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WE have received several communications in regard to the new Congressional Library, expressing surprise that the design for a building of such importance should not be made the subject of a general competition among the architects of the country, instead of being quietly prepared by a small commission appointed for another purpose, and adopted by the Congressional Committee on its own responsibility. Certainly, there could have been no better occasion for reviving the practice once adopted here, and still universal in all other civilized nations, of treating such matters as affairs of public interest, holding out the execution of the work as a high honor, to be obtained only by that professional talent and skill which should show itself superior to all others in the searching trial of a great competition, and conferring lasting fame upon the successful architect; but in the present state of official regard for the fine arts in the United States, it may, perhaps, be doubted whether any really satisfactory contest of the kind could be carried out. There would be little hope, we fear, that Congress would absolutely delegate its power of choice in such a matter to a jury of experts, and if not, it is only too easy to imagine the sort of discretion which the legislators who endure Brumidi's ridiculous frescoes in the Rotunda of the Capitol, and look with complacency on the piteous mutilation of Mills's design for the Washington Monument, would bring to the task of selection.

THE stone-work of the Albany Capitol is again the subject of much newspaper comment, on account of new evidences of settlement which are said to have been recently discovered. A correspondent of the New York *Evening Post*, who signs himself "H. D. C.," writes that indications of movement are everywhere visible in the lower portions of the building. In the vestibule, under the corridor which adjoins the Assembly Chamber, two granite blocks, each six feet long and two feet high, which adjoin the piers on which the great columns of the Assembly Chamber rest, are broken entirely through; while the vaulted ceiling of the vestibule is cracked. In what is known as the "red corridor" in the second story, and the adjoining Court of Appeals room, the correspondent says that "the sandstone is cracked and splintered on every hand." In the Assembly Chamber itself, an opera-glass is needed to see the defects in the vaulted ceiling; but it appears that some of the stones in the arched ribs are disjointed or chipped, and innumerable seams are to be seen in the smaller pieces, while both walls of a neighboring corridor are cracked from top to bottom. A committee of members of the Assembly has already inspected the work for the second time, and it is understood that a commission of experts will be called in to make a thorough examination.

THE trial of the persons whose negligence led to the catastrophe at the Ring Theatre has, as we learn by telegraph, just been concluded. A detailed account of the preliminaries of the indictment and trial will be found in another column, and although we imagine that our readers will agree with us in regretting that the highest officials seem to have escaped the most easily, it is satisfactory to know that a certain amount of responsibility has been definitely fixed upon some one. Herr Jauner, the manager of the theatre, and formerly Director of the Imperial Opera, has been sentenced to four months' "simple arrest," which we suppose is a nominal restraint, suited to persons of quality. Geringer is condemned to four months' actual imprisonment, and Nitzsche, the engineer of the fire department, to eight months, each of the culprits to fast one day in every month. Jauner, Geringer and Nitzsche are also required to pay six thousand florins to the sufferers by the fire. All the other persons brought before the tribunal are acquitted. The Burgomaster, Newald, who refused to allow the regulations adopted by the City Council for protecting theatre audiences from danger in fires to be even communicated to the managers, and took no steps for carrying them out, escapes all punishment; while Landsteiner, the heartless Inspector of Police, who, although assured by the fugitives that hundreds were left suffocating in the burning building, not only refused to make any investigation, but set guards to drive off the citizens who tried to save some of the unhappy victims, also goes free. It is said that if this man had done his duty, most of the people in the theatre might have been rescued, and the pompous announcement, "All are saved," with which he received the Archduke Albert, at the very moment when hundreds were dying for want of his aid, has passed into a proverb among the people of Vienna, whose dislike toward the city police, on account of the systematic indifference with which their complaints are treated, will take a renewed bitterness from seeing such brutal inefficiency go unrebuked.

THE suit of certain property-owners on the line of the New York elevated railway to obtain redress for injury to their estates by the running of trains in front of them has advanced another stage, judgment having been given against the railroad company in the Superior Court. A final appeal will undoubtedly be taken to the highest State tribunal, but in the mean time the decision of the Superior Court is absolute, — that the plaintiffs are entitled to a perpetual injunction to restrain the railway corporation from operating its road in front of their premises. As will be remembered, the original suit was begun by Dr. Caro, of Fifty-third Street, who was defeated in the lowest court, and although the judgment was reversed on appeal, died soon afterward from the effect, as was supposed, of the vexation and anxiety which he had undergone. After his death the proceedings were suspended for a time, but his heirs have now resumed them, and will prosecute the case to a final issue. Meanwhile, another suit of a similar kind has already reached the Court of Appeals, and will be decided in a few days. If the judgment in this is favorable to the plaintiffs, it will decide also the Caro claim and all others of the same kind; but if it is adverse, which seems to be generally considered most probable, the Caro heirs will still prosecute their suit, which differs in some respects from the other, in the hope of obtaining a decision which will definitely determine the relative rights of property-owners and railway corporations under such circumstances.

THE Chicago *Tribune* publishes a paragraph entitled "Niagara in Harness," from which, although the style of the article is so obtrusively silly as to almost take away one's confidence in its assertions, we gather that twelve acres of ground, constituting what is known as Prospect Park, adjacent to the American Fall, have been purchased in the interest of a company formed to utilize the force of the cataract, estimated at two million horse-power, in generating electricity by dynamo-electric machines, which will transmit currents for illuminating, heating and motive purposes to the principal cities of the country. Just how this power is to be made available we are not informed, but it appears that "it is proposed to erect immense buildings and ponderous machinery on the brink of the falls, where the water can be easily reached;" the power being thus, we presume, fished up out of the stream, instead of employing the old-fashioned appliances of dams across the current, sluices and turbines, which have hitherto been thought necessary for making available any considerable portion of the force of falling water. The remainder of the scheme appears to be of the same character as the preliminary portion. The electricity generated by the force of the Fall is to be conducted through

"properly-insulated cables," whose construction is unfortunately not described, to sixty-five prominent cities and towns, there to be used "for the comfort of people." The enthusiastic writer of the article, inspired by this prospect, bursts into a rhapsody of pleasing anticipation. "Although," he says, "Nature may protest against the utilization of the cataract in some reckless way that will send the whole project to everlasting smash," still "an effort is to be made to compel this vast fall of water" which has been "plunging over its brink merely for the profit of hackmen and the pleasure of sentimental sight-seers and poets," "to do something for a living and be of some use in the world." With all possible sympathy in any effort to reform the neglected morals of the cataract, and educate it in habits of peaceful industry, we cannot avoid the conviction that the time has not yet come for undertaking the task with success, and that so far as the present scheme is concerned, if the reckless conduct of the river does not send it "to everlasting smash," the ridiculous ignorance and folly of its projectors is amply sufficient to accomplish the same result.

A case of deserved retribution occurred in Chicago last week, to which we invite the attention of would-be law-breakers, if there are any such among our readers. A certain Joseph Flugel, in defiance of the statute, erected a frame house some two years ago within the building limits. The contractor, who is held jointly responsible with the owner for infractions of the ordinance, was arrested and fined, but through political influence the fine was remitted, and some informalities having been discovered in the wording of the statute, no further prosecution was undertaken, and the structure was completed. An account was then sent in for the contract price, but the ungrateful owner, quite unmindful of the troubles which the builder had undergone in his behalf, neglected to pay it, and suit was finally entered to compel him to do so. The attorney for the owner at first pleaded that the work was improperly done, but finding that the evidence would not support this assertion, he retracted it, and set up the novel defense that the house had been erected in violation of the law, and that the contractor could not recover compensation for doing an illegal act. The judge held that this plea, although not an extremely magnanimous one, was a sufficient answer to the suit, and ordered judgment for the defendant, at the same time remarking that if he had the power he would send both parties to jail. The counsel for the contractor, having no other way of consoling himself for his defeat, proposes, it is said, to take revenge on the owner by applying to the Mayor and the Superintendent of Buildings to have the house condemned and torn down. We should be glad to think that this attempt was likely to succeed, but there are many difficulties in the way, and we fear that the vindictive lawyer will be again beaten.

According to the Chicago *Tribune* a new variety of water-gas is to be introduced into that city and Milwaukee by Mr. A. M. Billings, who has made a contract with Mr. T. G. Springer for the use of what is said to be a novel apparatus for decomposing steam and utilizing the dissociated gases. The reporter of the *Tribune* is not remarkable for the clearness of his technical language, but we conceive from his description that the conversion of the watery vapor is effected in a retort containing a mass of strongly-heated fire-bricks, of a peculiar convoluted shape, against which the jet of steam is directed. Decomposition takes place instantly, and a moment afterward a jet of naphtha is thrown into the retort, which volatilizes, and is itself decomposed, a portion of its carbon uniting with the oxygen of the water to form carbonic oxide, while the remainder forms with its own hydrogen and that derived from the water a new compound, equal in illuminating power to the best coal-gas. So far we find nothing improbable in the description, and the convolution of the fire-bricks, by which the steam is held longer and more closely in contact with the heated surface, seems to be a real improvement; but we must confess a reluctance to accept the latter part of the account, which informs us that the carbonic oxide and the carburetted hydrogen separate in the retort, the latter, which is lighter, being "carried off through the higher pipes, while the carbonic oxide finds its way to the outer air through a lower escape." However this may be explained, the practical working of the apparatus appears to be excellent, one small retort producing with ease four hundred thousand cubic feet of gas per hour, at a cost of from fifteen to twenty cents per thousand feet.

The Water Board of the city of Reading, Pennsylvania, recently obtained tenders for the construction of a new reservoir, and after opening them awarded the contract, not to the lowest bidder, but to a local firm, whose bid was some sixteen thousand dollars higher. The lowest bidder, as soon as the facts were known, applied for an injunction to restrain the board from entering into a contract with his rivals, and on the refusal of the judge to issue such an injunction, gave notice that the case would be carried to the Supreme Court. Although we shall be grateful to the disappointed contractor for helping to settle the law in such cases, we cannot give him much hope of success in his suit. It has been repeatedly decided that unless some expression in the invitation of tenders implies that the lowest bid is to be accepted, no obligation exists on the part of the persons inviting the tenders to accept the lowest, or indeed any of them. It is true that builders of an inferior class frequently resist this principle, in the hope of eliminating the advantage which known skill and integrity naturally give in contests of the kind, but although occasional hardship may be caused to deserving but little-known men, this is nothing to the evils which would flow from the establishment of the rule that the lowest, which often means the least responsible or honest bidder must necessarily receive the contracts for which he tenders; while worthy but neglected individuals may console themselves for their disappointments by the reflection that the same kind of preference by which they suffer once will, when their own reputation is established, return to them a hundred-fold their small original loss.

We hardly know whether to rejoice or not at the news that "the famous cathedral of Saint Front, at Perigueux, in the centre of France, has just been completed, after thirty years of restoration." The account adds that "the greater part of the building dates from the eleventh century; the architecture is in the Byzantine style, and the work of restoring it is said to have been carried out with singular fidelity and success;" and whatever may be thought of the correctness of the first part of this assertion, there is only too much reason to fear that the last part is literally true. Skilful as the French are in original architectural design, they are, if possible, even more so in the imitation of ancient work, and a church of the eleventh century "restored with singular fidelity and success," would probably be thenceforth like many other churches in that country, a counterfeit so complete that no one, not familar with every step in the work, could determine with certainty what stones belonged to the eleventh and what to the nineteenth century. Unquestionably, there is something to be said in favor of this painstaking imitation, by which the simulacrum, so to speak, of the structures which our ancestors erected is preserved to us after the actual work of their hands has perished, but so long as any of the original wrought stones remain, they gain nothing, but, on the contrary, lose much by the insertion beside them of work so closely similar as to give ground for any possible mistake as to its true character; and there is no habit which travelling architects acquire more quickly than that of avoiding all ancient buildings which have fallen under even the suspicion of restoration, to devote their attention to others, less important, perhaps, but remaining, apart from obvious changes, just as the workmen of those distant ages left them.

The past few months have been distinguished by an unusual number of conflagrations in theatres. The *Deutsche Bauzeitung* mentions five which took place within a single month, from March 16 to April 16. The first of these destroyed the so-called Crystal Palace at Marseilles on the night of March 16; on the following night the Livadia Theatre at St. Petersburg was burned; three days afterwards the Theatre National at Oran in Algiers was totally consumed; on the 15th of April the largest provincial theatre in England, the Temple Opera-House at Bolton, was burned; followed the next night by the Court Theatre at Schwerin, in Mecklenberg. At St. Petersburg and Schwerin the fire broke out during the performance, but in the other cases it was not discovered until the audience had been dismissed. No loss of life is reported except at Schwerin, where an over-zealous fireman was killed, but there were narrow escapes in several instances, and a slight change in the circumstances, possibly a different setting of the scenery, might have led in either of these cases to a catastrophe as shocking as that at Vienna.

SOCIETY OF AMERICAN ARTISTS, NEW YORK. — II.

THOUGH the supplementary exhibition of the American Artists was, naturally, less full and less important as a whole than the collection first shown, it yet contained some pictures of capital importance. Most prominent among them was Mr. Eakins's Crucifixion. Mr. Eakins had previously been known as the strongest and most characteristically local in temper of all those who had sought to put on canvas the types of humanity nearest to us in time and place. His chief pictures moreover, with the recent exception of his Mending the Net, had been of interiors; and his great skill in the management of strong effects of light had displayed itself in works where the general tone had been pitched very low. Knowing these facts and knowing Mr. Eakins's love for the actual rather than the imaginative side of art and his consummate anatomical science, one expected in a Crucifixion, from his hand a sombre though perhaps forcibly-illuminated picture, and a realistic study of death and agony. This last we have found; but combined with it no little unexpected pathos; and still more to our surprise, a picture conceived and well worked out in a very light scheme of color—showing the sacrifice as taking place under an unclouded Eastern sky. The conception is at variance with that traditional in any school, all the commonly accepted accessories of the scene being absent. No other human creature's presence is suspected by the observer. There is, as I have said, no hint of that sympathy of nature with the passing tragedy to which legend and art have alike accustomed us, and the cross, moreover, does not stand upon an elevation, but in the midst of a broken, rocky, sandy stretch of desert. But for the crown of thorns and the scroll above the cross one could not tell what martyr's death might be before us. These things, however, consecrated though they are by all tradition, are but accessories which an artist may omit at will provided he gives us the essential idea — which is that of *a sacrifice* — and provided he uses his novel material to heighten the impression of terror or pathos at which he aims. This in my opinion, Mr. Eakins has done. I know there are some who see in the picture little but a most painful anatomical study: to me, however, it has an intensity of pathos touched with horror. The composition is very good, the figure presenting itself just a little obliquely, and the lower part of the cross beneath the feet being invisible. The landscape is finely drawn, and in spite or perhaps because, of the full sunlight upon it, is instinct with the very spirit of desolation and abandonment. It adds more than one thinks at first to the effect of the picture. Without it one might see merely a suffering body, — I cannot tell. But I feel that with its aid one receives an impression that is very characteristic of the sentiment to be aimed at in such a work. The face is not an important feature, for death has come, apparently, and it is sunk upon the breast and in shadow: of course, therefore, there has been no attempt to render spiritual emotion. The hands are contracted in a way that is extremely painful, though, owing to Mr. Eakins's anatomical knowledge we may believe that it is physically probable. The knees are much bent to bring the feet upon the little rest provided for them; and this also adds greatly to the painful impression. There has, moreover, been something less than an attempt to idealize the form of Christ: it is lean to the verge of attenuation and the limbs are extremely thin. The whole has been most admirably modelled in full illumination, the light streaming on the figure from the spectator's left, and the only space of decided shadow being where the head falls forward on the right. The management of the light is extremely good, and Mr. Eakins shows himself here as capable of fine chiaroscuro as when his scale is low and his shadows more all-embracing. It is true, simple sunlight, moreover, not the calcium-light effect so often substituted therefor in French studios to-day. Those who have the least acquaintance with the painter's art must appreciate what a difficult task has thus been accomplished, to paint actual sunlight from a palpitating blue sky, to model a nude figure in this high light without the assistance of contrasting shadows, and to draw from such elements an impression in harmony with the tragic subject. Of course this picture is no complete expression of that subject, for the higher physical elements are left entirely on one side; but this is not to be regretted, perhaps, for when attempted they have scarcely once been completely realized in the whole history of art; and what Mr. Eakins *has* attempted he has, I think, completely given. This has been, not merely the rendering of physical agony, but the suggestion of desolateness, pathos and sacrifice. It is extremely difficult to put into words the impression made by such a picture, so strong, so repulsive in some ways, yet so deeply pathetic, partly by reason, perhaps, of that very repulsiveness. I can only speak for myself, when I say that after seeing a hundred crucifixions from modern hands this one seemed to me not only a quite original but a most impressive and haunted work.

Among the portraits shown, perhaps the most important was by Mr. Alexander, whose portraits of Thurlow Weed and of a young girl with a dog were noticed in my account of the Academy exhibition. This one showed the figure of a middle-aged man, with a face that was extremely unusual in type and full of character. This character was well suggested and though the color of the flesh was again, rather raw and unnatural, the handling of the rest of the picture showed great skill of a bold and rapid sort. Another picture by Mr. Alexander, showing a negro boy holding a large turkey, was good in character and very much better in color. Miss Allegra Eggleston sent a portrait of a gentlemen that was rather weakly painted, but proved a noteworthy power to render facial expression, a power which always makes one hope for still better things in the future. Mr. Kenyon Cox showed his charming little portrait of a lady in black, which was sketched in the *American Architect* when it was shown in Philadelphia in the autumn of 1880. It still seemed, as it had then, remarkably clever in character as well as in the management of the varied blacks, a most spirited and charming little piece of work. Miss McLaughlin—of Cincinnati pottery fame—was represented by a very good half-life-size study of an old negro. There were other interesting portraits, moreover, but I must pass them over to give a word to work in other departments. Mr. Thayer sent a large landscape, a shore-view at Nantucket which was interesting in sentiment and pleasing though pallid in color, which would have been a beautiful work, indeed, had there been more light and vitality in it. Mr. Chase sent a river landscape, not especially good, it seemed to me, except in the rendering of the soft gray cloudy sky. Mr. Homer Martin, whose best works are so poetical, so full of sentiment and individuality without being in the least exaggerated or unnatural, had here a very green landscape with a sky that was greenish also, a picture in which the color was decorative but of which one could hardly say much else in praise. Mr. Currier sent several landscapes from Munich, each more extraordinary and undecipherable than the other. Though his water-colors seem to me strong, beautiful and most artistic, I could make nothing of these paintings, which were forced and unnatural without being beautiful in color, and which assumed no satisfactory form no matter from what point of view one tried them. Mr. Currier is evidently so sincere and earnest a workman that one is impressed with the fact that to him nature must have looked in this way, with the foregrounds all confused and the heavy cloudy skies more solid and nearer to the spectator than any thing else within the frame. One regrets, therefore, not to be able to admire these pictures as one admired the audacious but successful beauty of the dozen water-colors he sent home last season. Mr. Quartly sent a medium-sized canvas showing a shipyard with a great vessel on the ways, clearly, definitely and soberly painted and in contrast therefore, with the rather muddy, if interesting work he has given us during the last year or two. Mr. Walter Palmer showed a large view of Venice, painted in the very delicate scale of color that marked his smaller Venetian view at the Academy, but not so good as this last, I think, in composition, in life or in atmospheric truth. The effect of the canvas would have been far better, it seemed to me, had a great group of piles not been introduced into the immediate foreground. Very realistically painted they were out of tone with the rest of the canvas and gave it a rather scenic and unnatural air by contrast with their homely truth. Yet with all defects, it was a charming and not unpoetical as well as an original picture. Mr. Dannat, who has recently been studying with Munkácsy, we are told, sent a small studio figure of a Spaniard, brilliantly painted but with the over-vivid, unnatural illumination one has seen too often in such pictures of recent years. Such a light may easily be produced by atelier arrangements, but it is not what it purports to be, nevertheless, the common light of day. And where the source of this extraordinary illumination remains as here, unseen upon the canvas, the effect must be unfortunate. Miss Wheeler sent a portrait-sketch of a young girl in profile that was pleasant in handling and good in color, and Miss Emmet a large wharf scene with several figures that was characterized by much truth to local material, but was rather hard and unpleasant in color, though the light was well given, and was extremely unfortunate in its composition, or rather, in its lack of any composition whatever. Figures in the foreground cut off at the knees by the picture frame, are awkward at the best. Such a figure Miss Emmet had introduced and not in the best manner, and the rest of her material was scattered about in a way that greatly detracted from one's enjoyment of her really clever brush. Mr. Bridgman sent a small canvas with many figures, called the Bey of Constantin, and shown in an unfinished state when his pictures were exhibited a year ago. It is very good in its way, as fine an example as one could have of his minuter and more labored style. Mr. Whistler's portrait of his mother and the bas-reliefs which I noticed in speaking of the earlier exhibition, were the only works that remained over upon the walls with this second instalment of the society's pictures. It is confidentially stated by members of the society, by the way, that they will have a gallery of their own against next season, capable of accommodating all the worthy pictures that may be submitted to their judgment.

M. G. VAN RENSELAER.

A DIKE ACROSS THE NORTH SEA. — A French lawyer has submitted to the Académie a scheme for producing perpetual spring in England and France. It is to construct a dike 500 miles long across the sea, from Ireland to Norway, to keep out the cold currents of water and floating ice.

A ROYAL INSTANCE.

FOR the fourth time the royal family of England furnishes a conspicuous and most widely-useful example of the bad effects of imperfect domestic drainage. The death of Prince Albert from typhoid fever; then the serious illness from the same disease of the Prince of Wales; then the death of the Princess Alice (of Hesse-Darmstadt), of diphtheria; and now the Duchess of Connaught barely escaping puerperal septicæmia.

The *Lancet* for March 18, 1882, publishes a communication by Professor Playfair concerning the serious illness following the recent confinement of the Duchess of Connaught—an illness accompanied with marked indications of blood-poisoning. The Duchess was immediately removed to Windsor, where she rapidly recovered. The house, an entirely new building recently erected at a cost of from thirty to forty thousand pounds (Bagshot Park), was subjected to a critical examination as to its drainage appliances at the hands of Rogers Field, Esq., a civil engineer of great experience in sanitary construction.

The following is an abbreviation of Dr. Playfair's report, the matter omitted in no case modifying that which is given: "As a matter of course considerable pains were taken in the arrangement and ventilation of the drains; but it appears that not only was the system adopted in itself defective . . . but that the work was in many instances so carelessly carried out that it is a matter of astonishment that more grave results have not followed. . . . A few examples of the faults will show how readily even in a new and costly mansion the inhabitants may, without suspicion, be exposed to risks the extent and subtlety of which it is difficult to estimate. . . . A thorough investigation . . . revealed a state of things which renders it astonishing that more serious consequences did not long since arise. As a matter of fact, offensive smells had long been perceived about the house, and had been a common topic of conversation; but no one had suspected their origin or had realized the dangers they were likely to cause. Many of the inmates, however, had suffered from various forms of indisposition, such as sore throat, diarrhœa, and a general sense of heaviness and malaise, and these generally affected new comers." Mr. Field's report showed foul drains badly placed and in direct communication with land drains, affording no reliable security against the passage of foul air. "All the drains inside the house and immediately around the house were found without exception to be leaky, some of them exceedingly so. On testing the drain, taking the soil-pipe from one closet, water ran out of the pipe through the wall into the basement, and on opening up the pipe, just outside the wall, it was found to be not only badly jointed but broken, and there was an accumulation of filth which had run from it into the ground. The bath and sink drain under the house was so completely stopped up with the slimy deposit that it was some time before any water could pass down it. All the closets had a disagreeable smell, and some of them were exceedingly offensive." In one case a pipe intended for the waste of a sink but not used, was asserted by the clerk of the works to have been carefully sealed up. It was found that there had been no attempt at sealing; the upper end of this pipe had been left open immediately under the floor of the vestibule, and afforded free passage for foul air into the house. It was found, by creating a smoke in the cellar, that there was a free circulation of air from this point where the escape from the drain had been most copious into many of the rooms of the house. "The smoke found its way into the dining-room, up the casing of the soil-pipe, into the Duke's dressing-room, and thence into the Duchess's bedroom." The following is from Mr. Field's general conclusions: "The general construction of the drainage, both round and inside the house, is very defective. This faulty work is undoubtedly the cause of the offensive smells that have been noticed, and the defects are so grave that I consider the house in its present condition unsafe for habitation from a sanitary point of view."

The *Lancet* in commenting on Dr. Playfair's report says: "It may at first sight seem incredible, but it is the fact that the elaborately-constructed system of baths, drains and waste-pipes communicated *directly* with the soil-drains of the building, and by a Machiavellian policy which would seem to be the pastime of modern builders, pipes which ought to have been stopped were left open and the poisonous gas which rises from fæcal accumulations was actually conducted, in sundry ingenious and wonderful ways into the very apartments it was particularly desired to preserve from possible infection. The professedly 'sanitary' constructors are, if possible, the least to be trusted. It would seem to be the common practice of these remarkable persons to ventilate the house-drains, and therefore, of course, the sewers generally, into bedrooms. We are repeatedly hearing of this piece of wantonness. Probably, in six cases out of ten the waste-pipes of baths and cisterns, which are never cleared by a current of water except at the rare moment when a bath or cistern 'runs over' communicate directly with a soil-pipe."

This comment calls forth a strenuous protest from Mr. Rawlinson, the Chief Engineer Inspector of the Local Government Board, and a leading authority on sanitary drainage. He says that sanitary constructors are usually engineers specially devoted to devising and executing works of sewerage and house-drainage, "and are not medical amateurs, some of whom claim alone to have the knowledge, experience and right to devise, dictate and direct sanitary works, and to carry on subsequent inspection. The system of drains found to be defective at Bagshot Park were not designed by a sanitary engineer, but by the architect who designed the house, and who is now dead. The drains were laid by the builder. There is in fact a school of sanitary engineers who are not blundering in darkness; but it must be remembered that these gentlemen are not architects, they do not design and build houses, and up to this time are rarely if ever consulted, unless, as in the unfortunate case of Bagshot Park, the drains are found to be defective." Geo. E. Waring, Jr.

THE RELATIONS OF FIRE EXTINGUISHMENT TO THE INSURANCE RISK.[1]

WHERE is one thing to be said about the subject of fire extinguishment—it can never be too much talked about for the good of the general public. It is, indeed, to be regretted that its discussion is confined so closely to that class of journals which we represent, for the annually increasing fire losses of the country constitute a serious drawback to the prosperity of the nation. Could they be prevented or materially reduced, every individual in the community would be benefited. As the great proportion of fires are due to ignorance, recklessness, or carelessness, so pronounced as to be almost criminal, those great daily, weeky and monthly disseminators of wisdom and news could not do a better service to their fellow men than by devoting a portion of their time to expounding the gospel of fire prevention. Give us the prevention and the question of extinguishment will take care of itself. In what I shall have to say at this time, I shall not confine myself very closely to the text assigned me, but shall endeavor to forget for the moment that I am identified with either an insurance or a fireman's paper, and strive to consider the question of fire prevention, fire extinguishment, fire losses, and insurance risks from the standpoint of a citizen taxpayer whose burdens are made heavier by fire losses. . . .

The prevention of disastrous fires is possible, of course, by the proper construction of buildings and cities, but that such construction will ever be attained is far from probable. Hence we must continue to regard constantly-recurring fires as inevitable under existing conditions, and resort to the best means possible for reducing their disastrous effects to the minimum. To do this, we need to pay more attention to the science of fire-prevention than to fire-extinguishment. Buildings can be constructed of slow-burning material so put together as to render them very nearly fire-proof. There are many such structures in European cities, and a few in the cities of this country; but it is impossible to make their contents fire-proof, and hence fires are liable to occur in them; but in buildings of this class it is possible to burn the entire contents of one portion of them without disturbing the occupants of the other portions. When buildings generally are so constructed, the fire losses will be reduced to the minimum. Under existing conditions of society, however, it is impossible to secure this nearly fire-proof construction. Property-

[1] Portions of a paper read at the last quarterly meeting of the Insurance Journalists' Association by Mr. Clifford Thomson, editor of the *Fireman's Journal*.

owners will not expend the additional sums necessary to erect such buildings, and no set of law-makers has ever been assembled that possessed the requisite practical knowledge to enable them to frame laws prescribing the methods of fire-proof construction. Experience, especially in this city, has demonstrated that it is impossible to enforce even such precautionary measures relative to building construction as have been enacted. Incompetent, careless, or corrupt officials have neglected their duty in the matter; property-owners are opposed to restrictive laws, and architects and builders evade them whenever it is made their interest to do so. As a consequence, our cities are now filled with badly-constructed, highly-inflammable and dangerous buildings, and their number is being added to day by day. The constantly increasing fire hazard has rendered necessary more elaborate and costly means of fire extinguishment. In this city [New York] it costs about $1,500,000 a year simply to maintain our fire department, involving a tax of nearly $1.50 a year upon every man, woman and child within the limits of the city. A tax in nearly the same proportion is rendered necessary to support the fire departments in other cities. The losses by fire in New York average about $4,000,000 a year; the amount paid for fire premiums annually averages $2,225,000, while the uninsured losses bring up the aggregate cost of fire-losses, fire-insurance, and fire-protection to very nearly $10,000,000 a year. That is what we pay in this city for the blessed privilege of erecting cheap, flimsy, and inflammable buildings — for ignorance, recklessness, and carelessness. Apportion this sum among the taxpayers of the city, and it makes a tax of $100 upon each, and probably more.

It is a theory of fire insurance that premium rates are made to harmonize with the risk — the greater the fire hazard the greater the premium. If this theory were carried into practice we should have little need to enact building laws, for it would then be to the advantage of every property-owner to make his buildings as nearly fire-proof as possible, to escape the extra hazardous premiums that would be required upon buildings of the class now existing. As a matter of fact, however, the discrimination in premium rates is more a matter of theory than of practice, and in reality the rate is scarcely higher on a building known to possess many and varied hazards than upon one that has few. There is, therefore, no incentive to fire-proof construction, and property-owners are content to put up shams that are attractive to tenants instead of substantial structures calculated to defy both time and flames.

A property-owner in Boston some time ago stated this point very clearly in reply to a published letter written by Mr. Edward Atkinson. After stating that he was the owner of several buildings he said that he would not spend one dollar for fire prevention or fire protection; that he was willing to spend money freely to secure the best sanitary condition for his houses, and to make them attractive to his tenants, but the fire hazard was of no interest to him whatever; that he paid the insurance companies to assume the risk, and they were responsible for it. He said, however, that if any company would make it an object to him to provide fire protection he would do so, but as long as he could get just as low rates without such protection as he could with it, he would not spend money for such object. This is the secret of the flimsy character of the buildings that disgrace our cities to-day, and jeopard the safety of whole communities. Insurance companies do not charge for the risk as they find it, and by not discriminating rob property-owners of all incentive to fire-proof construction. Until such discrimination is made, and property-owners shown that it is to their pecuniary advantage to provide proper means for preventing and extinguishing fires, the fire losses of the country will most certainly increase year by year in proportion to the increase of population and the development of our commercial and industrial resources. Insurance companies now employ surveyors to inspect buildings and pronounce upon their fire hazards, but such inspections have far less influence upon the establishment of rates than does the excessive competition for business engendered by the active rivalry of numerous insurance companies. A few years ago the sanitary condition of buildings began to be actively discussed, and out of the interest developed in the subject there has grown a new profession, composed of sanitary experts, who are competent to remedy defective drainage, correct bad plumbing, and by other means convert a pestiferous house into a safe and wholesome domicile. When insurance companies encourage property-owners to adopt means for fire protection and prevention, we shall soon find another class of experts taking the field to advise property-owners as to the best means of providing against disasters by fire. At present, instead of fire prevention being provided at the cost of individual property-owners, too much reliance is placed upon the means for fire extinguishment maintained at public cost, and upon the complaisance of insurance companies, that insure property for its full value, or more, at absurdly low rates.

From the underwriters' standpoint, the means available for fire extinguishment have no relation to the insurance risk. At least, that is the inference to be drawn from their practice. Just over in New Jersey there is a manufacturing city that is literally without water for fire protection. A little stream passing through one end of the city furnishes sufficient water for numerous hat factories located on its banks, but is totally insufficient to protect them from the flames, as has been demonstrated on numerous occasions. Its fire limits embrace the main street and twenty feet on each side of it. The front of the street is lined with brick buildings, while twenty feet in rear of them there are any number of frame sheds, tumble-down stables, and cheap wooden structures. When a fire occurs the people turn out to see the property burn, not with any expectation of saving it. Yet in that city, composed mostly of special fire hazards, and virtually without fire protection, the rates of insurance are no higher than they are in Newark, where a splendidly-equipped fire department gives excellent protection to property within the city limits. Other instances without number might be cited to prove that the means provided for fire extinguishment have no influence whatever upon insurance rates, whatever it may have upon insurance risks. We all remember how, some time ago, there was a hue and cry about the insufficient fire protection in Chicago, and how the insurance companies threatened to cancel their policies and withdraw from the city. How many of them actually did cancel their policies, or gave up their business there? It was a long time before any better fire protection was provided; but what company refused a risk on that account during that time? Possibly, if the entire fire department of New York City was disbanded, the underwriters might become frightened, cancel policies, and stop writing in the city; but if one-half the apparatus only were disabled, who believes that one of them would refuse a premium tendered, or would give up business? They would still trust to luck to bring them out all right, and the competition for business would be as active as ever. Whatever may be the theory of underwriters regarding fire protection, in practice they certainly do not regard it as of any value, for be it good or bad, it has little or no influence upon rates. To citizens and taxpayers, however, an efficient fire department is of inestimable value. So it is to the underwriters, but they do not recognize it as other citizens do. Only a few days ago a fire occurred in a woodworking establishment up town, which was filled with highly-inflammable material. . . . The actual loss was not more than ten per cent of what it would have been had the building been entirely consumed or the firemen five minutes late in reaching the scene. The value of the fire department to the underwriters in this instance was equivalent to ninety per cent of the amount of insurance on the property.

The means for fire extinguishment bear a most important relation to the insurance risk, but if such importance is appreciated by underwriters, they do not recognize it in their dealings with the public. It is not long since I heard the president of a city insurance company complain of the scarcity of fires in New York. Said he, "if the fire department goes on putting out all the fires so promptly we shall lose our business." Another insurance president has written and said that "underwriters want plenty of small fires to keep the people alive to the value of insurance. We don't want fire departments too well equipped: all we want is protection from large conflagrations." This is the underwriter's view of the relations of fire extinguishment to the insurance risk. Yet these same men, as good citizens and taxpayers, admit that this view of the question is opposed to public policy. In their own communities they advocate the best means attainable to protect their property from fire, and we know of some of them who have complete little fire departments of their own for the protection of their private residences. In one of my conversations with the president of a company who held these views, and who also said that over-insurance was responsible for fully thirty per cent of all fires, I said, "then you must hold that fire insurance is a curse to the community." "Most certainly I do," was his reply; "it is a benefit to individuals, but a curse to the community." The welfare of the citizen and the taxpayer demand the most efficient means of fire protection attainable, while the interest of underwriters is consulted by having plenty of fires but no conflagrations.

Modern architecture is rapidly outgrowing our present means of fire extinguishment. Buildings are run so high up in the air as to be entirely out of the reach of the fire departments. No stream of water can be projected from the ground to their roofs, nor can ladders be built long enough to reach the upper floors. All the firemen can do in such cases is to wait till the fire burns down to them. Such was the difficulty they had to contend with at the great fire in Worth Street a few years since. The fire was raging a hundred feet above the street, and no engine was capable of throwing an efficient fire stream to that height. The water that could be projected that distance was merely a spray, and of no effect in putting out the fire. And so the flames spread from one building to another, creeping behind the hollow iron front that projected beyond the division walls, till they had done their destructive work. Other buildings have so enlarged the areas between walls that when a fire gets started, it becomes such a formidable volume of flame and heat that it is both unapproachable and uncontrollable. Such was the case in the South-Street fire, and also in the Havemeyer & Elder refinery. One or two brick walls dividing the area of these buildings would probably have kept the fire confined so that it might have been controlled.

The buildings of to-day are as much beyond the capacity of our present fire-extinguishing machinery as those of twenty years ago exceeded the capacity of the old hand-engines. Either there must be limits put upon the construction of buildings, or there must be improved means devised for extinguishing fires. There is not likely to be any reduction in fire hazards; on the contrary, new ones are constantly being devised, but there has been no radical improvement in fire-extinguishing machinery since the invention of the steam fire-engine. New methods of utilizing these are being brought forward by firemen and inventors, but no machines of greater capacity for projecting water have been invented. What are necessary to control

fires in large buildings, or even in small ones that imperil others, are large, powerful streams of water, sufficient to drown out a fire at short notice. When a fire gets a good headway in one of a block of buildings, the object of the firemen is not so much to save the contents of the burning building as to protect those adjoining. To do this they must drown out the fire by the application of large volumes of water. This is protecting the insurance risk to the best advantage. But to get these large and powerful streams an abundant water-supply is necessary, and in this respect nine out of ten of the cities of this country are deficient. In certain portions of New York the water-supply is wholly inadequate, and Brooklyn, Boston, Philadelphia, Chicago, St. Louis, New Orleans, and many other cities are little better off. Without an abundant supply of water there can be no efficient fire protection. The day will come when all our seaboard cities will have the high-pressure water-service, delivering efficient fire streams of salt water directly from the hydrants, and these placed in such close proximity to each other that forty or fifty streams can be concentrated upon a single point. With such means at hand for fire-extinguishment, the conflagrations so much dreaded by underwriters will be impossible.

It has been so frequently demonstrated that private fire-extinguishing appliances are of little value that I do not propose to discuss them. It is absolutely useless to equip a building with standpipes, hose, extinguishers, etc., unless men of intelligence are placed in charge of them, trained in their use, and held to a strict accountability for them. You all remember, no doubt, that the Locust Grove Hotel was splendidly equipped with fire-extinguishing apparatus, force-pumps, pipes all through the building, hose on every floor, etc. The fire broke out in the oil-room, adjoining the force-pumps, and the fire-extinguishing appliances were, consequently, almost the first things burned. About the only private appliances that I know of that have proved of value in extinguishing fires are the automatic sprinklers, the use of which is required by the New England mill mutuals in all the mills they insure. These sprinklers have proved of immense service in putting out fires in large factories, and have been enthusiastically commended by Edward Atkinson and his associate officers in the mutual companies. It did not seem practicable to bring these into general use for the reason that, working automatically under the effect of heat, and releasing the water-supply when a certain temperature was reached, there was danger that the uncontrolled flow of water would do more damage than the fire; but improvements have been made in them of late, and, among other things, they are so arranged that an alarm is sounded simultaneously with the starting of the water, and human intelligence is thus summoned to extinguish the fire or turn off the water, as circumstances may require. It seems to me that this means of fire-extinguishment may be advantageously introduced in places that are now inaccessible to the firemen. By making the floors water-tight, and providing scuppers to carry off the superfluous water through leaders to the sewers, there would be little danger of injury to goods or material located on the floors below where they were operating. Certainly any method that promises to control fires in buildings that are now, for all practical purposes, beyond the reach of the firemen, is deserving of careful investigation.

The fire losses of the country have reached such magnificent proportions as to demand the attention of every thinking man. They average, according to estimates of underwriters, about $100,000,000 annually. Add to this the large sums paid for insurance premiums and for the maintenance of fire departments, and taking into account, also, the losses of the thousands of mechanics and others who are thrown out of employment by reason of the burning of the industrial establishments in which they found employment, and we get some idea of what we pay every year for enjoying the luxury of burning up buildings. The efforts of every intelligent man should be directed to overcoming the ignorance and carelessness that are responsible for this enormous waste of the nation's wealth. In doing so, no one need be afraid that he is opposing the interests of underwriters, for however efficient may be the means adopted for fire-prevention and fire-extinguishment, there will always be a sufficient number of fires to keep alive that interest in insurance that is so necessary to the successful collection of premiums. Fires have always been plentiful and always will be sufficiently so to make insurance a necessity. The system of insurance has so grown into our commercial and industrial economy that it has become an essential factor in our national and individual prosperity. It is not dependent for its success upon the number and magnitude of fires that occur, but the character of the indemnity it offers against possible contingencies. Those contingencies are ever present, regardless of any means that may be adopted for fire prevention or extinguishment. If there should not be a fire in New York City for a year, that fact would not reduce the volume of insurance premiums by a single dollar. The welfare of the community demands the very best means of fire extinguishment, and the best that can be obtained will in no way conflict with the interests of fire underwriters.

In these rambling remarks relative to fire matters, my purpose has been to direct attention more to the subject of fire prevention than to discuss the relations of fire-extinguishment to the insurance risk. I regard the insurance interest in the subject as entirely secondary to that of the community, but that interest is in no danger whatever of being impaired by any efforts that may be made tending to lessen the fire losses of the country. At present neither property-owners nor the companies derive any advantage from buildings being either fire-proof or extra hazardous. Either condition plays but an insignificant part in the establishment of rates, and has but little effect on the aggregate of premium receipts. While the fire hazard is an important factor in establishing rates for classes of risks, yet these rates are scarcely affected by the question of available means for fire-extinguishment. It is fair, therefore, to assume that fire extinguishment is not regarded by underwriters as sustaining any important relation to the insurance risk. Consequently, if property-owners demand the best possible facilities for extinguishing fires, they cannot be regarded as antagonizing the interests of underwriters. If the latter show a little inconsistency in desiring fire departments equal to the prevention of conflagrations, which they do not want, but inadequate to the putting out of small fires, many of which they desire, that is their fault, not mine, for I have simply quoted their public utterances.

THE ILLUSTRATIONS.

THE BROWN BUILDING, PHILADELPHIA, PA. MESSRS. CABOT & CHANDLER, ARCHITECTS, BOSTON, MASS.

HOUSE FOR JACOB S. BURNET, JR., CINCINNATI, O. MR. W. W. FRANKLIN, ARCHITECT, CINCINNATI, O.

ST. PAUL'S SCHOOL, CONCORD, N. H. MR. GEORGE H. YOUNG, ARCHITECT, BOSTON, MASS.

THE L. & N. R. R. STATION, LOUISVILLE, KY. MR. H. WOLTERS, ARCHITECT, LOUISVILLE, KY.

HOUSE INSPECTION.[1]

THE points as to house inspection I would urge as established by experience are the following:

1. The inspection should be experimental.

2. The inspection should be periodical.

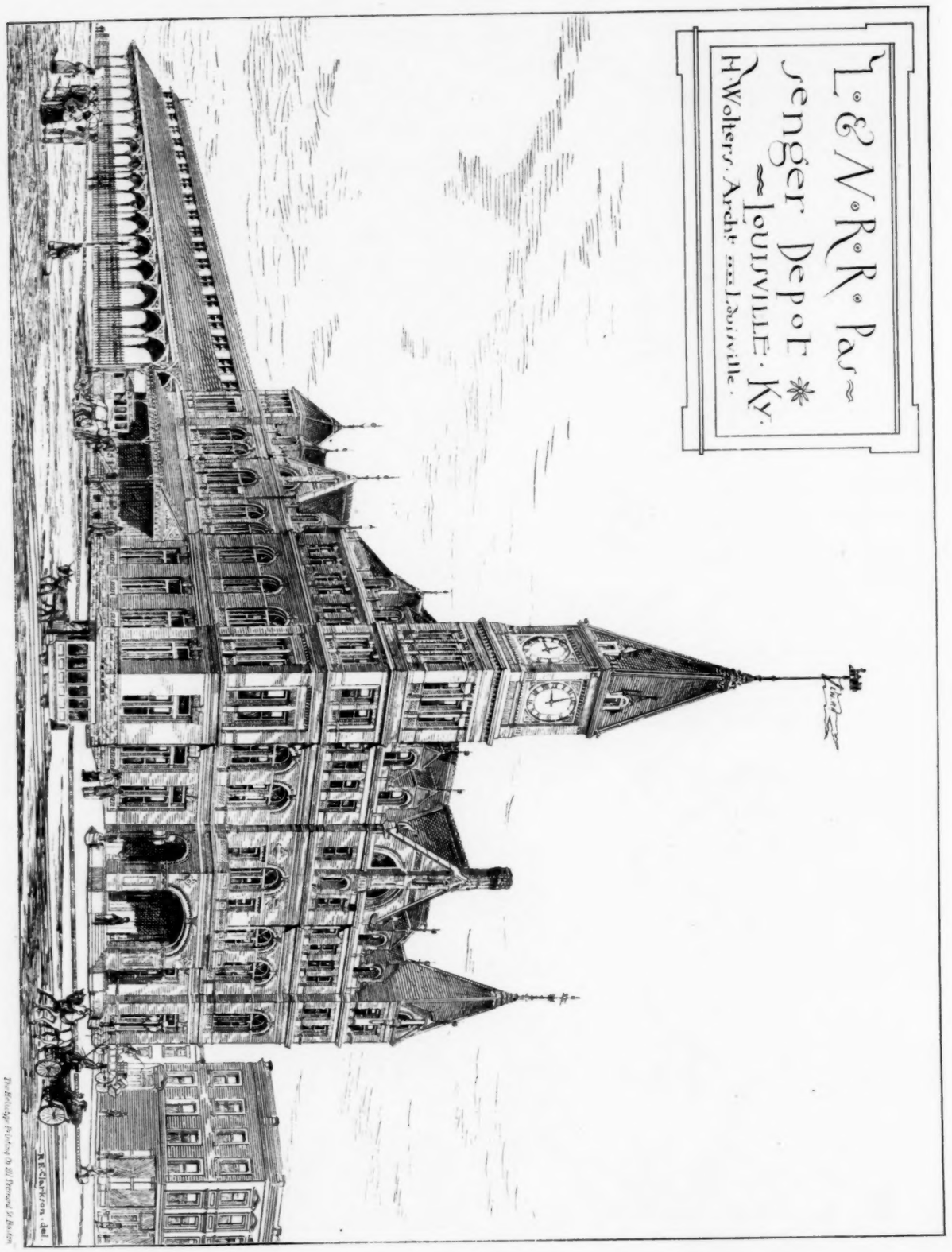
3. The inspection should be made by a professional engineer, who should have no interest in any expenditure he may recommend.

4. An inspection of this character can be efficiently and cheaply carried out by making use of the principle of co-operation.

Let me then first explain what is meant by saying that the inspection should be experimental. It is commonly supposed that to investigate the sanitary fittings of a house thoroughly, it would be necessary to rip up floors, tear down panelling, break open plaster, and lift the pavement of the ground floor. Householders prefer to run some risk of typhoid fever. With a more rational system of arranging the plumbing work in a house, the pipes could be readily inspected without this demolition, and it is heartily to be desired that architects should give their minds to arranging every pipe so that every yard of it can be seen with little trouble, and repaired without inconvenience.

The first principle an engineer is taught in the drawing office is this: Every part of a machine must be readily accessible for inspection and repair. The water and drain systems of a house constitute a large and complex system, but architects and builders have sadly neglected this condition of accessibility. The sanitary engineer must, however, deal with existing houses as he finds them, and contrive experimental tests by which the fittings can be proved, without being actually seen from end to end. When an old house is inspected for the first time, some disturbance and expense are almost necessarily entailed. No inspection deserves to be called inspection, which does not make sure that the house-drainage system really is connected with the town sewer. To make sure of this, the ground must be opened between the house and the sewer, the drain broken into, the flow of the sewage from the house inspected, and the condition and structure of the drain examined; but when this has once been done, it is easy to insert an inspecting man-hole, or simple eye with a lid easily removable, by which on all future occasions the necessary examination can be made with no disturbance, and at no expense. Even the first opening of the drain does not usually involve any inconvenience, for the work can usually be completed outside the house. The inspecting eye or man-hole can be made use of for other experimental tests. Thus, the second point of cardinal importance in drainage is, that pipes conveying drainage through any part of a house should be *water-tight*. I shall be told that no pipe ever should cross a basement: so be it; but in old houses, built in streets with a sewer in front and water-closets at the back, the drainage-pipes *must* cross the basement. We cannot avoid this defect of design, and must render it as little noxious as possible. This we can do by insuring at least, that the pipes shall be water-tight. This can be tested experimentally. The whole network of pipes up to a certain level can be filled with water, while the outlet at the inspecting eye is stopped with a clay plug. If the water does not sink, then the

[1] Paper, by Professor Fleeming Jenkin, F. R. S., read at the Brighton Health Congress, December, 1881.



RESIDENCE OF
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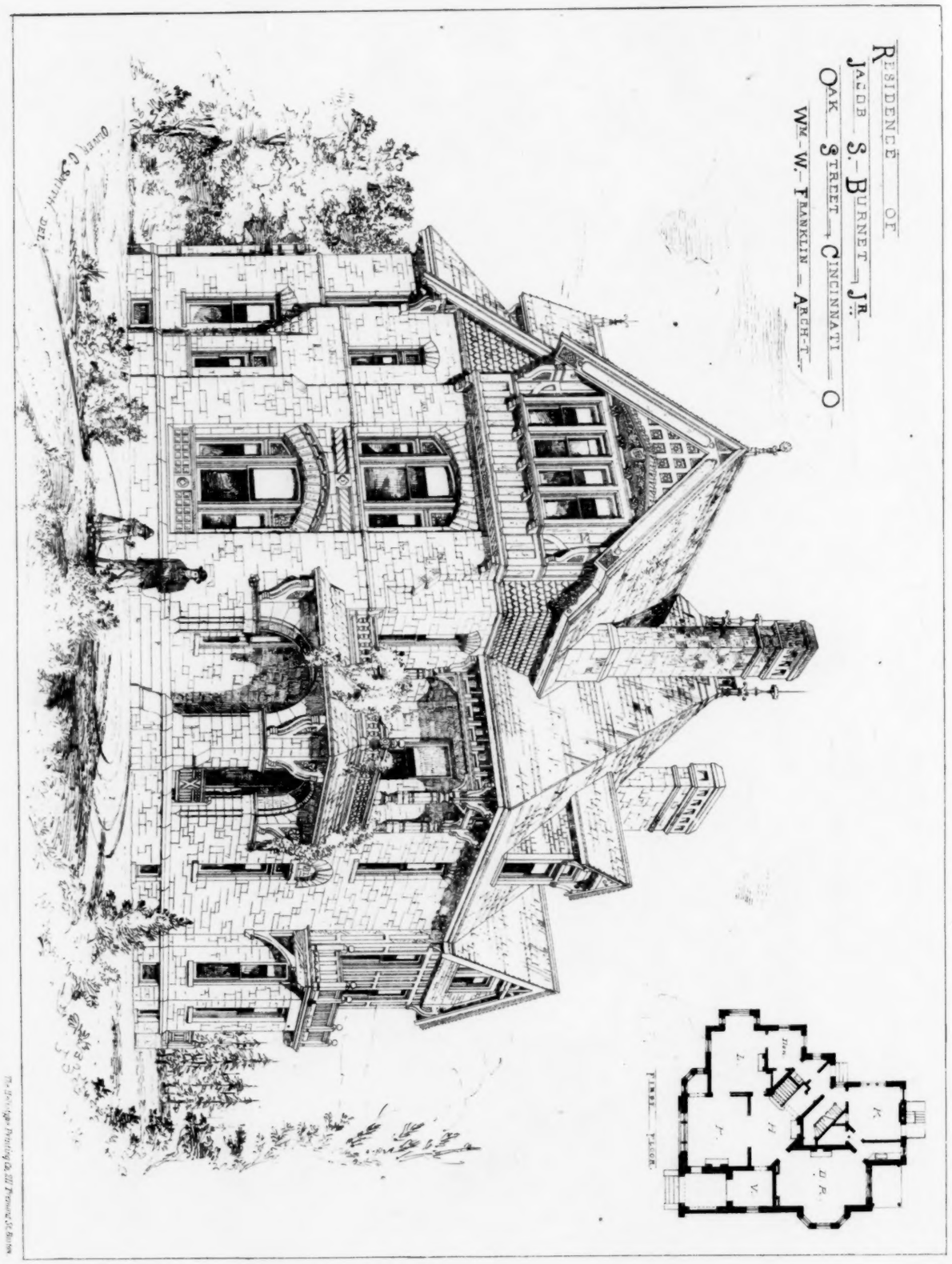
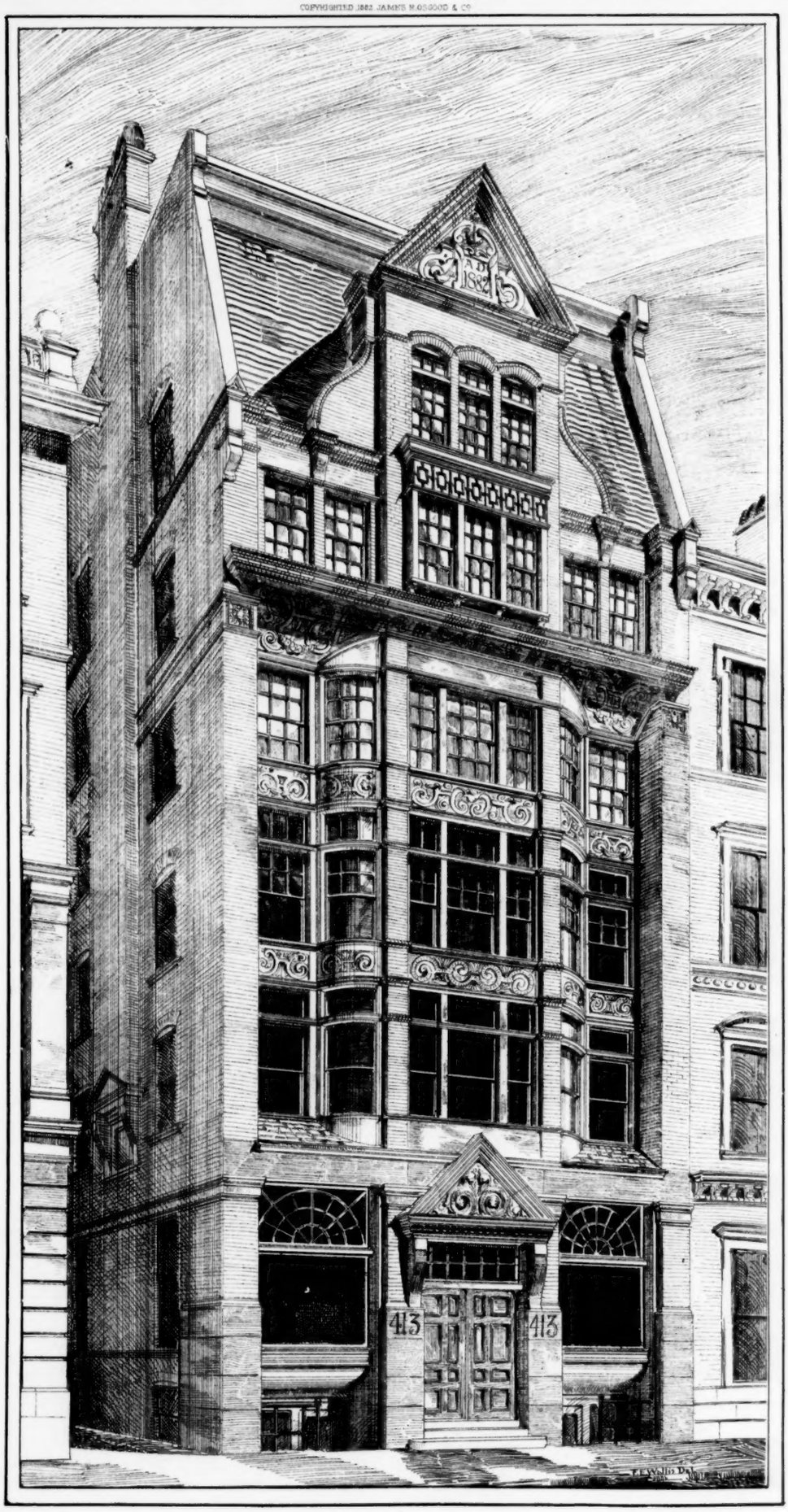
OAK & 3 STREET & CINCINNATI & O.
WM. W. FRANKLIN & ARCH'T.





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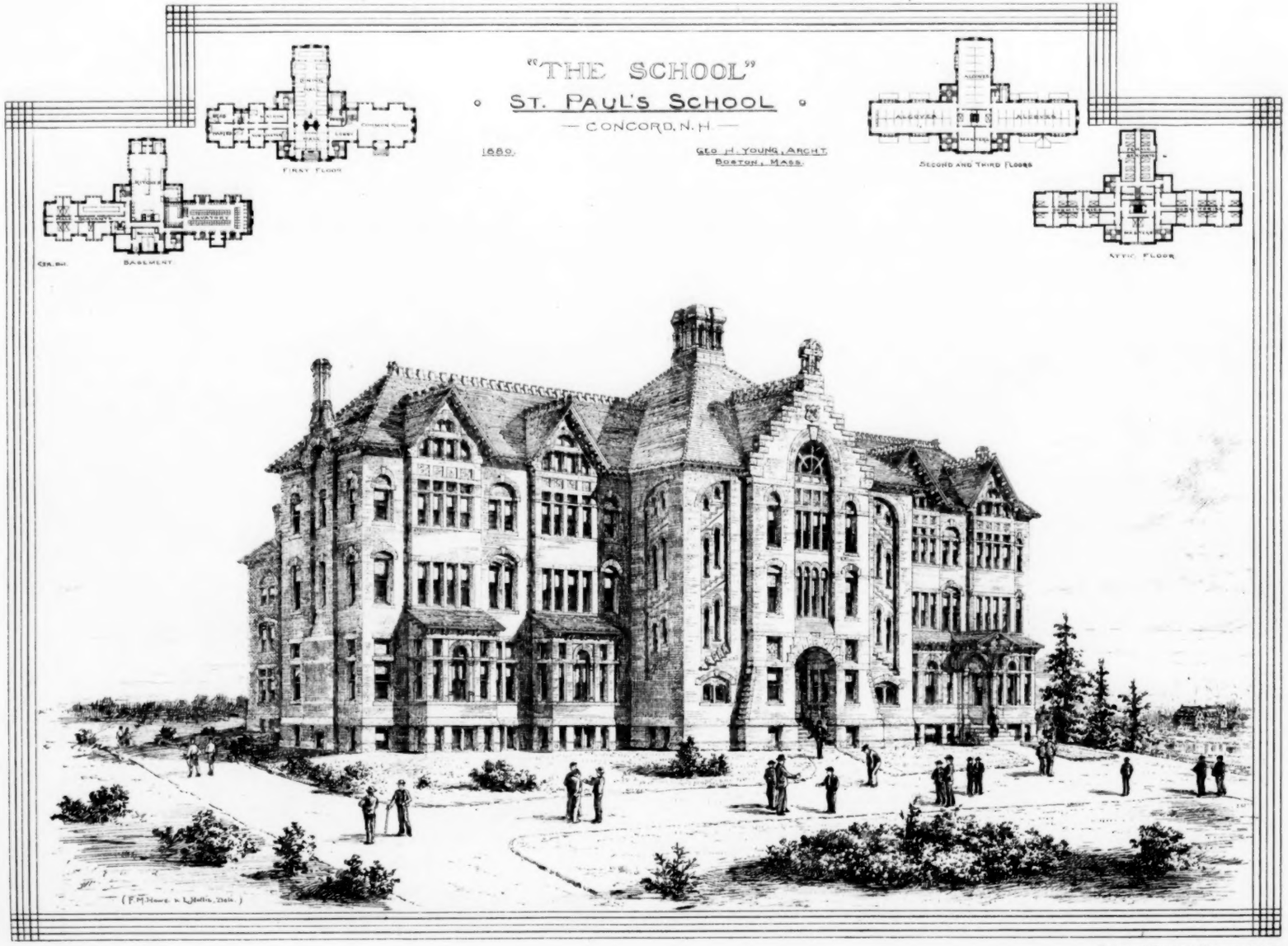


system is water-tight. This inspection insures the excellence of the underground channels, without disturbing a single paving-stone, or interrupting the servants in their work for a minute. Experience has shown, however, that no drains laid in old houses will stand this test. Builders are positively aghast when drains are specified which are to be subjected to this test. They have to be told that it is the commonest test in the world as applied to pipes laid by contractors for engineers, before they will consent to undertake such a responsibility as keeping water in a pipe under, say, six feet of head, or pressure.

The builder has thought until now, that if he provided an open channel with a sufficient fall, and with smooth joints inside, he had executed first-class work. The fact that the joints would let sewage ooze out and gradually saturate the basement, was not taken into account. We can by experimental inspection guard against this danger.

The third point of inspection I take to be insuring that the system of piping throughout the house shall be *gas-tight*. No doubt by careful ventilation and thorough flushing, the inside of drainage-pipes may be kept moderately clean, but it will always be our duty to stop all direct communication between the insides of the pipes and the rooms of our houses. The sewer-gas inside the pipes may be present in very small quantities, or may be of a very mild type: nevertheless it should not be admitted to our houses.

We can experimentally test the staunchness of the pipe-system by introducing some strong-smelling volatile substance, such as paraffine or oil of peppermint. If this be poured into the pipes by a man outside the house, and if an inspector with a good nose goes over the house carefully, room by room, he cannot fail to detect the existence of holes in the piping, when these exist. This third experimental test detects faults of design, faults of execution, and faults arising from decay. Often we find that some unforeseen and unguarded by-path exists by queer cross-connections, leading sewer-gas straight into bedrooms or bath-rooms. Often we find in this way dry traps leaving an unguarded hole.

Often we find badly-executed joints, where the soldering is so imperfect that a finger could be introduced into the gap. Often we find that work originally good has in course of time decayed, so as to leave numerous vents from which sewer-gas can issue. It will be seen that this experimental test is really more searching than the much-dreaded tearing down of panels and breaking open of plaster, which only becomes necessary when the existence of a defect has been proved.

In what has been said small allusion has been made to the original design and arrangement of the sanitary fittings. The public are too apt to assume that sanitary inspection means calling in one sanitary engineer to condemn what another sanitary engineer has just recommended.

But if every house were perfectly drained and fitted with the best sanitary appliances, the inspection described in this paper would be necessary. We should still require to test experimentally whether—

1. The pipes were choked.
2. The drains were water-tight.
3. The pipes were gas-tight.

This leads me very naturally to the second head of my paper, the inspection should be *periodic*. It is not enough to call in the engineer, and have all put in the best order once in a way. This is indeed very necessary in most cases. How necessary few know; but when it has been done the inspection must be maintained. The case is quite analogous to that of a steam-boiler. We must in the first instance provide ourselves with a good article designed by competent engineers and experimentally tested, but we must also pay competent men to come year after year and examine whether any deterioration has occurred. I am continually told, when I press friends to join an inspection association, "Oh, our house does not require it; our drains were all put right five years ago by Mr. So-and-so," naming an authority of undoubted weight. My answer is, "You, oh, my friends, are the very people who should welcome the inspector. You will incur no expense beyond that of mere inspection. I could understand your objection if you were in a very bad state, because inspection might involve you in great expense, might turn you out of your house for weeks while alterations were being made," and so forth.

Sometimes my friends are persuaded, and sometimes I find their excellent drains choked, their excellent lead pipes burnt through by lime, or cracked by settlements, and it is well worth while to pay an inspector a guinea a year to insure you against these accidents, which have cost more lives than all the boiler explosions that ever have or ever can happen. The number of accidental injuries to pipes is great beyond belief. In London we find about six per cent of the houses inspected have their drains choked, so that the whole of the sewage oozes out into the basement; and over thirty per cent of the whole show considerable leakage of sewer-gas through faulty pipes when tested by oil of peppermint. Nor do these things occur only in houses where there is some reason to believe defects exist. It is a common fallacy to suppose the inspector should only be called in when some danger or nuisance is proved. This is like calling in the engineer only after the boiler has burst. If every house in London were tested at this moment, it is my conviction, based on experience, that the above proportion would be maintained; one in every twenty houses would be found not to be drained at all; the air in rooms of one in three would be found in direct communication with the town sewers, and this has little or nothing to do with faulty design, unless, indeed, our whole domestic economy of receiving water into houses clean, and sending it out foul into a common receptacle, be called faulty design.

The next point for consideration is, who shall make this periodic experimental inspection? Some say the householder himself. They contend that these tests are very simple, and such as a man of sense can himself carry out with the aid of shilling hand-books. This may be true, but the man of sense never will do it. He has so many other engagements, and sewage is such an unpleasant subject, that he will not rout out man-holes in the area, put his arm into traps half full of dirt, climb up under the slates to inspect cisterns, get onto the roof to pour down oil of peppermint: he will pay some one to do it for him. Moreover, a man who is his own doctor has a fool for his client. The same thing is said of law, and perhaps the same thing may be said of engineering: the amateur engineer does not command my confidence, even when dealing with drains.

Others say the inspection should be carried out by the town officials. In this I heartily concur, but while the law and custom are what they are, this cannot be done. We find that for thorough inspections, such as I recommend, one man can undertake 400 houses per annum. In Brighton there are, perhaps, 17,000 houses, and therefore the town authorities should have forty inspecting engineers to do what has been here recommended once a year for each house. In course of time the Medical Officer of Health will have these forty engineering assistants, and the sooner the better, but it will not be this year or the next. Let us agitate for improved official inspection, and strengthen our argument by showing what can be done by private organization.

Some say the plumber should make the inspection. Many plumbers are competent to do so: some are not. Few, at present, carry out these inspections, and in my opinion they are not the proper persons: they have an interest in recommending alterations and repairs. The adviser of the householder should be quite disinterested, and should be capable of inspecting work executed by the plumber. The best of contractors work better under inspection, and this we find by experiment is also true of plumbers.

We come lastly to the professional engineer or architect as the proper person to inspect in the way suggested. He can not only carry out the tests described, but he is competent to give an opinion on the merits of the general arrangement of pipes in a house, on the design of the sanitary fittings, on the condition of the cisterns, and on the supply of water: all points of great importance, though they have been subordinated in this paper to the one question of *inspection*. That a well-educated, disinterested professional man is the proper person to advise and inspect seems so clear, that the only remaining point is to consider how to find such a *rara avis*, and how to induce him to undertake the work at such moderate rates as the average householder can afford. This brings me to my last point, namely, that the experimental periodic inspection by a skilled disinterested man can best be obtained by making use of the principles of co-operation. When three or four hundred persons club together, they can, by subscribing three or four hundred guineas, pay a salary which will procure the services of a well-educated young engineer or architect of good standing. Between the ages of twenty-four and thirty the salaries of these professions do not run much higher than from £150 to £300 per annum, and this single engineer can, as has been proved in Edinburgh and London, inspect the 400 houses. This must be taken for granted. On the one hand they may be told that the one inspector of nuisances can thoroughly inspect sixteen or twenty thousand houses per annum, and on the other, that no inspection is worth anything which costs less than fifty or a hundred guineas. Both statements, though somewhat less crudely put, are made with unfailing regularity at every meeting where this subject is discussed. I appeal to experience. For four years the leading doctors, bank directors, hospital managers, and householders in Edinburgh have tested our system of inspection. Hundreds, I may now say thousand, of houses have been inspected under it, and not one person who has had the inspection made, has ever complained that the inspection was not thorough; and letters are constantly received expressing the greatest satisfaction at the care given. The system is spreading in London, Bradford, Wolverhampton and elsewhere. Liverpool, Brighton and Plymouth are discussing plans for its adoption. The idea is no longer a speculation, but has been put to the test of four years' experience among the shrewdest of the inhabitants of these islands. Not only does co-operation enable you to pay a man of your own to conduct these inspections, but it places his appointment in the hands of a local committee, under whose eye he works. They should be men whose names are a guaranty to the citizens that the appointment of the engineer is honestly made, and that his work will be honestly watched.

Co-operation will do still more. It will provide a retaining-fee sufficient to pay a consulting engineer of standing, who will exercise such a general supervision over the executive engineer as to insure the adoption of sound principles and the avoidance of all quackery. These are the principles which led to the establishment of the Edinburgh Sanitary Protection Association, and which I trust may lead to the establishment of a similar association for Brighton.

The one difficulty, so far, in starting local associations has been that of finding at the start a sufficient roll of members to justify the appointment of a resident engineer.

In these cases the proper course seems to me the following: Let

the inhabitants of a town like Brighton join a central association, such as that over which Professor Huxley presides, at 7 John Street, Adelphi, London. Let a local committee of supervision be appointed to watch how the London officers do their work, and to promote the interests of the local members.

Whenever the number of members in a given town justifies the step, let the local committee constitute themselves a council for a local independent association, appointing officers of their own, who might often come from the central association. In this way no pecuniary risk would be run. The London association is not a money-making society, and would be heartily glad to be the means of establishing the nucleus of successive associations in successive towns.

The breaking off of each descendant from the parent association would be a matter of still greater rejoicing than the starting of a new affiliated branch.

It is much easier to begin any work of this kind by degrees in each town than to create an independent and completely-organized society from the first.

Unfortunately the system of inspection proposed only meets the case of persons who can afford to pay at least a guinea per annum; but if we can show what inspection is possible and how great the need of that inspection is, we shall have neared the point at which inspection will become compulsory. No argument for compulsory inspection that has ever been brought forward has a tithe of the force of that established by the London Sanitary Protection Association — namely, that even among the better houses, one-twelfth part is not drained at all. — *Sanitary Record.*

THE RING-THEATRE FIRE TRIAL

LAST week Vienna was the scene of the great trial of the persons accused of having contributed to the terrible disaster of December 8th, 1881, — the burning down of the Ring Theatre and the loss of 386 lives. Among the accused is Chevalier von Newald, who at the time of the fire was chief burgomaster of the Austrian capital. One of the principal prisoners, however, is Herr Jauner, the manager of the ill-fated theatre. Besides these two there are six other prisoners, including Herr Landsteiner, a high police official, two city surveyors of Vienna, two firemen engaged at the theatre, and the official whose duty it was to inspect the building and see that everything necessary for safety from fire was in order, according to the legal regulations. All these persons are accused by the public prosecutor, Dr. Von Pelzer, of having, by culpable neglect, endangered life. This, according to Austrian law, being a simple misdemeanor, no jury is required, and the case will be settled by four judges.

The formal act of accusation fills a book of fifty-three closely-printed pages. The essential points are as follows: — The burgomaster of Vienna, Dr. Von Newald, had been ordered, at the time of the Nice-theatre catastrophe, to issue to the Vienna-theatre managers a new set of regulations for securing the safety of that class of public buildings. Among the expedients which were to be specially enforced was an iron curtain, which was always to be kept down, dividing the stage from the audience up to the moment when the performance commenced. Another regulation imperatively ordered that oil-lamps should be kept lighted during the performance in various parts of the house, especially in the gangways, stairs, and galleries; while a third requirement was that at every performance firemen should be kept posted near the water-hose from the opening to the close of the doors of the theatre. These precautions, if strictly carried out, could hardly have failed to avert the terrible calamity which befell the Ring Theatre on the 8th of December last. The offence with which the ex-burgomaster now stands charged is not only of having neglected to issue the regulations in question, but of having positively forbidden them to be sent to the managers of the Vienna theatres. It is known that the burgomaster denies that he ever forbade such a thing, but the public prosecutor states that he shall produce evidence of the fact.

The charge against Herr Franz Jauner, the manager of the unfortunate Ring Theatre, is that, previous to the catastrophe, he contributed by his negligence, and through the carelessness of his servants, to conceal the fact that there was danger from fire on the premises under his management, — to wit, through an escape of gas; further, that he had omitted to provide the expedients and measures prescribed by law for preventing the occurrence of such perils; and, finally, of having intrusted the safety of the theatre to incompetent and careless persons. Herr Jauner, before the fire, had been repeatedly told that the firemen, instead of being at their posts throughout each performance, were in the habit of getting drunk in the nearest public-house. Moreover, Jauner often made these men do duty as scene-shifters, gas-lighters, and in other stage work, instead of seeing that they attended to their proper business. He also failed to have the iron curtain properly attended to, employing, instead of special men as prescribed by the regulations, two of the common workmen who, on the night of the catastrophe, instead of being at their posts, were quietly carousing in a neighboring beer-house. Other charges against Jauner are that, on the night of the fire, there were no oil-lamps in the galleries, staircases, and gangways; that, contrary to his contract, the soffits were lit up in a way that caused an escape of gas; that, whereas he was bound by contract to be on the stage before the commencement of the performance, he was not there on the fatal night, having failed to reach the theatre till some time after the fire had broken out. Had he been present at the critical moment, as it was his duty to have been, the disaster would probably have been averted, or, at any rate, greatly circumscribed. In his absence there was no one to take command. The fireman committed the disastrous mistake of turning off the gas at the meter, plunging the audience in total darkness. Another official opened the revolving shutters leading from the street to the stage, while there was no one to let down the iron curtain between the stage and auditorium, whereby a strong draught of air was at once let in upon the burning stage, carrying the fire and suffocating fumes immediately into the body of the theatre. Instead of being at his post to prevent these mistakes, and to address a word of advice to the audience, as the Grand Duke of Mecklenburg-Schwerin did from his box the other night at the Schwerin Theatre, Herr Jauner did not arrive till after the performance ought to have commenced, and when the building was already hopelessly in flames.

Not less culpable than Jauner appears the conduct of the Police Inspector and Counsellor Herr Landsteiner. In spite of the protestations of several persons who had managed to escape, this official prevented any persons from entering the building to rescue those inside, but told the Archduke Albrecht, and persisted in repeating, "All are saved!" Landsteiner, according to the act of accusation, appeared at the theatre at five minutes before seven o'clock, and took the entire command of the police there stationed. His assertion that he at once tried to enter the building, but was driven back by the smoke is denied by eye-witnesses, who affirm that at seven o'clock the vestibule and lower part of the staircases were entirely free from smoke, and that at that time Landsteiner was surrounded by persons imploring him to send in help and rescue the unfortunate persons inside. The father and wife of the orchestral leader begged him to send a light into the house to seek for the missing musician, but all in vain. Landsteiner posted policemen at all the entrances, with orders to prevent by force any one from going into the theatre. Coachmen brought the lamps from their carriages; one man even succeeded in getting a packet of candles to the door, but there every one was stopped, while hundreds were being suffocated or were trampling each other to death. Even the chief of a fire brigade, who came with his men ready to proceed to the upper passages, was peremptorily stopped. Finally, Landsteiner was deaf even to the persons who leaped from the balconies, and who told him repeatedly that there were numbers of people still in the building. Half an hour after Landsteiner's arrival, in fact, there were found by Count Lamezan in one of the passages three women whose lives were not entirely extinct, so that, if a rescue had been attempted when Landsteiner first arrived, probably almost the whole and, at any rate, a large part, of the fearful loss of life would have been prevented.

The concluding words of the indictment are as follows: "Except the few fortunate persons who succeeded in saving themselves or their relatives no one was saved, either by the police or by the fire brigade."— *The Builder.*

UTILIZATION OF BLAST-FURNACE SLAG.

THE attention of foreign scientific men has lately been directed to the utilization of slag, a subject which was dealt with by Mr. Charles Wood in a paper read before the Society of Arts in May, 1880.

According to M. A. Gounod a blast-furnace produces an average of rather more than 25,000 cubic yards of slag yearly, which piled up to the height of a metre, or rather more than a yard, covers a space of 2½ hectares, or about six acres, which is completely lost for any useful purpose. If the slag be piled up to a greater height, an additional expense of nearly two francs per ton is incurred: therefore, many methods have been proposed for

turning it to some profitable use. The composition of the scoriæ is such, that it is impossible to use it without admixture with other substances. The following have been proposed and tried; but each has its objections: —

1. The metalling (macadamizing) of roads; but slag, having no great cohesion, soon becomes reduced to a state of powder, and is blown away by the wind.

2. Use in blocks for the construction of dikes and sea-walls, the slag being allowed to run into iron moulds; but it is feared that the sea-water would eventually bring about a partial decomposition capable of causing a falling in.

3. Manufacture of paving stones, for which purpose the slag is run into suitably-shaped moulds, and the blocks are afterwards worked into a cubical form. This, however, involves considerable expense.

4. Manufacture of mineral felt. Subjected to the action of a strong current of air, slag forms woolly filaments, which are used for covering steam boilers and pipes for preventing the radiation of heat. It has, however, been found that only slag of a certain composition is suitable for this purpose, as otherwise the felt crumbles to dust.

5. It has also been proposed to make rough bottle-glass by melting the slag in a Siemens furnace, with suitable proportions of sand or an alkali; but the results obtained have not been satisfactory.

The most practical and successful methods hitherto employed for turning slag to useful account, besides preventing its becoming a nuisance and an eyesore, is to make it into bricks and mortar for building purposes. By granulating it, and allowing it to fall into a stream of cold water, a sand is formed, which, with the addition of lime or gypsum, may be made into either bricks or mortar. The strength of bricks thus produced is greater than that of the best bricks of Burgundy, and their price on the spot is about 37 francs, (£1 10 s.) per thousand.—*Journal of the Society of Arts.*

SOME QUESTIONS ON CONSTRUCTION.

BOSTON, May 6, 1882.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — I should feel obliged if you would reply to the following questions: —

1. On that part of the city known as the Back Bay, it is customary to form foundations by wood piles and granite blocks alone. Why would not a concrete wall serve the same purpose as the granite, and at less cost?

2. In the interior of a large city house, finished regardless of cost, in which there is much elaborate wood panelling, do you think good and effective work could be made by having the panelling $\frac{7}{8}$″ thick?

3. What is the prevailing custom in this city and New York in regard to closing architects' offices on Saturday afternoons?

Yours truly, B.

[1. Concrete of sufficient strength to answer for capping piles would need to be very thoroughly made, and as the gravelly soil of the new part of Boston would not stand vertically, it would be necessary to mould the blocks for the wall at a distance, or else set up moulding apparatus on top of the piles, all of which would involve so much trouble and expense as to bring the cost of the concrete quite up to that of the more reliable granite.

2. Whether 7-8″ panelling will make good work in a house, depends upon the proper seasoning of the stock and the arrangement of the grounds and furrings. Whether it will be effective or not is another thing, depending wholly on the design, but we cannot see why it should not be perfectly satisfactory, especially if the panels are raised and the panelled surface is large.

3. As to closing offices on Saturday afternoons, our experience is that the practice of architects varies very much with the pressure of work. The business of a professional man differs materially from that of a dry-goods dealer, and while an architect is usually very willing to favor his assistants any day in the week if he can, he would be sorry to find them so indifferent to his and their interests as to leave him in the lurch at two o'clock every Saturday afternoon in hot weather, no matter how important it might be to get certain pieces of work finished. Within the last few years we think that a considerable majority of the architects' offices in New York and Boston have been closed on Saturday afternoons in summer. Whether the practice is likely now to be suspended, we do not know. — EDS. AMERICAN ARCHITECT.]

JACKSONVILLE, FLA., May 3d, 1882.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Gentlemen, — Will you give me your opinion as to stability of a brick wall under the following conditions: Wall 17″ thick 40′ high and 45′ long, on good foundation, carries one floor of 15′ span, 45′ long at height above ground of 4′, and another of 30′ span 44′ long and 19′ above ground, — joists of this floor 4″ x 15″, 15″ between centres, each alternate one being anchored to the wall; weight on this floor, 100 lbs. per square foot. 15′ above this floor, wall carries ceiling-joists and a flat roof. SUBSCRIBER.

[IF the bricks are good and the wall well built, we should judge that such a structure would be stable unless the position of the openings were unfavorable. — EDS. AMERICAN ARCHITECT.]

SINGLE *vs.* DOUBLE TENONS.

WORCESTER, MASS., May 8, 1882.

All other things being equal, which do you consider the strongest, a single or double tennon? INQUIRERS.

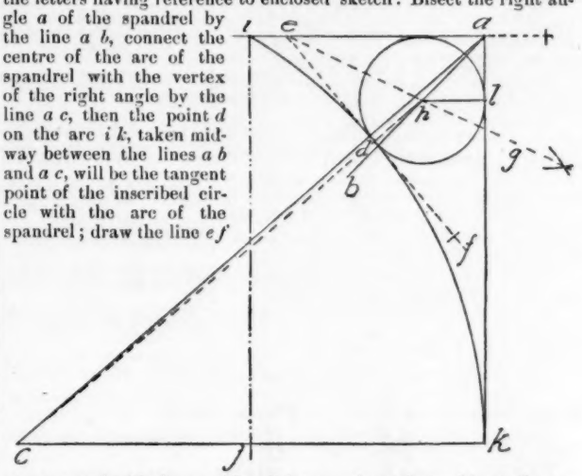
["INQUIRERS" do not say what their framing is for. Theoretically a single tenon is stronger than a double one, and its mortise also weakens the timber into which it is framed less than two mortises would. Practically a double tenon would be used with a joint bolt for drawing the framing together, placed between the two tenons; or it might be advisable to use two tenons to diminish the effect of shrinkage, as for instance in a door, where a double tenon often answers better than a single one. — EDS. AMERICAN ARCHITECT.]

THE LAST OF THE SPANDREL PROBLEM.

BONDS VILLAGE, MASS., May 12, 1882.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — The solution of the spandrel problem is as follows, the letters having reference to enclosed sketch: Bisect the right angle *a* of the spandrel by the line *a b*, connect the centre of the arc of the spandrel with the vertex of the right angle by the line *a c*, then the point *d* on the arc *i k*, taken midway between the lines *a b* and *a c*, will be the tangent point of the inscribed circle with the arc of the spandrel; draw the line *e f*



tangent at *d* with the arc *i k* and intersecting *a i* at *e*, bisect the angle *a e f* by the line *e g* and intersecting *a b* at *h*, which will be the centre of the inscribed circle; *h l* drawn perpendicular to *a k* will be the radius.

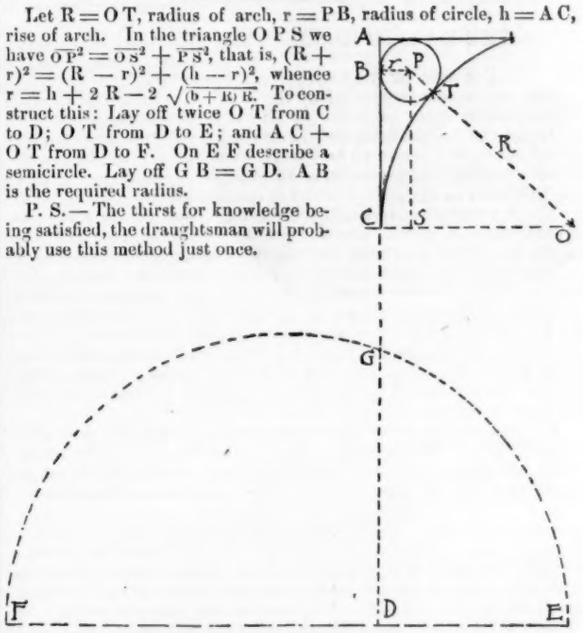
Proof. — Draw the dotted line *c h*, connecting the centres of the two circles, which will pass through the tangent point *d* if the work has been done correctly.

The principle of bisecting lines and angles to find the centres of circles to be tangent to straight lines and circles I consider the most important principle which we have in mechanical drawing, and should be thoroughly understood by all draughtsmen.

Respectfully yours, ENGINEER.

Let R = O T, radius of arch, r = P B, radius of circle, h = A C, rise of arch. In the triangle O P S we have $\overline{OP}^2 = \overline{OS}^2 + \overline{PS}^2$, that is, $(R + r)^2 = (R - r)^2 + (h - r)^2$, whence $r = h + 2R - 2\sqrt{(h+R)R}$. To construct this: Lay off twice O T from C to D; O T from D to E; and A C + O T from D to F. On E F describe a semicircle. Lay off G B = G D. A B is the required radius.

P. S. — The thirst for knowledge being satisfied, the draughtsman will probably use this method just once.



TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — Allow me to say that a mistake was made in your issue for May 6 in calling that last demonstration another solution. The last was not another solution, but simply the demonstration.

Yours respectfully, R. H. BULLOCK.

ARCHITECTS' FEES.

BOSTON, May 15, 1882.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Gentlemen, — Be careful what you do. In your reply to "Architect's" communication referring to you the question as to his right

to a commission upon cost of mantels and grates, you are (forgive a friend for saying it) in the wrong.

Mantels and grates are fixtures — like heating apparatus and plumbing — and these are as much parts of the house as the windows and doors, floors, plastering, chimneys, or anything else you please to mention. Whether they "are included in the contracts for the building" or not, has nothing to do with the question. Their cost is a part of the total cost of the house, upon which a commission is to be charged.

Mantels may be selected from a stock in the market, as hardware usually is, or they may be made to special designs, as hardware sometimes is. In the latter case the cost to the architect may be excessive, and call for a special charge.

Nothing would better please a certain class of clients than to have the principle you seem to accept admitted in practice.

Suppose you are dealing with a committee: one eminently practical man will relieve you from all responsibility in regard to the plumbing; another has special facilities in the direction of furnaces; a third can buy paints and oils at bottom prices, and knows a man who will lay them on to good advantage by the day; so they are not "included in the contracts," and the committee cannot possibly understand why they should pay you five per cent on these items. And so on to the end of the chapter.

If you yield a line in this direction you are lost: you cannot take one step and refuse to take the next.

We can make but one answer to claims of this sort on the part of clients: "Gentlemen, we cannot go into this question. The best practice, the world over, charges a commission upon the total cost of the building completed, with all its attachments. We admit that this has its disadvantages, but we cannot undertake to change in our individual practice a custom which is established."

This, or something like it, quietly stated and adhered to, saves endless trouble and possibly disaster.

Your journal has a strong and a growing influence throughout the country upon questions of professional duty and right. No point needs to be more clearly established than that upon which rests the business relations of architect and client. That your pages will be open for that purpose, is the belief of

One who has met these questions for more than a quarter of a century.

[Our correspondent argues his point very effectively, and we have received other letters to much the same purpose. We are by no means fixed in the opinion referred to, and certainly made an unintentional omission in saying that "the architect is not entitled to any commission (on pieces of furniture) unless he designs them and superintends their execution." This should be qualified by saying that the architect is unquestionably entitled to a liberal commission for furniture and decorations *selected* by him, or purchased with his advice, since no part of his professional work requires a more trained taste and judgment. — Eds. American Architect.]

THE HARTFORD SOLDIERS' MONUMENT.

Hartford, Conn., May 13, 1882.

To the Editors of the American Architect:

Sirs, — The course pursued by the Hartford Soldiers' Monument Committee, in order to arrive at an intelligent decision as to the merits of the designs submitted in competition for the proposed soldiers' monument, ought to be specially commended and held up to building committees generally, as an example to be followed in passing judgment on designs submitted in competition.

About twenty-five designs were received, each design being submitted under a motto. Mr. J. Cleveland Cady, architect, of New York, was called in to assist the committee in selecting three designs to receive the three prizes offered. After a careful examination, Mr. Cady submitted a written report, recommending for the first prize, of $500, the design submitted by Mr. Clarence S. Luce, of Newport, R. I.; second prize, $200, to Messrs. Tryon & Brunner, of New York; and third prize, $200, to Mr. Frederic C. Withers, architect, of New York. Mr. Cady gave his reasons for selecting each design, which were considered sound by the committee, and his recommendations were adopted, and the awards made accordingly.

The competition, in an architectural point of view, like most open competitions, is disappointing, and is evidently, with a few exceptions, the work of architectural students, or architects having no special training for this class of design. Observer.

GAUDEAMUS IGITUR.

New York, May 10, 1882.

"The tall spire of the Somerset-Street church, which stands on the eastern end of Beacon Hill, rises higher even than the gilded dome of the State House. It is the loftiest pinnacle of the city. This conspicuous Boston land-mark will soon disappear. The building with eight thousand feet of land has been purchased by the Boston University. It will be remodelled and adorned before autumn for the use of the College of Liberal Arts."

Now let there be an injunction against any more spires on Beacon Hill, if Bostonians do not wish to have the State-House dome resemble (from certain points of view) a spitted turnip. Exsul.

NOTES AND CLIPPINGS.

Magdalen Bridge, Oxford. — The work of widening the famed Magdalen Bridge at Oxford is already in progress. The extent of the enlargement will be about twenty feet on what is known as the Botanical-Gardens side, so that the side facing southwest, in which lies the chief beauty of the structure, will remain uninjured.

A Vienna Monument. — The year 1683 is a momentous one in the history of Vienna. The Austrian capital in that year underwent a terrible siege by the Turks, whom, however, the Emperor Leopold, with the aid of his allies, the Polish King John Sobieski, Prince Carl of Lorraine, and the Princes of Saxony and Bavaria, finally succeeded in defeating and compelling to retire. Next year, 1883, the second centenary of the successful defence of Vienna against the Ottomans is to be celebrated by popular *fêtes*, and, amongst other things, by the commencement of a monument, for which the Austrian Ministry has just invited designs. It is intended that the monument shall be erected under the lofty spire of St. Stephen's Cathedral. It is to be constructed of a fine kind of limestone, and the Government have decided to expend the sum of 50,000 florins (£5,000) upon the work. The sums of 2,000 florins, 1,500 florins, and 1,000 florins, have been set aside as prizes for the first, second, and third best designs respectively. The general form of the monument is to resemble that of the Doges at Venice. It is also to be ornamented with statues of the chief personages who were engaged in defence of the city, including, in addition to the sovereigns and princes above mentioned, the following persons: Rudiger von Starhemberg, Burgomaster Liebenberg, the leader of the University Students' Corps, Paul Sorbait, and Bishop Leopold Kollonitz. The drawings and models are to be one-tenth of the natural size, and are to be sent in by April 15, 1883. It has given some dissatisfaction that the Government has acted in this manner without consulting the civic authorities. Most critics would have preferred as the site of the monument, not St. Stephen's Cathedral, but some spot on the grand open boulevard, the Ring-strasse, which runs upon the site of those very walls which witnessed the valiant deeds that are to be commemorated by this work.

The Strength of Wrought-Iron and Steel at High Temperatures. — Some time ago the *Journal* of the Franklin Institute presented an article entitled "Experiments on the Strength, of Wrought-Iron and Steel at High Temperatures," which, though perhaps containing no original matter, is an interesting summary of previous investigations. Three kinds of metal were tested, viz.: fibrous iron having an ultimate tensile strength of 52,464 pounds, an elastic strength of 38,280 pounds, and an elongation of 17.5 per cent; fine-grained iron having for the same elements values of 56,892 pounds, 39,113 pounds, and 20 per cent; and Bessemer steel having values of 84,826 pounds, 55,029 pounds, and 14.5 per cent. The mean ultimate tensile strength of each material expressed in per centum of that at ordinary atmospheric temperature, is given in the annexed table, the last column of which contains, for purposes of comparison, the results of experiments carried on by a committee of the Franklin Institute in the years 1832-36.

Temperature Fahrenheit. Degrees.	Fibrous Wrought-Iron. Per cent.	Fine-grained Iron. Per cent.	Bessemer Steel. Per cent.	Franklin Institute. Per cent.
0	100.0	100.0	100.0	96.0
100	100.0	100.0	100.0	102.0
200	100.0	100.0	100.0	105.0
300	97.0	100.0	100.0	106.0
400	95.5	100.0	100.0	106.0
500	92.5	98.5	98.5	104.0
600	88.5	95.5	92.0	99.5
700	81.5	90.0	68.0	92.5
800	67.5	77.5	44.0	75.5
900	44.5	51.5	36.5	53.5
1000	26.0	36.0	31.0	36.0
1100	20.0	30.5	26.5	
1200	18.0	28.0	22.0	
1300	16.5	23.0	18.0	
1400	13.5	19.0	15.0	
1500	10.0	15.5	12.0	
1600	7.0	12.5	10.0	
1700	5.5	10.5	8.5	
1800	4.5	8.5	7.5	
1900	3.5	7.0	6.5	
2000	3.5	5.0	5.0	

Valuable Discovery of Asbestos. — The Tucson (Arizona) *Star* says: "At a depth of ninety feet in the Apache copper mines in the Santa Catarinas, a ten-inch vein of asbestos has been discovered. When found the workmen reported to Superintendent Scott that they had struck a petrified log. He thought it impossible, and made an examination, and at first sight believed the strike was what it afterward proved to be, after a careful assay and analysis. The specimen shown us, in specific gravity, is almost equal to lead, of a fine fibrous character. The fibres are combined together in a compact mass, but split off similar to a straight-grained wood. It is a greenish color, with a white shade. The vein appears permanent at present, and, as a matter of course, adds greatly to the property. The finest fibrous variety, with easily-separable fibres, is used for making cloth, which renders it indestructible by the elements. In ancient times the cloth made from asbestos was used to enwrap dead bodies placed on the funeral pile, so as to preserve the ashes unmixed. The finest quality is found in Savoy, but it is abundant in Corsica. It is also found in Cornwall and several of the Shetland Islands. Small veins have been discovered in California and Nevada. The value in its native form is abut $300 per ton. It is now largely used in the manufacture of fire-proof materials, such as cloths, papers, etc.

An Improved Apartment-House. — The new co-operative apartment-house now building at the corner of Fifty-second Street and Madison Avenue will have several special features. The basement will be almost entirely above the sidewalk; there will be a fire-proof Mansard roof on which a summer garden will be arranged, with a fountain and sprinklers to keep the tiles cool; marble stairways, an appliance for cremating vegetable refuse, and all the rooms to be heated by air warmed by steam-pipes. A novel improvement is to be put in the bedrooms: instead of slats the bedsteads are to have bottoms of steam-pipes, which will be connected with a steam coil for warming purposes. The building is to cost $350,000, and will be ready for occupation in October next. — *New York World.*

School Buildings Exhibition. — An exhibition of plans and models for school buildings in Paris is now being organized by the French Minister of Public Instruction. Already 300 architects and contractors have notified their intention of exhibiting, and every province of France, including Corsica and Algeria, is to be represented. The exhibits are expected to be diversified, owing to the various needs arising from different altitudes and climates. It has been decided to hold the exhibition in the Passy wing of the Trocadéro Gallery, and the plans, models, and drawings must be delivered there between May 1 and May 15.

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

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

BUILDING PATENTS.

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

257,460. BRICK-MACHINE. — Henry C. Barker, Sedalia, Mo.

257,463. LADDER. — William A. Boyl, Strathroy, Ontario, Can.

257,468. WRENCH. — Matthew E. Campfield, Cleveland, O.

257,503. WINDOW FRAME AND SASH. — Michael W. Mahar, Dayton, O.

257,505-506. REFRIGERATING BUILDINGS, CARS, VESSELS, AND OTHER STRUCTURES. — Francis M. McMillan and Henry C. Johnson, Washington, D. C.

257,510. COMPOSITION FOR PAINTS. — William R. Norris, Fort Ann, N. Y.

257,515. CARPENTER'S SQUARE. — Rufus Pope, Nobesville, Neb.

257,526. MAKING OF MOSAICS OF GLASS, PORCELAIN, OR STONE. — George Stanley, Boston, Mass.

257,538. FAUCET. — Charles Whittaker, Chicago, Ill.

257,548-549. AUTOMATIC FIRE-EXTINGUISHER. — Joseph R. Brown, Providence, R. I.

257,592-595. FIRE-ANNIHILATOR. — Isidor Kitsee, Cincinnati, O.

257,608. BRICK-MAKING MACHINE. — Stephen J. Plant, Yorkville, Ontario, Can.

257,616. METALLIC JOINT FOR FLEXIBLE ROOFING. — Frank E. Sagendorph, Cincinnati, O.

257,627. MORTAR-MIXING MACHINE. — Randall T. Van Valkenburg, Manchester, Mich.

257,637. WINDOW-FRAME POCKET. — Algernon S. Bangs, Augusta, Me.

257,650. APPARATUS FOR HEATING AIR AND WATER FOR BUILDINGS. — Alvia K. Brown, Newton, Io.

257,654. FIRE-EXTINGUISHER. — Albert M. Burritt, Waterbury, Conn.

257,663. FIRE-ESCAPE. — Patrick H. Costello, Boston, Mass.

257,665. BRICK-MACHINE. — John Creager, Cincinnati, O.

257,711. SHUTTER-WORKER. — Lafayette Huntoon, Natick, Mass.

257,713-715. ILLUMINATING GRATING OR VAULT-COVER. — Thaddeus Hyatt, New York, N. Y.

257,716. FIREPLACE OR STOVE. — Matthew Ingram, Manchester, County of Lancaster, England.

257,722. SASH-FASTENER. — Eleazer Kempshall, New Britain, Conn.

257,725. LATCH. — Thomas Lalor, Toronto, Ontario, Can.

257,729. MECHANICAL HEATING-APPARATUS. — Sylvester J. Linn, Mondamin, Iowa.

257,754. HYDRAULIC ELEVATOR. — Goldsbury H. Pond, New York, N. Y.

257,771. FUNNEL-BLOCK FOR PARTITIONS OF BUILDINGS. — Dennis Shea, Portsmouth, and Romanzo Trefethen, Dover, N. H.

257,781. FIRE-ESCAPE. — John E. O. Sullivan, Hopkinton, Mass.

257,822. ILLUMINATING-GRATING AND BUILDING LIGHTED THEREBY. — Thaddeus Hyatt, New York, N. Y.

257,824. SHUTTER-FASTENER. — Franz O. Matthiessen, Irvington, N. Y.

257,826. CURTAIN-FIXTURE. — James Andrew McCutchen, Pine Grove, Pa.

SUMMARY OF THE WEEK.

Baltimore.

DWELLINGS. — E. W. R. Troxell, Mrs. N. E. Troxell, and E. J. J. Greer, 3 houses, 20′ x 61′ each, Park Ave., near Wilson St., brick dwell., with Cheat River stone and terra-cotta trimmings; cost, about $6,000 each; Mr. Thos. Dixon, architect.

CHAPEL. — Brick chapel of the Church of the Redeemer (Episcopal), cor. John and Chester Sts., 26′ x 56′, one-st'y, seating capacity, 175; cost, about $2,000; Mr. Geo. Archer, architect.

BUILDING PERMITS. — Since our last report twenty-one permits have been granted, of which the following are the more important: —

Richard Smythe, two-st'y brick building, n w cor. Hudson and Dawson Sts.

Geo. Derr, two-st'y brick building, State St., n of Saratoga St.

A. Booth, D. D. Mallory & Co., one-st'y packing-house, n e cor. Lancaster and Wolf Sts.

David Street and John Spring, 2 three-st'y brick buildings, Chase St., e of Greenmount Ave.

J. B. Adt, one-st'y brick shed, Holliday St., between Pleasant and Saratoga Sts.

Cornelius Mullen, two-st'y brick stable, in rear of No. 96 Dolphin St., between John St. and Park Ave.

Boston.

BUILDING PERMITS.—*Brick.—Brighton St. Ave., No.* 1, Ward 8, for Charles Roberts, dwell., 17′ x 32′ 6″, five-st'y; Wm. Smith, builder.

Brighton St., No. 107, Ward 8, for Chas. Roberts, dwell., 17′ x 32′ 6″, five-st'y; Wm. Smith, builder.

Huntington Ave., Ward 11, for J. F. Mead, family hotel, "Oxford," 47′ 6″ x 110′ x 240′, five-st'y mansard; J. F. Mead, builder.

Newbury St., No. 295, for Wm. H. Talbot, dwell., 23′ x 57′, four-st'y and mansard.

Hampden St., No. 134, rear of, cor. Howard St., Ward 20, for Julia H. Dyer, boiler-house, 15′ x 32′; James Smith, builder.

Tremont St., Nos. 1429-31, Ward 22, for Francis G. Wood, dwell. and store, 20′ and 22′ x 45′, three-st'y; E. W. Sanborn, builder.

West Chester Park, cor. Newbury St., Ward 11, for Geo. Wheatland, Jr., stable, 80′ and 100′ x 118′, two-st'y mansard; Lanning & Drisco, builders.

Tremont St., Nos. 1180 *and* 1182, Ward 19, for Wm. H. Wallace, dwell. and store, 28′ x 66′, four-st'y; Wm. H. Wallace, builder.

Tremont St., No. 1178, Ward 19, cor. Culvert St. store and mercantile, 24′ 6″ x 65′, four-st'y; Wm. H. Wallace, owner and builder.

Commonwealth Ave., cor. West Chester Park, Ward 11, for Oliver Ames, dwell., 52′ 6″ and 64′ 6″ x 95′ 4″, four-st'y mansard; Norcross Bros.

Commonwealth Ave., Ward 11, for F. P. Sprague, dwell., 30′ x 71′ 8″, four-st'y; Hez. McLaughlin, builder.

Wood.— Washington St., nearly opposite School St., Ward 24, for Roswell Gleason, dwell., 35′ 6″ x 39′ and 45′ 6″, two-st'y; J. H. Burt & Co., builders.

East Sixth St., cor. Q St., Ward 14, for James A. Jones, pavilion, 30′ x 30′; ell, 30′ x 30′, two-st'y; John Murphy, builder.

Savin St., near Blue Hill Ave., Ward 21, for Hugh Nawn, stable, 28′ x 80′; ell, 28′ x 30′, two-st'y; Hugh Nawn, builder.

Metropolitan Ave., near Poplar St., Ward 23, for Charles A. Anderson, dwell., 22′ and 32′ x 28′, two-st'y; Wm. R. Hudson, builder.

Washington St., cor. Beethoven St., Ward 23, for Francis W. Kittredge, dwell. and stores, 45′ and 47′ 6″ x 70′, two-st'y; Geo. D. Cox, builder.

M St., near East Second St., Ward 14, for Wm. T. Eaton, 2 dwells., 20′ x 32′, three-st'y hip; Wm. T. Eaton, builder.

East Fifth St., near N St., Ward 14, for Wm. G. Doe, 2 dwells., 20′ x 32′, three-st'y hip; Wm. T. Eaton, builder.

Dorchester Ave., No. 671, rear, Ward 15, for John Souther & Co., for Isaac Dunn, blacksmith shop, 33′ x 60′.

Shelton St., cor. Adams St., Ward 24, for Leonard Milton, greenhouse, 15′ x 101′ 6″; Michael Ryan, builder.

Dale Ave., near Rockland St., Ward 21, for Hattie R. Smith, 3 dwells., 22′ 2″ and 28′ 2″ x 34′; 3 dwells., 22′ 2″ x 30′ 2″, two-st'y; Wm. A. Smith, builder.

Dove St., near E St. and West First St., Ward 14, for Warren F. Hall, stable, 33′ x 72′; 2 ells, 22′ x 65′; David A. Berry, builder.

East Second St., near P St., Ward 14, South Boston R. R. Co., car-house, 79′ x 114′; Holbrook & Harlow, builders.

Brookside Ave., Ward 23, for Cable Rubber Co., manufactory, 40′ 8″ x 100′ 8″, two-st'y; manufactory, 40′ 8″ x 125′ 8″, one-st'y; Joseph P. Shaw, builder.

Central Ave., near Blue Hill Ave., Ward 24, for Highland St. R. R. Co., car-house, 56′ x 150′, one-st'y.

Smith St., No. 91, Ward 22, for Jeremiah O. Sullivan, dwell., 29′ x 31′, three-st'y hip; Samuel Rantin, builder.

East Fourth St., rear, near Q St., Ward 14, bathing-house, 5′ x 60′; Geo. H. Wolcutt, owner and builder.

Brooklyn.

BUILDING PERMITS. — *Spencer Pl.*, e s, 42′ s Hancock St., 4 three and four story brownstone dwells.; cost, $10,000; owner, J. C. Hoagland; architect, Amzi Hill; builder, E. B. Sturges.

Central Ave., w s, 25′ n Melrose St., two-st'y frame dwell.; cost, $2,000; owner, John Biggerman, cor. Central Ave. and Melrose St.; architect, John Platte; builders, Ulrich Maurer, Jr., and F. J. Berlenback.

Monroe St., n s, 300′ e Reid Ave., 5 two-st'y brick dwells.; cost, $2,800 each; owner, Patrick Barrett, 68 Underhill Ave.; architect, Charles B. Piper; builders, Wm. Whistler and Chas. B. Piper.

Van Brunt St., No. 115, between President and Union Sts., four-st'y brick store and dwell.; cost, $7,100; owner, Wm. Gohler, 791 Bergen St.; architects, etc., Girhson & Leibbrand.

Union St., s s, 135′ w Hicks St., four-st'y brick tenement; cost, $6,500; owner, Patrick Craddick, 135 Union St.; architect, M. J. Morrill; builder, Richard O'Shea.

Graham Ave., w s, 100′ n Moore St., three-st'y store and dwell.; cost, $4,450; owner, L. Geiser, cor. Seigel St. and Graham Ave.; architect, J. Platte; builder, John Rueger.

Newton Creek, Ann and Commercial Sts., one-st'y brick storehouse; cost, $5,500; owner and architect, Havermeyer Bros.; builders, J. W. Woodruff and J. James.

Furman St., to river, 440′ n Montague St., five-st'y brick warehouse; cost, $42,000; owner, Thos. and Samuel McLean, cor. Pierrepont and Hicks St.; builder, Thos. Stone.

Ninth St., n w cor. Seventh Ave., three-st'y brick dwell.; cost, $7,000; owner, Henry Lansdell, Ninth St. and Fifth Ave.

Lee Ave., n e cor. Penn St., 4 three and four st'y brownstone stores and dwells. and other dwells.; owner and builder, J. F. Ryan; architect, E. E. Gaylor.

Bushwick Ave., s w cor. Greene Ave., 10 two-st'y brick dwells.; cost, about $5,000 each; owner and builder, Thos. Donohue; architect, M. J. Morrill.

Fulton St., s s, 150′ w Ralph Ave., three-st'y frame store and tenement; cost, $4,000; owner, John Scholl, 1889 Fulton St.; builder, J. Pierning.

Elm Pl., Nos. 10 *and* 12, two-st'y Berlin stone and terra-cotta store and hall; cost, $13,000; owner, Geo. Figge, 10 Elm Pl.; architect, C. F. Eisenach; builders, T. Donlon and W. Zang.

Tenth St., n e cor. Seventh Ave., 14 three-st'y brownstone flats; cost, each, $6,500; owner, Daniel Doody.

Throop Ave., e s, 50′ s Ellery St., three-st'y frame store and tenement; cost, $4,000; owners and builders, C. and C. Duerller, 179 Throop Ave.; architect, Wm. Mashke.

ALTERATIONS. — *Henry St., No.* 255, three-st'y brick extension; cost, $4,000; owner, J. S. Hollingshead, 255 Henry St.; architect, J. W. Ritch; builder, E. Smith.

First St., cor. South Sixth St., raised one st'y and repair damage by fire; cost, $10,000; owner, Pond's Extract Co.; builder, Jas. Rodwell.

Pier St., near State St., one-st'y frame extension; cost, $6,500; owner, Franklin Woodruff, 94 Remsen St.; architect and builder, Thomas Stone.

Willoughby St., n e cor. Jay St., two-st'y brick extension; cost, $5,000; owner, Wm. Rockwell, 92 First Pl.; builder, C. P. Skelton.

Chicago.

IN GENERAL. — Building operations in this city are very much crippled on account of the scarcity and high prices of brick. The old stock is nearly exhausted, and manufacturers will not start making because of the demands of the makers for higher wages. How long this state of things will continue depends on the ability of both parties to hold out.

BUILDING PERMITS. — Gottleib Schlechl, three-st'y and basement brick store and dwell., 47′ x 69′, North Wells St. and Lincoln Ave.; cost, $14,000.

Wm. Burke, three-st'y store and dwell., 21′ x 60′, 510 Ogden Ave.; cost, $4,500.

Shimmen & Kaiser, three-st'y brick dwell., 21′ x 52′, 225 Maxwell St.; cost, $3,500.

Victor Fiala, two-st'y and cellar brick dwell., 35′ x 49′, 139 and 141 Farquhar Sts.; cost, $4,900.

V. Klocan, two-st'y brick dwell., 21′ x 44′, 125 Farquhar St.; cost, $2,500.

Frank Kreicher, two-st'y brick dwell., 23′ x 52′, Ashland Ave., near Van Buren St.; cost, $2,700.

Jansen & Lindsten, three-st'y tailor shop, 40′ x 100′, Elm and Selah St.; cost, $7,000.

J. C. Otis, four-st'y factory, 50′ x 65′, 125 and 127 Indiana St.; cost, $9,500.

Jacob & G. C. Furst, 2 three-st'y brick dwells., 50′ x 65′, Congress and Ashland Ave.; cost, $10,000.

Lehigh Valley Coal Co., one-st'y brick office, 18′ x 32′, West Chicago Ave. and River; cost, $2,500.

Servite Sisters, 3 additional stories, 75′ x 100′, Van Buren St. and Albany Ave.; cost, $17,000.

Wm. Goldie, two-st'y and basement brick store and dwell., 86 Sherman St.; cost, $5,000.

Joseph Cata, two-st'y brick store and dwell., 24′ x 74′, Nineteenth and Hoyne Ave.; cost, $2,500.

C. J. Blomstrom, three-st'y and basement brick dwell., 25′ x 80′, No. 16 Hills St.; cost, $7,000.

R. Johnson, three-st'y and basement brick dwell., 25′ x 60′, No. 12 Hills St.; cost, $6,000.

A. McNally, 2 three-st'y brick dwells., 41′ x 47′, North Park and Garfield Aves.; cost, $15,000.

A. McNally, three-st'y and basement brick dwell., 45′ x 48′, North Park and Garfield Aves.; cost, $15,000.

A. V. & K. R. R. Becker, three-st'y and basement brick flats, 54′ x 56′, 764 and 766 Sedgwick Sts.; cost, $14,000.

E. S. Kirkland, four-st'y brick dwell., 20′ x 52′, No. 277 Huron St.; cost, $8,000.

M. Feigel, two-st'y brick store, 22′ x 100′, 692 West Seventeenth St.; cost, $3,000.

S. Beidlowsky, one-st'y brick store, 24′ x 77′, Paulina and Seventeenth Sts.; cost, $2,300.

Jos. Kenba, two-st'y and basement brick dwell., 22′ x 30′, Loomis, near Nineteenth Sts.; cost, $2,400.

L. W. Yaggy, four-st'y and basement brick flats, 51′ x 60′, 246 and 248 Erie St.; cost, $25,000.

E. and W. Burke, 2 three-st'y and basement stores and dwells., 48′ x 60′, Milwaukee and North Avenues; cost, $12,000.

M. D. Wells, two-st'y and basement stone dwell., 50′ x 90′, and two-st'y brick barn, 2552 and 2560 Michigan Ave.; cost, $125,000.

J. C. Helenkolz, two-st'y and cellar brick dwell., 25′ x 80′, 413 La Salle Ave.; cost, $12,000.

S. H. Wheeler, five-st'y and basement brick flats, 70′ x 147′, 79 to 91 Rusk St.; cost, $90,000.

Cincinnati.

STRIKES. — There is up to date (May 13) no change as regards the strikes. Both strikers and bosses seem determined to hold out to the last. There is and has been for about six weeks almost a complete lockout among the plasterers. Of the carpenters, about one-half are out, mostly among the outside hands. Most of the mill men are at work.

Among the tinners there seems to be a complete lockout, and no prospect of accommodating the differences.

BUILDING PERMITS. — Since the last report the following building permits have been issued: —

Chas. Kallendorf, two-st'y brick dwell., No. 60 Dudley St.; cost, $3,000.

E. B. Cassidy, repair three-st'y brick dwell., 165 Plum St.; cost, $3,000.

F. G. Huntington, repair four-st'y brick dwell., 173 Elm St.; cost, $4,000.

P. Carrigan, three-st'y brick dwell., 238 Pearl St.; cost, $2,000.

T. Coeller, three-st'y brick dwell., Hammond and Marshal Sts.; cost, $5,000.

V. Williams, repair one-st'y frame dwells., 70 West Sixth St.; cost, $2,000.

Benj. Hermann, repair three-st'y brick dwell., 61 Court St.; cost, $2,000.

Tennessee Lumber Co., two-st'y brick building, Sixth St., near C. H. & D. Railroad; cost, $8,000.

H. Elbrink, repair three-st'y brick dwell., 395 Broadway; cost, $2,500.

J. Murphy, two-st'y Frame dwell., Lane St., near Oak St.; cost, $2,400.

Robt. Auchuiz, two-st'y frame dwell., Glenway Ave.; cost, $2,000.

Jno. White, two-st'y brick dwell., Kemper St., near Park Ave.; cost, $2,500.

Thirteen permits for repairs; cost, $6,000.

Denver, Col.

SHOP. — Hendy & Meyer, two-st'y brick shop, Blake St.; cost, $20,000.

HOTEL. — John Baker, three-st'y brick hotel, Twelfth St.; cost, $15,000.

SYNAGOGUE. — Congregation Emmanuel, Curtis St.; cost, $25,000; W. J. Edbrooke, architect.

BUILDING PERMITS. — The following are the more important permits issued since last report: —

BUSINESS BLOCKS. — Rodney Curtis, three-st'y brick,

business block., Arapahoe St.; cost $23,000; L. Cutshaw, architect.

L. Reithmann, three-st'y brick business block, Fifteenth St.; cost, $20,000; E. P. Brink, architect.

A. W. Waters & Co., two-st'y brick business block, Holly St.; cost, $11,000.

Geo. W. Lapier, three-st'y brick business block, Larimer St; cost, $16,000; E. Anthony, architect.

Union Block, four-st'y stone business block, Sixteenth St.; cost, $58,100; R. S. Roeschlaub, architect.

Mrs. Evans, two-st'y brick business block, Arapahoe St.; cost, $10,000; L. Cutshaw, architect.

H. K. Steele, three-st'y brick business block, Stoub St.; cost, $22,000; L. Cutshaw, architect.

DWELLINGS. — Mrs. L. J. Hoyt, two-st'y brick dwell., Curtis St.; cost, $10,000; Nicholas & Canmann, architects.

Geo. Young, two-st'y brick dwell., Lincoln Ave.; cost, $10,000.

Hugh Smith, double two-st'y brick dwell., Champa St.; cost, $10,000.

New York.

CITY BUILDINGS. — On Hart's Island a central administration building, 36' x 60', with two wings, 30' x 150' each, to cost about $50,000, is to be built of brick and stone; and on the same island a laundry and kitchen building, 40' x 80', of native stone with brick trimmings, is to be built at a cost of $20,000; both from designs of Mr. Jos. M. Dunn.

BUILDING MATERIALS. — Brick show a very decided downward tendency, and there are prospects of a continued decline in prices. This may cause work to be commenced on several buildings which have not been started on account of the high estimates submitted.

LABOR. — Masons seem to have concluded that they cannot demand over $4 per day. The plumbers are getting the same figure. Carpenters are getting $3.50; hod-carriers, $3; and unskilled labor is obtainable at $1.50 @ $2 per day.

APARTMENT-HOUSES. — Messrs. Hubert Pirsson & Co. have completed the plans for the apartment-house to be built on n e cor. of Madison Ave. and Thirtieth St. It is to be 91' x 110', ten-st'y and attic, brick and stone front, and will cost $300,000.

At No. 16 East Fifty-third St. an apartment-house for bachelors, five-st'y, brownstone front, is to be built from designs of Mr. Geo. E. Harney.

VANDERBILT RESIDENCES. — The plans for the residences to be erected on Fifth Ave. and Fifty-fourth St. are nearly perfected. The house on the corner has a frontage of 48', and the adjoining one 52'. The houses are to be four-st'y, with steep roofs crowned with copper crestings and finials. The fronts will be of brick and stone, the first stories being entirely of stone; Mr. Chas. B. Atwood is the architect, in conjunction with Mr. Jno. B. Snook.

TERMINAL STATION. — Plans for the terminal station of the New York, Ontario & Western Railroad and the New York, West Shore & Buffalo Railroad are now completed. The general waiting-rooms and railroad offices cover a lot 100' x 270'. The portion occupied by offices is to be two-st'y. The waiting-rooms will extend above this and be finished with an open roof. The train-shed will be 270' x 700. There will also be six ferry-slips and ferry-houses. All the buildings will be frame, rather in the Queen Anne style; Messrs. Wilson Bros. & Co. are the architects.

DEPOT. — The Delaware, Lackawanna & Western Railroad Company are to build a freight-depot, 75' x 556', at the foot of Leroy St., North River; to cost $50,000.

BUILDING PERMITS. — *Greenwich St.*, n w cor. Hubert St., six-st'y brick flat; cost, $50,000; owner, Wm. S. Livingston, 113 East Seventeenth St.; architect, Emanuel Gandolfo.

Greenwich St., Nos. 211 *and* 213, four-st'y brick warehouse; owner, estate of Henry Carey; lessee, James P. Bennett; architect, Hugo Kafka; builder, John D. Miner.

Pier No. 41, *North River*, foot of Leroy St., two-st'y freight-shed; cost, $50,000; lessees, Delaware, Lackawanna and Western R. R. Co., office 26 Exchange Pl.; architect, Otto Bottcher, Jr.; builder, S. Griffith.

Grand St., Nos. 409 *and* 411, 2 five-st'y brick tenements and stores; cost, each, $15,000; owner, Margaret Crawford, 956 Third Ave.; architect, G. A. Schellenberger.

One Hundredth St., s s, 175' w Ninth Ave., 4 four-st'y brick flats; cost, each, $11,000; owner, Edward Morrison, 15 West Thirty-ninth St.; architects, Berger & Baylies; builders, Gilbert M. Platt and Steel & Costigan.

One Hundred and Thirty-first St., n s, 20' e Eighth Ave., 10 three-st'y brick (brownstone front) dwells.; cost, $10,000 each; owner, Samuel S. Hinman, 413 Pleasant Ave.; architect, John Rogers.

Seventh Ave., No. 35, four-st'y brick dwell.; cost, $6,000; owners, Board of Trustees, Jas. W. Kinney, President; architect, Chas. Reekie.

One Hundred and Forty-fifth St., s s, 230' e Third Ave., four-st'y brick dwell.; cost, $12,000; owner, George Gould; architects, Cleverdon and Putzel.

East Sixty-third St., No. 343, two-st'y brick dwell. and store; cost, $4,000; owner, Conrad Oberlein, 404 East Sixtieth St.; architect, Jobst Hoffmann.

East Sixty-third St., No. 345, two-st'y brick dwell. and store; cost, $4,500; owner, George Morgenhoff, cor. Sixty-second St. and First Ave.; architect, Jobst Hoffmann.

One Hundred and Twenty-third St., s s, 315' e Fourth Ave., five-st'y brick flat; cost, $16,000; owner, Stephen J. Wright, 201 West One Hundred and Thirtieth St.; architects, Thom & Wilson.

Fifty-eighth St., s s, 195' e Sixth Ave., 2 four-st'y brick (brownstone front) dwells.; cost, $40,000 each; owner, Daniel W. Hennessy, 129 East Fifty-fifth St.; architects, Thom & Wilson.

Madison Ave., n e cor. Thirtieth St., ten-st'y and attic brick flat; cost, $400,000; owners, G. P. Lowry et al.; architects, Hubert Pirsson & Co.; builder, D. A. King, Jr.

One Hundred and Twenty-first St., n s, 71' e Second Ave., 4 four-st'y brick tenements; cost, $9,500 each; owner, Patrick Sheridan, Elizabeth, N. J.; architect, Andrew Spence.

Second Ave., n e cor. One Hundred and Twenty-first St., four-st'y brick tenements and stores; cost, $10,000 each; owner, Patrick Sheridan, Elizabeth, N. J.; architect, Andrew Spence.

Jefferson Ave., n s, 213' w Williamsbridge Road, two-st'y frame dwell.; cost, $3,200; owner, Elizabeth Wainwright; architect, R. Rosenstock; builder, Fred. Robinson.

Summit Ave., n s, 189' w Williamsbridge Road, 4 two-st'y frame dwells.; cost, $1,600 each; owner, Wm. M. Walker, 8 West Thirty-sixth St.; architect, R. Rosenstock; builder, Fred. Robinson.

One Hundred and Third St., n s, 100' e Second Ave., 6 four-st'y brick tenements; cost, $9,000 each; owner, Wilhelmine Juch, 2019 First Ave.; architect, F. S. Barus; builder, Wm. Juch.

One Hundred and Forty-sixth St., s s, 325' e Willis Ave., three-st'y frame dwell.; cost, $3,000; owner, Bridget Bergen, Third Ave. and One Hundred and Forty-eighth St.; architect, L. W. McGrath; builders, Robert Suran and P. Garvin & Son.

Seventy-seventh St., s s, 143' e First Ave., one-st'y brick workshop; cost, $3,500; owner, John B. Dingledein, 351 East Seventy-seventh St.; architect, John Brandt.

Eighth Ave., n w cor. Forty-sixth St., five-st'y brick flat; cost, $120,000; owner, John J. Astor, 21 West Twenty-sixth St.; architect, Thomas Stent; builders, Jas. Webb & Son and John Downey.

Forty-sixth St., n s, 85' w Eighth Ave., five-st'y brick flat; cost, $60,000; owner, John J. Astor, 21 West Twenty-sixth St.; architect, Thos. Stent; builders, Jas. Webb & Son and John Downey.

Franklin St., s e cor. West Broadway, five-st'y brick store; cost, $18,000; owner, James S. Bearns, 80 South Tenth St., Brooklyn; architect, Wm. Jose.

West Fifty-second St., No. 115, three-st'y brick stable; owner, Charles R. Purdy, 20 West Fifty-eighth St.; architect, Robert Mook; builder, Thos. H. Purdy.

East Ninth St., No. 733, five-st'y brick tenement; cost, $12,000; owner, Wm. J. Gessner, 1722 Madison Ave.; architect, H. J. Dudley.

Forty-seventh St., n s, 45' e Third Ave., four-st'y brick tenement; cost, $6,000; owner, Ogden Goelet, 425 Fifth Ave., architect, J. M. Dunn; builder, M. Reid.

ALTERATIONS. — *East Seventy-first St., No.* 10, three-st'y brick extension, etc.; owner, E. P. Wheeler, 8 Pine St.; architects, G. F. Babb and Walter Cook; builder, D. Campbell.

Sixth Ave., Nos. 313, 315 *and* 317, one-st'y brick extension, interior alteration; cost, $35,000; owners, Simpson, Crawford & Simpson, 307 to 311 Sixth Ave.; architect, Jas. Stent; builders, Jas. Webb & Son and Jno. Downey.

Maiden Lane, Nos. 21 *and* 23, raised one st'y; cost, $3,000; owner, Alex. M. Hayes, 141 West Forty-seventh St.; architect, A. H. Thorp; builder, J. C. Wessels.

Pearl St., No. 281, three-st'y brick extension; cost, $3,493; owner, architect, etc., same as last; carpenters, Oakly & Randolph.

East Thirty-eighth St., No. 7, one-st'y brick extension; cost, about $10,000; owner, Robert Gordon, on premises; architect, G. E. Harvey; builders, Jeans & Taylor.

Fifth Ave., n e cor. Fifty-second St., raise wing one st'y, also seven-st'y brick extension, alteration for hotel; owners, Carrie S. Shannon and Chas. R. Purdy, 20 West Fifty-eighth St.; architect, R. Mook; builder, not selected.

West Twenty-fourth St., Nos. 537, 539 *and* 541, two-st'y brick extension; cost, $3,000; Catharine Requa, 375 West Thirty-second Sts.; architects, Babcock & McAvoy; builders, Giblin & Lyons.

West Twenty-fifth St., No. 24, repairs, cabinet-work, new plumbing, etc.; cost, $7,500; owner, Benj. Altman, St. James Hotel; builders, D. & J. Jardine.

Fourth Ave., Nos. 1024 *and* 1026, new store front; cost, $2,000; owner, Helena L. Gillender, Asinari, Italy; architect, W. H. Keene; builders, W. M. Scudder and C. E. Hume & Co.

Stone St., No. 6, new front iron-work, altered for restaurant; cost, $16,000; owner, Mrs. Eliza A. Murphy, 9 State St.; architect, A. Hatfield; builders, J. & W. C. Spears.

East Forty-fifth St., No. 126, four-st'y brick extension; cost, $10,000 to $12,000; owner, W. H. Lefferts, 346 Broadway; architects, Lamb & Rich; builders, Alex. Brown, Jr., and J. J. Brown.

Henry St., No. 141, four-st'y brick extension, interior alterations, etc.; cost, $8,000; owner, Rev. M. J. O'Farrell, on premises; architect, L. J. O'Connor; builder, M. J. Newman.

East Sixty-ninth St., No. 129, third-st'y partition removed and alterations to saloon floor, etc.; cost, $4,250; owner, Charles Sternbath, on premises; architect, C. I. Berg; builders, Steele & Costigan.

West Thirty-fifth St., No. 349, four-st'y brick extension; owner, James N. Bradley, 1267 Broadway; architect, M. C. Merritt.

Philadelphia.

OFFICE-BUILDING.—At No. 222 and 224 s Third St., a five-st'y office-building will be built, 34' x 93'. The façade on Third St. will be of red, gray, brown and buff pressed brick; Charles M. Burns, Jr., architect.

BUILDING PERMITS.—*Madison Ave.*, w s, n of Fr'k'd Road, 7 two-st'y dwells., 15' x 41'; Daniel Trianor, contractor.

Sixth St., e s, s of Norris St., three-st'y dwell., 18' x 52'; M. E. Broomall.

Cumberland St., s s, e of Bailey St., 4 dwells., 18' x 40'; M. McIlvain, owner.

Third St., w s, s of Lehigh Ave., e of Orianna St., 15 two-st'y dwells., 14' x 42'; E. J. Devlin, owner.

Cedar and Terrace Sts., cor. M'y'k, three-st'y dwell., 18' x 32'; James Harper, contracter.

Baldwin St., e s, bet. Hamilton and Wood Sts., M'y'k, 4 three-st'y dwells., 15' x 33'; S. S. Keely, contractor.

Connarroe St., e s, bet. Mitchell St. and Ridge Ave., 5 three-st'y dwells., 15' x 33'; S. S. Keely, contractor.

Queen Lane, w s, three-st'y dwell., 20' x 44'; S. S. Keely, contractor.

Cedar St., near Terrace St., three-st'y dwell., 16' x 40'; Robt. Manly, contractor.

Dayman St., e s, bet. Clearfield St. and Allegheny Ave., 2 two-st'y dwells., 16' x 32'; Robt. Manly, contractor.

Sharp and Hermit Sts., cor. 2 three-st'y dwells., 16' x 44'; Robt. Manly, contractor.

Brown St., No. 1416, three-st'y dwell., 14' x 34'; A. A. Catanach, contractor.

Hancock St., e s, n of Columbia Ave., one-st'y storage-shed, 33' x 210'; S. Humphries, contractor.

South Twenty-first St., No. 244, four-st'y dwell. and stable, 22' x 82' and 19' x 64'; Yarnall & Cooper, contractors.

Orianna St., w s, s of Lehigh Ave., 7 two-st'y dwells., 14' x 30'; W. H. Lower, contractor.

Rittenhouse St., w s, bet. Green and Wayne Sts., three-st'y dwell., 23' x 67'; T. W. Wright & Son, contractors.

Delaware River bet. Moore and Morris Sts., storage mill, Carbon and Retort house, 48' x 96' and 64' x 142'; Baugh & Sons, owners.

Dock St., No. 126, three-st'y store, 20' x 75'; W. D. Jacoby, contractor.

Leamy St., s s, bet. Tusculum and Cambria Sts., 4 two-st'y dwells., 14' x 28'; Jas. Gradin, owner.

Somerset St., s s, bet. Rose Hill and C St., three-st'y dwell., and two-st'y stable, 20' x 45'; J. E. Hill, owner.

Market St., No. 1203, fourth-st'y addition to store, 24' x 80'; Robt. Ligget & Co., owners.

Woodstock St., w s, bet. Brewn and Parrish Sts., 20 three-st'y dwells., 16' x 52'; Jno. McGill, owner.

South Twelfth St., No. 1154, three-st'y dwell., 16' x 42'; J. McGuckin, owner.

Richmond St., w s, n of Division St., three-st'y store and dwell., 17' x 52'; J. Ebner, contractor.

St. Louis.

BUILDING PERMITS. — Thirty permits have been issued since our last report, but six of which are for unimportant frame houses. Of the rest, those worth $2,500 and over are as follows: —

W. C. Richardson, two-st'y dwell.; cost, $6,000.

Mrs. Philibert, three-st'y store and dwell.; cost, $14,000.

Wm. Barr Dry Goods Co., two-st'y stable and dwell.; cost, $6,000.

Mr. Jno. Herl, two-st'y dwell.; cost, $4,000.

Mrs. Louisa Lemp, two-st'y dwell.; cost, $6,000.

St. Lucas Church, two-st'y dwell.; cost, $2,600.

J. A. Carson, two-st'y dwell.; cost, $3,300.

Broderick & Bascom, two-st'y wire-rope manufactory; cost, $5,055.

John Schopp, two-st'y dwells.; cost, $9,000.

PROPOSALS.