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A CODE of building-laws which fills a book of one hundred and sixty-eight printed pages, and which has been corrected and revised by its compilers through five successive proofs of the entire work, ought, when ready for issue to the public, to be not only comprehensive but trustworthy. But while there is little doubt that the new code of building-laws for New York City, which in "tentative" form has been submitted to the Municipal Assembly for its adoption, is the first, there is some excuse for questioning whether it is altogether the second. Chief amongst the reasons for entertaining doubt as to whether the new code is all that it might and should be is the curious way in which the Commissioners charged with the preparation of the new codification seem to have abstained from seeking the advice of that body in the community which is especially interested in the matter and peculiarly qualified by training and experience to advise. One would think that during one of the five revisions of the proofs, the Commissioners would have called for advice from the New York Chapter of the American Institute of Architects, a body which, we believe, is officially recognized by statute law as applied to sundry building-matters in the city; but seemingly it was only after the new code in its so-called "tentative" form had been handed to the Municipal Assembly, and, of course, underwent the risk of an immediate and perfunctory adoption and enactment — under "orders" from the boss — that the New York Chapter and the Architectural League were informed that, if they cared to offer any criticisms or suggestions, the Commissioners would probably be willing to grant them a hearing during the next two days. No one, we feel sure, can have any belief that the members of these two architectural organizations are not as earnest as any one in desiring good building-laws for the city and when such men refuse even to look at the new law, the action is startling enough to catch the attention of the most indifferent private citizens, and make them realize that there possibly may be something wrong with a law that its promoters seem inclined to rush through without debate. The architects are entirely willing to give the law careful study, but they very properly decline to allow themselves to be forced either to officially approve or condemn a law of such size and with so many complicated definitions, and possibly conflicting rulings, unless they shall have been granted a reasonable time for its quiet consideration as individuals and its later discussion in society conclave.

MOREOVER, the architects understand very well, even if the public do not, what are the possibilities of legalized blackmailing, evidences of which appeared here and there to public view during that portion of the Mazet Committee's investigation that dealt with the Building Department; and doubtless they remember that one of these very Commissioners charged with the compilation of the new code, when upon the witness-stand at that time, did not make a particularly satisfactory showing under the cross-examination of counsel, while the names of his fellow-Commissioners do not reveal men who are generally known to have won a right to hold expert opinions on building matters. The action of the architects will probably prevent the too hasty enactment of the code, and that is the chief thing that the action was designed to secure. If on examination the law be found impeccable, a little delay in enactment will do no great injury to any one, while if it does contain regulations based on erroneous data, or if any of them are devised for the purpose of securing unjust commercial advantages to the favored friends of the Commissioners, or the political party at present in power, it is well worth while to attempt, at least, to expunge them before enactment. Amongst the new regulations which seem to be open to suspicion is one which requires the introduction into every building already erected, which in height exceeds one hundred feet, of a three-inch, or larger, stand-pipe, with a Siamese connection on the street, and hose-connections and hose on each floor, with such further appliances as the Fire Department may require. There is little reason for questioning the utility of a stand-pipe, and a law compelling its introduction into future buildings would be both proper and desirable. But to compel the introduction of an expensive adjunct of this kind into buildings in occupancy is likely to be held by many tenants merely as a legalized method of levying blackmail upon them and they will doubtless proceed on that assumption, to the great glee and private profit of the inspectors, who will be glad enough, if the tenant makes it worth their while, to sign the inspection-return on having shown to them a "Siamese connection above the sidewalk level," the said connection really being connected only with the interior of the front or rear wall. In case the tenant or owner elects to be honest, and actually installs the stand-pipe, there are enough hundred-foot buildings in the city to make the dealers in stand-pipes and hose-fixtures able to pay a pretty heavy contribution to the campaign-fund of the Democratic party at the next election.

IN so voluminous a code as this, it is a matter of course that the major part of the requirements are reasonable and proper, and only have to be stated to have their propriety acknowledged. Amongst the matters that have been revised, and certainly improved, are the regulations that limit the strengths of floors, and we are glad to note that the new law will no longer require the absurdly heavy floors that are generally demanded in the building-laws of most of our cities by regulations which have long been the subject of complaint by ourselves and other architects. The Commissioners are said to pride themselves particularly on the definitions they have included in their work, and some of them are certainly interesting. For instance, they divide buildings into dwellings and warehouses — of course for constructive purposes only, and, as all buildings must be either dwellings or warehouses, we are amused to find that a laboratory, in which we did not suppose any human being ever slept, is declared to be a dwelling, while a police-station, which is certainly inhabited day and night, is written down as a warehouse. Another definition which has drawn out the indignant protest of the Tenement-house Committee of the Charity Organization Society is that which seeks to differentiate the apartment-house from the tenement-house, the object being to release buildings belonging to the former class from the operation of the stringent regulations of the tenement-house law, which is embodied in the new charter itself of the city, and so is beyond the reach of the present Building Code Commission or of the Municipal Assembly. It is suggested that the definition is devised with the sole purpose of enabling speculative builders to dodge the proper requirements of the tenement-house sections of the charter. This may be so, and it would seem as if the speculators could use it to their advantage, but it is not necessarily so. Nor does it seem impossible to arrive at a definition of the two classes of buildings which shall allow to one class certain liberties which are denied to the other. The moral and intellectual standards, so far as matters of hygiene are concerned, of dwellers in apartments is distinctly different from those which obtain in tenements, and it is, of course, an unnecessary wrong that persons who may be trusted to make proper use of their privileges should be denied them simply

because there is another class, with whom they never mingle, living under somewhat analogus conditions, who could not be trusted not to misuse identical privileges. To be sure, laws, building-laws amongst them, are found needful not for the restraint of the law-abiding, but of the lawless; but architects and other competent persons have so long suffered through having to observe laws devised to restrain the imcompetence of the uninstructed, that we hope that ways may still be devised which will allow them in the future a little more freedom of action than in the past.

AT this writing, the situation with what many are disposed to feel is a most nefarious attempt to make blackmail easy, is that the code has been adopted, without alteration or amendment, by one part of the Municipal Assembly, the Aldermanic; and this was done in spite of the impassioned protests of the opponents of the measure, who pointed out again and again how certain sections would, if unaltered, make blackmailing, not only easy, but inevitable.

SOME one in Boston has sent to the New York *Evening Post* a "special despatch" which strikes us as being not only silly but cruel. It is an argument which, based on the last issue of the State's Census Bureau giving statistics concerning employment and idleness during the year May, 1894, to May, 1895, seeks to prove that during the "hard times" there was really no suffering to speak of in the ranks of wage-earners. Doubtless, the figures given in the report are correct and properly declare that out of the nine hundred and twenty-five thousand, seven hundred and eighty-one persons covered by the enquiry, seventy-one and eighty-three hundredths per cent were continuously engaged throughout the year, while twenty-seven and twenty-seven hundredths per cent were irregularly employed, averaging perhaps nine months' work to each person, and only nine-tenths of one per cent were absolutely unemployed throughout the entire year. Percentages and averages are consoling things to the statistician who handles them, but we fancy they offered poor substitutes for bread and meat to the eight thousand, three hundred and thirty-nine individuals who were idle throughout the entire year, even if some of them were too ill to work though work had been ready to their hands. It is easy for the despatch-writer to write that "the public was more scared than hurt by the hard times," but we fancy, again, that the two hundred and fifty-two thousand, four hundred and fifty-six individuals who were only partly employed during the year experienced some very real anxiety, and not a little suffering, during the three months' time when they could find no work and yet desired to live. And of the six hundred and sixty-four thousand, nine hundred and eighty-six who were employed throughout the year, a large part of them earned only reduced wages, which had to be still further skeletonized by being used in the support of the enforcedly idle members of the family. If during the hard times the despatch-writer had been a mechanic, with half a dozen persons depending on him, he would not have felt that "imagination reinforced the facts heavily in making up the distressing picture." One empty stomach can ache terribly, and a single ill-clad body can suffer as much, and it will take more than statistics to prove such sufferings either overdrawn or non-existent.

ON the other hand, statistics show very clearly that even in good times the building-mechanic's lot is no bed of roses, even if his family be of less than average size, while he himself receive the highest wage of his particular craft. It is easy enough for the unthinking, who do not sound the true depth of the statistician's figures, to argue that a good mechanic, with his three or four dollars per diem, is quite as well off as the mercantile clerk, who, as every one knows, manages, somehow, to lead a fairly comfortable and self-respecting life on a salary of one thousand or twelve hundred dollars a year. But there is a great difference between the fortunes of the two classes. The clerk, hired by the year, finds his salary paid to him each week or each month with punctual regularity; he knows what his cloth measures and can cut his coat accordingly. The mechanic, on the other hand, hired by the day, finds when pay-day comes round that his meagre stipend has been docked — because it rained one day and it was impossible to go on with the job, because, another day, another contractor was behind with his part of the work and it had not been possible for his own gang to go on with theirs, or there was an incipient strike and all hands had been called out for a few hours while the dispute was being adjusted. And so it goes, a loss of a few days' time here, a week or two there and a month later, because of a strike in some industry in another State that put a stop to the forwarding of supplies, until at the end of the year the building-mechanic is lucky if he finds he has pocketed eighty per cent of full pay. The winter time, when work is slack, is, of course, the hardest time for the out-door mechanic, and for this reason we are inclined to be well satisfied with the present shortness in the supply of structural metal-work, as it is likely to delay the completion of many buildings far beyond the ordinary close of the building season. The delay will insure to the wage-earner employment at the time of year when it is hardest to find.

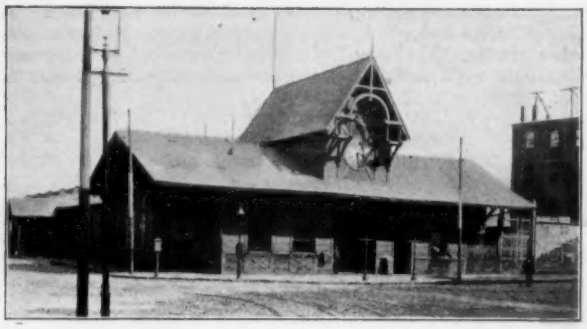
IF there is any truth in the report that the Chief Magistrate of this country has been coerced into becoming an honorary member of the Bricklayers' and Stone-masons' International Union, so that he might be allowed by that body to lay the corner-stone of the Chicago Post-office Building, it is a thing to cover the self-respecting citizen with shame. But it is so part and parcel of the audacious disregard of other persons' rights shown by Union Labor that most people will not see the real significance of the act, which acknowledges that there are irresponsible bodies who enact unreasonable laws which even the head of a great nation has to bow to. The alleged act has a wholly mediæval flavor, and brings to mind the many cases where the powerful guilds of those times more than once put shame and disgrace upon rulers by divine right who dared to dispute their will. It might, however, be well for the guiding spirits of trade unions to spend a little time in reading the history of the times when the rest of the people found it worth their while to turn to and suppress the guilds.

WHEN there was first seen in the newspapers the statement that a crematory operated by the use of liquid-air was to be established at Nyack, N. Y., probably many imagined it was either a canard pure and simple, or that the item had been worked-up by some imaginative reporter, who, having heard stories of the terrible and almost incurable burns that are inflicted by liquid-air and materials subjected to its influence, had become confused in his mind, and argued that if bad burns could be inflicted, probably the burning-process could be carried to any length, even to the destruction of cadavers. But it appears that such a crematory is really to be put into operation in Nyack under patents owned by Dr. S. H. Emmens. The liquid-air, however, is not to be used in the incinerating process as liquid-air, but merely as a more or less inexpensive means of procuring a supply of liquid-oxygen which can be injected into an electric-furnace and so vastly increase the already powerful effect of the furnace itself. It is found that as liquid-air vaporizes, the nitrogen and other gases evaporate first, leaving the oxygen in the bottom of the vessel, and it is at this point that the inventor of the new process proposes to make use of the liquid-air, or all that is left of it. How possible it will be to handle it remains to be seen, as well as whether any form of retort or any kind of electric connection will stand the fierce combustion of electric arcs burning in nearly pure oxygen. At all events, it seems likely that any body exposed to fire of this kind must be consumed with the greatest expedition, and as it is the unpleasant waiting between the beginning and ending of an incineration by past methods which, as much as anything, stands in the way of the growth of the practice of cremation, we hope the new method may be found one that can be easily managed and controlled.

THERE are few of the great modern buildings of the day that have not paid a more or less heavy blood-tax through the maiming or killing of some of the workmen employed in their erection. Seemingly, the arch now erecting in New York in honor of Admiral Dewey's return is ambitious to pay a relatively heavier tax than satisfies more long-lived structures. We have already chronicled the deaths of two of the sculptors employed on the groups of statuary, and now must mention that a third, Frank E. Crane, a modeller, was found dead in bed, and that a fourth, Henry Balrer, who was modelling a medallion of Captain Lawrence, has been stricken with paralysis. We hope that the survivors do not experience a sinister joy at the thinning of their ranks, and argue that, the fewer there are to share the ultimate profits from this most magnificent of legitimate *réclames*, the better off each sharer will be.

THE NEW SOUTH STATION OF THE BOSTON TERMINAL COMPANY.—I.

ON January 1st, last, the new South Station of the Boston Terminal Company, Boston, Mass., was formally opened to the public, the simple dedicatory ceremony having taken place two days previously. This new station, which has been under actual construction for about two years, brings into one train-shed all the existing lines running southwards from Boston, and will thus prove an important



Abandoned New York & New England Station.

improvement and a great convenience to passengers, a source of increased prosperity to the city, and also an economic advantage to the railway companies themselves. Heretofore the railway lines radiating southward from the city have operated from four separate and distinct stations, each with its individual sets of tracks, crossings, bridges and draws, greatly to the inconvenience of the public. These stations, which are illustrated by photographs, are the New England (which formerly occupied the site of the present new station), used by the New York & New England Railroad Company, the Old Colony, used by the Old Colony Railroad Company, the Park Square Station of the New York, New Haven & Hartford, and the Boston & Providence Railroads, and, lastly, the Kneeland Street Station of the Boston & Albany Railroad Company. The first three of these railroads are now in control of, and operated by, the New York, New Haven & Hartford Railroad Company. It may be well to allude briefly to the other large terminal station of Boston, namely the Northern Union Station, which was built in 1892, and which accomodates all the railway lines radiating from the city north and east. As the Boston Elevated Railway Company, which controls all the street-railway lines in the city proper, will connect in a few months the Union Station with the new South Station by means of their elevated tracks, the convenience of the whole arrangement will be at once apparent.

The history of the new South Station begins with an informal conversation held in January, 1896, between the Hon. Josiah Quincy, then just elected to the Mayoralty of the city, and C. P. Clark, the President of the New York, New Haven & Hartford Railroad. As the outcome of this, the other railroads were approached and, an equitable basis of arrangement having been arrived at and the coöperation of the city officials assured, a charter from the Legislature was secured by the Boston Terminal Company and plans were put in hand. After much careful consideration and consultation, these plans were matured and finally approved by Mayor Quincy on behalf of the city, in December of the same year, and early in the following month they also received the formal approval of the Massachusetts State Railroad Commissioners.

In the meantime, the Terminal Company was organized and five Trustees were appointed, and under their supervision the various details were ably worked out by the engineers and architects of the Company, in connection with those of the various railroads and of the city. The Trustees appointed were Samuel Hoar, representing the Boston & Albany Railroad; Royal C. Taft, the Boston & Providence; Charles L. Lovering, the Old Colony; Francis L. Higginson, the New England; and Charles P. Clark, the New York, New Haven & Hartford. The cost of the construction was arranged for by the issue of $13,000,000 bonds and $500,000 stock.

In order to provide the necessary area for the station, the city was required to divert some of the streets and widen others, and construct a new stone-bulkhead or sea-wall along Fort Point Channel, as shown on the ground-plans. This work was done at the expense of the city, but the Terminal Company deeded to the city the land required for the purpose.

Very rapidly the Terminal Company negotiated for and obtained possession of the various properties occupying the site, and removed the existing buildings, and operations were commenced in earnest in the summer of 1897.

In designing the station it was necessary to consider that the aggregate number of tracks in the stations to be superseded was twenty-five, and as the available land for the new station would only accommodate properly twenty-eight tracks, some arrangement had to be made to provide sufficient facilities for the future increase of traffic that was sure to come. As a very large proportion of the traffic to be handled was the suburban service, which is mainly compressed into about two hours, morning and evening, and requiring very prompt handling, it was readily seen that if stub-tracks were used, the time taken up in switching and arranging the various trains would militate against a very rapid service, unless a number of tracks were reserved for the purpose. It was at last decided to use the main-floor for through trains and divert the strictly suburban or local service to a subway beneath the main-floor, with an arrangement of loops, and so avoid the necessity for switching. Moreover, as it is contemplated to equip the suburban trains electrically and operate them by the third-rail system in the near future, the subway plan, by removing the electric system from the main-yard and train-shed, obviated possible danger to employés from electric shock, and eliminated the complicated switches and crossings that would have been necessary. Moreover, the operation of the subway service electrically removed the objection to the subway on account of smoke and steam in an underground station. The possible use of compressed air as a motive power is also being considered. Having

Main Waiting-room of the South Station.

decided on the use of a subway, the engineers were confronted with the serious problem of keeping the subway dry, as the floor-level was several feet below tide-water and it was necessary to carry out a most complete arrangement for waterproofing the subway, and also a system of drains, catch-basins and pumps, to care for any water that might find its way in during exceptional storms.

In examining the structure it is noticeable that the head-house and all buildings, offices, etc., are entirely outside of the train-shed, which covers only the tracks and platforms. The immensity of this train-shed grows upon one, as it is so well designed and proportioned that its vast size is not appreciated at the first glance. When one considers that twenty-four of the largest buildings in Boston could be arranged on the floor area of the train-shed and head-house, some idea of the size can be gathered.

The station is located at the confluence of Summer and Federal Streets and Atlantic Avenue, on the west bank of Fort Point Channel, and covers the site of the former New England Railway station, which was removed to make way for it. In addition to this ground, a large quantity of adjacent property was purchased and the buildings thereon pulled down and removed. The total area of the land acquired was about thirty-five (35) acres, of which the buildings occupy about thirteen (13) acres.

The head-house lies opposite the end of Federal Street at the intersection of Atlantic Avenue and Summer Street, the main entrance and principal architectural feature facing up Federal Street. It forms the northwest corner of the building and is constructed on a curve. From the entrance, the building extends southward along Atlantic Avenue for seven hundred and ninety-two feet (792′), and eastwards along Summer Street six hundred and seventy-two feet (672′). The central portion appears as a five-story building, the first story or ground-floor being the station proper and the other four stories being utilized for offices. The central, and curved, portion is two hundred and twenty-eight feet (228′) long, the first two

"The Midway" between the Head-house and the Train-shed.

stories forming a strong base, in which are three large entrance arches, with the upper three stories treated as a colonnade. The columns are of granite, four and one-half feet in diameter and forty-two feet in height. Above the colonnade, the entablature and parapet, broken by a small projecting pediment, carry the façade to a height of one hundred and five feet (105′) above the sidewalk. A handsome clock with a twelve-foot illuminated dial surmounts the centre. A massive eagle of sculptured granite, weighing eight tons, and whose half-spread wings measure eight feet from tip to tip, stands above the clock-case. On either side of the eagle, and over each of the entrance-piers, is placed a sixty-foot flagstaff. A massive rostral column of polished granite has been erected on the sidewalk in front of the main entrance to carry a cluster of arc-lights.

All of the curved portion is built of cut granite, as is also the greater portion of the front, although on each side of the colonnade the stonework is relieved by large, dark-buff mottled bricks. The central portion is pointed and cut, but the rest of the coursed ashlar is rock-faced. The total length of the five-story front is eight hundred and seventy-five feet (875′), of the two-story building along Atlantic Avenue three hundred and fifty-six feet (356′), that on Summer Street two hundred and thirty-four feet (234′), and on Dorchester Avenue seven hundred and twenty-five feet (725′). The total length of the frontages of the building on the three streets is two thousand, one hundred and ninety feet (2,190′).

From Atlantic Avenue, a little south of the main entrance is a secondary one, and also one to the subway for suburban traffic. From this entrance southward is the outward-baggage room, with doors at frequent intervals along the street, with an iron-and-glass awning extending far over the sidewalk to protect baggage and teams from the weather.

On the Summer-Street front is the main waiting-room with its lofty arched window-openings, and next beyond the main exit, a wide thoroughfare reaching the street by a bridge over the inclined exit from the subway below. The carriage-concourse is at the corner of Dorchester Avenue and Summer Street and beyond another inclined entrance to the subway, and along the Dorchester-Avenue side is the extensive inward-baggage room. Along this side, as on Atlantic Avenue, there is an awning for protection of the teams. On the Summer-Street side the awning is forty feet wide, covering the subway incline and also the sidewalk.

The main entrance to the head-house is a thoroughfare ninety-two feet wide, the side walls being lined with polished Stony-Creek granite. Four massive columns of polished Milford granite, three feet, four inches in diameter, support the floors above. The arched ceiling of white enamelled bricks is carried on iron girders encased in white marble. The following inscriptions are cut in the granite walls on the right and left of the entrance, respectively. On the right:

MDCCCXCVII
THIS BUILDING ERECTED BY
THE BOSTON TERMINAL CO.
COMPOSED OF
THE BOSTON & ALBANY R. R. CO.
THE NEW ENGLAND R. R. CO.
BOSTON & PROVIDENCE R. R. CORPORATION.
OLD COLONY R. R. CO.
THE NEW YORK, NEW HAVEN & HARTFORD R. R. CO.

On the left:

MDCCCXCVII
JOSIAH QUINCY, MAYOR OF BOSTON.
THE BOSTON TERMINAL CO.
SAMUEL HOAR, ROYAL CHAPIN TAFT, CHARLES PETER CLARK, CHARLES LONGHEAD LOVERING, FRANCIS LEE HIGGINSON, TRUSTEES.
GEORGE B. FRANCIS, RESIDENT ENGINEER.
NORCROSS BROS., BUILDERS.
SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.

All the entrances lead directly to the "Midway," or end of the train-house. The Midway, with its concrete floor, extends clear across the train-house. Opening from the western end of the Midway is the parcel-room, and next, the entrance from Atlantic Avenue, and beyond this again the immense outward-baggage room, five hundred and sixty-two feet (562′) long and twenty-six feet (26′) wide. On the left of the main entrance are the lavatories, telegraph and telephone offices.

The main waiting-room, architecturally very imposing, is two hundred and twenty-five feet (225′) long, sixty-five feet (65′) wide, and twenty-eight feet, six inches (28′ 6″) in height. It is lighted on the north by lofty windows looking out on Summer Street, and also by smaller windows on the other side above the line of the roof of the Midway. The floor is of marble mosaic of a handsome pattern. A high dado of light enamelled brick, supported by a base of polished granite, is carried around the room, and above the dado the walls are finished in hard plaster. There are three large doorways of polished Milford granite, with protecting vestibules outside. The room is fitted with two handsome verde-antique marble drinking-fountains. The ceiling is of richly-modelled stucco coffered with beams four feet deep, the electric-light fixtures being specially designed in keeping with it, giving a sufficient and well-diffused light. Three handsome kiosks of wood and copper and plate-glass are placed along the middle of the room for the sale of flowers, confectionery, etc. Large polished hardwood settles or seats are placed along the north side of the room, removed from the doors and ticket-windows, and are arranged in the form of alcoves. These alcoves are named, in large letters on the wall adjoining, after the various counties through which the railways pass, so that passengers may arrange to meet their friends at a certain alcove, and thereby save time and trouble in finding them.

At the western end is the entrance to the ladies' waiting-room, which is thirty-four feet (34′) long by forty-four feet (44′) wide, and very comfortably furnished with lounges, rocking and easy-chairs and, for the children, cots and cradles. Opening out of this room are "free" and "pay" lavatories. On the south side of the main room are the various ticket-windows, sixteen in number, for local and through tickets, and outside, opening to the Midway, are eleven more ticket-windows, protected by a long vestibule, covered with ornamental copper-work. At the eastern end of the general waiting-room is the main exit to Summer Street, on the other side of which is the spacious lunch-room, with its marble mosaic floor and wainscotted with enamelled bricks. Adjoining the lunch-room is a hall, with stairway and elevator to the dining-room above, on the second floor. There is also on the second floor a large kitchen, a private room for employés and a directors' dining-room.

Beyond the lunch-room are the station-master's room, barber-shop, shoe-polishing and smoking rooms, the latter with a large free lavatory adjoining. The passenger and baggage-transfer office is at the end of the Midway, next to the carriage-concourse. A room, opening only into the carriage-way, is provided for the cabmen. The inward-baggage room, five hundred and seven feet (507′) long by twenty-six feet (26′) wide, flanks the eastern side of the train-house, and in the basement adjoining the subway are rooms for emigrants, and other purposes, and for stores. Beyond the train-house and main buildings of the station, on the Dorchester-Avenue side, are the power and other buildings, to which we will allude later.

Above the first story, the main building is utilized for offices and employés' rooms. The conductors and trainmen have rooms in the Dorchester-Avenue wing, while the remainder of the story on Summer Street and Atlantic Avenue is occupied by the offices of the Boston Terminal Company. The Boston & Albany Railway Company will occupy the whole of the third story and the New York, New Haven & Hartford Railway Company the fourth and fifth stories.

H. W. WELLER.

[To be continued.]

MECHANICAL DRAUGHT.[1]

PROBABLY no subject is of more importance to-day to the engineer and to the manufacturing and steam-using world than that of the economical combustion of fuel in the furnace of the steam-boiler. That even with the best arrangements of modern steam-plants for the conversion of calorific into mechanical energy but a small efficiency is obtained is a well-established fact, and yet possibly more startling than some realize. Theoretically each horse-power should require about 0.212 pounds of coal per hour, and yet the very best engines and steam-plants require from 1½ to 2 pounds, — *i. e.*, about ten times as much and good practice requires fifteen times as much and the great majority of good engines in daily use fifteen to twenty times as much, — *i. e.*, 3¼ to 4¼ pounds coal per horse-power per hour, and show a ratio of actual performance to the full calorific power of fuel consumed of 5 to 8 per cent. A great portion of this loss of 9-10 to 19-20 of the work represented by the fuel combustion is unavoidable, arising, as it does, from the physical qualities of water employed as a vehicle for the use of heat. A perfect heat-engine could save but about 16.9 per cent. The best-designed engine and steam-plant will in fact yield but about 6 to 8 per cent, and hence the ratio of practical performance to the perfect plant under usual conditions is about 35 per cent; in other words, two-thirds of the heat-work that may be striven for is lost. This loss is in the engine chiefly, and also partly in the boiler, and hence appears the vital value of improvements in combustion and boiler efficiency, which will tend to reduce this two-thirds loss of possibly available work.

This subject has commanded the best efforts of our greatest steam-engineers for years — men such as Chas. E. Emery, John C. Hoadley, Wm. R. Roney and others have given the subject exhaustive study and experiment — with gratifying results, it is true, but that there is still a wide field for improvement will be realized when it is understood that the relative efficiency above referred to of 6 to 8 per cent has, with such economy-facilitating devices as mechanical draught, water-grates, improved furnace and boiler designs, mechanical-stokers, etc., been improved upon only to the extent of 10 to 30 per cent. There are, besides the high-class modern steam-plants of comparatively recent installation, a vast number of plants, large and small, on land and water, where limitations of first cost forbade improved devices, and even many high-class boiler-plants which are susceptible of great improvement in efficiency, and offer a large field for apparatus tending to such and obtainable at a reasonable or low cost. Examples of such plants are the many small power-plants in our hotels, office-buildings and factories, and on board our many passenger and freight-carrying steamers and barges. There are many applications and devices on the market which claim to have the panacea of all the evils a boiler-plant is heir to; some are really of value, some are purely "quack" devices. Hence a study of this subject is of great value from a negative as well as from a positive standpoint. It is hardly less worth while to know the absolute limitations of economy in coal combustion, to know what cannot be done, to know the good and bad features of exploited devices, though quacks promise never so much, as to learn by what means some of the important loss of heat in existing arrangements may be saved and put to use at a reasonable cost and without undue trouble. It is the object of this paper, by a description of some of the most important experiments and data made and obtained in the line of boiler-economy-promoting devices, and especially of mechanical draught, and a brief discussion of the same, to possibly present some valuable matter and at least start discussion and thought on the subject in the Society. The limitations of a single paper of this kind, and the time allowed the writer for preparation of same, will not permit a full consideration of the subject, and especially-detailed accounts of experimental data and the many arguments pro and con on the debatable points. The importance of good draught, natural or artificial, for the supplying of sufficient oxygen for the rapid and economical combustion of fuel has long been appreciated by intelligent engineers. The gain both in efficiency and capacity obtained by the rapid and energetic combustion of the various kinds of coal, and the resulting high furnace-temperature, is well established. Its importance has, however, been generally conceded only within a few years. The wonderful stimulus which the development of electrical industries has given to the building of compound engines has necessitated higher boiler-pressures, and this, in turn, has greatly increased the use of water-tube boilers. High initial furnace temperature is essential to the best economy with all types of boilers, and especially with the water-tube type, with their large amount of heat-absorbing surface in close contact with the products of combustion, as otherwise the temperature of the gases will be lowered below the point of ignition, and will pass up the chimney only partially consumed. To obtain this high furnace temperature requires proper draught to deliver an abundant supply of oxygen to the furnace. This result is obtained by two well-known means, — viz., natural draught, produced by a column of heated gases in a chimney of suitable proportions, and "forced draught," obtained by mechanically creating an air-pressure under the grates with a blower or fan. A third means, less known, is mechanical exhaust or induced draught, produced by a suction-fan arranged to draw the waste gases from the furnace and discharge them into a small stack. These are the various systems of mechanical draught in general use. Special features for further increasing the efficiency of the apparatus, such as utilizing otherwise wasted heat in escaping furnace-gases to heat the feed-water or the feed or supply-air, are often added. There are numerous other devices, such as hollow "wind-grates," in which the grate-bars are hollow and kept full of air under pressure, but constantly escaping to feed the furnaces through small holes in the grate-bars, and others. The above-mentioned, however, cover the most successful arrangements. The principal advantages urged for these various mechanical-draught systems over natural draught are, first, the more effectual combustion of fuel by reason of the more abundant and intimate supply of oxygen to the furnace, using any kind of fuel; second, the obviation of the necessity for high chimneys; third, the possibility of using a cheaper grade of coal at the same time with a proper combustion of the same, and, fourth, the almost practical abolition of the smoke nuisance by reason of the more perfect combustion of the fuel and gases.

It has been urged that the use of the more rapid draught causes early deterioration of the grates in the case of the "cold-air" forced or exhaust draught by the great difference in temperature between the air supplied to the under side of grate and the incandescent fuel on the upper side; in the case of the hot draught, either forced or exhaust, by the great temperatures obtained under and on the grates causing burning or melting down of the grates. It can be shown that the first-named evil is largely exaggerated, and can be rendered slight by taking the supply of air from the boiler-room and from over the boilers; as to the second criticism, which also has been exaggerated, the use of water-grates, — *i.e.*, hollow grates, — with a circulation of water in them, overcomes the burning out of the grate-bars, even with the maximum obtainable temperatures. There is no doubt but that many of the old-time "forced-draught" applications, where high-speed blowers deliver cold air at 2 to 3 ounces pressure under the grates, and having no economising device for utilizing the waste gases escaping up the chimney, are not as efficient as they should be; are great consumers of power for fan propulsion and destructive of boiler-grates and shells. True, they do "make steam" quick, and when coal is shovelled in fast enough they are great "steam-raisers." Of such plants, a large majority have been applied on ocean steamers, where limited space forbids the use of large slow-running fans and low-velocity air-conduits, and the principal object is fast steam-making more than economy of fuel. The value, however, of the use of even cold forced draught at pressures of ½ to 1½ ounces, and still more of the forced or exhaust draught with hot draught and economizer attachments, in effecting an economy of from 8 to 20 per cent, is well established, and from 8 to 36 per cent is claimed. Slow-speed fans should be used whenever possible, in order to reduce the power required for fan propulsion. In this connection, a brief consideration of results obtained by eminent engineers will be pertinent. From the summer of 1881 to May, 1882, at the expense of a number of the largest mill-owners in New England, extended tests of "Marland's warm-blast" apparatus were made under direction of the late John C. Hoadley, M. E., of Boston, at the chemical works of the Pacific Mills, at Lawrence, Mass. This apparatus consisted briefly of a "Root" positive blower exhausting the furnace-gases upon leaving the furnace, through a number of thin tubes about 3 inches in diameter, over which tubes the air-supply for the boiler-furnace was led and warmed, and thus effecting the economies of increased air-supply, more effectual and complete combustion and warm feed-air and its attendant results. These experiments were on a very practicable and elaborate scale, every detail being attended to, and in degree of accuracy of calorimetric, anemometric and thermometric work were doubtless the most extended and valuable tests of the kind ever made. The most vital point in boiler testing, the analysis of the flue-gases, was very carefully determined and elaborated, and the greatest care was taken in determining the exact power used in driving the blower or fan. The results obtained showed beyond a doubt a net saving of 10 to 18 per cent over the best obtainable practice with natural chimney-draught, and with air-supply at the usual external air temperatures, at least five times as much as can be saved by any and all other methods save analogous devices (see *Transactions* of American Society of Mechanical Engineers, Vol. VI, pages 676–842). This apparatus has been in use several years, and no unusual deterioration of boiler, boiler-grates or the warm-blast apparatus itself has occurred, thus effectively demonstrating its practical efficiency. The induced or exhaust draught with feed-water-heating economizer, as applied in many large plants, consists of large slow-speed fans exhausting the furnace-gases over coils of feed-water-heating pipe and discharging the refuse-gases up short stacks or chimneys and outdoors, thus utilizing the waste heat of the gases to heat the feed-water for the boilers. Mr. William R. Roney, M. E., of Boston,

[1] A paper by H. B. Prather, read at the regular monthly meeting of the Engineers' Society of Western New York, Buffalo, N. Y., and published in the *Journal of the Association of Engineering Societies.*

Mass., is probably the best authority on this form of mechanical draught. The results of his experiments, in brief, as lately stated by him, are that the first-cost of a properly-designed mechanical-exhaust-draught plant is very much less than that of a suitable chimney of equal capacity, usually averaging 75 to 80 per cent less; and as to power required for fan propulsion in a plant with 6000 H. P. water-tube boilers, the power required to drive one fan to do this work was 6–10 of 1 per cent of the boiler horse-power developed or estimated in coal per horse-power per hour at $3.00 per ton; the fuel cost of running the plant one year was 2 per cent of the estimated cost of a natural-draught chimney for the plant. In other words, it would not pay to build a chimney so long as money was worth more than 2 per cent per annum. In another case the power required was less than 10 H. P. for each 2000 H. P. produced, or less than half of 1 per cent of the power developed by the boilers; and in a tabulation of the results obtained in nine large plants, the average net fuel saving was about 15.2 per cent, and in some nearly 20 per cent; and, in addition, there was the economy in first-cost and in the money which would otherwise have been invested in chimneys.

Referring to those feed-water heaters commonly known as fuel economizers, they are certainly no new thing, having been manufactured in England for over fifty years and in this country for three or four years, and have been imported for many years. They have been used, however, almost exclusively in chimneys with natural draught, and hence on account of the reducing effect on the draught caused by lowering the temperature of the gases and retarding their flow, it is always necessary to provide a better draught where they are to be used than when not; hence, higher and larger chimneys. Good practice requires that chimneys with economizer should never be less than 200 feet in height. Certainly, the failure which has sometimes attended the introduction of the fuel-economizers has often been due to placing them where the chimney draught was none too good before; hence, they not only failed to show an expected economy, but also impeded what draught there was. Of course these objections do not hold when mechanical draught is used; a short chimney can be used only high enough to permit the discharged gases to clear neighboring buildings, and the heating surface in the economizer can be made a maximum and the gases cooled to a point which would destroy the draught altogether in even the tallest chimney using natural draught. In the designs of new plants and chimneys for same, this point of small chimney required is extremely important in first-cost, especially in this day of valuable land around our city power-buildings. Mechanical draught possesses great advantages over natural draught, especially in its flexibility of application and adaptation to both large and small capacities and in its ability to meet sudden and excessive demands for steam, either by an extra turn of the throttle-valve or by use of an automatic regulator controlling the steam-supply to the fan-engine, and hence adjusting the speed of the fan according to the boiler pressure. No such flexibility of adjustability can be had with natural draught. It should be noted that in no system of exhaust draught so far referred to in this paper does the suction-fan handle the furnace-gases at their furnace temperatures; they pass through the fan after the major portion of their heat is absorbed by the economizer or by the "abstractor," or air-supply heating device, the average temperature of the gases actually handled by the fan, even with the exhaust draught, being about 300 degrees, a temperature in no way deleterious to a fan of proper construction with "a water-cap" bearing. The Howden "hot-draught" apparatus has been applied quite successfully on the lake and ocean boats; this consists of a blower-fan forcing cold air at about 1½ ounces pressure over tubes (through which are passing the hot gases from the boiler furnaces), and thus absorbing most of the heat from the furnace-gases, thence discharging this hot feed-air at about ½ to ½ ounce over and under the grates. Tests of these plants on the lake steamers "*Madagascar*," "*Nicaragua*," "*Harvey H. Brown*" and others have, on a comparison of comparative fuel-consumption per ton cargo carried per mile, showed a gain in efficiency of 28 per cent over work done without the hot-draught and using a poor grade of bituminous coal; and showed an average combustion of 1.65 pounds fuel to each indicated horse-power developed per hour; a most remarkable showing for the mechanical hot-draught, as well as for the complete steam-plants. The Ellis and Eave's system, as applied to the power-plant for the American Line of steamers in New York City, is on the same principle as the Roney exhaust-draught plants, excepting that, instead of the feed-water-heating economizer, a feed-air heater is used and hot air supplied to boiler; and for this system a gain of 20 to 25 per cent is claimed, and certainly 15 to 20 per cent can be relied upon.

Before closing this review of the most important systems before the public to-day, the "Keene Fuel-Economizer and Smoke-Consumer," a form of mechanical draught, demands attention. This device consists of a fan-blower taking in ordinary air on one side and connected by means of a suitable pipe with a chimney-flue near the breeching of the boiler on the other side, so as to take in more or less of the flue-gases to heat the air, and delivering the mixture of air and gases to the ash-pit of the furnace, whence they are forced through the grates and the fuel-bed. Dampers are placed on each side to regulate the proportion of air and flue gases admitted to the blower. Tests of this apparatus under direction of the smoke commission of the city of St. Louis, Mo., showed an average temperature of the air discharged under the grates of 235° and a gain in efficiency over the same boilers without the device of 38 per cent; and when using the fan, but not heating the air-supply, a gain in efficiency of 26 per cent, and a smoke record of reduction of smoke emitted from stack of 90 per cent is claimed. It will be noted from the above matter that the simple "forced-draught" application of mechanical draught, consisting of a blower discharging ordinary air under the grates of the boiler, has not, so far, been largely touched upon. But there are twenty of these applications, however, to one of the more elaborate economizer or hot-draught arrangements, and the proportion is probably much larger. There is no doubt whatever but that the addition of the special features referred to for further increasing the economy of the mechanical-draught plant do so enhance their value, but there are, as before stated in this paper, a vast number of boiler-plants already installed, and mostly of small size, whose efficiency is susceptible of increase and oftentimes badly in need of such an increase by the addition of the simple forced draught, and where the cost renders the same the only available apparatus. Great corporations, with their hundreds of thousands involved, can afford the most complete equipment and profit by the same, but the smaller steam-users must often, and very often, purchase the lowest in price that they can get, and still improve their poor draught or abate their smoke nuisance, or both. A description of a few representative plants of this kind will be of interest. The elements are about the same in all cases, excepting in very small outfits of 30 horse-power or under.

A steel-plate fan with direct connected, single or double-engine, usually vertical, exhausting the air from the hottest part of the boiler and engine-room (thus serving to help cool the room, as well as assisting the boilers), discharges this air under the grates in case of stationary land-boilers, or into wind-boxes in front of ash-doors for marine-boilers, with suitable dampers and levers readily accessible for operation of same. An automatic steam-regulating valve on the steam supply-pipe to the engine for the automatic regulation of the engine speed in proportion to the pressure desired to be carried on the boilers is generally provided. The velocity of the air at the fan outlet is carried at from ¾ to 1¼ ounces pressure, and under grates from ⅓ to ¾ ounce; and a delivery for tubular boilers of about 150 cubic feet of air per square foot of grate surface per minute, and for water-tube boilers from 200 to 300 cubic feet per square foot grate is effected. A plant like this, with a 70-inch (narrow fan) and five by seven single engine, was placed in the power and light room of the large dry-goods store of Barnes, Hengerer & Co., of this city, about two years ago, by the Buffalo Forge Company; has run successfully ever since with no unusual repairs, and has shown a net saving of at least 30 per cent in the fuel-bills and a relative gain in efficiency of 10 to 15 per cent, with a practical abolition of the smoke nuisance. The remarkable economy in the fuel-bills arises in this case from the fact that before the introduction of this system the best pea-coal and anthracite was burned, while with the use of the forced-draught apparatus a soft-coal slack is used, with the addition of one barrel of good hard coal to about six or eight of the slack or cheap coal. Plants have been installed in the Genesee and Broezel Hotels, about twenty factories and manufacturing establishments, and on the lake steamers "*Wm. H. Gratwick*," "*Caledonia*," "*Italia*," "*Bulgaria*," "*Australasia*" and others, with practically the same results, by the same firm.

As a conclusion, it is pertinent to emphasize the fact that the most perfect mechanical-draught plant will be a failure nine times out of ten if the firing of the boilers is not properly attended to, and the too rapid rushing of the air through the grates or the improper impeding of the draught by the kind of firing and the manner of stratifying the coal on the grates is not prevented. Engineers may design, and inventors may scheme, but the king of the boiler-room is the fireman. Mechanical draught is a help to the fireman as well as to the man who pays the coal-bills, if he would but appreciate it. The day of the tall chimney, belching forth its clouds of black smoke, which many a time has been cited as glorious evidence of prosperity, is about over, and the day of the development of one indicated horse-power by one pound of coal, with all its enormous economies to the steam-using world, approaches, and no single agency in this good work deserves more praise or has been more useful than mechanical draught.

The Lot of the Prix de Rome Men.— Some particulars concerning the benefits enjoyed by the winners of the Grand Prix de Rome are given by the Rome correspondent of the *Morning Post*. Besides being lodged gratis at the Villa Medici, which belongs to the French Government, the Rome prizemen receive from the French Exchequer £12 a month during the three years of their stay in the Italian capital. At the end of that period they are entitled to a sum of £480 provided by a special legacy — which they may receive in three or four annual installments of £160 or £120 each. In exchange they are required to furnish every year to the State a work of art — in painting, sculpture, architecture, or music — in accordance with a fixed programme. In addition there is an annual prize of £60 for the best work of art sent to Rome by the prizemen. The musical prizeman, moreover, is entitled to an extra sum of £16, subject to the obligation to place a wreath worth 15 francs on the tomb of the testatrix — a Mme. Mauvoisin — in the Montparnasse Cemetery. Whether the achievements of the prize-winners correspond in excellence with the advantages enjoyed is a question which it would be hard to answer in the affirmative, nor is it easy to decide whether the prizemen themselves or the systems of training and selection are chiefly to blame for the mediocrity of the annual exhibitions at the Villa Medici.— *N. Y. Times.*

ST. MARY-LE-BOW, CHEAPSIDE.

BY the courtesy of Mr. Charles Innes, architect and surveyor to the church-wardens, we are placed, says *The Builder*, in possession of the facts upon which somewhat alarming statements are made concerning the stability of the tower and steeple of St. Mary-le-Bow. The fabric, we are informed, is not as yet in a dangerous condition; on the other hand, certain fissures which have become apparent since last October in the four walls, particularly in the north, south and west walls, and in the pavement from east to west, of the vestibule on the tower's south side — and probably due, it is alleged, to the tunnelling through the clay for the Central London Railway — demand serious attention. A careful plumbing of the tower proves that the top of the belfry stage, about 115 ft. above the pavement, is 12 in. out of the perpendicular, inclining northwards. Thus the tower has, in part, broken away from the vestibule, and the latter, in part, from the north wall of the church. It appears that the Railway Company, for whom Sir Benjamin Baker is engineer, offer 140*l.* in satisfaction of all liability for damage, if any, arising from the prosecution of their works and traffic. A statement has, however, been drawn up by the church authorities upon which Sir Douglas Fox will be asked to report and advise. Meanwhile, we gather, no remedial measures of any importance are likely to be undertaken. The ringing of the twelve bells, which weigh over 220 cwt., has been discontinued for some months past.

The well-known steeple of St. Mary-le-Bow was erected in front of the old church's site. Its four foot-piers stand upon what Wren describes as a causeway of rough stone, close and well rammed with Roman bricks and rubble at the bottom for a foundation, and all firmly cemented, being 4 ft. thick, 18 ft. below the surface, and lying upon the natural clay (see the "*Parentalia*"). It measures 32 ft. square at its base, and rises about 120 ft. to above the belfry stage, attaining to a total height of 221 ft. 9 in. — the dragon included. Begun in 1671 and completed six years afterwards, it cost 7,388*l.* The body of the church, erected over the crypt of the Norman fabric, cost 8,072*l.* The rounded stylobate that rises from within the parapet and angle scrolls of the tower carries a peristyle of twelve Corinthian columns, the columns support the flying-buttresses which resist the thrust of the upper portion, the spire and lantern being carried by the dome of the inner cylinder, 11 ft. internal diameter, and 9 in. thick. The spirelet is supported by a similar construction within the lantern. The steeple was repaired by Sir William Staines (then a young stone-mason) at the end of the last century. Its restoration, in 1818-20, by George Gwilt the younger, was rendered necessary by the exfoliation of a wrought-iron tie-bar, which had been worked into the masonry, causing the upper part of the spire to become tilted very visibly. Gwilt re-built the upper peristyle and the obelisk for a height of about 40 ft., using red granite for the columns and their entablature at the lantern stage. As the foundations of the church were subsequently discovered to be defective, some important works were carried out under his directions, when the remains, *temp.* William I., of the original building were identified.[1] In 1867 the galleries were removed, and the interior re-arranged, by Mr. Pedley; in 1879 the interior was renovated and redecorated, and the floor lowered 1 ft., by Messrs. Dove Bros., contractors, under Sir Arthur Blomfield's superintendence. About ten years ago, at a cost of nearly 2,000*l.*, Mr. Innes repaired the stonework of the tower and steeple, and stripped the cement from off the body of the church (of which the design is said to be based upon that of the Temple of Peace at Rome), so as to again exhibit the original walls, constructed of thin red bricks. In the vestry is Hawksmoor's plate, printed for Samuel Harding, showing the design, as at first intended, of a stone portico of two bays on the east side of the tower; that same feature appears as repeated on the tower's west side (where is now Bow Churchyard), in the old model preserved in the vestry.

JACOB MARIS, PAINTER.

THE Dutch painter, Jacob Maris, who has just passed away at the age of 61, was the eldest of the three brothers whose works are so well known throughout Europe. Their father was a printer living at the Hague, and finding Jacob, as a mere boy, devoted to drawing, sent him to the local Academy, where he studied under Van Hove and Stroebel. Later on Van Hove moved to Antwerp and Maris followed in his suite. In 1866 he went to Paris, and worked with *le père Hébert*; but he probably learned far more from his friends Diaz, Daubigny, and others of that school, although he always kept his own individuality. His greatest work is the marvellously realistic "Amsterdam," which has figured at so many exhibitions. After the troubles of 1871, Maris left Paris for the Hague, which he had since then made his permanent home.

Jacob Maris was an all-round painter. He worked in oil and water-colors, and in black-and-white; and he by no means made landscape his exclusive study. His "Fille au piano" and "Fils au violon" are fine examples of his figure-work. His drawings include everything from which it was possible for an artist to make a study — windmills, trees, seashores, peasants — what not? Everything that had life and breath charmed him — and particularly his own country, that eminently picturesque old "Low Country," with its ineffable charm of color and atmosphere. At the Hague and at Amsterdam, the municipal museums contain specimens of his work; and many private collections are enriched by one or more examples of his versatile brush.

[1] See Gwilt's paper, with plates lxi-vi. in Vol. V of "*Vetusta Monumenta*;" and the *Builder*, Vol. X (1852).

ILLUSTRATIONS

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

A GROUP AT THE ENTRANCE TO THE OCEAN PARKWAY, BROOKLYN, N. Y. MR. FREDERICK MAC MONNIES, SCULPTOR.

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

THE SOUTH TERMINAL STATION, BOSTON, MASS. MESSRS. SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS; MR. GEORGE B. FRANCIS, ENGINEER, BOSTON, MASS.

For description see article elsewhere in this issue.

PLAN AND SECTION OF THE SAME.

THE ABBAYE AUX HOMMES AND THE LYCÉE, CAEN, FRANCE.

[The following named illustration may be found by reference to our advertising pages.]

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NOTES AND CLIPPINGS

MORE SLOT GAS-METERS TO BE USED. — The penny-in-the-slot gas-meter, introduced from Liverpool by the South Metropolitan Gas Company three or four years ago, has been an astonishing success, and a further development of the idea is now being tried. It has been a success, at any rate, so far as the attainment of a wide popularity may be considered to constitute success, though it is understood that the Gas-Light and Coke Company does not find it pay. On the other side of the water it pays very well, and they have nearly ninety thousand customers, and are adding to them at the rate of three hundred or four hundred a week. These are all penny customers, and they bring into the company's exchequer somewhere about 200,000*l* a year, so that this development has done much to neutralize any injury the electric light may have inflicted. So satisfied is the company with the result of its new departure that it is now getting out "shilling-in-the-slot" and "half-crown-in-the-slot" meters for customers a cut or two above the penny people. One great advantage the company has in this system is, of course, that there is no trouble and no difficulty in getting in money. "No penny, no gas" is the principle, and it will be the same with the shillings and the half-crowns, though these at present are only in the experimental stage. — *London News.*

PIG-IRON CASTING-MACHINE. — Since the recent description in these columns of the American pattern of pig-iron casting-machine, others have come to notice, formed on somewhat similar principles, though differing as regards details. At the recent meeting of the Iron and Steel Institute at Manchester, Mr. R. H. Wainford described an apparatus which reversed the principles of the system described in the Providence *Journal* of June 25 and August 27. In both these the casting-ladle was stationary and the moulds progressed to a point where the pig, either wholly or partly cooled, could be delivered. The Wainford machine consists of a central-inclined railway-track, with a horizontal narrow-gauge-railway line on each side of it, starting at a higher level, but

being crossed by the former about two-thirds of the way along. Outside the narrow-gauge lines are two rows of 40 moulds, placed horizontally, and underneath each row of moulds run tracks on which stand cars to receive the pigs. A large ladle of 15 tons capacity runs on the central line, and on each narrow-gauge line is a controlling-vessel which is attached to the ladle by an arm. The full ladle is brought to the lower end of the inclined ladle-track. The controlling-vessel is then attached to it, and both are hauled by means of wire-rope along the line of moulds, the ladle being gradually tilted. The inclined track was adopted in order to avoid the splashing of the molten metal, as by its use the lip of the ladle is kept low down and in a constant position with regard to the controlling-vessel. After the metal has remained in the moulds a short time the moulds are tilted over in pairs and their contents delivered to the cars beneath. The moulds are constructed in a light corrugated form and are placed in semi-circular casings, leaving a space or cavity between the moulds and the casings, in which is placed non-conducting material. The moulds are made detachable, and may be readily taken out and replaced. They revolve upon trunnions to discharge, but a locking-gear is provided, and the spaces between the moulds is automatically closed during the operation of casting. This system allows of continuous casting, the moulds being held perfectly still while the metal is solidifying, which is considered an advantageous point. With the 15-ton ladle and 40 moulds in line, a daily capacity of 1,440 tons is claimed. The space occupied by the plant is only 36x96 feet, and the power required is but 5 horse-power to haul the ladle and the controlling-vessel. — *Providence Journal.*

London's Underground Railroads. — Those whose business takes them past the "heart" of the city — the Bank of England, the Royal Exchange and the Mansion House — will know the disorganized state of the roadway at this point, caused by the various underground electric-railway workings now approaching completion, says the *London Mail*. In front of the Royal Exchange is the city terminus of the Central London Railway, whose line to Shepherd's Bush, via Oxford Street and Notting Hill, is making rapid progress. Opposite are the entrances to the Waterloo & City Railway, opened to the public in August last. At the junction of Lombard Street and King William Street is arising the new City station of the City & South London Railway, which will by the autumn of this year be able to convey passengers from Clapham Common to Moorgate Street in twenty-one minutes. Another eight minutes will, after the end of 1900, take the passenger to the Angel, and he will thus be able to journey from North to South London within the half-hour. By the end of 1902 the Great Northern & City Railway from Finsbury Park to Moorgate Street is expected to be complete. Capital will probably shortly be asked for by the City & Brixton Railway, which proposes to construct a line from the present King William Street terminus of the City & South London Railway to Brixton, passing via St. George's Circus under the Kennington and Brixton roads. Yet another projected line is the Charing Cross, Euston & Hampstead. All these lines will be electrically worked, and the Metropolitan Railway is at present conducting experiments with a view to adopting that power on its existing system. — *Boston Transcript.*

Rousseau on Roman Remains. — Rousseau's "*Confessions,*" a book more studied by literary men than artists, contains, it is worth noting, one of the most eloquent descriptions in print in regard to the effect on the mind of the great remains of Roman engineering works. Rousseau was on a journey from Geneva to Montpellier, and had been advised not to miss seeing the Pont du Gard on the way. The following is his comment: "It was the first work of the Romans which I had seen. I hoped to see a monument worthy of the hands which had raised it; and for the first time in my life, my expectations were surpassed by the reality. It belonged only to the Romans to produce such an effect. The aspect of this simple and noble work struck me all the more that it was in the midst of a desert where the silence and solitude increased its effect; for the so-called 'bridge' is in reality only an aqueduct. One asked oneself what power could have transported all these immense stones to such a distance from any quarry, and united the forces of thousands of men in a place devoid of inhabitants. I walked along the three stages of this superb construction, with a respect which made me almost shrink from treading on it. The echo of my footsteps under the immense arches made me think I could hear the strong voices of the men who had built it. I felt lost like an insect in the immensity of the work; I felt, along with the sense of my own littleness, something nevertheless which seemed to elevate my soul; I said to myself, with a sigh — 'O that I had been born a Roman!' I remained several hours in this rapture of contemplation. I came away from it in a kind of dream, and this reverie was not favorable to Mme. de Larnage [the latest of Rousseau's numerous objects of sentimental attachment]. She had been careful to warn me against the attractions of the young women of Montpellier, but not against the Pont du Gard. One cannot think of everything." This outburst of enthusiasm is the more noticeable, as in general Rousseau says little in the "*Confessions*" either of architecture or of any of the arts except music, to which he was passionately devoted. — *The Builder.*

Recovery of a Painting stolen at the Centennial. — A curious case has recently been decided in Philadelphia. An artist, Philip H. Holmes, of Gardiner, Me., painted, for the Philadelphia Exposition of 1876, a landscape entitled "The Adirondacks, from Vermont." It was afterward hung in the gallery of the permanent art exhibition which followed the Centennial, and when this exposition was closed Mr. Holmes went to Philadelphia to get his painting, only to find that it had disappeared, leaving no trace of its whereabouts. Six years later one of Mr. Holmes's former pupils discovered the painting hanging in the lobby of the Girard House, Philadelphia, and labeled "The Shenandoah Valley." Notwithstanding the claim of a number of Grand Army veterans who were in the hotel at the time, that the landscape was really one of the Shenandoah Valley, the pupil was so positive that it was Mr. Holmes's picture that he sent the latter word of his discovery. Mr. Holmes went to Philadelphia, identified the painting, and brought suit to recover it. The proprietor of the hotel, the late Andrew M. Moore, swore that he had purchased the painting at an auction-sale of the goods of a saloon-keeper, Herman Minor, at Tenth and Chestnut Streets, and Mr. Minor testified that he had, in turn, purchased the picture from a Mr. Winter, while it was stated in court that the latter had bought the canvas from some unknown persons. The case dragged through the local courts of Philadelphia for some years, and it was only last week ascertained that it had been settled by Mr. Holmes paying all the costs and charges and receiving his painting in return. Now the question is, who obtained the picture in the first place and did any other paintings in the Philadelphia permanent exhibition also disappear in like manner. — *N. Y. Times.*

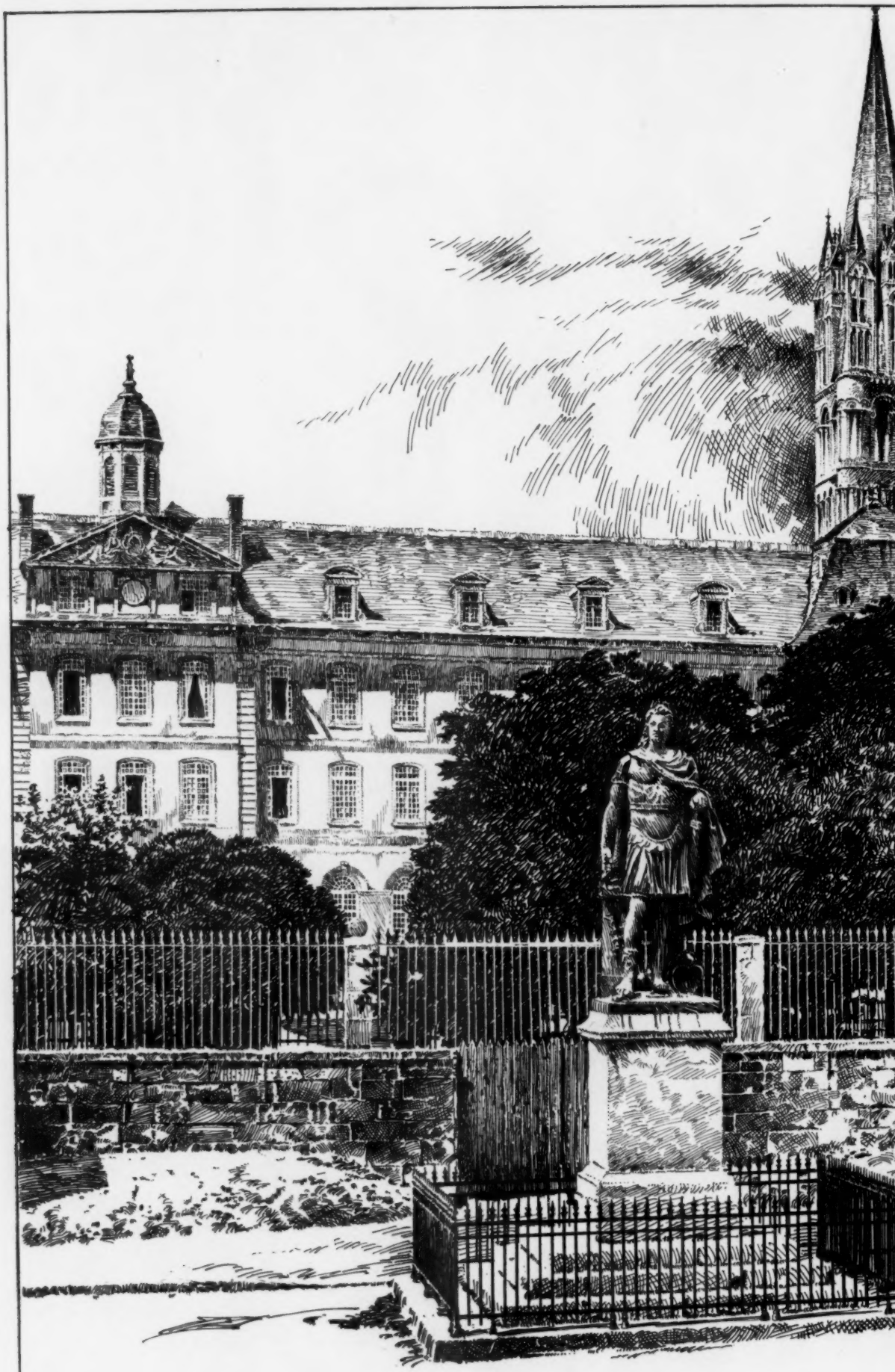
Roman Columbaria. — In the year 1726 an ancient building was discovered near the Via Appia, about a mile and a half outside of Rome, consisting of three sepulchral chambers of the servants and freedmen of Augustus and his wife Livia. Only one of the three rooms was cleared of the earth and rubbish, which Bianchini inspected carefully. Rows of small niches, like pigeons' nests, one row above the other, ran along the four sides of the room, and every niche contained two or more "*ollæ cinerariæ,*" or little urns of terra-cotta, in which the ashes of the dead were deposited. Above the niches were tablets containing the names and the offices of the persons whose remains lay in the urns beneath. Bianchini gives many of these inscriptions, which throw considerable light on the manners and domestic habits of those times; several of them refer to female servants of Livia. The total number of urns in that one room was above 1,000. Another building of the same description had been discovered some years before in another vineyard by the Via Appia, about half a mile nearer Rome. It also consisted of three rooms, which contained at least 3,000 urns, likewise of servants and *liberti* of Augustus; Fabbretti published a description of them. The names in the inscriptions denote individuals from every part of the Roman empire, some natives of Asia Minor and Syria, and others from the banks of the Danube, the Rhine or the Ebro. Some of the inscriptions refer to the time of Claudius, and even to a later period, but by far the greater number belong to the time of Augustus. Other sepulchral deposits have been found of the slaves and freedmen of that emperor and his wife Livia, altogether showing the amazing number of servants attached to the great Roman families. — *The Architect.*

Stonehenge for Sale. — Sir Edmund Antrobus, who succeeded to the ownership of Stonehenge so recently as April last, on the death of his father, has decided to lose no time in seeking to transfer that mysterious monument to the custody of the nation. Lest it might be supposed that he was influenced by archæological, sentimental, or even philanthropic motives, the advisers of the young baronet suggest that a price ought to be obtained which will bear comparison with the very large amounts given nowadays for works of art, and in order to make this perfectly clear, Sir Edmund asks of the Government for this relic of unfathomed antiquity, together with some 1,300 acres of surrounding land (subject to pasturage and sporting rights), £125,000 — a sum which does not unduly err on the side of modesty. Whether an eighth of a million sterling, or nearly £100 an acre, is or is not a fancy price for a barren area on Salisbury Plain, it is evident that Stonehenge is unique, and for the honor of England it is desirable to make such a monument safe for all time from the danger of falling into the hands of speculators or advertisers. Doubtless, the Chancellor of the Exchequer, who has just bought the Netheravon estates, on the same plain, of Sir Michael Hicks-Beach, at the very satisfactory rate — for himself as vendor — of 37 years' produce of the gross rental as fixed by the arbitrators, will entertain a kindly feeling towards his brother-baronet land-owner, and induce the Treasury to hasten to complete the bargain. — *Building News.*

The Range of the Incendiary Locomotive-spark. — Investigations made at Purdue University in Indiana do not bear out the current belief that locomotive-sparks are the cause of the greater number of the forest-fires. In the Indiana experiments a series of large pans were placed at distances of 15, 25, 50, 75, 125, 175, 275, and 375 feet from a railroad, at a point where there was a heavy grade, and where many freight-trains passed daily. Each pan was covered with soft cotton cloth, so that if live cinders reached them, the fact would be known by scorched or burned places in the cloth. When the experiments were concluded, it was found that the greatest number of sparks or cinders had fallen in the pans fifty and seventy-five feet from the track. The largest cinder did not equal the size of a white bean, while in no instance was the cloth in the pans even scorched. The inference was that if the cinders were hot when they left the smoke-stacks, they had lost their heat in travelling the fifty or seventy-five feet. This would indicate that fires communicated from locomotives are rare. — *N. Y. Evening Post.*

The Longest Asphalted Street in the World. — Philadelphia can boast of the longest asphalted street in the world. Broad Street has that unique distinction. First, as already stated, it is the longest asphalted street in the world; secondly, it is the only street which is of even width for eleven miles, and this width is the greatest ever attained by any street for a course of eleven miles. It is also the straightest street, for from League Island to the county line it does not vary an inch, except where the great City Building causes the street to turn around it. Seven miles of the street are asphalted, but the remainder is provided with a roadbed of fine macadam, which is continued by the old York road, which extends for about twenty miles farther on. A carriage can drive on this street and road and make only one turn in thirty-one miles. Broad Street is 113 feet wide and measures 69 feet from curb to curb, and thirty-five men can walk abreast on it. — *Scientific American.*

S. J. Parkhill & Co., Printers, Boston, U. S. A.



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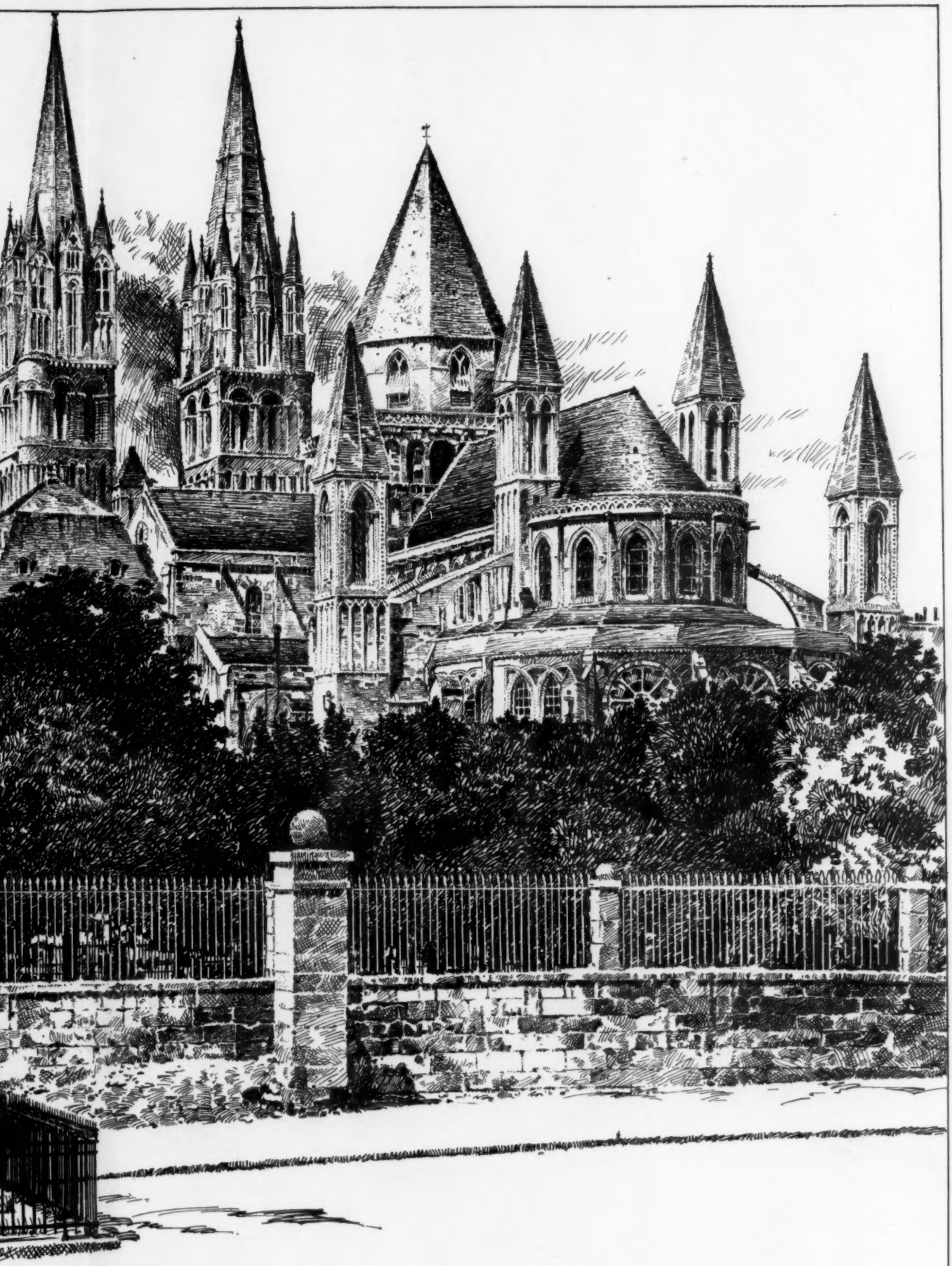

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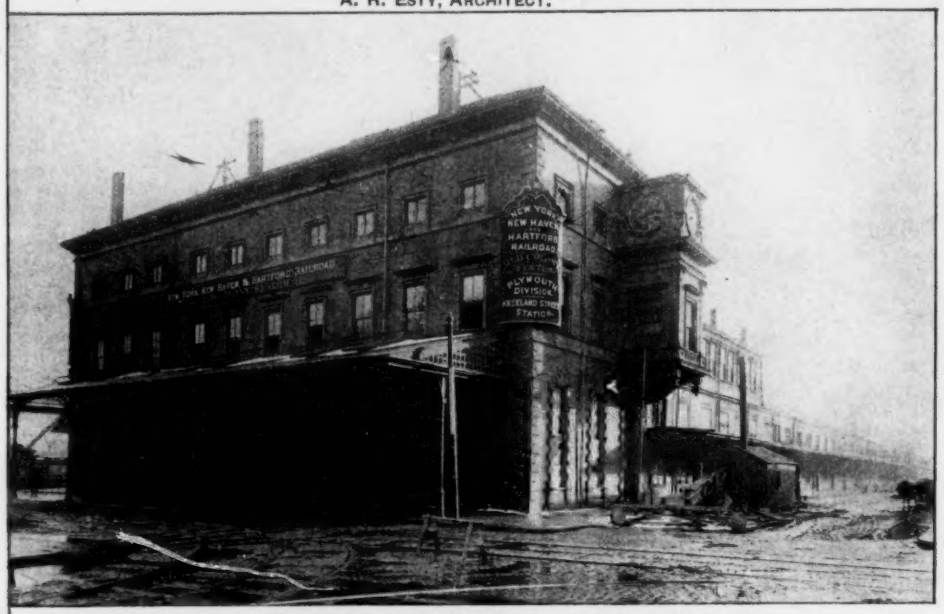

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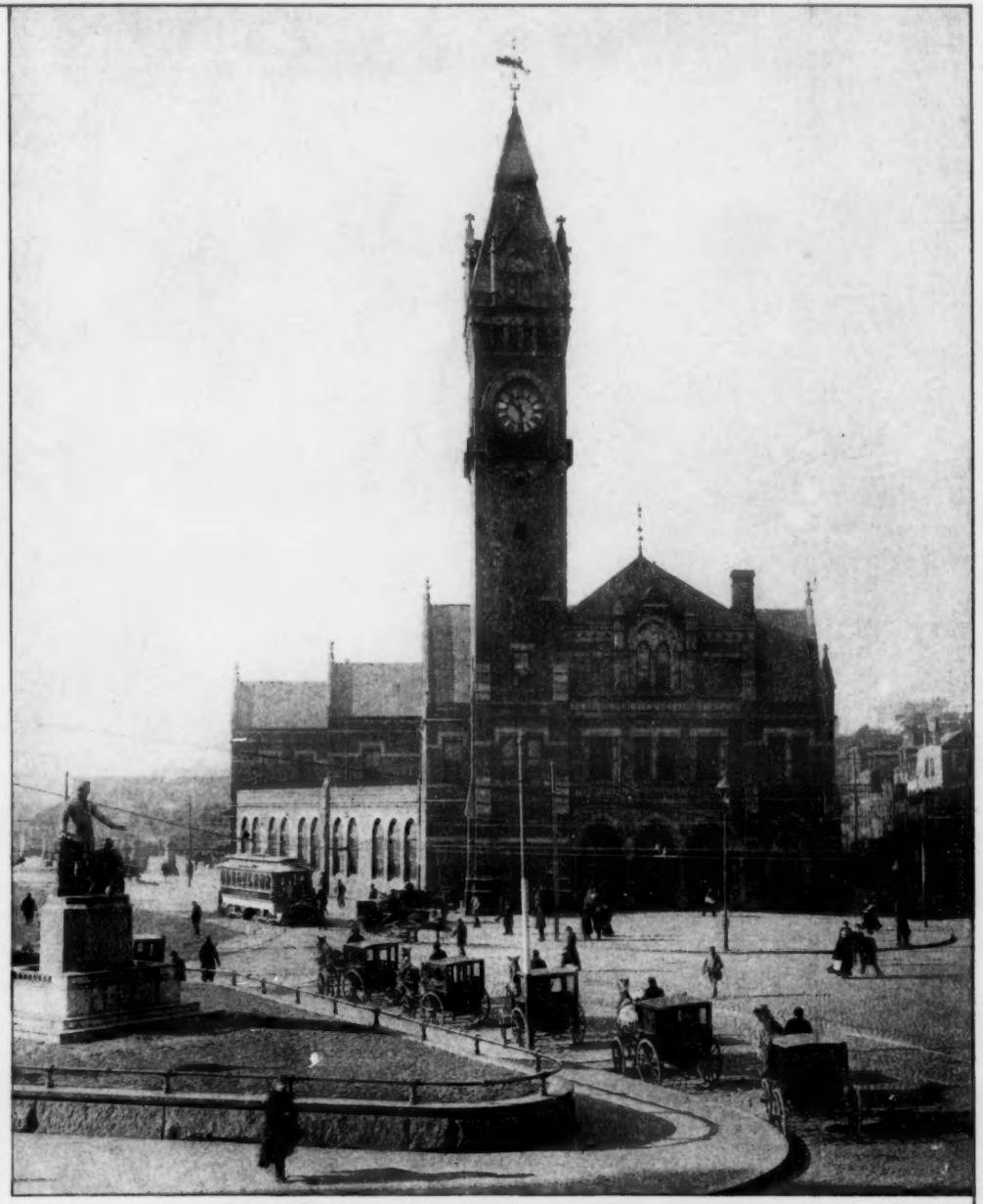

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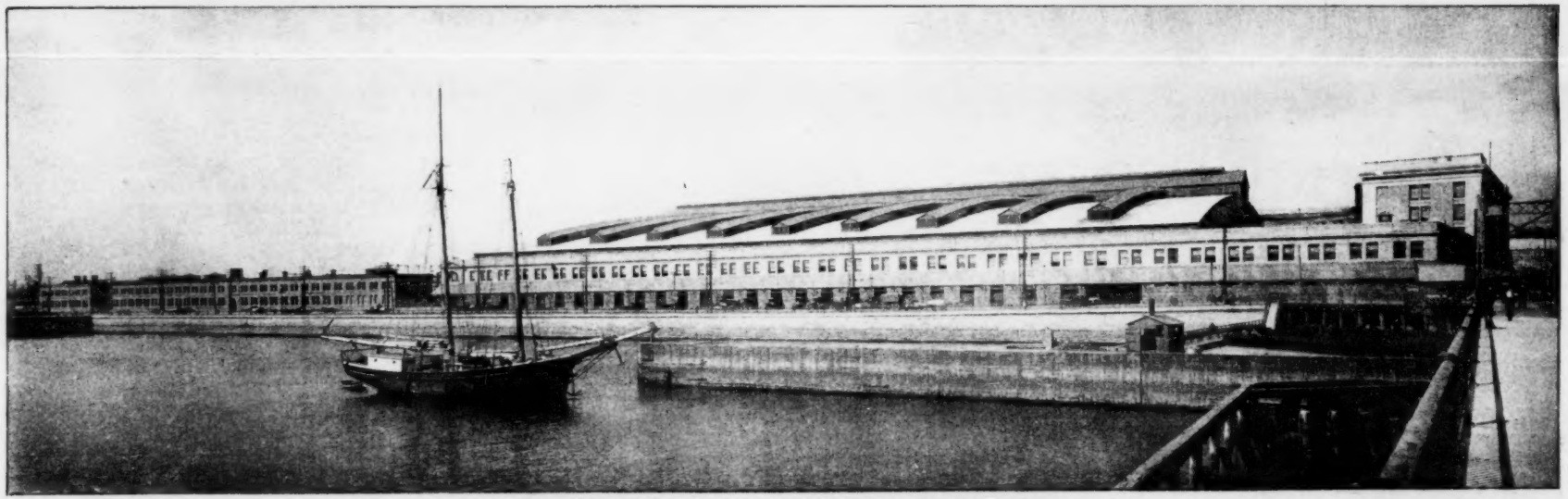

THE SOUTH TERMINAL, FROM FORT POINT CHANNEL.

THE SOUTH TERMINAL STATION, BOSTON, MASS.

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS. GEORGE B. FRANCIS, ENGINEER.

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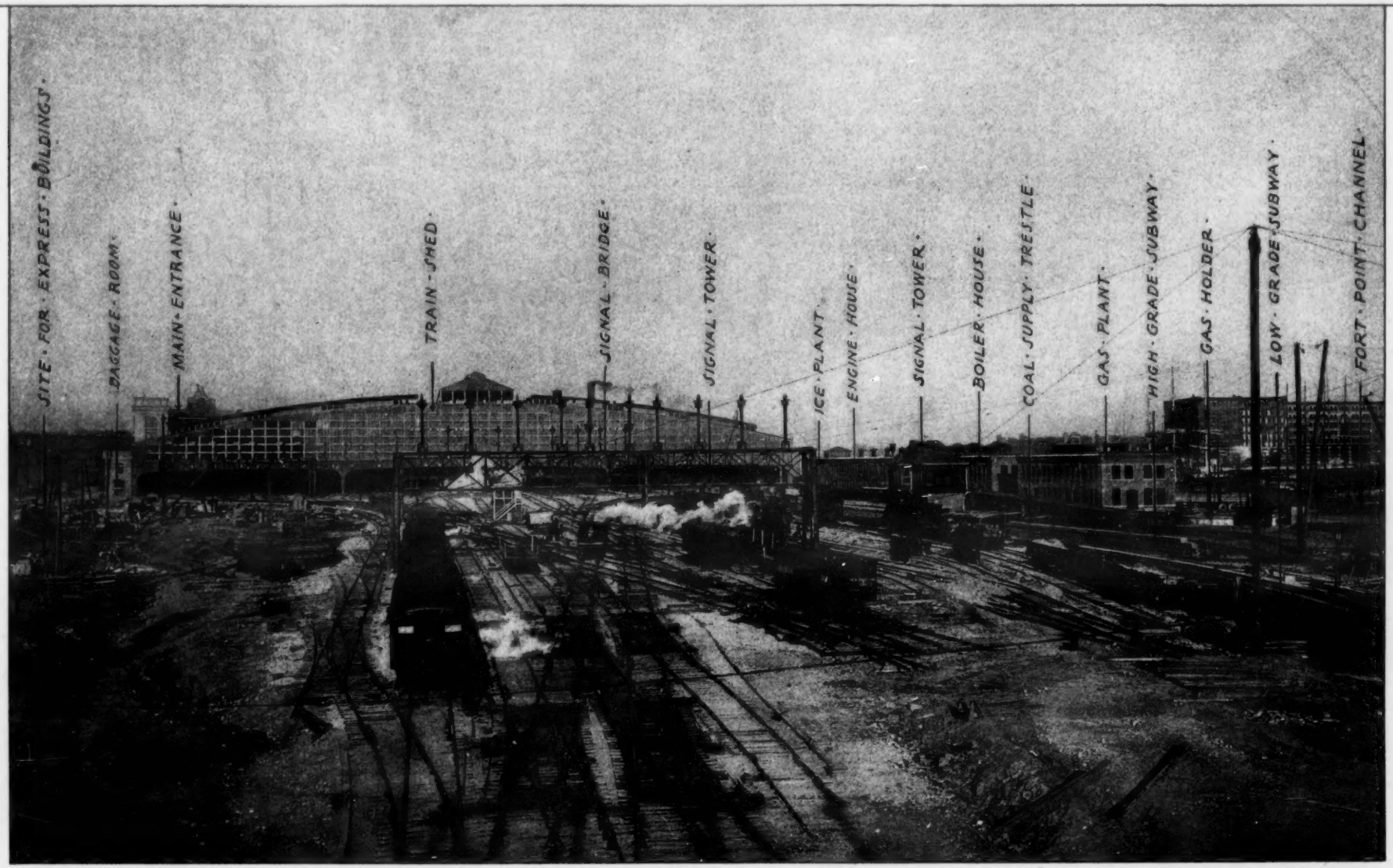
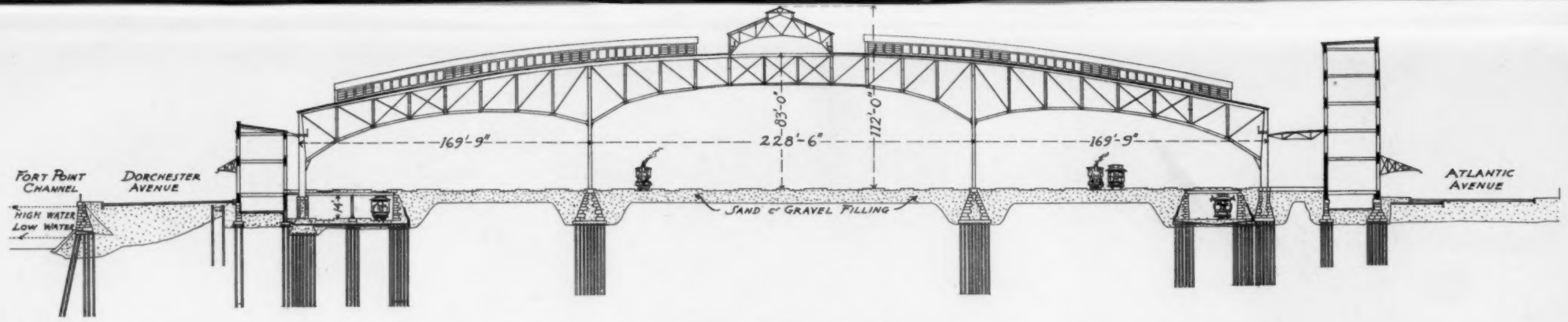
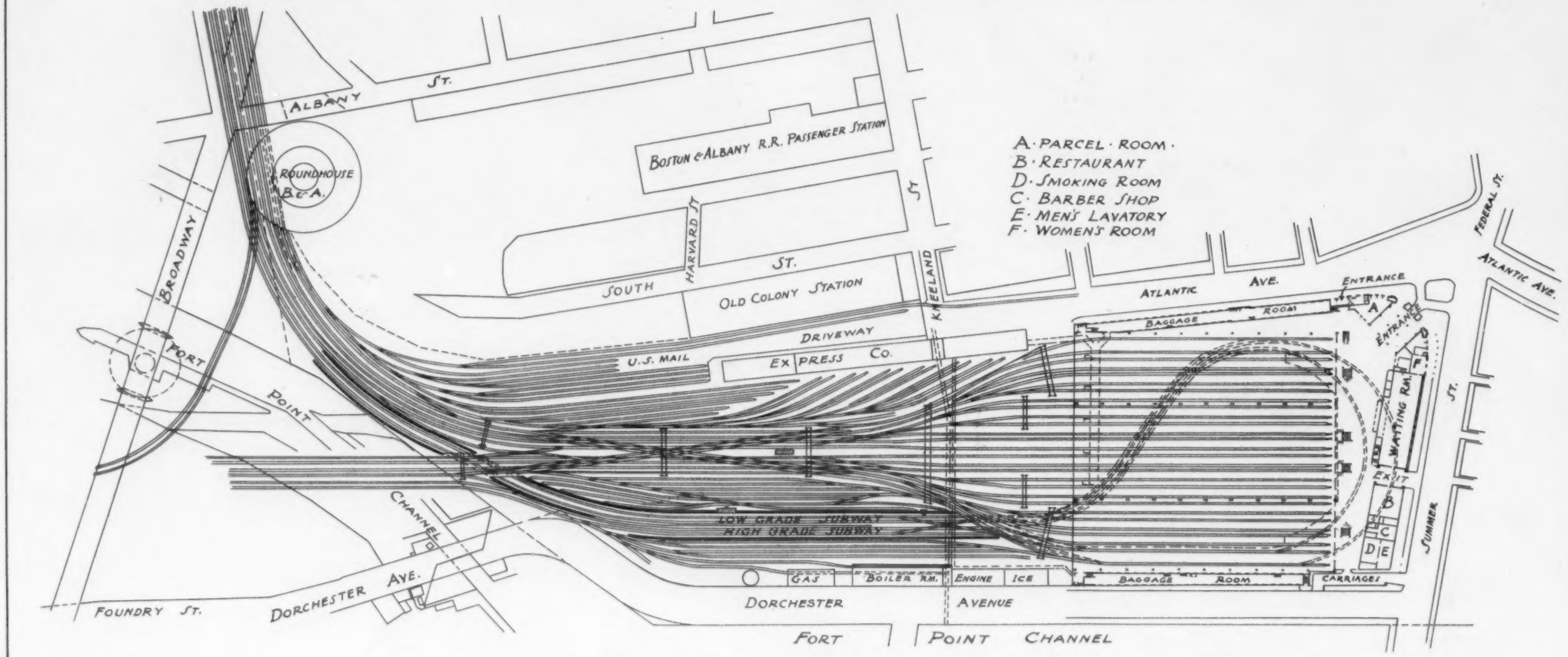


THE TRAIN YARD, DURING CONSTRUCTION.



SECTION, LOOKING NORTH.



THE SOUTH TERMINAL STATION, BOSTON, MASS.

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The American Architect and Building News

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BUILDING MATERIALS.

Reported for the American Architect and Building News.

BUILDING MATERIALS	New York. (Wholesale Prices.)	Boston. (Prices to Builders and Contractors.)	Philadelphia.
STONE. (₱ cubic foot, rough.)			
Foundation:			
Dimension	@	5 00 ₱ ton.	
Block	@	4 60 ₱ perch.	
Rubble	@	1 25 @ 1 50	Conshocken 1 45 @ 2 50
Sandstone:			
Longmeadow	@ 80	80 @ 90	
Kibbe	@ 90	90 @ 1 10	95 @ 1 05
Brown (Connecticut)	1 00 @	1 00 @ 1 30	1 05 @ 1 25
Amherst Ohio	90 @ 95	90 @ 1 00	85 @ 95
Berea "	75 @ 1 00	85 @ 90	55 @ 75
Berlin "	75 @ 1 00	80 @ 90	85 @ 95
Belleville	80 @ 1 25	25 @ 1 35	1 00 @ 1 10
New Brunswick (Dorchester)	@ 1 00	75 @ 90	1 05 @ 1 15
Potsdam Red	@ 1 30	@ 1 40	@ 1 40
Caen	@	@ 2 00	1 25 @ 1 35
Carlisle. English	@ 1 05	@ 1 05	95 @ 1 05
Corse Hill (Scotch)	@ 1 05	@ 1 05	95 @ 1 05
Granite: (*Maine*)		@ 60	55 @ 65
Limestone:			
Bedford	45 @ 1 25	95 @ 1 00	75 @ 85
Joliet	1 00		Richmond
Lemont			₱ 75 @ 1 50
Serpentine		10 50 per ton.	Perch 4 50 @ 5 50
Bluestone: (₱ sq. ft.)			1 in. th. 10 @ 25
Sidewalk	30 @ 5 00	40 @ 1 75	37 @ 50
Planed	50 @ 6 00	@ 75	
Marble: (₱ cu. ft.)			
Lee, Mass	@	1 75 @ 2 50	2 00 @ 2 50
Rutland, white and blue	@	@ 3 00	2 00 @ 3 00
Sutherland Falls	1 25 @ 1 75	@ 2 00	1 70 @ 3 00
Glens Falls, black	@	@	4 00 @ 4 50
Italian, blue-veined	@	@	2 50 @ 2 75
" Sienna	@	@	@ 5 00
Tennessee, red	@	@	4 00 @ 6 00
" Knoxville	@	@	3 00 @ 4 00
Pennsylvania, blue	@	@	2 00 @ 3 00
Vermont, white	@	@	2 25 @ 3 00
Slate: Roofing (₱ square)			
Green	5 00 @ 6 00	4 75 @ 5 25	2 90 @ 3 60
" unfading	5 00 @ 6 00	5 50 @ 6 50	4 25 @ 5 00
Purple	5 00 @ 6 00	5 50 @ 6 50	4 50 @ 5 50
Red	@ 10 00	10 00 @ 11 00	11 50 @ 13 00
Black, Lehigh	4 25 @ 4 75	@	4 00 @ 4 35
" Chapmans	@	@	4 50 @ 5 00
Genuine Bangor	4 35 @ 5 50	4 75 @ 5 90	4 35 @ 5 50
Unfading black,	6 00 @ 8 50	6 00 @ 8 50	6 50 @ 9 00
" "	5 50 @ 8 00	5 50 @ 8 00	6 50 @ 9 00
Tiles, Am. ₱ M.	@	@	@ 28 00
N. Peach Bottom, war. unfading	@	@	5 76 @ 6 25
Fire Clay Roof Tile on cars at fac.	8 00 @	8 00 @	8 60 @
LUMBER. — ₱ M.			
Boards: (*Ordinary dimensions.*)			
Pine, 1st quality, clear	65 00 @ 75 00	55 00 @ 75 00	47 50 @ 60 00
" 2d quality	55 00 @ 60 00	@ 55 00	38 00 @ 48 50
" 3d quality	18 00 @ 22 00	@ 45 00	27 50 @ 36 50
Spruce	@ 25 00	14 00 @ 20 00	15 00 @ 21 50
Hemlock	ea13½ @ 14	13 50 @ 18 00	11 50 @ 13 75
Yellow pine	20 @ 40	22 00 @ 40 00	14 00 @ 29 00
Cypress	@	28 00 @ 55 00	30 00 @ 38 00
Clapboards:			
Pine	@	35 00 @ 55 00	14 00 @ 25 00
Spruce	@	24 00 @ 40 00	*Not sold.*
Framing Timber:			
Pine			25 00 @ 37 30
Spruce	14 00 @ 16 00	17 00 @ 20 00	15 00 @ 21 50
Hemlock	12 00 @ 16 00	14 50 @ 17 00	14 00 @ 20 00
Yellow pine	18 00 @ 21 00	25 00 @ 50 00	22 50 @ 30 00
Laths:	@		
Pine ..... Round Wood	@	2 00 @ 2 50	2 75 @ 3 00
Spruce ..... Slab	2 75 @ 3 00	2 25 @ 2 75	2 30 @ 2 35
Shingles:			
Pine, shaved ₱ M.	5 60 @ 6 00	@	
Pine, sawed "	4 00 @ 5 00	@ 450	
Spruce, sawed "	1 80 @ 2 00	1 50 @ 2 00	
Redwood ₱ 125.	1 40 @ 1 60	3 25 @ 4 00	
Cedar split ₱ M.		@ 6 00	30" $35 @ 40
Cedar sawed "	@	2 75 @ 3 75	24" 8 @ 21
Cypress. Split ..... 7 x 24 "	18 00 @ 20 00	5 00 @ 6 00	20" 35 @ 14
			11 00 @ 14

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ARCHITECTS' REMOVALS, Etc.

G. A. Schellenger, architect, has removed his offices from 128 Broadway to 130 Fulton St., New York City. 1238

WANTED.

AGENCY.—An architect of fifteen years' experience wishes to represent on the road some branch in the building trade where a knowledge of architecture is desirable—must be for old and reliable firm only. Address "Energetic," care *American Architect.* 1238

WANTED.

POSITION.—An experienced architect accustomed to handling large building operations would accept a good offer as such. "H.," Room 54, Bible House, New York City. t.f.

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PARTNER.—A partner wanted, with capital or influence, by a draughtsman with fourteen years' experience on large work. For the past five years has received $35 a week salary, in present position four years, has taken two years special course at Boston Tech., has won scholarship, can give best references. Address "Influence," care of *American Architect.* t.f.

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 five cents.*]

632,240. FLEXIBLE AND ADJUSTABLE RULER FOR DRAWING CURVES.—Gordon P. Clark, London, Eng.
632,258. RULER.—John T. Glascock, Hopkinsville, Ky.
632,291. DOOR-CHECK.—Henry G. Voight and Norman B. Hurd, New Britain, Conn.
632,293. DOOR-BELL.—Henry G. Voight, New Britain, Conn.
632,294. REVERSIBLE LATCH.—Henry G. Voight, New Britain, Conn.
632,295 DOOR-KNOB.—Henry G. Voight, New Britain, Conn.

BUILDING PATENTS.

632,299. AUTOMATICALLY OPERATING DOORS.—John H. Whitaker, Davenport, Ia.
632,310. WEATHER-STRIP.—Benjamin F. Higgins, Neoga, Ill.
632,326. TRANSOM-LIFTER.—Joseph Siewert and Michael Wisniewski, Chicago, Ill.
632,329. SASH-CENTER.—Robert T. Teakle, Detroit, Mich.
632,333. DOOR-HOLDER.—Oliver Beck, Watford, Eng.
632,347. AUTOMATIC STOP FOR ELEVATORS.—Jas. G. Gracey, St. Louis, Mo.
632,356. COLD-STORAGE APPARATUS.—James T. Ludlow, San Francisco, Cal.
632,365. SHUTTER-WORKER.—Samuel L. Powell, Newberry, S. C.
632,369. MEANS FOR OPERATING ELEVATOR-DOORS.—Elliott S. Robison, Chicago, Ill.
632,371. AUTOMATIC DAMPER-REGULATOR.—John J. Roy, Lawrence, Mass.
632,373. AUTOMATIC SINK-DOOR OPENER.—Larkin S. Safford, Kelso, N. D.
632,388. APPARATUS FOR THAWING FROZEN GROUND.—John Whitehead, Urbana, O.
632,396. GULLY-TRAP FOR DRAINS.—Jas. Brightmore, Tideswell, Eng.
632,411. SLIDABLE AND SWINGING WINDOW-SASH.—Bernard Hausmann, San Francisco, Cal.
632,414. ELEVATOR-CAR ARRESTER WITH MOVABLE GUIDE-STRIPS.—James H. Johnson, Newark, N. J.
632,415. AUTOMATIC SAFETY-STOP FOR ELEVATORS.—James H. Johnson, Newark, N. J.
632,468. CISTERN-CLEANER.—Henry F. Mueller, New Orleans, La.
632,482. ARTIFICIAL STONE.—Albert H. van der Vijgh, Hendrik van der Vijgh and Gerhard van der Vijgh, Amsterdam, Netherlands.
632,506. HEATING AND VENTILATING OR REFRIGERATING APPARATUS AND SYSTEM.—William E. Allington, Saginaw, Mich.
632,507. FAN-BLOWER HEATING APPARATUS.—William E. Allington, Saginaw, Mich.
632,508. DRYING APPARATUS.—William E. Allington, Saginaw, Mich.
632,510. BRACKET FOR HOLDING WINDOW-SASHES.—James I. Brown, Ottumwa, Ia.
632,512-513. ELECTRIC BURGLAR-ALARM.—Clyde Coleman, Chicago, Ill.
632,523. FIREPROOF CONSTRUCTION.—Godfrey Fugman, Cleveland, O.
632,528. FIREPROOF STRUCTURE.—William S. Hull, Jackson, Miss.
632,571. BLIND-FASTENER.—Edward Hughes, New Bedford, Mass.
632,582. VENTILATING SYSTEM.—August Miller, Burlington, Ia.
632,584. METALLIC CENTERPIECE FOR CEILINGS.—Robert Oehring, Meadow Grove, Neb.
632,607. DRAWER OR SLIDE EQUALIZER.—Otto H. L. Wernicke, Grand Rapids, Mich.
632,609. DOOR-HANGER.—Thomas Wilbern, Carpentersville, Ill.

BUILDING PATENTS.

632,620. Automatic Dead-Latch Lock. — Chas. Backer, New York, N. Y.
632,631. Water-Closet. — Gustave Biebuyck, Brussels, Belgium.
632,651. Automatic Car Safety Device for Electric Elevators. — James H. Johnson, Newark, N. J.
632,653. Painting Apparatus. — Geo. G. Lewis, Sycamore, Ill.
632,661. Knob Attachment. — Oscar Stoddard, Detroit, Mich.
632,664. Burglar-Alarm Lock. — Edward M. Wagner, Denver, Col.
632,669. Metallic Building Construction. — Thomas Bailey, New York, N. Y.

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

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

ADVANCE RUMORS.

Athens, Ga. — H. S. West is interested in a movement to organize a company to build a hotel here to cost $50,000.

Atlantic City, N. J. — H. G. Hallinger, of Armory Park, Camden, contemplates building a hotel here to cost $175,000.

Baltimore, Md. — Jackson C. Gott is preparing plans for an eight-story brick and stone warehouse to be erected on Liberty St., for Louis Yakel.

Berkeley, Cal. — The jury composed of American and foreign architects has awarded to M. Bernard, the Paris architect, the first prize in the competition resulting from Mrs. Phoebe Hearst's offer of prizes for the best plans for new buildings for the University of California.

Chicago, Ill. — D. B. Scully, 416 Illinois St., will build a $50,000 residence this fall at the corner of Beach Ct. and Irving Park Ave.

With a capital stock of $600,000 divided into shares of $100 each, a hotel of the type of the Mills' hotels of New York City is being planned for Chicago's downtown district. The building will be fireproof, of ten stories, and 1,130 sleeping rooms.

J. W. Thomas, manager of the Inland Steel Co. at Chicago Heights has purchased lot "A," having a frontage of 129′ in West End Ave. and 140′ in 17th St. Mr. Thomas will at once cover the ground with a steel structural building to be used for stores, offices and theatre, and which it is estimated will cost about $90,000.

Denver, Col. — It is reported that it is proposed to enlarge the Albany Hotel, at a cost of $100,000.

Des Moines, Ia. — A new hospital under the management of members of the Methodist Church is to be established in this city. A site has been given, and money for construction and endowment is now being raised. It is hoped to begin work on the buildings within a few months.

Findlay, O. — The Lutheran Society will build a church on W. Front St.; estimated cost, $10,000. Rev. W. G. Dressler.

Fitchburg, Mass. — Henry M. Francis, Wallace Building, has prepared plans for a $35,000 brick school to be erected on North St.

Gastonia, N. C. — The Methodists will erect a new church to cost $12,000. Address George A. Gray.

Geneva, O. — A $20,000 public library will be erected at this place as a monument to Platt R. Spencer, who introduced what is known as the Spencerian system of penmanship.

Grand Rapids, Mich. — Plans have been prepared by William G. Robinson, 62 Houseman Building, for a three-story club-house for St. Albertus Society, of which Joseph Wegienka is president. It will cost about $25,000.

Fulton, N. Y. — The Henri Nestle Co., manufacturers of Nestle's Food, are establishing a large plant for the production of their specialties in the United States. This firm has its headquarters at Vevay, Switzerland, and before establishing its plant in America, it has already constructed a similar plant in Sweden. The plant will be fireproof, and of the most modern construction, using steel framework for the floors and roofs, with brick side walls, the floors being constructed of concrete supported by steel beams. The Berlin Iron Bridge Co., of East Berlin, Conn., furnished and erected all the steel structural work connected with this building, under the supervision of Mr. H. J. White, consulting engineer for Henri Nestle.

BUILDING INTELLIGENCE.

(*Advance Rumors Continued.*)

Highlandtown, Md. — Plans for a new $12,000 stone church for the Methodist Episcopal Society are being prepared by F. E. & H. R. Davis, of Baltimore.

Ida Grove, Ia. — A new church to cost $10,000 will be erected by the Catholic Society.

Kansas City, Mo. — W. A. Kelley, 947 New York Life Building, has been awarded the contract for the erection of an addition to the Home of the Little Sisters of the Poor, at $25,000.

Knoxville, Tenn. — According to local papers the Southern Railway Co. will at once begin the erection of a large marble depot, plans for which have been prepared by Architect Frank Milburn, of Charlotte, N. C. F. S. Gannon, general manager, Southern Railway, Washington, D. C.

Lancaster, Pa. — The Building Committee of the Board of Trustees of Franklin and Marshall College have instructed Architect C. Emlen Urban to prepare plans for a new science building for the college, to be 50′ x 190′, two and three stories high, built of pressed brick and stone; cost, $40,000.

Lexington, Va. — W. G. McDowell has prepared plans for a new building to be erected at the Virginia Military Institute in memory of General Francis H. Smith. The structure is to be three stories, of brick and stone, 74′ 6″ x 196′, arranged for various departments of the institute.

Los Angeles, Cal. — The citizens have voted to issue $200,000 bonds for general school improvements.

Manitowoc, Wis. — The North Side School Board has decided to build a $12,000 addition to the Luling School.

Minneapolis, Minn. — The contract for erecting the East Side High School building has been awarded to John Wunder, at $67,000.

Monon, Ind. — The contract for erecting a schoolhouse has been awarded to Hennson Bros., Noblesville, at $20,000.

Moorestown, N. J. — The Moorestown & Burlington Safe Deposit Co. has decided to erect a $25,000 bank building.

Mt. Holly, N. J. — The Burlington County Freeholders are stated to have decided to build an asylum for the insane at a cost of $60,000.

Muscogee, I. T. — The Missouri, Kansas & Texas Ry. Co. will build a $25,000 hotel. S. B. Fisher, Engr., St. Louis, Mo.

New Comerstown, O. — The plans of W. H. Herrick, of Mt. Vernon, for 2 six-room school-houses were the designs finally accepted by the School Board and the contract for construction has been awarded to H. D. Howell, at $18,740. This corrects error in our issue of September 2d of architect's name and contract price.

New Waterford, O. — L. W. Thomas, Canton, has prepared plans for a brick and stone public school building, slate roof and furnace; cost, $10,000.

New York, N. Y. — Sturgis & Hill Co., 42 E. 23d St., have been awarded the contract for alterations to stable on 33d St. and Park Ave. for Cornelius Vanderbilt, at a cost of $10,000.

George M. Jansen has filed plans for a three-story brick music-hall, 69′ x 100′ 4″, to be built on 42d St., near 7th Ave.; estimated cost, $45,000.

Ocean City, N. J. — A $75,000 hotel is contemplated by H. G. Hallinger, of Camden.

Overbrook, Pa. — Architects Field & Medary are preparing plans for a $15,000 house for George W. Blabon. The house will be modelled after the Elizabethan style of architecture, and will be of gray local stone with cut limestone trimmings.

Parkersburg, W. Va. — Caldwell & Drake have received the contract for the Nash School, for $25,897.

Portsmouth, N. H. — The bid of Mead, Mason & Co., Boston, Mass., at $29,870 has been accepted for constructing an electric-light building and boiler-house at the Navy Yard.

Richmond, Va. — Collis P. Huntingdon has purchased 1,350 acres of land near this city, and on a portion of it will build a reformatory for negro children of this State. Plans are being prepared.

Rockford, Ill. — D. S. Schureman is preparing plans for a three-story brick and stone addition to the high-school building, 113′ x 132′; estimated cost, $60,000.

Seattle, Wash. — The Colman Block is to be raised to five stories and used for a hotel to be run by the Hotel Dunbar Co. The company will expend $200,000 in enlarging and improving the building. A. Tidemand, architect.

South Bend, Ind. — The Vandalia Ry. Co. is considering the matter of erecting a passenger and freight depot to cost about $60,000.

St. Paul, Minn. — The contract for the foundations, superstructure and roof covering for the U. S. post-office, court-house and custom-house building has been awarded to the D. H. Hayes Co., Chicago, Ill., at $144,000.

Washington, D. C. — It has been announced at the headquarters of the Tabernacle Society in this city that Mrs. Ryan, the wife of Thomas F. Ryan, New York, had purchased from St. Paul's parish, this city, ground upon which will be erected a convent and chapel for the Sisters of the Perpetual Adoration. The plans for the building are now being prepared in Rome, and work will be begun immediately upon their arrival. The sisters who are to form the nucleus of the order in this country will come from Brussels.

Williamston, S. C. — Architects Wilson & Edwards, Columbia, have prepared plans for a brick and stone fireproof bank building for the Bank of Williamston.

APARTMENT-HOUSES.

Chicago, Ill. — *Twenty-seventh St. and Turner Ave.*, three-st'y & base. bk. & st. flats, 25′ x 92′, flat roof; $8,000; o., John Kolacek, 474 W. 26th St.

New York, N. Y. — *E. Sixth St., Nos.* 538-540, 2 six-st'y bk. flats, 23′ x 84′; $50,000; o., John J. Houlahan, 99 Nassau St.; a., Schneider & Herter, 46 Bible House.

Seventh Ave., cor. 55th St., eight-st'y bk. flat, 50′ x 94′; $140,000; o., John McKelvey, 412 W. 47th St.; a., Thom & Wilson, 111 Fifth Ave.

CHURCHES.

Boston, Mass. — *E. Broadway*, cor. O. St., Ward 14, fr. church, 70′ x 121′, pitch roof, furnaces; $12,000; o., Rt. Rev. John J. Williams; b., Holwell & Barry, 79 North St.; a., George A Clough.

Buffalo, N. Y. — *North and N. Pearl Sts.*, two-st'y st. & bk. church; $50,000; o., First Baptist Society; gen'l c., Brown, Stabell & Griffiths; a., Rob't A. Wallace.

Columbus, O. — *Bryden Road and Ohio Ave.*, st. church, 65′ x 80′, tile roof, furnace; $40,000; o., First Presbyterian Society; a., Yost & Packard.

New York, N. Y. — *Eighty-second St.*, nr. Amsterdam Ave., one-st'y bk. church, 89′ x 102′; $40,000; o., Roman Catholic Church Holy Trinity, W. 82d St.; a., J. H. McGuire, 3 W. 29th St.

EDUCATIONAL.

Hartford, Conn. — Three-st'y bk. building, 72′ x 122′, for the new Natural History Hall to be erected on the campus; $50,000; o., Trinity College.

FACTORIES.

Brooklyn, N. Y. — *Metropolitan Ave.*, nr. Manhattan Ave., four-st'y bk. factory, 50′ x 103′, gravel roof, steam heat; $10,000; o., Colby & Co., 694 Metropolitan Ave.; a., E. A. Schottell, 264 Manhattan Ave.

Chicago, Ill. — *Randolph and Market Sts.*, five-st'y bk. store & manufacturing building, 78′ x 90′; $30,600; o., Lind Building Co.; b., W. H. Kaiser; a., Jenney & Mundie.

N. Spaulding Ave., Nos. 965-969, three-st'y bk. factory, 105′ x 169′; $35,000; o., Nelson & Kreuter; b., P. N. Lotz, 60 Wabash Ave.; a., Huehl & Schmid.

Memphis, Tenn. — *Front St.*, four-st'y bk. factory, 153′ x 136′; $60,000; o., National Biscuit Company; a., Shaw & Shaw.

Milwaukee, Wis. — Five-st'y bk. factory, 60′ x 120′, asphalt roof, steam; $45,000; o., J. W. Maner; a., H. Messmer & Son.

Six-st'y bk. & st. factory 50′ x 200′, comp. roof, steam; $40,000; o., Mayer Shoe Company; a., E. R. Liebert, 26 Marshall Block.

Philadelphia, Pa. — *Glenwood Ave.*, nr. 7th St.; four-st'y bk. & iron factory building, 60′ x 160′; $20,000; o., Scott Paper Co.; b., John R. Wiggin.

Ludlow St., nr. 31st St., three-st'y bk. building, 18′ x 128′; $12,000; o., Quaker Milling Co.; b., A. Raymond Raff.

Piqua, O. — Four-st'y bk. factory & store-rooms, 70′ x 111′, comp. roof, steam; $15,000; o., Reed & Curtis; a., E. W. Hart & Co., Columbus.

BUILDING INTELLIGENCE.

(*Factories Continued.*)

Providence, R. I. — *Beach St.*, five-st'y steel fr. & bk. factory, 280′ x 51′, with ell 112′ x 51′; o., Brown & Sharpe Mfg. Co.; b., Norcross Brothers.

HOSPITALS.

Brooklyn, N. Y. — *Ralph Ave.*, nr. Pacific St., 7½-st'y bk. hospital, 39′ 8″ x 68′; $10,000; Hebrew Orphan Asylum; o., Moses May, Pres., 500 Bedford Ave.; a., J. B. Snook & Sons, 261 Broadway, New York.

Charleston, W. Va.—Three-st'y bk. & st. hospital building, 100′ x 175′, slate roof, steam; $15,000; o., West Virginia Miners' Hospital; a., Yost & Packard, Columbus, O.

HOTELS.

Brooklyn, N. Y. — *Ocean Ave.*, s w cor. Stratton's Walk, three-st'y fr. hotel & pavilion, 73′ 10″ x 343′, gravel & metal roof, steam heat; $50,000; o., Louis Stauch, Ocean Ave., Coney Island; a., Peter M. Coco, 8 Union Sq., New York.

New York, N. Y. — *Madison Ave.*, cor. 92d St., nine-st'y bk. hotel, 62′ 2″ x 100′ 8″; $350,000; o., W. H. Ebeling, Jr., 157th St. & Cauldwell Ave; a., Louis Korn, 37 Maiden Lane.

HOUSES.

Baltimore, Md — *Eutaw Pl.*, nr. the Park, three-st'y bk. dwell.; $30,000; o., Elias Blackshire; a., J. E. Laferty, Builders' Exchange.

Boston, Mass. — *Lawn St.*, nr. Heath St., Ward 19, three-st'y fr. dwell., 25′ x 47′, flat roof, stoves; $4,000; o., Mrs. P. H. Moore; b., P. H. Moore, 56 Lawn St.

Roxton St., nr. Glenway St., Ward 20, two-st'y fr. dwell., 27′ x 34′, pitch roof, furnace; $4,000; o. & b., J. S. McLean, Bowdoin Sq., Dorchester.

Oak Ridge St., nr. Morton St., Ward 24, two-st'y fr. dwell., 24′ x 36′, pitch roof, hot water; $4,500; o., Catharine A. Voy, 42 Temple St., Dorchester; b., A. M. Crowell.

Dudley St., nr. Bellevue St., Ward 23, two-st'y fr. dwell., 25′ x 30′, pitch roof, furnace; $3,000; o. & b., George W. Havey, Roslindale.

Harbor View St., No. 55, Ward 20, three-st'y fr. dwell., 25′ x 48′, flat roof, stoves; $4,000; o. & b., W. T. Henderson, 35 Spring Garden St.

Capen St., nr. Dyer St., Ward 24, two-st'y fr. dwell., 24′ x 42′, pitch roof, furnace; $4,000; o., Jeanie Morton; b., Matthew Morton, 21 Florida St.

Capen St., nr. Evans St., Ward 24, two-st'y fr. dwell., 24′ x 42′, pitch roof, furnace; $4,000; o., Jeanie Morton; b., Matthew Morton.

Neponset Ave., nr. Chickatawbut St., Ward 24, three-st'y fr. dwell., 28′ x 33′ x 38′, flat roof, stoves; $4,500; o., Arthur Murphy, Wollaston; a., W. M. Bacon.

Chickatawbut St., nr. Neponset Ave., Ward 24, 2 three-st'y fr. dwells., 18′ x 20′ x 63′, flat roofs, steam; $9,000; o., Arthur Murphy, Wollaston; a., W. M. Bacon.

Winship St., No. 50, Ward 25, two-st'y fr. dwell., 25′ x 39′, pitch roof, furnace; $3,800; o., Catharine Murphy and May McCarthy; b., J. & W. H. Muldoon, Brighton.

BUILDING INTELLIGENCE.

(*Houses Continued.*)

Park St., nr. Centre St., Ward 23, 2½-st'y fr. dwell., 36′ x 43′, pitch roof, furnace; $5,500; o., Mrs. E. P. Devens; b., Richard Duffee, Roslindale.

Blue Hill Ave., Nos. 15-21, 4 three-st'y bk. dwells. & stores, 23′ x 45′, flat roofs, stoves; $18,000: o., Estate J. P. Nichols; a., A. H. Cox and W. E. Putnam, Jr.

Unity St., No. 19, Ward 6, four-st'y bk. dwell. & store, 23′ x 55′, flat roof, stoves; $7,500; o., F. & M. Milano; a., F. M. Churchill.

Bay State Road, nr. Sherburne St., Ward 11, three-st'y bk. & st. dwell., 26′ x 70′, flat roof, furnace; $30,000; o., Emor H. Harding; a., Peters & Rice, Tremont Building.

Bloomington, Ind. — 2½-st'y bk. & st. dwell., slate roof, hot water; $7,000; o., Harry Jefferson; a., J. L. Nichols.

Brooklyn, N. Y. — *St. Nicholas Ave.*, cor. Ralph St., three-st'y bk. store and dwell., 20′ x 55′; $5,000; o., W. Maske, 16 Palmetto St.

Nostrand Ave., cor. Canarsie Road, 2 three-st'y fr. stores & dwells., 20′ x 59′, two families; $10,000; o., H. Cordes, 157 Hamburg Ave.; a., H. E. Funk, 1561 Broadway; b., Hafner & Gregorson, E. 31st St.

E. Fifteenth St., nr. Albemarle Road, two-st'y & attic fr. dwell., 22′ x 57′ 4″, shingle roof, steam heat; $8,000; o., Dean Alvord, Prospect Park South; a., J. J. Petit, 186 Remsen St.

Ave. C, cor. E. 21st St., 3 two-st'y & base. bk. dwells.; $17,000; o., E. C. Edwarks, 952 Bergen St.; a., C. Baxter & Son, 2582 Third Ave. New York City.

E. Fifteenth St., nr. Beverly Road, two-st'y & attic fr. dwell., 20′ x 48′, shingle roof, steam: $8,000; o., Dean Alvord, 191 Montague St.; a., Child & De Goll, 62 New St., New York.

E. Third St., nr. Avenue D, two-st'y & attic fr. dwell., 21′ x 27′, shingle roof; $6,000; J. V. Ohenwald, Ocean Parkway & Prospect Ave.; b., W. Grassman, 156 Buffalo Ave.

Hampton Pl., nr. Butler St. & Park Pl., 14 three-st'y bk. dwells.; $119,000; o., C. C. Haines & Co., 373 Fulton St.; a., Irving B. Ellis, 373 Fulton St.

Virginia and Hampton Pls., nr. Butler St., 6 three-st'y & base. bk. dwells., 18′ x 45′, felt & gravel roof, hot air; $51,000; o., C. C. Haines & Co., 373 Fulton St.; a., Irving B. Ellis, 373 Fulton St.

E. Fifteenth St., nr. Beverly Road, two-st'y fr. dwell., 33′ x 33′ 10″, shingle roof, steam; $7,500; o., Dean Alvord, 191 Montague St.; a., Child & De Goll, 62 New St., New York City.

Virginia and Hampton Pls., nr. Park Pl. & Butler St., 30 two-st'y & base. bk. dwells., 18′ x 45′, felt & gravel roofs, hot air; $195,000; o., C. C. Haines & Co., 373 Fulton St.; a., Irving B. Ellis, 373 Fulton St.

Chicago, Ill. — *Garfield Boulevard, Nos.* 2345-47, two-st'y bk. dwell., 30′ x 41′; $8,000; o., Mrs. Susanna Curtin; b., John Winblad, 6349 S. Peoria St.

Columbus, O. — *Seventh Ave.*, 2½-st'y bk. dwell., 36′ x 40′, slate roof, furnace; $5,000; o., F. J. Dawson; a., R. Z. Dawson.

Dayton, O. — 2½-st'y bk. dwell.; $7,000; o., H. F. Douglas; a., E. L. Acton.

Detroit, Mich. — *Westminster Ave.*, 2 two-st'y bk. dwells., 28′ x 50′, slate roof, furnace; $10,000; o., Theo. Graether, 663 Brooklyn Ave.

Cadillac Ave., 2½-st'y bk. & st. dwell., 35′ x 61′, slate roof, hot water; $9,000; o., George E. Currie, 1250 Jefferson Ave.; a. N. Wardrop.

Milwaukee, Wis. — *Twenty-sixth St.*, nr. Grand Ave., three-st'y bk. & st. dwell., 40′ x 60′; $17,000; o., Ferdinand Kieckhefer; a., Ferry & Clas.

Minneapolis, Minn. — *S. Third Ave., No.* 2008, 2½-st'y fr. dwell., 32′ x 52′, pitch roof, steam heat; $5,000; o., R. H. Shattuck; b., T. P. Healy; a., E. P. Overmire.

New York, N. Y. — *Riverside Drive*, nr. 105th St., five-st'y bk. dwell., 21′ x 62′; $34,000; o., A. G. Loomis, 52 Wall St.; a., C. P. H. Gilbert, Townsend Building.

Crotona Ave., cor. 175th St., 3 two-st'y fr. dwells., 21′ x 60′; $13,500; a., Thomas & Dunn, 2080 Anthony Ave.; a., Moore & Landsiedel, 2861 Third Ave.

Ave. C, nr. 5th St., Unionport, two-st'y fr. dwell.

Iron-Work.

BUILDING INTELLIGENCE.

(Houses Continued.)

21′ x 50′; $5,000; o. & a., Mrs. M. Olsson, 3d St. & Ave. C, Unionport.

Webster Ave., nr. 171st St., 3 four-st'y bk. dwells., 18′ 10″ x 75′; $48,000; o., Jos. Anderson, 376 W. 52d St.; a., Rudolf Werner, 3d Ave. & Wendover Ave.

One Hundred and Fifty-sixth St., nr. Kelly St., 12 two-st'y & base. bk. dwells., 20′ x 50′; $66,000; o., G. F. Johnson & Son, 156th & Dawson Sts.; a., W. C. Dickerson, 149th St. & 3d Ave.

Eighty-seventh St., nr. Broadway, three-st'y bk. dwell. & stable, 30′ x 93′; $15,000; o., Mrs. A. C. Clark, Cooperstown; a., Ernest Flagg, 35 Wall St.

BUILDING INTELLIGENCE.

(Houses Continued.)

Main St., cor. Cross St., two-st'y fr. dwell., 24′ x 46′ 6″; $5,000; o., Edward Flynn, City Island; a., Franklin D. Logan, New Rochelle.

Seventy-second St., nr. West End Ave., 4 five-st'y bk. dwells., 25′ x 65′; $75,000; o., Wm. E. Diller, 62 W. 69th St.; a., G. A. Schellenger, 130 Fulton St.

Philadelphia, Pa. — *Wayne Ave.*, nr. Penn St. two-st'y bk. dwell., 42′ x 58′, pitch roof; $10,000; o., Henry R. Gummey; c., George Hearst, Germantown.

Thirty-third St. and Moreland Ave., three-st'y bk. & st. dwell., 36′ 4″ x 98′ 4″, pitch roof; $28,000;

BUILDING INTELLIGENCE.

(Houses Continued.)

o., Walter L. Ross; b., Wm. J. Patterson; a., Peabody & Stearns, Boston, Mass.

N. Thirteenth St., Nos. 2900-32, 16 two-st'y bk. dwells., 15′ x 40′ & one three-st'y bk. dwell. & store, 16′ x 50′; $53,000; o. & b., Geo. A. Bilyea.

St. Paul, Minn. — *Albemarle St.*, nr. Ross St., two-st'y bk. dwell., 40′ x 59′, slate roof, hot water; $5,000; o., Rev. Anthony Ogulin; a., Herman Kretz & Co.

MERCANTILE BUILDINGS.

Minneapolis, Minn. — *Seventh St. and Hennepin Ave.*, two-st'y bk. & st. building, 50′ x 150′, pitch roof, steam; $20,000; o., W. I. Badger, Agent; a., Chas. S. Sedgwick.

OFFICE BUILDINGS.

Boise, Idaho. — Three-st'y bk. & st. store & office building, 25′ x 122′, flat roof, hot water; $12,000; o., Peter Soma; a., W. S. Campbell; day-work.

Boston, Mass. — *Beacon St., Nos.* 13-15, eight-st'y bk. & st. building for offices, halls, etc., 56′ x 58′ x 94′ & 88′, flat roof, steam; $200,000; o., Woman's Club Corporation; b., F. B. Gilbreth, 85 Water St.; a., Josephine R. Chapman, 9 Park St.

New York, N. Y. — *Elm St.*, cor. Manhattan Pl., five-st'y bk. office-building & stores, 30′ 9″ x 24′; $10,000; o., Roman Catholic Orphan Asylum; a., Mulliken & Pruitt, 289 Fourth Ave.

STABLES.

Boston, Mass. — *Wales Pl.*, nr. Richfield St., Ward 20, two-st'y bk. stable, 28′ x 55′, pitch roof; $4,000; o. & b., James Barrett, 69 Winsor St.; a., G. A. Fuller.

Kemble St., nr. Gerard St., Ward 17, two-st'y bk. stable, 33′ x 53′, flat roof, stoves; $4,000; o. & b., John T. Keefe, 271 Columbus Ave.; a., C. R. Beal.

Idaho St., nr. River St., Ward 24, two-st'y fr. stable, 22′ x 24′, flat roof; $100; o. & b., W. A. Chamberlain, 121 River St.

Brooklyn, N. Y. — *Ainslie St.*, nr. Graham Ave., two-st'y fr. stable, 21′ x 25′; $1,000; o., Mrs. Herman G. Borsman, on premises; a., F. J. Berlenbach, 200 Graham Ave.

W. Twelfth St., nr. Ave V, two-st'y fr. stable; $1,650; o., William J. Sullivan, Homecrest Ave., & Ave. V; a., R. Glenn, 2958 Third Ave., New York.

Sullivan St., nr. Conover St., two-st'y bk. stable, 34′ x 36′; $3,600; o., Richard McNerney, on premises; b. D. J. Lynch, 97 Coffey St.

Pitkin Ave., cor. Hendrix St., 1½-st'y fr. stable, 25′ x 16′, shingle roof; $400; o., Chas. Rappold, 525

BUILDING INTELLIGENCE.

(*Stables Continued.*)

Flushing Ave.; a., L. F. Schillinger, 622 Glenmore Ave.; b., F. Gunderman, Schenck Ave. nr. Blake Ave.

New York, N. Y. — *Ave. C.*, nr. 10th St., Unionport, one-st'y fr. stable, 20′ x 16′; $500; o., John Dillon, on premises; a., Moore & Landsiedel, 2861 Third Ave.

One Hundred and Sixty-second St., nr. Amsterdam Ave., one-st'y bk. stable, 20′ x 25′; $3,500; o., Lucy E. Lynn, 500 W. 157th St.; a., Benj. Talbot, 500 W. 157th St.

STORES.

Brooklyn, N. Y. — *Pitkin Ave.*, cor. Watkins St., four-st'y bk. store & hall, 50′ x 100′, steam heat; $32,000; o., Mandel Myersohn & Krakauer, Stone & Pitkin Aves.; a., Hugo Smith, 836 Broadway.

Philadelphia, Pa. — *Market St., Nos.* 927-29-31, eight-st'y bk. & terra-cotta building, 69′ x 192′; $150,000; o., William Weightman; c., Benjamin Ketcham's Sons; a., Willis G. Hale.

Rockford, Ill. — Five-st'y bk. & st. department-store building, 66′ x 156′, comp. roof, steam; $50,000; o., Mead Bros.; a., D. S. Schureman.

TENEMENT-HOUSES.

Brooklyn, N. Y. — *Stewart St.*, nr. Broadway, 2 three-st'y bk. flats, 25′ x 65′, six families; $12,000; o., Mrs. Mary F. Wehr, 1327 Bushwick Ave.; a., B. Finkenseiper, 93 Broadway; b., G. Wehr.

Twelfth St., nr. Prospect Park West, four-st'y bk. flat, 34′ x 87′, steam; $10,000; o., Geo F. Crawford, 517 Twelfth St.; a., Thos. Bennett, 198 Fifty-third St.

New York, N. Y. — *E. Tenth St., Nos.* 384-390, 4 six-st'y & base. bk., st. & terra-cotta stores & flats, 25′ x 81′; $100,000; o. & b., Wm. & Julius Bachrach, 375 Grand St.; a. Michael Bernstein.

Monroe St., Nos. 161-167, 3 six-st'y & base. bk., st. & terra-cotta flats, one 40′ 5″ x 86′ 6″, & two 26′ 6″ x 87′; $75,000; o., Rebecca Meryash, 96 Monroe St. a., Horenburger & Straub.

Broome St., Nos. 122-124, 2 six-st'y & base. stores & tenements, 25′ x 77′ 6″; $41,000; o. & b., Wm. &

BUILDING INTELLIGENCE.

(*Tenement Houses Continued.*)

Julius Bachrach, 375 Grand St.; a., Michael Bernstein, 245 Broadway.

Park Ave., nr. 173d St., 4 three-st'y bk. flats, 21′ 8″ x 63′; $40 000; o., Amelia Schwartzler, 1073 Fifth Ave.; a., Edward Wenz, 2577 Third Ave.

E. Thirty-fifth St., Nos. 326-330, six-st'y bk. flat & stores, 75′ 1″ x 88′ 9″; $20,000; o., Laura Billings, 279 Madison Ave.; a., Samuel Huckel, Jr., 132 Park Ave.

First Ave., n e cor. 16th St., 2 six-st'y bk. flats & stores, 34,′ 35′ x 84′, 89′; $67,000; o., Samuel A. Robinson, 145 E. 111th St.; a., Geo. F. Pelham, 503 Fifth Ave.

THEATRES AND HALLS.

Richmond, Ind. — Bk. & st. opera-house, 60′ x 120′, comp. roof, steam; $20,000; o., M. Genette; a., Yost & Packard, Columbus, O.

WAREHOUSES.

New York, N. Y. — *Eighteenth St., Nos.* 112-116 w. six-st'y bk. loft building, 60′ x 92′; $60,000; o., Edward Jansen, 124 W. 19th St.; a., W. C. Frohne, Bible House.

MISCELLANEOUS.

Chicago, Ill. — *S. Morgan St., Nos.* 509-11, two-st'y bk. dispensary, 44′ x 58′; $10,000; o., United Hebrew Charities; a., C. W. Dameier's Sons, 159 La Salle St.

New York, N. Y. — *Forty-second St.*, nr. 7th Ave., three-st'y music-hall & café, 69′ x 100′; $45,000; o., Anna Davidson, Albany; a., John E. Kerby, 722 Tremont Ave.

Philadelphia, Pa. — *Sansom St., No.* 1528, two-st'y bk. & st. fire-engine house, 32′ x 80′; o., City; b., Thomas M. Seeds, Jr.

COMPETITIONS.

CHURCH. [At Roanoke, Va.]
Plans for a Catholic church, brick and stone, will be received **until December 1.** J. J. GARRY. 1239

PROPOSALS.

CONSTRUCTION, ETC. [At Ellenville, N. Y.]
Sealed proposals for furnishing the materials and labor for completing the central building and north wing, installing warming system and boiler, and for plumbing and drainage, and electrical works, may be sent by mail or delivered in person **up to 1 o'clock P. M., on Monday, the 18th day of September, 1899,** to George Deyo, Chairman Building Commissioners Eastern New York Reformatory, Ellenville, Ulster County, New York. 1238

CONSTRUCTION. [At Galveston, Tex.]
Bids will be received at the office of George B. Stowe, architect, **until September 25,** for the erection of a five-story building for the Improvement, Loan and Trust Company. 1238

CONSTRUCTION. [At Norfolk, Va.]
Sealed proposals, endorsed "Proposals for Electric Plant Building," will be received at the Bureau of Yards and Docks, Navy Department, Washington, **until 1 o'clock, September 30, 1899,** and then and there publicly opened, for the construction of a building for electric plant, pumbers' shop and machine shop of steel and brick, about 110′ x 180′, at Navy Yard, Norfolk, Va. Plans, specifications and forms of proposal can be obtained from the commandant, Navy Yard, Norfolk, Va. MORDECAI T. ENDICOTT, chief of bureau. 1238

COURT-HOUSE. [At New Martinsville, W. Va.]
Bids are wanted **October 3** for a court-house, cost not to exceed $30,000. H. R. THOMPSON, Co. Clk. 1239

Sealed proposals will be received at the office of the Light-house Engineer, Tompkinsville, N. Y., until 12 o'clock M., October 2d, 1899, and then opened, for building the east face of North Wharf in accordance with specifications, copies of which, with blank proposals and other information, may be had upon application to D. P. HEAP, Lieut.-Colonel, Corps of Engineers, U. S. A. 1239

STEAM-HEATING. [At Marietta, Ga.]
Bids are wanted by the County Commissioners **until September 23** for a low-pressure steam-heating apparatus for the County Court-house. J. M. STONE, Ordinary. 1238

SCHOOL. [At Forest City, Ia.]
Bids are wanted **September 18** for a school in Grant Township. C. I. ANDERSON, Pres. School Bd. 1238

HOSPITAL. [At Auburn, Cal.]
Bids are wanted **September 18** by the City Clerk for a hospital to cost not more than $15,000. 1238

ALTERATIONS. [At Harrisburg, Pa.]
Bids are wanted **September 20** by the County Commissioners for remodelling the county prison. 1238

ELECTRIC LIGHT PLANT. [At New London, Conn.]
Sealed proposals for furnishing and delivering electric light plant at New London, Conn., will be received here **until noon, September 27, 1899,** and then publicly opened. Information furnished on application. SMITH S. LEACH, Major, Engrs., U. S. engineer's office. 1238

Professional Ethics.

The following . . .
. . . CODE OF ETHICS . . .
Prepared in Conformity with the Best Standards of Practice, and Recommended to its Members by the Boston Society of Architects, was . . . . . .

ADOPTED BY THE SOCIETY, FEBRUARY 1, . . 1895. . .

SECTION 1. No Member should enter into partnership, in any form or degree, with any builder, contractor, or manufacturer.

*

SECTION 2. A Member having any ownership in any building material, device or invention, proposed to be used on work for which he is architect, should inform his employer of the fact of such ownership.

*

SECTION 3. No Member should be a party to a building contract except as "owner."

*

SECTION 4. No Member should guarantee an estimate or contract by personal bond.

*

SECTION 5. It is unprofessional to offer drawings or other services "on approval" and without adequate pecuniary compensation

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SECTION 6. It is unprofessional to advertise in any other way than by a notice giving name, address, profession, and office hours, and special branch (if such) of practice.

*

SECTION 7. It is unprofessional to make alterations of a building designed by another architect, within ten years of its completion, without ascertaining that the owner refuses to employ the original designer, or, in event of the property having changed hands, without due notice to the said designer.

*

SECTION 8. It is unprofessional to attempt to supplant an architect after definite steps have been taken toward his employment.

*

SECTION 9. It is unprofessional for a Member to criticise in the public prints the professional conduct or work of another architect except over his own name or under the authority of a professional journal.

*

SECTION 10. It is unprofessional to furnish designs in competition for private work or for public work, unless for proper compensation, and unless a competent professional adviser is employed to draw up the "conditions" and assist in the award.

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SECTION 11. No Member should submit drawings except as an original contributor in any duly instituted competition, or attempt to secure any work for which such a competition remains undecided.

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SECTION 12. The American Institute of Architects' "schedule of charges" represents minimum rates for full, faithful and competent service. It is the duty of every architect to charge higher rates whenever the demand for his services will justify the increase, rather than to accept work to which he cannot give proper personal attention.

*

SECTION 13. No Member shall compete in amount of commission, or offer to work for less than another, in order to secure the work.

*

SECTION 14. It is unprofessional to enter into competition with or to consult with an architect who has been dishonorably expelled from the "Institute" or "Society."

*

SECTION 15. The assumption of the title of "Architect" should be held to mean that the bearer has the professional knowledge and natural ability needed for the proper invention, illustration and supervision of all building operations which he may undertake.

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SECTION 16. A Member should so conduct his practice as to forward the cause of professional education and render all possible help to juniors, draughtsmen and students.

BUILDING MATERIALS.

Reported for the American Architect and Building News.

	New York. (*Wholesale Prices.*)	Boston. (*Wholesale Prices.*)	Chicago. (*Prices to Builders and Contractors.*)	Philadelphia. (*Prices to Builders and Contractors.*)
BRICK.—₱ M.				
Common: *Cargo afloat.*				
Pale	1 75 @ 2 00	Domestic Com. 8 50 @ 9 50	Building 4 50	In Yard.
Jersey	4 75 @ 5 25	Domestic Face	sewer add 1.00	Sq. Hard 8 00 @ 9 00
Long Island	@	Philadelphia { 18 00 @ 25 00	hollow, add 1.25	" @ 7 00
Up River	4 75 @ 5 25	35 00 @ 40 00	Enam. Imp. Bk.	Salmon @ 5 50
Haverstraw Bay 2d	@ 4 75	10 00 @ 11 00 }	125 00 @ 145 00	Sq. " @ 5 50
" 1st	@ 5 25		Enam. Domes.	Light Stretchers
Hollow	@ 7 00	Phila. mould {	70 00 @ 85 00	9 00 @ 11 00
Fronts:	@	50 00 @ 80 00 }	Select Red Sand-Mold...10 00	Medium "
Croton, Brown	@ 12 00		St. Louis Hyd'lc	@ 12 00
" dark	@ 12 00	Enamelled B'k.	Press ..27 00	Red "
" red	@ 12 00	Imported	Collinsville, do	@ 12 00
Chicago pressed		Enam. (edge)	..... 22 00	Dark "
" Moulded		105 00 @ 120 00	Findlay, do 22 00	@ 12 00
Baltimore	37 00 @ 41 00	" (edge & end.)	Chicago, do	Pressed
Philadelphia	19 00 @ 21 00	120 00 @ 135 00	assorted shades	@ 17 00
Trenton	17 50 @ 18 50	Domestic.	16 00 @ 20 00	Paving
Milwaukee		Enam. (edge)	Chicago, do	11 00 @ 13 0
Moulded:		90 00 @ 100 00	Brown..24 00	Second " @ 12 00
Red Pressed	@ 29 00	" (edge & end.)	Chicago, do Red	Third " @ 10 00
Buff "	@ 27 00	110 00 @ 115 00	Roman..24 00	
Moulded Red & Buff	45 00 @ 70 00		Chicago, do Br'n	
Enamelled: *Imp.*			Roman..27 00	Dom. { @ 65
Enamelled (edge)	85 00 @ 100 00		Bushnell Buff	@ 85
Enamelled (edge and end)	90 00 @ 110 00		.....25 00	
CEMENT, LIME, etc. (₱ *cask.*)				
Rosendale Cement	90 @ 1 00	5 00 @ 1 00	*Not sold.*	1 30 @ 1 50
Louisville "		@	75 @ 1 00	S.H.Fs'l 20 @ 1 50
Utica, Akron, Buffalo, Milw'ke.	*Not sold.*	@	75 @ 1 00	@
Portland, Eng. (Gibbs)	2 25 @ 2 50		2 50 @ 2 60	2 85 @ 3 15
" (K. B. & S.)	2 50 @ 3 00		2 50 @ 2 60	2 30 @ 2 60
" " (Black Cross)	2 25 @ 2 50	@	2 50 @ 2 60	2 85 @ 3 15
" " (Burnham)	2 50 @ 2 50	2 20 @ 2 50	2 50 @ 2 60	2 75 @ 2 85
" " (White's)	2 65 @ 3 00	@	2 50 @ 2 60	Belg'n 2 10 @ 2 40
" French (Lafarge)	3 60 @ 3 75	@ 5 00	3 75 @ 4 25	Hemmoor
" Ger. (Alsen)	2 90 @ 3 25	2 75 @ 3 00	2 90 @ 3 20	2 50 @ 2 75
" " (Fewer)	2 25 @ 2 40	B'ks, Shoobridge & Co.,	@	2 75 @ 2 85
" " (Vorwohler)	2 50 @ 2 90	English 2 30	@	Josson
" " (Lagerdofer	@	2 75 @ 3 00	2 80 @ 2 90	2 60 @ 2 75
" " (Dyckerhoff)	2 75 @ 3 00		3 10 @ 3 30	3 00 @ 3 25
" " (Hanover)	2 50 @ 3 00	@	2 75 @ 2 90	2 75 @ 2 85
" " Stettin, (Anchor)	2 35 @ 2 45	3 50 @ 4 00	2 85 @ 3 00	B. Egl. 2 50 @ 2 75
Roman	2 75 @ 3 00	@ 7 00	2 75 @ 3 25	3 00 @ 3 50
Keene's coarse	4 25 @ 4 75	8 00 @ 9 00	6 00 @ 7 00	6 50 @ 7 00
" superfine	@ 6 50		9 00 @ 10 00	8 00 @ 9 00
Lime:				
Lime of Teil	@ 4 00	@	*Not sold.*	White Lime ₱ bush
Hydraulic Lime	@ 1 45			25 @ 30
Chicago Lime in bulk	{ St. John		45 @ 55	{ White Mash
Wisconsin Lime	@		45 @ 55	1 25 @ 1 50
Rockland and Rockport, (Com.)	80 @ 85	@ 90	*Not sold.*	1 00 @ 1 00
Rockland, finish	90 @ 95	@ 95	*Not sold.*	
Kelley Island Lime, finish	@	@	1 00 bulk, 75c.	
State, Com. cargo rates	@ 65	*Not sold.*	*Not sold.*	*Not sold.*
State, finishing	@ 75	*Not sold.*	*Not sold.*	*Not sold.*
Plaster-of-Paris (calcined)	1 30 @ 1 40	1 85 @ 2 00	1 65 @ 1 75	1 50 @ 2 25
" (casting)	@ 1 60	@ 2 25	1 75 @ 1 90	1 75 @ 2 50
Hair (cattle) ₱ *bush*	14 @ 16	25 @ 30	12 @ 20	20 @
" (Goat)	17 @ 19	@ 30	20 @ 25	30 @
Sand, ₱ *load*	1 00 @ 1 25	1 00 @ 1 75	1 00 00 1 25	