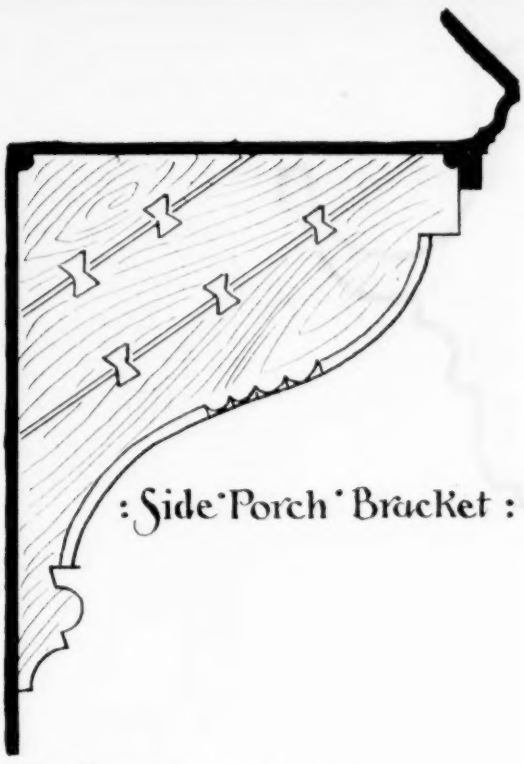




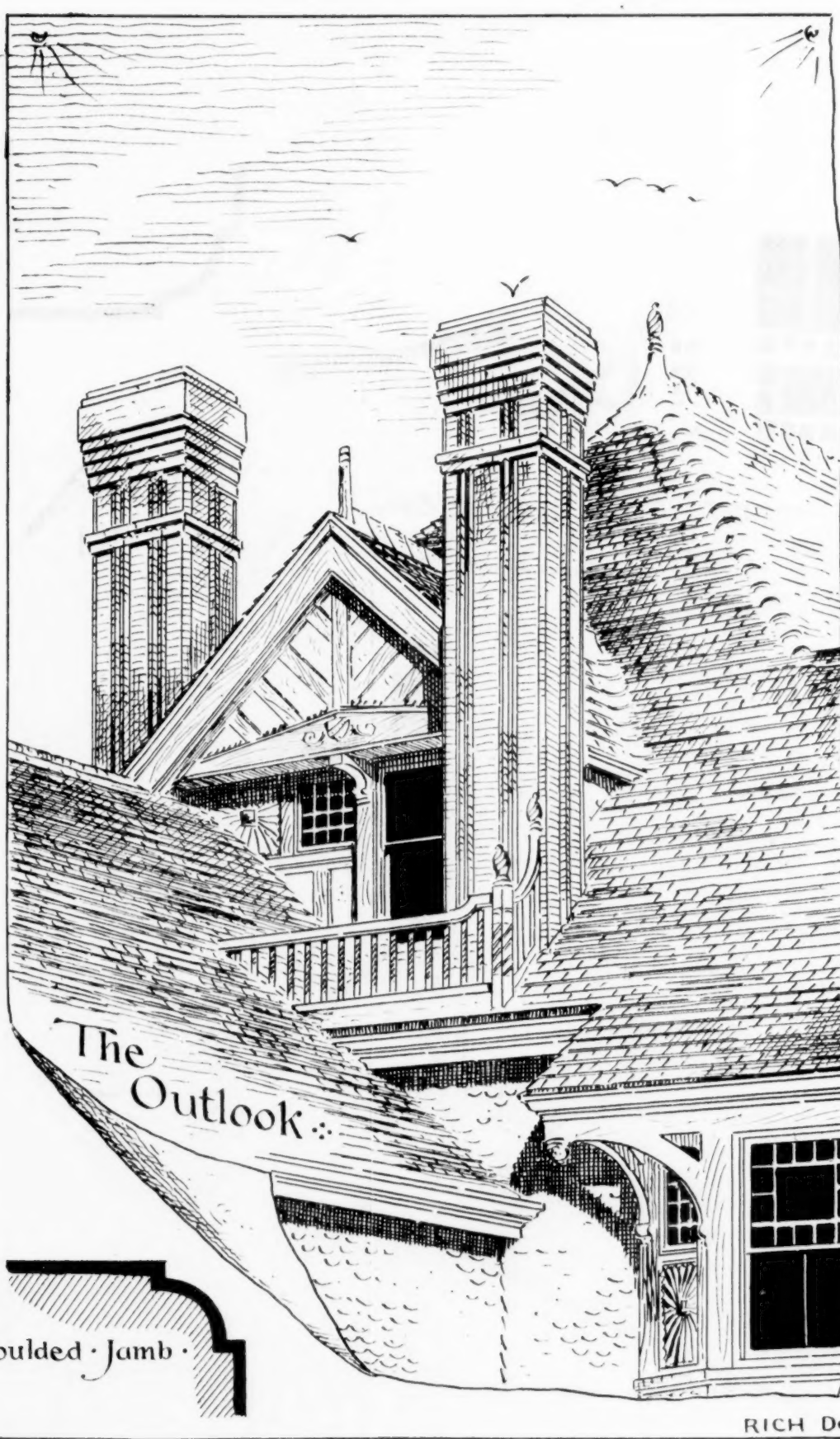
Side Porch Bracket

Details of House

FOR E. Torrey Esq.

Cabot and Chandler Archt's

Boston Mass.



The Outlook

Moulded Jamb

RICH Del.

CUT-STONE SETTING.

Measure vault-covers, flagging, curbing and ashlar by the superficial foot; coping and belt-courses, by the lineal foot; all other cut-stone by the cubic foot.

Tuck-pointing and cleaning and pointing stone-work to be measured by the superficial foot of exposed surfaces.

PLASTERING AND LATHING.

To be measured by the superficial yard — from floor to ceiling for walls, and from wall to wall for ceiling.

Corners, beads, etc. All corners, angles of more or less than ninety degrees, beads, quirks, rule-joints, and mouldings, to be measured by the lineal foot on their longest extension. Add one foot for each stop or miter.

Cornices. Length of cornices to be measured on walls.

Plain cornices, of two feet girt or less, to be measured on walls by the lineal foot.

Plain cornices, exceeding two feet girt, to be measured by the superficial foot.

Add one lineal foot by girt for each stop or miter.

Enriched cornices (cast work) by the lineal foot for each enrichment.

Arches, corbels, etc. Arches, corbels, brackets, rings, centre-pieces, pilasters, columns, capitals, bases, rosettes, bosses, pendants, and niches, by the piece.

Openings. Openings in plastering to be measured between grounds.

No deductions to be made for openings of two feet or less in width.

One-half of contents to be deducted for openings from two feet to six feet in width.

For openings of more than six feet in width, deduct contents of openings, and allow one foot six inches for each jamb, by height.

Deafening to be measured by the superficial yard, floor measure, between walls: take out well-holes.

THE ENTRESOL.

It is rather remarkable that so little has been done by the architects of commercial buildings with the entresol, but that all architecture or attempts at design are cut off at, and end with, the shop-window or its breastsummer. We seldom see the façade of a building devoted to business which does not affect the palace above the ground-story or shop-window. The shop-front must, as a *sine qua non*, be all plate-glass, while above it the building may assume the most monumental appearance of solidity, and bespeak at once the genteel residence of its occupant. The entresol, literally an inter-story, is the French word for mezzanine or middle story, but its proper meaning architecturally is that it should form a subordinate story within the larger or higher one. In the following remarks we desire simply to show its proper place as an architectural feature. Many of our recent buildings in the City, where this feature is employed, show a decided misapplication of it; and their architects appear to have adopted a common French expedient of pronouncing the mezzanine between strongly expressed horizontal features, as cornices and balconies, the effect of which is to cut up and destroy the unity of the composition.

One of the usual modes with us of making an entresol is by forming an arch above the shop-window, the effect of which arrangement is to unite the two openings and also to make the shop-cornice appear as a transom. This method is common in the United States, and we have several examples in leading thoroughfares in London. It may be seen in the Strand, in Cheapside, and the most recent instance of it we know is at the new Mercers' Hall, in Cheapside, where the architect has formed a series of flat elliptical arches springing from the piers, the general appearance of which is an arcade with a transom running through at the impost level. Of all usual arrangements this is probably as good and as architectural as any; but the difficulty is in treating the arch and making it unite agreeably with the upper stories. A semi-circular arch seldom so unites; there is a recent instance of this near Anderton's new hotel in Fleet Street. The semi-circular opening does not unite well with the upper part, and the shape of the arch itself has an unmeaning effect for the purpose of lighting. A segmental-headed opening is not open to this objection so much, but it always appears to want a good abutment at the sides, or a weak, unstable effect is produced; and another difficulty occurs in sub-dividing the opening for windows, and we have seldom seen, in either of these forms, any suitable filling-in for the glazing. It appears to us far better to abandon the idea of having one undivided opening under a single arch, and to arch it in three or more divisions, with small piers between, which would rest on the entablature, or be carried down the front below. With, say, three arches of segmental form, the elevation of the house is not increased; the mezzanine may be kept lower, and the architectural composition above not sacrificed. A horizontal line or cornice can be run through, above the arches, and the first story can be made to unite in a less awkward manner to the mezzanine. For the purpose of separating the mezzanine from the first story, a common mode is to have a bold cornice or a balcony of slight projection, as in the new premises in Ludgate Hill; but it is a mistake to mark distinctly the separation between the shop-windows and mezzanine. In a few examples this story is treated as a kind of attic to the lower order, with good effect. A still better arrangement is to make the entresol an integral part of the shop-front if the building is intended for commercial purposes; that is to say, to let the framework of the ground-story window run through, only marking the separation by a kind of transom. It is possible, in this manner, to make the entresol a transition between the shop-front and the more solid upper stories of the building. Square or straight heads are better than arches, and can be made to adapt themselves with more agreement to the composition above. They also agree better with the horizontal cornices, balconies, or other features that may be placed above them.

The Italian architects seemed to be alive to this arrangement for combining two stories, so that the windows, while appearing separated, were yet connected architecturally. We may mention the celebrated Pesaro Palace at Venice, where Longhena has shown how the mezzanine can be made to appear an intermediate story without destroying the unity or gradation of the composition above. The basement of that building (see Fergusson's Handbook of Modern Architecture) is an excellent study for architects. Its two central archways or entrances are made the key-note of the horizontal division, for the mouldings which form the imposts of the arches are continued through as a string-course, and divide the lower ground-story windows from those of the mezzanine. The vertical pilasters are carried directly over one another, as architraves, and connect the two openings, while both the ground story and entresol are comprised in the rusticated basement; the effect of which is to give a lofty solid base to the two stories of columns and arches above. A similar treatment is seen at the Tursi Doria Palace, Genoa, also illustrated by Fergusson. In Cornhill and the Poultry, two examples of the same principle may be seen applied to business architecture. The ground floor and mezzanine are united, and form one composition; the horizontal divisions are kept back from the front of the façade, and the effect is to give unity to the design. Architecturally, we think the design is always more satisfactory when the ground and mezzanine or inter-story are combined, and appear to form one part of the composition, than when the latter is cut off and is made to look like a low story between two lofty ones. What looks better than a wide façade, with broad piers or pilasters running up to the top of the entresol, the horizontal division or floor being marked by a bold interrupted entablature, or band of masonry? The piers are strengthened actually and visibly, while a certain dignity of effect is obtained. In Mr. Peebles's new business premises in Fleet Street, illustrated in our last volume, this kind of treatment is partly adopted; the entresol is divided from the shop-story, though it forms more distinctly a part of it than an upper story. In this case, however, we find the mezzanine windows are slightly canted in each division, making a kind of flat bay-window between the vertical pilasters. Strictly speaking, however, the entresol should always be treated in the manner we have indicated, and not affect a separate and intermediate story of low height. In a future paper we may illustrate these remarks by some recent examples, in which the entresol is made an element of considerable value in street frontages.—*The Building News.*

VANDALISM IN ITALY.

Mr. J. C. Robinson, an English authority on art, in a letter to the *London Times* says:—

"One of the chief treasures of the South Kensington sculpture collection is the 'Cantoria,' or marble singing-gallery, from Santa Maria Novella, at Florence. I obtained this noble work about the year 1860, under the following circumstances: Being then in Florence, busily occupied in my official task of gathering works of art for the Museum, then under my charge, I learned that it had been resolved to 'restore' Santa Maria Novella, and that the noble old conventual church, every part of which was previously well known to me, was shut up and given over to the tender mercies of an architect acting under the immediate direction of the monks. Nobody had any idea of what was going to be done, and no one was allowed to get inside to see. However, I found means to obtain access. When I did so, the sight was heart-rending: the glorious old church, rich in wonderful details, and to which clung a thousand memories, was literally a chaos, gutted and pulled to pieces from one end to the other. The central pavement, once one of the most interesting things in Italy, almost every stone being a beautiful sculptured and inscribed grave-slab, — the very pavement on which Boccaccio's ladies of the *Decameron* are imagined to have trod, — was torn up and condemned, and every footstep stirred up clouds of sacred dust of the thousand old Florentine worthies beneath. All around lay heaps of dismantled altars, stalls, and curious church-fittings, and among them the huge marble stones of the 'Cantoria.'

"I learned that it was actually intended to replace this latter splendid work with a new one of entirely different design in black stone! The thing seemed incredible, yet it was true; and this was the reason: It seems that the monks of Santa Maria Novella had suddenly been cursed with wealth. One of their number had inherited a considerable fortune, and the fatal idea occurred to him that the best thing he could do with it would be to 'restore' the church. Some demon, doubtless, whispered this terrible suggestion, and the same fiend must have prompted the architect who came forward to carry out the plan. This worthy persuaded the monks that it was necessary to make the church and its contents uniform in style. Now, Santa Maria Novella is a fourteenth-century building, and from the architect's point of view, of course, all after additions were to be transformed or done away with. This the misguided man actually carried out. The entire series

of altars which lined the church on both sides, erected at various periods during the sixteenth and seventeenth centuries, some of them splendid specimens of carved and gilded woodwork, were all ruthlessly swept away. Fresh altars were erected in their place in Florentine black stone, rows of them all alike, solemn travesties of fourteenth-century Italian-Gothic, hideous and unsightly and utterly out of keeping with the great pictures which adorned the old altars, and were re-inserted in the modern structures. It would be tedious, however, to recount a tithe of the enormities committed; as regards the marble 'Cantoria,' the work of Baccio d'Agnolo, one of the greatest of the Florentine *quattro-cento* sculptors, and which is lauded as a famous masterpiece by Vasari, it was sold to this country for a sum amounting to not one-third of the cost of the hideous 'Gothic' stone gallery put up in its place. To crown all, the architect had the folly and stupidity, at the conclusion of the work, to publish a self-laudatory pamphlet descriptive of his labors.

"Comment on this lamentable story would be superfluous: things quite as bad have been done since; the only way to stop them is publicity. Italian newspapers would render true service if they would take the trouble to find out and denounce the innumerable acts of vandalism which are rapidly depriving their beautiful country of the evidences of its ancient glories, instead of abusing observant foreigners who call attention to the subject."

THE ST. GOTHARD TUNNEL.

The piercing of the longest tunnel in the world has been achieved in seven years and five months — a rapidity of execution quite unprecedented, for, relatively to its length, the St. Gothard has been bored in a fourth of the time occupied in the boring of the Hauenstein tunnel, and in less than half the time taken by the Mont Cenis. This great advance in the art of tunnel-driving is due to the more extended application of machinery, and above all to the efficiency of the air-compressors invented by Professor Colladen, of Geneva. The perforators, actuated by these compressors, do their work with marvellous swiftness. In two hours one machine drills 26 holes 1.20 metres deep in a face of rock some two metres square. The holes are then filled with dynamite, charged and fired, every explosion dislodging some 2.5 cubic metres of rock. The point of attack for the perforators is always the upper part of the finished tunnel of the future; the floor of the passage they clear out being afterwards blasted and wrought down by hand to the required level. The locomotives used in the tunnel are moved by compressed air, and ventilation is provided from the same source. Horses are also used for dragging the wagons, but owing to the intense heat and the closeness, the mortality among them is very great. Out of a stud of forty, ten die on an average every month. The men work night and day in shifts of eight hours each; the labor is very trying, and they are compelled to take frequent holidays. Great circumspection has had to be exercised in the admission of outsiders to the galleries, as a walk of several miles in the stifling heat and vitiated atmosphere might easily prove fatal to persons with weak hearts or a tendency to congestion of the brain, and even the healthy who venture in for the first time have often occasion to regret their temerity. The scene in the interior of the tunnel is weird in the extreme: the pitchy darkness, relieved only by the glare of a few lamps, the shrieking of locomotives, the blowing of horns, the tramp of horses, the vibration of the perforators, the explosion of mines, the continual passing of heavily-laden wagons, the groups of naked men plying pickaxe, spade, and shovel — all these things mingled together create an impression never to be forgotten.

The completion of the work, now that the two galleries are joined and a free circulation of air is established, will be comparatively easy. The tunnel is expected to be ready for traffic by the end of September; and the entire system of which it is the centre, in the summer of 1882. The great engineering triumph of which the St. Gothard Tunnel is at once the monument and the consummation, though a peaceful, has not been a bloodless one. Between sixty and seventy men have been killed by the premature explosion of mines, and other mishaps; many more have been seriously injured. — *London Times.*

SEWERAGE AT NEW ORLEANS.

[The following are the main portions of an address to the New Orleans Auxiliary Sanitary Association by Col. Geo. E. Waring, Jr.]

Looking at the main problem of sanitary improvement in New Orleans, it seems to me that when this surface cleansing shall have been secured, you must, before you cease from your labors, go deeper than the surface, and strive to secure those conditions which are recognized the world over as essential to safety.

Your difficulties are other and far greater than those of a high-lying town, built on a porous and well-drained site. Such a town has by nature most important conditions which you can secure only with the aid of art. Your city stands low down on the saturated alluvium of the Mississippi, and I am informed that your soil is water-logged to the very foundation of your houses. This condition is incompatible with even a tolerable preservation of the public health, and the great prominence of pulmonary, malarial, and diarrhœal diseases in your records of sickness and deaths sustains the accepted and proven theories on the subject. With a climate most favorable for pulmonary soundness, you have a death-rate from consumption which would appall even a New England doctor; the malarious tendencies of your climate are aggravated by the worst possible malarial condition of your soil; and domestic filth — the foster-mother of diarrhœal maladies — is here in no degree counteracted by soil conditions which elsewhere favor its harmless destruction.

Your chief problem can be very simply stated. What you need is a dry soil and a clean soil. The dejecta of human life must, so far as possible, be instantly removed — before their decomposition has begun, and the soil water which now fills your air with dampness and your ground with obstruction to its natural purifying functions, must be removed. In other words, before you can hope for the healthy condition which it is your right to demand, and which it is your duty to secure, you must have deep soil drainage and deep sewerage. I place them in the order of their importance, for soil drainage should take precedence of sewerage in your work, as much as consumption and malaria take precedence of zymotic diseases in your death-tables.

I cannot pretend, with only a few days' acquaintance with the locality, to prescribe the manner in which the improvement should be carried out. I can only suggest what general course I should advise, were the conditions to prove, on fuller examination, to be what they seem to be at a glance. The details of the scheme can be safely determined only by a very careful study of all the circumstances.

Suppose some such plan as this to be taken as a basis of arrangements of which the details should be worked out: —

At the lowest point in the general neighborhood of the Bienville draining-machine, establish two adjacent pump wells low enough to receive the outflow of subsoil drains and sewers, which should be at no point less than six feet deep. Let one of those wells receive the clean water of the subsoil drains, and the other the foul outflow of the sewers. Establish a pumping outlet from the latter to the Mississippi, and an outlet from the former into the canal which leads to the lake. Erect two pumping engines, either one of which would suffice in ordinary times to keep both wells pumped out, working alternately in both. In emergencies both pumps could be brought into requisition, and in case of accident to one the other could be made to do the full duty. Any means which would keep these wells empty would secure the same result as would the raising of the site of the city at least six feet above its present level. The wells would become effective low outlets for the entire low drainage.

The sewers should be adjusted to remove all of the foul sewage of the city, but none of its surface wash. The household waste which now makes your gutters so very foul should be withdrawn, but the clean water of your rains and of your flushing works should flow freely through them. The gutters of your cross streets are now seething with nastiness, and any plan for securing even tolerable sanitary reform must include their cleansing — not only by flushing where that is practicable, but more imperatively by keeping out of them the filth which they now receive.

The sewers being provided, their use should be compulsory, and the removal of every form of human waste quite into the Mississippi, within a few hours of its production, should be secured. Organic decomposition should be made obsolete anywhere within the city, and this implies the total abolition of all forms of vaults and cesspools and of all ingenious systems which include the retention of waste matters for a single day in the premises where they are produced.

The sewers should not be used as subsoil drains. If they are so constructed as to let soil-water in, they will let sewage water out. In connection with them, laid often in the same trench, but delivering always into the clean water well, there should be a series of permeable subsoil drains, to remove the water of saturation which now does you such vast injury.

By a proper application of the system here indicated, you will secure the dryness and the purity of the soil of the city which are so imperatively demanded.

It would be folly to attempt with the data in my possession to make even a guess as to the cost of this work, but any one who is conversant with sewerage operations must at once recognize the fact that it would be well within the means of the people to support it. Its maintenance and the interest on its cost would probably not exceed the present yearly outlay for emptying vaults alone.

It has been the custom hitherto for all sewerage work to be done by the public authorities. So long as the sewerage proper and the removal of storm-water are effected by the same system, this is necessary; but if we have to consider, as we surely ought to do here, the separate removal of the foul sewage, there is no reason why the work should not be done by private enterprise — paid by the persons served — as is the case with private water companies and gas companies. There will be no difficulty in securing capital for such an enterprise; if necessary, legislative authority can be had. The coming summer would suffice for the preliminary engineering, and between next October and June the whole city-built area of New Orleans could be completely drained and sewered.

When the time comes for it, the whole outlying area of the city can be drained by a separate system of deep open-ditch works, by the methods universal in Holland — the present canals serving for the outlets of this drainage.

The deeper drainage of these lands would have a very marked effect in increasing the salubrity of your climate, and its trifling cost would impose but a slight additional tax on land which is now of little value, and which would then become of the best agricultural character. This is a subject for future treatment, but it should be included as a possible element of the whole scheme.

IMPROVEMENT OF THE BACK-BAY, BOSTON.

To the Editor of the American Architect:

Dear Sir,— My attention is called to an objection offered in your issue of 20th inst., to the plan for the improvement of the Back Bay now before the Boston City Council, and which, if the writer's assumptions were accepted, might stir up a strong property interest against it, and defeat the pending appropriation. As I had not thought it necessary to anticipate this objection in my report on the subject, quoted by the writer, you will kindly allow me to explain my neglect to do so.

The objection is that there must be a constant rapid deposit of filthy silt in the proposed Back-Bay basin, from the water supplied to it out of Charles River; that this silt will foul the shores, and fill up the channel from which it must be removed at frequent intervals by a very costly process and with great offence to all living in the vicinity. The objection is unsound for the following reasons:

In summer all the supply required from the Charles may be let in within an hour before and after high-water, and may be all drawn from within three feet of the surface. At and near the turn of flood, the river is without perceptible current, and the water within three feet or more of the surface carries no silting matter. I have observed it frequently, when, so far as the eye could detect, it was perfectly clear.

When, under extraordinary circumstances, the water is unusually turbid, it will be unnecessary to let it into the basin. The gates may be always closed against in-flow during stormy weather if it is thought desirable. In winter they may be closed for a month at a time without harm.

But it is urged that as population increases on its banks, the river will be increasingly dirty. Both the present city engineer and his predecessor in office, and the city superintendent of sewers, are of a different opinion. The completion of works now in progress is expected to relieve the river of Boston sewage; and, looking further ahead and beyond Boston, it is likely that other expedients will in time be adopted for maintaining it in tolerable cleanliness. In no probable event is it to be anticipated that the annual deposit of silt within the basin from tidal water will be more than a mere film, or that it will be offensive.

To obtain satisfactory results upon the Back-Bay without excessive expense, is a complicated problem. I acknowledge especially a certain degree of uncertainty as to what may be accomplished under the novel conditions proposed for the low ground, and I should be grateful for advice upon this point from any of your sea-coast readers, who may have had experience of approximately similar conditions. The descriptive terms of our language applicable to land subject to occasional overflow from the sea are unfortunately limited, and for want of better I spoke of that proposed to be formed in the Back-Bay as marshy and fenny. Your contributor's second objection to the commissioners' plan is based, however, upon a more restricted use of these terms than I had supposed to be necessary. There are many sea-coast nooks of Massachusetts Bay with wooded banks into which the tide occasionally rises, and which are commonly spoken of by country people as marshy, very different in character and appealing in a very different way to the imagination from the marsh which he assumes that I have had in view.

As to his somewhat authoritative assumption of the "unloveliness" of all possible marsh detail under the circumstances, you will pardon me for repeating the familiar words of the poet: —

> "Dear marshes! Vain to him the gift of sight,
> Who can not in their various incomes share."

Respectfully yours, Frederick Law Olmsted.

THE BACK-BAY PARK.

Boston, March 27, 1880.

To the Editor of the American Architect.

Dear Sir,— There is one serious drawback to Mr. Olmsted's plan of the park of which even your intelligent correspondent, in the Architect of the 20th, does not appear to have thought. The thirty acres of marsh will furnish such clouds of mosquitoes, of the peculiarly malignant type generated in such places, as will make the surrounding neighborhood a very uncomfortable place of residence during the better part of the year, and render a row in one of the "small omnibus boats" anything but a pleasure trip. This plague of mosquitoes is one of the Back-Bay nuisances that many who have residences there, and in the otherwise delightful neighboring district toward Longwood and Brookline, have hoped would be in a great degree abated by the new park and the filling of the surrounding lands for streets and buildings. But this plan seems likely to make perpetual, if not to increase the nuisance.

Very truly yours, W.

A WATER-CLOSET CASING.

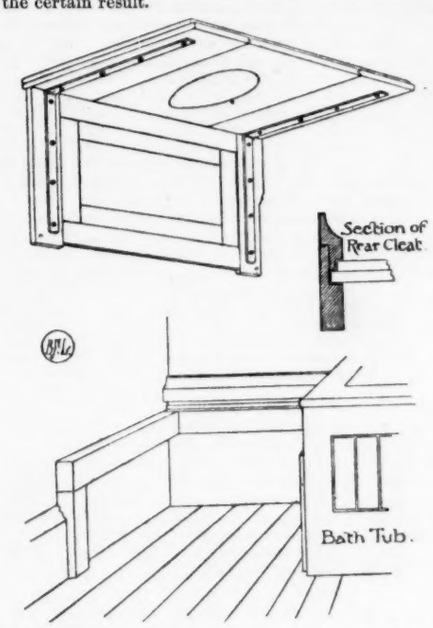
Philadelphia, March 6, 1880.

To the Editor of the American Architect:

Dear Sir, — The difficulty of reaching the apparatus within the water-closet without disfiguring the wood-work around it causes many householders to delay examination into its condition, when there are strong suspicions that repairs are much needed.

One objection to the present wood-work is, that it is composed of too many detached, or necessarily detachable, pieces; a second, that two visits from a carpenter are required to remove and replace these pieces with the least harm possible to their goodly appearance.

If the case is an urgent one, which it too often is likely to be, the work of removing the wood casing falls to the unskilled hands of the plumber, with considerable defacement of oak, walnut or mahogany, as the certain result.



I herewith send you a drawing of a seat *all in one piece*, which can be raised from its supporting cleats by simply loosening two screws at the base of the front vertical board. The horizontal and upright framed portions of the seat are held together by *two strong angular pieces of wrought-iron* screwed to the wood-work from the back; the screws not showing on the exposed face. The front panelled door, which should have hinges and a catch, you will notice is made so large that a complete examination of the interior of the closet may be made at any time. The back of the seat passes beneath the moulded portion of the rear cleat (see sectional drawing), and is thus held firmly in position. Also, the stiles of the vertical frame are lengthened a half or three-fourths of an inch, giving space below the lower rail for admittance of air. Ifthe room is covered with carpeting or oil-cloth, the seat may be removed, so that these may be placed beneath, and not against, the seat-front.

Hoping you may see fit to give publicity to the above, I remain,

Respectfully yours, B. Frank Leeds.

NOTES AND CLIPPINGS.

The Egyptian Workers in Glass. — A writer in the *University Magazine* says: On the walls of the Beni Hassan tombs, the figures of glass-blowers with blow-pipes, marvers, crucible and furnace still show as freshly as when placed there by the artists of Osirtasen I. some 3,500 years before the Christian era, and among countless other relics, such as vases, bottles, cups, and bugles, found in the valley of the Nile, a necklace bead discovered at Thebes bears the name of Queen Ramake, wife of Thothmes II., who reigned about the date of the Jewish exodus. In the sacred colleges of Thebes and Memphis the systematic pursuit of science and constant investigation of the mysteries of nature were objects of the closest attention. The colossal works of architecture and sculpture with which the country is studded could only have been executed by a people among whom the mechanical arts were highly advanced: and though the fragility of glass renders it especially liable to utter destruction, there exists ample evidence in the specimens now enshrined in our museums that its manufacture was carried out to a degree of perfection that modern science has hitherto vainly sought to rival. The glass works of Alexandria were especially renowned for their vases with blue and white grounds and festoons of colored glass, and their products were exported to Rome down to the days of Aurelian. Classic authors inform us that the Egyptians were famous in imitating gems in colored glass, and bracelets, earrings and trinkets of the purest gold set with these paste gems have been forthcoming to confirm this statement. Other specimens show that they could not only gild and engrave glass and fuse it into colored mosaics, but that they possessed the art of fusing gold in glass so as to unite, — an art until now looked upon as being as utterly lost as that of tempering copper to the hardness of the finest steel, which the Egyptians also practised. Hence glass thus instudded with granulated gold has been regarded hitherto as one of the rarest and most curious relics of antiquity.

Artesian Wells. — Messrs. Pevear & Co. have in successful operation, at their store on Boston Street, Lynn, Mass., a tubular well, two-inch pipe, with a capacity of twenty to twenty-five gallons per minute, or from 12,000 to 15,000 gallons per day. The well is thirty feet deep, the water soft and clear; temperature, 53 degrees. At Newhall & Co.'s, Myrtle Street, a similar well has been in operation seven years, producing 86,400 gallons per day. It is confidently asserted by some that Lynn's future water-supply will be obtained by similar means.

The Last Great Fire in Japan. — The first detailed account received of the destructive fire which occurred at Tokio on the 26th of December, and by which over 260 persons lost their lives, is found in the Japan *Gazette*. "The fire broke out at twelve o'clock in the central part of the city, close to Nihonbashi. It was blowing a gale at the time, and within thirty minutes of the outbreak the city was on fire in seven different places; burning shingles were flying about as thick as hail, and were carried long distances by the wind, settling on other houses and setting fire to them. The scene is said to have been terrible. Strong men were running about in a state of bewilderment with old men, old women, and children on their backs; mothers dragging along their little ones, bent only on saving their lives. All day the fire raged with the utmost fury. The whole of the buildings on the island of Ishikawa, at the mouth of the Sumida River, including the dockyard and prison, were burned. So rapidly did the flames travel that it was with difficulty the streets were cleared of people before the houses ignited; and in so many places was the fire raging that they knew not which way to run. Anxious to save *futons* and wearing apparel, the poor creatures sallied forth from their homes with bundles on their shoulders to fly they knew not whither. The streets became blocked with the surging masses; women and children were trampled under foot, and many who fell in the crowd never rose again; little children were seen looking for their parents, parents looking for their children, while the air was rent with cries of rage, anguish, and despair. Still they clung tenaciously to the few worldly possessions they had succeeded in bringing from their burning homes, thereby almost completely blocking up the narrow streets through which the masses were slowly threading their way. At length the police interfered and caused numbers to throw their bundles into the rivers, or anywhere else out of the way, so as to facilitate the escape of the people from the frightful death which threatened them, and which was gaining on them fast. The native papers say that 68 streets, containing 13,464 houses, were burned, rendering over 40,000 persons homeless. A relief fund was started, towards which their Majesties the Emperor and Empress subscribed 2,000 yen each. Long before the fire reached the foreign settlement of Tsukiji, the residents felt anxious and began to pack up. But this appears to have been almost a needless task; for when the fire did reach them there was no one to be found to convey their goods and chattels away. Everything had been got ready for flight, but had to be left in the house, as no coolies were to be found willing to undertake the task of removing even the boxes of clothing.

Destruction of the Pyramids. — A correspondent of the *Egyptian Gazette* writes: "I have just returned from a most interesting series of excursions to the Pyramids. They were made from a dahabiah, and included visits to the great pyramids of Gheezeh, at Sakkarah, to Dashoor, and to Maydoon. I regret to say that in several places we observed the hand of the destroyer at work. Not only was this the case at a remote place like Dashoor, but, so to speak, under M. Mariette's very nose. Some four or five large stones, immediately under the entrance, have been removed from the Great Pyramid; and, incredible as it may seem, I was informed, on what seemed to me trustworthy authority, that this wanton act had been committed by order of the Khedive, the stone being required for the buildings of the new mosque which so greatly overshadows the beautiful mosque of Sultan Hassan. Few people would be sorry to see the hideous new building pulled down, but that the pyramid should be further destroyed to build it is one of the most singular examples of the 'revenge of time' I ever heard. It is well known that, beautiful as is the mosque of Sultan Hassan, we have it at the sacrifice of the Great Pyramid, which was pulled down to build it. That the Great Pyramid should, after the lapse of more than five centuries, be once more put under contribution, and that for the purpose of building a mosque which already, when only half finished, hides and dwarfs its older neighbor in a way almost destructive of the pleasure of looking at it, is, indeed, a noteworthy example of the vicissitudes of fate and the irony of history. When the Government itself sets an example of this kind, we are not surprised that it is promptly followed by meaner folk. At Dashoor, a place seldom visited by the tourists, and where consequently the marauder thought himself safe, three camels were during our stay being loaded with the square white limestones of the casing of the larger pyramid. Few of these stones remain. The upper part of the pyramid has long been stripped. But, in spite of the remonstrances of our party, and the threat, promptly carried out, of a complaint to the Government by letter, these few relics were being ruthlessly pulled away, every removal of a stone insuring the destruction of two or three of its neighbors. The adjoining pyramid, which is so conspicuous from Helouan, and so remarkable from being built in two different slopes, had till lately its casing nearly complete. This casing is of the greatest importance, for the alteration of the angle will almost disappear when it has been removed; and I regret to say, though I did not actually see the work in progress, there can be no doubt that here also the destroyer has been recently busy. Stones, loosened from the top of the building, have been rolled down the side, tearing and smashing the smooth surface. Three or four large stones have also been removed from below the entrance, which is now inaccessible without a ladder. It is in little-known places like Dashoor that such destruction as I describe is most easy to perpetrate and most difficult to prevent. But there cannot be much difficulty in watching the Great Pyramid of Gheezeh."

The New Perugino at London. — The fine example of Perugino purchased several months ago in Italy for $16,000, and detained there some time for want of a government license to leave the country, has reached London, and is now permanently lodged in the National Gallery. It is in an excellent state of preservation, and is believed to have been painted in the first decade of the sixteenth century. It comprises nearly life-size figures of the Virgin and Child, standing between St. Francis and St. Jerome, with two angels above flying with a crown, and is looked upon as a magnificent specimen of Umbrian art. In size it is about six feet square. For many years it belonged to the private gallery of a family in Perugia, and very little has been known of it.

Masonic Emblems in Egypt. — The Cairo correspondent of the *Herald* communicates by telegraph a fact which will revive in a still higher degree the interest excited among students of Egyptian mysteries two or three months ago by Lieutenant Commander Gorringe's discovery of Masonic emblems underneath the pedestal of the obelisk at Alexandria, destined for transportation to New York. Interesting and important as were the discoveries of Commander Gorringe and Dr. Fanton, they were not exhaustive; and the practised eye of another distinguished Masonic dignitary has just detected an additional series of emblems of a value and significance far greater and more unquestionable than those previously reported. Mr. S. A. Zola, Grand Commander and President of the Scotch Ancient and Accepted Masonic Rite for Egypt, and Egyptian ex-Grand Master of Symbolic Masonry, has just examined the foundations of the Alexandrian obelisk, and has discovered another series of stones which not only bear all the existing Masonic emblems, but furnish the key which has hitherto been lacking to explain the entire dimensions and proportions of what proves to have been an elaborate Masonic edifice, including the obelisk itself, the pedestal, the staircase, and the hidden foundations. Mr. Zola professes to be able by this discovery to throw a vivid light upon the ancient Egyptian origin of Masonic symbolism, hitherto so energetically disputed by many *savants;* and it is expected that the publication of his detailed drawings will finally settle more than one of the problems which lie at the very foundation not only of Masonry, but of the obscure and complicated religious system of the early Egyptians.

Mr. Ruskin's Sheffield Museum. — Mr. Ruskin's museum at Sheffield has become so crowded with art treasures, and the number of students has so increased, that a public subscription has been started to defray the cost of a new wing to the building. Mr. Ruskin has written a letter of thanks to the working men who opened the subscription list.

Art at Washington. — An art inconoclast, visiting Washington recently, proposes a government commission to condemn the statuary of that city and utilize it for art purposes, as old cannon are similarly used by the Government. Property owners are beginning to complain that the horses in bronze, called, for respectability's sake, equestrian statues, are an injury to the value of real estate, for houses that face these effigies are not as rentable as formerly. Even the average Democratic politician thinks that unless a good marble statue can be set up in the Capitol, the marble had better be used for building purposes, as there is quite enough now "running to waste" that ought to be utilized. What little there would be left of art, after a robust and faithful exercise of the functions of such a commission, could serve as a model and warning for the future.—*Boston Transcript.*

Buying Soldiers with Porcelain. — A paper has lately been discovered in the state archives of Saxony which contains some curious particulars concerning the corps long known in the Prussian service as the "porcelain regiment," and from which the present 1st Dragoons and the 3d, 4th, and 5th Regiments of Cuirassiers claim to have sprung. According to tradition, the regiment was bought by King Frederick of Prussia from the King of Poland for some costly porcelain vases; and the documents lately found in the Saxon archives show that substantially the tradition was correct. King Frederick William, it appears, possessed a number of very beautiful and precious specimens of porcelain, and an attempt was made by King August II., of Poland, who was also Elector of Saxony, to purchase some of these through an agent in Berlin. King Frederick William declined to sell any of his porcelain; but King August, knowing his royal brother's passion for soldiers, offered him 600 dragoons, without horses, arms, equipment, or officers, in exchange for certain pieces. The negotiations were carried on by Privy Councillor von Marschall on behalf of Prussia, and Lieutenant-General von Schmettau for King August, and ended in the transfer of the 600 dragoons to the King of Prussia, and of a number of the vases in the first place to Dresden, where some were added to the royal collection of china, and others were placed in the Johann Museum, where they are still distinguished as the "dragoon vases." The men were valued at twenty thalers each, and the whole regiment consequently at 12,000 thalers; while the porcelain given in exchange for them was considered to be worth considerably more, though it had been purchased by the deceased King Frederick I. for a smaller sum.

The Peabody Buildings in London. — The last annual report of the Peabody Fund in London shows that the original bequests, which aggregated $2,500,000, have been increased by rents and interest to more than $3,500,000, although by recent expenditures this amount has been cut down to about $2,750,000. For the erection of more "Peabody buildings" for homes for the poor, the trustees of the Fund have arranged for the purchase of an area of nine acres, at a cost of $500,000. The buildings which are to be erected will cost about $1,800,000; and as the trustees are not allowed to encroach upon the principal, they have obtained a loan of $1,500,000, at three and a half per cent. This loan will be wiped out in about twenty years by the income from the original fund, and then the charity will be self-sustaining. The present buildings accommodate nearly 10,000 people, and the buildings to be erected will hold as many more. The sanitary provisions of the buildings are excellent, as is attested by the fact that the death-rate in them is less than in the West End, the aristocratic section of London. The report shows that the magnificent gifts of George Peabody are being administered with singular prudence and sagacity.

A New Castellani Collection. — It is said that Alessandro Castellani has been very busy of late in out-of-the-way bric-á-brac shops in various Italian towns. He is said to have got together another collection nearly as good as the one offered to the Metropolitan Museum in New York. He asked for his first collection $150,000, and on selling it in Europe realized $80,000.

Sandy Hook Lighthouse. — The Sandy Hook lighthouse, which is 50 x 50 feet, and 60 feet high, is to be removed 700 feet from its present location, up a grade of 35 feet in the 700.

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.*]

BUILDING PATENTS.

[*Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.*]

224,625. Steam-Stove.—John Ashcroft, Brooklyn, N. Y. The object is to construct a stove for culinary purposes, operated by steam only, which shall be capable of accomplishing all the duties required of a kitchen-range, and so that the difficulties attendant upon the use of steam apparatus in the household may be mainly avoided. A represents the outer wall of

Fig. 1.

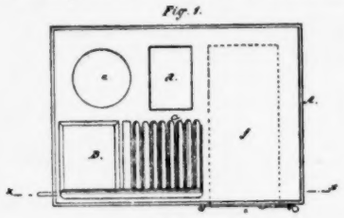
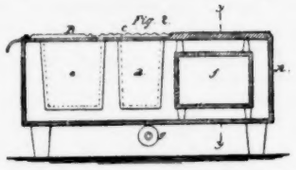
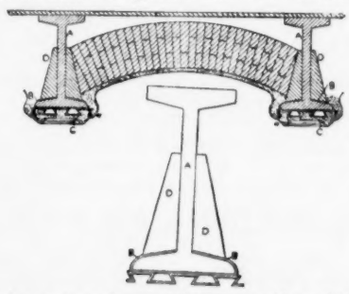


Fig. 2.



the stove, *d* and *e* are depressions in the top of A, which may be multiplied to any number, and may be of any shape, size, or depth, for any kind of cooking. B and C are sections of the top of the wall, A, or "stove," as it may be called, and are to be used for frying and broiling, and are inclined and provided with depressions to collect drippings from meats. C is corrugated, to be used as a broiler more particularly. *f* is an oven opening on the side of and inclosed in the wall A, and supported by lugs. This oven is closed by a door which may be either single or double. The steam-chamber is the space between the walls, A, and cooking-chambers *d*, *e*, and *f*, and is provided with suitable steam connections and traps for the introduction and escape of steam and water. This invention is intended especially for use in the household, where neither the knowledge nor skill required in the use of steam receptacles with joints can be found. Therefore the new apparatus is cast entire, the chamber, cooking receptacles, and broiler all in one piece, thus avoiding all joints, except where the necessary steam connections are made. In casting a dry sand core is made, and the casting is made, leaving a sufficient number of holes for the removal of the core, which holes are afterwards plugged up. The casting is of sufficient strength to resist any pressure required, and will be provided with steam-traps and safety-valves.

224,173. Fire-Proof Building.—Joseph Gilbert, Philadelphia, Penn. A represents flanged beams of metal or wood. B represents sheaths of metal which



incase the lower flanges of the beams and have riveted to them the metal lathing C, by which the plastering *a* beneath the beams is supported; and as the sheaths are covered above by the skew-backs D and at sides and bottom by the plastering *a*, it is evident that the security of the beams and the fire-proof nature of the building are increased. The skew-backs D are of terra-cotta. The lathing C is bent into dove-tail grooves, which offer an effective key to the plaster and securely sustain it.

225,680. Screen-Door.—Joseph Barkheimer, Des Moines, Iowa.

225,682. Combined Drill and Bit-Stock.—Seymour A. Bostwick, Chelsea, Mass.

225,684. Eaves-Trough Hanger.—August H. Braunlich, Ida, N. Y.

225,704. Safety-Device for Windows.—R. D. Henrense, New York, N. Y.

225,707. Latch.—Thomas S. Livermore, Leicester, Mass.

225,720. Expanding-Drill.—Levi F. Pond, Ludlow, Mass.

225,725. Curtain-Fixtures.—Francis B. Scott, Buffalo, N. Y.

225,728. Latch.—Charles H. Smith, New Britain, Conn.

225,732. Crayon-Sharpener.—John Suter, New York, N. Y.

225,733. Sheet-Metal Roof.—Raymond G. Sykes, Niles, O.

225,761. Ratchet-Regulator for Transoms, etc. John T. Donohue, New York, N. Y.

225,798. Bit-Brace.—Nelson Spofford, Haverhill, Mass.

225,776. Valve for Sewer-Traps, etc.—William Wilson, Oakland, Cal.

225,795. Saw.—Amos A. Burr, Rockdale, N. Y.

225,808. Lock.—Alonzo E. Deitz, Brooklyn, N. Y.

225,822. Artificial Wood.—William Grossmann, Chesterfield County, Va.

225,831. Step-Ladder.—James Hill, Wilkesbarre, Penn.

225,837. Illuminating Roofing-Plate.—Jacob Jacobs, New York, N. Y.

225,842. Disinfecting-Device for Urinals, etc. Edward J. Mallett, Jr., New York, N. Y.

225,847. Door.—John F. Martin, Chicago, Ill.

225,850. Sewage Transportation Tank.—Reuben A. McCauley, Baltimore, Md.

225,851. Combined Steam and Hydraulic Elevator.—James R. McPherson, Beloit, Wis.

225,857. Curtain-Roller.—Walter B. Noyes, Boston, Mass.

225,860. Automatic Paper-Hanger.—Robert R. Pattison, Terre Haute, Ind.

225,868. Tool-Handle.—Jacob H. Richardson and John C. Calhoun, Oakley, La.

225,877. Window-Cornice.—James R. Shackleton, Brooklyn, N. Y.

225,902. Drill-Chuck.—Richard E. Wilcox, Hartford, Conn.

225,907. Register-Border.—Albert H. Tingley, Providence, R. I.

SUMMARY OF THE WEEK.

Baltimore.

Building Permits.—The following building permits have been issued since the last report:—

Mrs. Ruth Taylor, three-st'y brick building, 62 Camden St.

D. M. Reese & Sons, two-st'y brick building, Fort Ave., between Burraugh and Ludlow Sts.

Hanover Street M. E. Church, additional story to church, cor. Hanover and Hamburg Sts., and three-st'y brick parsonage on Hamburg St.

S. L. Rhodes, two-st'y brick building, No. 1 South Charles St.

Adam Laner, two-st'y brick building, Herbert St., between Raison and Marriott Sts.

Charles Masson, 16 two-st'y brick buildings, on Eagre St., between Woef and Washington Sts.

Henry Laudensack, a three-st'y brick building on Baltimore St., between High and Front Sts.

Corn and Flour Exchange.—At a meeting of the incorporators of the new Corn and Flour Exchange Building Company, the announcement was made that the full amount of the capital stock, $200,000, had been subscribed, and that everything was ready to complete the purchase of the site on Second Street.

Warehouse.—The drawings for the new five-story warehouse for the Trustees of Johns Hopkins's Estate, which is to be built on Sharp Street, between German and Lombard Streets, are nearly completed. This building will measure 45 by 75 feet. The fronts will be of brick, with stone and terra-cotta finish. Cost, $60,000. Messrs. Dixon & Carson, are the architects.

Boston.

Building Permits.—Since our last report the building permits granted are as follows:—

Brick.—246 *Commonwealth Ave.*, 1 dwell., 26′ x 57′, three stories; Vinal & Dodge, builders; G. A. Avery, owner and architect.

262 *Commonwealth Ave.*, 1 dwell, 24′ x 60′; S. M. Shapleigh, owner and builder.

Second St., cor. P. & E., for South Boston Horse R. R. Co., 1 stable, 152′ x 155′, two stories.

Wood.—*Emerson St.*, Ward 14, for Henry Southers, 4 dwells. 32′ x 35′; W. T. Eaton, builder.

Euclid St., Ward 24, for J. M. Pike, 1 dwell., 22′ x 28′; E. F. Brown, builder.

Dorchester Ave., cor Victoria St., 4 dwells., for D. H. & E. A. McKay, 22′ x 30′.

Devon St., Ward 25, for B. & A. R. R., 1 stable, 40′ x 100′; A. H. Glover, builder.

Taylor St., Ward 24, for Milton Ice Co., 1 ice-house, 30′ x 55′; J. A. Turner, builder.

Main St., cor. Winthrop, Ward 5, for H. H. Chandler, 1 dwell. 25′ x 69′, four stories; E. W. Archer, builder.

Brick Permits for March, 35.

Wood Permits for March, 65.

Repairs and alterations active.

The work is far ahead of the same period of the last three years.

Church.—On Columbus Ave., near Berkeley, is to be built the "People's Church," adjoining the chapel of the same society. The materials for the exterior will be Roxbury stone and buff freestone. The auditorium, with the connecting chapel, will accommodate about 3,000. The building measures 100 by 120 feet. The cost of the building is to be about $50,000. Mr. J. H. Besarick, who won in the recent competition, is the architect.

Brooklyn.

Building Permits.—*Clinton St.*, 1 one-st'y brick store, 25′ x 70′; owner, George Cunniff, 13 Clinton St.; architect, Thos. F. Houghton; builders, Philip Sullivan and Myron C. Rush.

Freeman St., cor. West St., 1 two-st'y brick machine shop, 100′ x 30′; owner, New York Dye Wood Extract & Chemical Co., 161 Front St., New York; masons, Barker & Berton.

Manhattan Ave., 1 three-st'y brick store and tenement, 25′ x 52′; cost, $5,500; owner, C. H. Lieber, 476 Manhattan Ave.; architect, James Mulhaul; builders, Jas. Rooney and James Doig, Jr.

Clason Ave., 1 three-st'y frame factory, 46′ x 42′; cost, $1,000; owner, A. Dugan, 999 Myrtle Ave.; architect, P. Concannon; builder, P. Sheridan.

Vernon Ave., No. 77, 1 two-st'y brown-stone dwell., 20′ x 42′; cost, $4,000; owner, Patrick Sheridan, 775 Myrtle Ave.; builders, Long & Barnes.

Tompkins Ave., No. 30½, 1 three-st'y frame tenement, 20′ x 50′; cost, $3,400; owner, Chas. C. Wissel, 26 Tompkins Ave.; architect, J. Platte; builders, J. Fuchs and George Loefler.

Pacific St., 3 three-st'y brown-stone dwells., 19′ x 43′; owner, William Zeigler, 248 Quincy St.; builder, James A. Thompson.

Atlantic Ave., 1 two-st'y brick stable, 35′ x 40′; owner, G. L. Weed; architect, John Mumford; builder, Frederick Ashfield.

Joralemon St., No. 103, 1 four-st'y brown-stone tenement, 25′ x 60′; owner, Geo. W. Brown, 728 Fulton St.; architect, C. B. Sheldon; builders, Levi Brown and C. E. Cozzens.

Fulton St., 8 four-st'y brown-stone tenements, 20′ x 65′; owner, Geo. W. Brown, 728 Fulton St.; architect, C. B. Sheldon; builders, Levi Brown and C. E. Cozzens.

Herkimer St., 5 two-st'y frame dwells., 16′ x 36′; cost, each $1,000; owner and builder, William C. Spear, 410 Seventeenth St.; architect, N. Whipple.

Sixth Ave., cor. Lincoln Place, brick church, 87′ x 100; cost $25,565; owners, Trustees Sixth Avenue Baptist Church; architect, L. B. Valk; builders, E. D. & A. Harrison.

Chicago.

Building Permits.—*Union St., No.* 161, two-st'y dwell., for C. Anderson; cost, $2,500.

Clark and Laselle, near Eugene, 13 two-st'y stone-front dwells., for O. O. Ostrom; cost, $65,000.

May, cor. Huron, church for Gethsemane Church; cost, $15,000.

Loomis, near Zion Place, two-st'y dwell., for A. Barton; cost, $3,500.

Emma St., No. 63, two-st'y store and hall, for E. Smrz; cost $6,000.

Lake Ave., near Thirtieth St., 8 two-st'y dwells., for G. R. Clarke; cost, $30,000.

Michigan Ave., near Twenty-ninth St., two-st'y dwell., for Mr. Gillette; cost, $18,000.

Market St., No. 210, repairs of Empire Warehouse; cost, $12,000.

West Lake St., No. 664, two-st'y store and dwell. for H. A. Goodrich; cost, $3,000.

Lincoln St., No. 207, three-st'y dwell. for H. Goaler; cost, $7,000.

Ohio St., No. 35, one-st'y box-factory, for David Goodwillie; cost, $12,500.

Michigan St., Nos. 104 to 110, five-st'y warehouse, for the Newburry estate; cost, $30,000.

Blue Island Ave., No. 393, three-st'y store and dwell., for G. A. Predeiva; cost, $8,000.

City-Hall.—Work on the City-Hall has been resumed.

Cincinnatti.

Building Permits—The following permits have been issued by the Board of Public Works:—

H. Kohlbrand, alter and repair two-st'y brick, Nos. 462 and 464 Vine St.; cost, $1,200.

John H. Shawe, four-st'y brick, No. 355 Main St.; cost, $3,500.

W. H. Fitzgerald, repair two-st'y brick, northwest cor. Nineth and Vine Streets; cost, $2,000.

Conrad Kuhl, three-st'y brick, No. 747 Vine St.; cost, $4,000.

Frank Reichert, two-st'y brick, No. 800 Vine St.; cost, $3,000.

Ohio Safe and Lock Company, four-st'y brick, southwest corner Elm and Commerce Sts.; cost, $6,000.

John Krohme, three-and-a-half-st'y brick, west side of Linn, between Court and Clark Sts.; cost, $4,000.

Jas. Griffith & Sons, three-st'y brick, west side of Central Ave., between Fifth and Sixth Sts.; cost, $6,000.

Indianapolis.

City Hall.—The city-hall project is defeated for the present.

College.—Mr. D. A. Bohlen is the architect of the new medical college.

Houses.—Mr. J. H. Stem, architect, is building, at a cost of $8,000, a house for L. Sohl.

Mr. C. A. Wallingford, architect, is building houses for J. W. Hadley and E. H. Mayo, which will cost $5,000 and $3,000 respectively; also one for W. T. Fenton, which will cost $3,000.

Library.—Mr. C. A. Wallingford is the architect of the new public library which is to cost $14,000.

Opera House.—Mr. W. H. English is to build on the Governor's Circle a fine opera-house which will seat 3,000 persons. The architect is not yet appointed.

State House.—Mr. A. Shearer has been appointed by the state-house commissioners to carry out Mr. May's design.

New York.

Building Permits.—*Spring St.*, cor. Sullivan, for J. Mohnmann, Mr. José, architect, a five-st'y brick tenement, 25′ x 67′: cost, $18,000.

One Hundred and Eighteenth St., for Mr. J. H. Hoffman, Chas. Baxter, architect, a four st'y brown-stone flat, 20′ x 72′; cost, $12,000.

First Ave., cor. of Eighty-seventh St., for Mr. H. & R. Johnson, A B. Ogden, architect, Jno. Cook, builder, 4 brick tenements, 122′ x 56′; cost, $30,000.

Eighty-seventh St., for Mr. H. & R. Johnson, A. B. Ogden, architect, Jno. Clark, builder, a four-st'y brick tenement, 27′ x 64′; cost, $9,000.

East Twenty-eighth St., Nos. 11 and 13, for the Rev. T. J. Dacy, L. J. O'Connor, architict, Wm. B. Pettit, builder, a church, Newark stone, 50′ x 98′9″; cost, $38,000.

Kingsbridge Road, 500 feet west of Croton Aqueduct, for Mrs. C. L. Anthony, Mr. Jas. Stroud, architect, a frame dwell., 61′ x 54′; cost, $2,000; Messrs. Smith & Crane, contractors.

Alterations. — *Sixth Ave., No.* 347, a three-st'y brick extension, 20′ x 23′, new store front in first story; cost, $2,500; owner, C. Halbe; architects, Thom & Wilson; builder, Jacob Vix.

First Ave., No. 838, new store front in first story; cost, $1,500; owner, Frederick Butterfield; architect, Charles W. Romeyn; carpenter, George Riper.

William St., Nos. 123 *and* 125, a sixth story to be added; cost, $2,500; owner, Mrs. M. J. Pomeroy; mason, J. Allens; carpenters, R. Lambard & Co.

Forty-third St., W., No. 131, a brick school-house and dwell.; a fourth story to be built; cost, $1,300; owner, Joseph Blumenthal; builder, Lewis H. Williams.

Thirty-ninth St., E., No. 110, a two-st'y brick extension, 6′ x 13′, on rear; cost, $1,000; owner, E. L. Corning; mason, John M. Dodd, Jr.

Chambers St., Nos. 167 *and* 169, one-st'y brick extensions, 17′ x 32′, and 25′ x 32′, on rear; new store fronts in first story, and internal alterations; cost, each, $7,500; owner, Robert L. Stuart; carpenters, Havilah M. Smith & Son; mason, Richard Deeves; iron work, Althouse & Co.

Second Ave., cor. Sixth St., extension on rear, 10′3″ x 17′6″; cost, $2,000; owner, George Wilts.

West Broadway, No. 141, two-st'y part to be raised to four stories, and interior alterations; cost, $3,000; owner, Kinney Estate; architect, J. P. Lalley; builders, Giblin & Lyons.

West, cor. of Albany St., a store is to be remodelled, and made into a tenement-house, at a cost of about $3,000. Mr. Henry R. Searle is the achitect.

East Fiftieth St., No. 136, the building of Hook and Ladder Co. No. 2, is to be altered and repaired.

The Ridgewood house is to be altered and repaired under the direction of Mr. Henry R. Searle, architect, of New York.

Factory.—The site of the building lately destroyed by fire on Twenty-ninth Street, corner of Seventh Avenue, is being cleared and a factory is to be built for occupation by the Domestic Sewing Machine Company.

Hospital.—Mr. H. M. Congdon has drawn the plans for an addition to the St. Mary's Free Hospital for Children, No. 407 Thirty-fourth Street. It will be of brick, with stone finish, and will cost about $40,000. Messrs. Jeans & Taylor are the contractors.

Houses.—Estimates are now being received for the house for Mr. Robert Goelet, on the corner of Forty-Eighth street and Fifth Avenue. It will be very elaborate in construction and finish, the front of brownstone, and will cost about $225,000. The size is 100 by 50 feet. Mr. E. H. Kendall is the architect.

Mr. Ogden Goelet is to have a fine residence built on the corner of Forty-ninth street and Fihft-avenue.

Ice-House. — An ice-house, 100′ x 100′, is to be built at the foot of Sixtieth St., by Mr. Eastman.

Model Tenements.—A block of model tenements is to be built on Twenty-third Street.

Warehouse. — Mr. S. D. Hatch has drawn plans for a large warehouse to be built on Hudson street.

Philadelphia.

Factories. — *Sargent St.*, cor. Emerald, 1 one-st'y picker house, 20′ x 36′, for James Meadowcroft & Sons.

North Twentieth St., Nos. 313 and 315, addition to mill of Jones, Evanson & Sons, 44′ x 48′.

North Fifth St., No. 1915, 1 two-st'y mill, 20′ x 46′; Charles Bossert, contractor; cost, $2,400.

Conestoga St., cor. Torr Ave., one-st'y factory, 40′ x 105′; P. H. Somerset, contractor.

Hotel. — 919 *Wood St.*, 1 four-st'y hotel, 32′ x 49′; contractor, H. M. Martin.

Houses. — *George's Hill*, (Phila.), 1 three-st'y brick dwell. 30′ x 60′; Henry Rife, owner; Wilson Bros., & Co., architects.

Park St., north of Norris, 8 three-st'y dwells., 18′ x 60′; contractor, D. A. Cleaver; cost, $16,000.

Wharton, east of Nineteenth, 1 two-st'y dwell., 15′ x 44′; Thomas Marshall, owner and builder.

North Eleventh St., No. 1742, 1 three-st'y house, 26′ x 33′; owners and builders, L. Standacher & Son.

Cor. Twenty-first and Nichols Sts., 1 one-st'y storehouse, 37′ x 42′; contractor, W. J. Morse.

Hutton, cor. Forty-first, 1 three-st'y dwell., 32′ x 42′; contractor, J. F. Meyer.

Fourth St., cor. Huntington, 2 dwells. and 1 store, three stories, 20′ x 51′; owner and builder, Edward Donnelly.

Twenty-first St., cor. of Spruce, three-st'y dwell., 20′ x 70′; B. Ketcham & Co., contractors.

Palethorp St., North of Cumberland, 1 two-st'y dwell., 18′ x 28′; owner and builder.

Library. — *Twentieth St.*, south of Walnut St., a one-st'y library building, 20′ x 24′; J. H. Emickson, contractor.

Stores. — *Market St., No.* 814, 1 five-st'y iron and brick store, 40′ x 300′; owners, Young, Smith, Field & Co.; contract not awarded.

Thirteenth St., cor. Diamond, 1 three-st'y store, 20′ x 56′; contractor, William Bartholomew.

North Thirty-eighth St., No. 44, 1 three-st'y building, 20′ x 40′; E. W. Woolman, owner and builder.

St. Louis.

Building Permits.—Forty-six permits have been issued since our last repott, seven of which are for frame structures of slight impotrance. Of the rest, those worth $2,500 and over are as follows:—

Owners.	Use.	Stories.	Rooms.	Cost.
John G. Weber,	Dwelling.	3	8	$ 3,500
Empire Building Co.	Theatre.	1	3	3,500
C. S. Greeley.	Warehouse.	4	4	40,000
J. Bastian and	Store and			
E. Langemann.	Dwelling.	2	10	5,000
Judge Ludley.	Dwelling.	3	10	6,000
C. Minges.	Dwelling.	2	16	5,000
A. S. Mermod.	Dwelling.	3	15	15,000
Lafayette Brew'g Co.	Brewery.	5	5	16,000
Anheuser Brew'g Co.	Malt House.	4	4	5,000
Rev. Wm. Fortens,	Church,	2	2	3,000

General Notes.

Athol, Mass. — The building fund of the Second Unitarian Society now amounts to $5,000.

Atlanta, Ga. — Messrs. Parkins & Bruce, architects, have the following work in hand: —

Fulton County Court-House; cost, $60,000.

House for Dr. A. W. Calhoun; cost, $8,000.

Bennington Station, Md. — Mr. C. E. Cassell, architect, of Baltimore, is preparing drawings for the new mission church, which is to measure 25 by 50 feet.

Birmingham, Conn.—Mr. C. B. Booth is about to build a fine frame house on the corner of Elizabeth and Cottage Streets. The plans are in the hands of Mr. C. T. Beardsley, Jr., architect.

Brewsters, N. Y. — Mr. Geo. Hines has plans ready for a frame house. Foster Bros., architects, of Danbury, Conn.

Brockton, Mass. — It is rumored that a new hotel is to be built here.

Cambridge, Mass.—Mr. J. H. Besarick of Boston is the architect of a family hotel to be built corner of Brattle and Spark street. It will form part of a scheme of five similar buildings enclosing a park. The hotel will be of brick, four stories high and will measure 46 by 58 feet. Mr. J. Brewster of Brewster, Bassett & Co. is the owner.

Clinton, Mass. — Mr. G. W. Goss is to build a first-class house this season, from plans by Messrs. Barker & Nourse, of Worcester. Mr. H. G. Morse, of Fitchburg, is the contractor.

Cooperstown, N. Y. — The corner-stone of the new court-house will be laid by the Freemasons, May 1.

Danbury, Conn. — Mr. Delas Gregory is to build a frame house in Middle River district. Cost, $3,000. Foster Bros., architects.

Messrs. Beckerly & Co. are building three-story frame hat-factories, — one shop 140 by 30, one shop 90 by 30, one shop 60 by 30, one shop 90 by 26, one shop 44 by 50, and one shop 20 by 50. Cost, $20,000. Plans by Foster Bros.

Messrs. Gargen & Co. have just broken ground for a new hat shop here, 26 by 130, three stories; one shop, 40 by 60, two stories; one shop, 20 by 50, two stories; one shop, 20 by 60. W. W. Sunderland, architect.

Messrs. Foster Bros. have plans in hand for Mr. Brady, for a $2,000 frame house.

Messrs. Beckerly & Co. are about to build a two-story frame house on East Liberty Street. Plans by Foster Bros.

Mr. A. M. White, of 63 Broadway, New York, and and D. P. Nichols, of Danbury, are building a frame block, 51 by 60 feet, two stories, for stores and offices. Plans by W. W. Sunderland.

Mr. David McLean is building a frame house, costing about $4,500, from plans by W. W. Sunderland.

Dayton, O. — The foundation of the Presbyterian church is completed, and the brickwork is progressing rapidly.

Detroit, Mich. — The estimated cost of the hall to be built for the Saengerfest is $60,000. The hall will be ready for occupancy by the 15th of August next.

The congregation of B'nai Jacob has decided to build a synagogue, and has appointed a committee to procure a suitable site.

Easton, Md. — Mr. Chas. D. Carson, architect, of Baltimore, is preparing drawings for a new three-story Masonic Hall, which is to be 40 by 40 feet, and will cost $8,000.

Gloversville, N. Y. — An opera-house will be built here.

Great Barrington, Mass. — Mr. J. L. Oberly, of New York, is commencing a new house a few miles out. Palliser, Palliser, & Co., architects, Bridgeport, Conn.

Holyoke, Mass. — The First Baptist Society has raised $6,000, for building a new church.

Indianapolis, Ind. — The managers of the Orphans' Asylum have decided to build their new home this year, within the city limits.

Kent Island, Md. — Christ Church is being rebuilt at a cost of about $3,000, under the charge of Mr. C. E. Cassell, architect, of Baltimore.

Labanon, O. — Prof. Holbrook will build a three-story boarding hall, on the corner East and Warren Streets, for the Normal School.

Lake George, N. Y.—Mr. H. R. Searle of New York is drawing plans for three cottages, to be built here teis season.

Leamington, Can. — Work on the new town-hall will be begun at once.

Litchfield, Conn. — Miss Hattie Woodruff is building a frame house on North Street, three stories high, 40 by 60 feet, costing $7,000.

Mr P. H. Cummings is building a frame house on on West Street, costing $3,000. Robert W. Hill, of Waterbury, architect.

Louisville, Ky.—S. Dinkelspiel & Son's three-story brick and stone store on Brook street; cost $5,000.

G. S. Spratt alters a three-story brick store and dwelling on the corner of Third and Walnut; cost, $4,600.

Lowell, Mass. — Mr. Wm. H. Anderson is building a frame house and stable, Queen Anne style, in Belleview district, from plans by Robert W. Hill, of Waterbury, Conn.

Meriden, Conn. — Mr. W. W. Lyman, has just commenced to build a frame house, — Queen Anne style. Cost, $18,000. henry C. Morehouse, of New Haven, Conn., contractor.

Mr. Wilbur F. Davis, city attorney, is building a frame house on West Main Street. Cost, $10,000.

Mr. Geo. E. Savage has a frame residence nearly completed, costing $5,000. Brown & Stilson, of New Haven, Conn., architects for each of the above.

The Catholic society, Rev. Thos. Walsh, pastor, is building a convent school, of brick and brown-stone finish. Cost, $12,000. Brown & Stilson, architects, of New Haven, Conn.

Milford, Mass. — A stock company, with a capital of $300,000, is to build an opera-house here.

Montgomery City, Md. — Christ Church, which is building under the charge of Mr. C. E. Cassell, architect, of Baltimore, will cost about $6,000.

Montrose, Pa. — A. T. Cope, of Philadelphia, is building a quaint country house. Palliser, Palliser & Co., architects, Bridgeport Conn.

Nashua, N. H. — Messrs. Dow & Wheeler, of Concord, N. H., are the architects of the station for the Concord Railroad which is to be built here this spring. It will be of brick and will measure 40 by 63 feet.

Naugatuck, Conn. — Messrs. Tuttle & Whittemore are building a foundry for malleable iron, of brick, 250 by 40 feet.

M. B. B. Tuttle is building a first-class house of pressed brick and Portland brown-stone finish, 60 by 84 feet, finished in hard woods.

Mr. Willard Hopkins is building a frame residence and stable on Hillside Avenue, costing $8,000. — Mr. Jas. O. May is also building a frame house on Hillside Avenue, costing $3,000.

Mr. Robert Hotchkiss is building a two-story frame cottage on Meadow Street, costing $2,500. Robert W. Hill, of Waterbury, architect.

New Britain, Conn. — A brick school-house is being built, with Portland brown-stone finish, three stories, 93 by 51 feet, costing $10,000.

Mr. Henry Foulds is building a brick block, with Portland brown-stone finish, on Arch street, three stories, 30 by 60 feet, costing $6,000.

Messrs. Russell & Irwin are about building a block of brick, with Portland brown-stone finish, three stories, 83 by 80 feet. Robert W. Hills, of Waterbury, architect.

New Haven, Conn. — A new block of dwellings is to be built on Orange Street, by Dr. Henry Bronson. They will have pressed brick fronts and cost about $15,000. They will be three stories high. Brown & Clark, carpenters. E. H. Sperry, mason.

Mrs. Smith is building a house on Trumbull Street and Whitney Avenue, of brick and wood. Cost, $15,000. Brown & Stilson, architects.

Prof. A. C. Twining is building a frame house on Prospect Street, — Queen Anne style, — costing about $15,000. Brown & Stilson, architects.

Messrs. Brown & Stilson have also furnished plans for Mr. Max Adler, corner Hughes Place and Green Streets, costing $18,000.

Newport, R. I. — The building committee of the Channing Memorial Church has voted to accept the designs for a church presented by E. Boyden & Son, of Worcester.

Noblesville, Ind.—The architects of Messrs. Leonard & Wild's new store are Messrs. Huebner & Mueller of Indianapolis. The store will cost $8,000.

Orange, N. Y. — $3,000 have been subscribed toward the new depot at Brick Church Station.

Pittsfield, Mass. Mr. George H. Bliss is building a frame cottage, costing $6,000 from plans by Robert W. Hills, of Waterbury.

Point of Rocks, Md. — A town-hall is being built.

Portsmouth, N. H. — Mr. H. M. Congdon of New York is drawing plans for Christ church which is to be built from a bequest of the late Mr. Marsh, at a cost of $40,000. It will be of stone, in Gothic style.

Providence, R. I. — Mr. Wm. A. Harris will make an addition to his works at the corner of Park and Promenade Streets, — a foundry, 110 by 160 feet, and a wing 130 by 161 feet. Plans prepared at the office of the works.

G. W. Chapin is putting up a tenement house on Aleppo Street. Cost, $2,000. Clifton A. Hall, architect.

Reading, Pa. — St. Joseph's Hospital is to be built immediately. The plans have just been adopted by a committee of physicians.

Richmond, Va. — The corner-stone of the new Jewish synagogue of the congregation Beth-Shaba, on Eleventh Street, was laid March 18.

A new church is to be built for the Oregon Hill Methodist Society.

Riverdon, N. J. — Mr. J. K. Boyer, of Philadelphia, will build at once a frame country house, in Queen Anne style, with tower. Cost, $6,000. Palliser, Palliser & Co., architects, Bridgeport, Conn.

Rome, Ga. — Messrs. Parkins & Bruce, architects, of Atlanta, Ga., are building for Col. D. S. Printrip a house which will cost $10,000, and a house for H. B. Parks, Esq. Cost, $4,000.