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WE have received the report of the chairman of the joint commission for the completion of the Washington Monument, and find in it some interesting details of the work recently accomplished. The underpinning with concrete, of which an extended account was printed in this journal at the time, *American Architect* for September 13, 1879, has been successfully completed, without causing the slightest crack or opening in any joint of the structure, weighing more than thirty-five thousand tons. During the summer of 1879 the terraced embankment around the base of the monument was finished, and the iron framework for the stairs and elevator was erected in the following winter. This framework consists of superposed Phoenix columns, four of which form the inner angle posts of the staircase, and are steadied by nine-inch iron beams at intervals of twenty feet in height, each passing through two columns, and being securely built into the masonry at both ends. The staircase is so planned that each of these beams forms the inner edge of a long landing, extending the whole width of the tower, inside the walls, so that the staircase consists wholly of short straight flights, each having eighteen steps and ascending ten feet. The elevator shaft consists of four similar columns, forming a square nearly ten feet on each side, and secured to the angle columns of the staircase. For the present, this framework of iron is carried up a little in advance of the masonry, and a crane or derrick is attached to each of the four outer columns, with a boom nineteen and one-half feet long, which enables every part of the wall to be reached. When the masonry has been carried up to the level of the framework, another section, of twenty feet in height, is added, the derricks and hoisting apparatus raised upon it, and the work continued. By this ingeniously simple arrangement, the construction can be carried on with great economy and speed. To prevent accidents to the workmen, a net was woven, and stretched around the top of the monument; a precaution which might well be imitated in less important works. Lightning was from the first guarded against by connecting the four columns of the elevator shaft, through large copper rods, with the water in the bottom of the well beneath the middle of the foundation. Already twenty-two feet have been added to the height of the monument, and Colonel Casey reports that the material on hand, and the available balance of the appropriation will be sufficient to build fifty-two feet more.

GENERAL DI CESNOLA has gratified his friends and the public by appearing before the committee appointed to investigate the charges concerning the alleged falsification of objects of art in his hands, and submitting a very careful, detailed, and apparently unanswerable statement regarding the matters in question. It must be acknowledged that unless his assertions can be disproved, they will tell heavily against Mr. Feuardent's professional reputation, and, supposing them to be true, there is perhaps some excuse for what has seemed the unnecessary personalities which marked his side of the discussion. The most damaging statement is that in answer to Mr. Feuardent's assertion that the object numbered 22—a statue of a priest—

had been furnished with a right hand and arm from another statue while the collection was in his (Mr. Feuardent's), gallery in London, but that now the points of junction of the added parts had been concealed. General di Cesnola explains this by saying that a false hand and arm were indeed attached to the statue while in London, by Mr. Feuardent himself, in order, as he said, to make it more salable, but without the knowledge of General di Cesnola, who was still in Cyprus, where he had the fragments really belonging to the statue, carefully preserved. The London collection, and the mass of material remaining in Cyprus, were soon after separately shipped to New York, and after their arrival Mr. Feuardent's fictitious members were removed from this statue and those substituted which actually belonged to it. Not knowing this, and supposing his own restorations to have been the only ones to which the figure had been subjected, Mr. Feuardent seems, to General di Cesnola, to have been rather disingenuous in accusing him of whatever fault there might be in such a proceeding. The matter of the false patina on the bronzes is also satisfactorily explained as having been merely the application of a preservative treatment. Altogether, General di Cesnola's statement has a frank and manly air, in spite of its severe tone toward his opponent, which is both attractive and convincing, and we think he will find his fear that "denial and disproof can never overtake falsehood," quite unfounded.

MR. FEUARDENT, in an interview with a reporter, answers the statement of General di Cesnola, but not with very manifest success. The allegation that one of the restorations mentioned in his letters was made by himself, while the collection was under his care, he confesses to be true, only explaining the case by saying that General di Cesnola knew of it at the time. He acknowledges, however, that it was done at his own suggestion, thereby appearing to have knowingly held another gentleman up to public condemnation for an action committed by himself. The remainder of his testimony consists chiefly in a sworn statement by the photographer to the effect that the stone-work of the figures was sawed and cut away by Mr. Balliard and his assistants, which is not of much value, since the crust of ashes and dirt which covered them might easily be mistaken for stone by a casual observer, and finally Mr. Feuardent indulges in some depreciatory possibilities regarding General di Cesnola which are quite unnecessary, and which we are sorry to see quoted as proceeding from the party to the controversy who has hitherto maintained decidedly the most dignified attitude.

ONE of the most sensible charities ever undertaken is in a fair way of success. The block of buildings constructed by the New York Improved Dwellings Association on First Avenue, Seventy-first and Seventy-second Streets, is well advanced, and will probably be ready for occupancy in July. The block is divided into thirteen buildings, each furnished with a fire-proof staircase. The tenements consist generally of three rooms, though some have only two, but all are of good size, and open to the outer air. Each tenement has its own ash-chute, wash-tubs and sinks, closets and coal-bins; reading-rooms are provided, to be used in common by several families; and the interior of the block is laid out as a garden. One hundred and thirty-two families will be accommodated in the block, and the rents charged will vary from seven to twelve dollars a month. This seems to us the best feature of all. There is little difficulty about building model tenements which must be held at such high rents that only the better class of tenants can inhabit them, but to be able to offer central and salubrious situation, decency, fresh air, privacy, sunshine and convenience to the very poor, at a price no higher than they are obliged to pay for the sickening dens which they now inhabit, is a great achievement,—a triumph of thoughtful kindness, energy, prudence, and common-sense, the four cardinal virtues of the modern world. At the rents charged, the net income will be about four per cent on the investment, which although small, is likely to be sure, and the burdensome relation of patron and dependant between the Association and its tenants will not exist. We trust that this will not be the last experiment of the kind; land is yet cheap in this locality, which is already the very centre of building and engineering operations that will employ thousands of the class which most needs such dwellings.

THE strange and hitherto totally unexplained connection of a moist atmosphere with the spread of infection has been illustrated in New York by an increased violence of diphtheria, scarlatina, and membranous croup,—which appears to have taken its place, at least provisionally, among the zymotic diseases,—following the heavy snow of the past weeks. As usual, an excessive proportion of fatal cases were reported from tenement-houses, where defective plumbing added its malignant influence to the other circumstances of crowding, cold and discomfort in encouraging infection. The Board of Health has shown a most praiseworthy activity in bringing about a reform in these places. Its hands are somewhat tied by the statute under which it acts, but it succeeds in laying them vigorously, and somewhat heavily, upon a great number of offenders. Already, more than three thousand complaints have been acted upon, and measures taken to enforce compliance with the law. At present, according to the *New York Herald*, about ninety suits against landlords are pending, but it is found that the determined action of the Board in arresting and even imprisoning contumacious owners has had a salutary effect, and its orders are obeyed much more readily now than heretofore. We hope that nothing will occur to interrupt the work which this most efficient body of officials is doing, and we commend their example to all similar ones.

THE South Side Street Railway Company of Chicago has decided upon adopting a means for propelling its cars which will be a novelty east of the Mississippi river, though it is said to be used in California. Instead of horses or engines attached to the cars, the motive power is to be furnished by stationary engines, driving a number of drums sunk in trenches midway between the tracks. Over these drums run endless cables, and the cars are fitted with means of gripping these cables and loosening their hold at pleasure; so that a uniform and reliable power is always ready for use. The difficulties which will arise from snow and ice in winter can, it is thought, be overcome, and appliances already in use will be sufficient to afford means of turning corners easily. The system is costly; fifty thousand dollars per mile being the estimate for applying it to the Chicago tracks; but the saving in operating expenses will be great enough to pay interest on the outlay required. It will occur at once to all who know anything of the management of elevated railways that if this device is successful for surface lines, it must be infinitely better adapted for those raised in the air, where cables and drums can move at any desired speed without fear of obstruction, and where the advantage gained by abolishing the smoke and noise of locomotives would be so great.

THE Panama Canal scheme pursues its uneven course, amid the extravagant depreciation of its enemies, and the hardly less extravagant praises of its friends. The former assert that by a recent change in the by-laws of the association the first forty million francs raised are to be distributed among the projectors of the enterprise, and they predict that as soon as this part of the work is completed, the remainder will be indefinitely postponed. On the contrary, the new President of the Canal Company expresses his conviction that the undertaking will be carried out, and will prove financially successful. In fact, it would not surprise him to see two canals built, and he thinks there will be business enough for both, if this is done. Meanwhile, Captain Eads has been busy in obtaining a "concession" from the Mexican government for his Tehuantepec ship-railway. The concession grants right of way, and a small subsidy, in return for the privilege, which would be of great value to Mexico, of having its ships and munitions of war transported free of charge; and in ninety-nine years the whole may be taken by the Mexican government on payment of two-thirds the cost. The most conspicuous feature of the concession in the eyes of ship-owners will be the permission granted to Captain Eads and his company to charge a toll on every vessel conveyed not exceeding five dollars per cubic metre of displacement, besides fifteen dollars each for passengers, and one per cent on the value of bullion or precious stones. This enormous toll, amounting to nearly seven dollars per ton, would, we should say, if actually imposed, practically prevent the use of the road, especially for steamers, which would have to pay it on their coal as well as their cargo. However, as the railway is estimated to cost only about half as much as the Panama Canal, and, as the charge for passage through the latter, which is limited by the terms of its concession to about two dollars per ton, is expected to pay a profit,

it is likely that moderate tolls will be found in practice the most remunerative to the railroad company.

THE elevated railway excitement in Boston seems to have subsided, and indeed, there does not appear to have been at any time cause for serious alarm. The companies, or one of them, disappointed in their application to the Railroad Commissioners for authority to run their tracks through the streets, indulged in what looks like an exhibition of childish resentment, by calling the attention of the Commissioners a second time to a route which they professed to have planned along the sides of Washington and Tremont Streets, the principal thoroughfares of the city, cutting directly through the very valuable estates fronting on them. To say nothing of the enormous value of the land which such a road would occupy, amounting to at least a million of dollars a mile, it would be necessary to destroy hundreds of costly mercantile buildings, paying not only their value, but the expense of their demolition. As the total paid subscriptions to the capital stock of the company which appeared to have this preposterous scheme in view amounted, we believe, to little more than forty thousand dollars, the Railroad Commissioners very properly disposed of the application without much formality. It is to be hoped that the next enterprise of the kind will be undertaken more seriously, if at all. It seems likely that the projected improvement of the Cambridge flats will, if carried out, lead to a renewed agitation in favor of rapid transit for that portion of the city and suburbs. Both the "Back Bay" district of Boston and the large suburban city of Cambridge are particularly in need of better communication with the business part of the city. At present, such communication as they have follows routes widely separated; but if the southeastern part of Cambridge should become densely populated and connected by a bridge with the Back Bay streets, a few hundred feet distant across the river, the main thoroughfare between the two cities would probably take this direction, and Cambridge and the West End of Boston would combine to secure a line of transportation which would serve them both.

CAPTAIN GALTON, in discussing the superiority of certain American buildings, in regard to heating and ventilation, over any to be found in England, expressed his belief that this result was due, not to the greater skill of the American architects, but to the greater scope given them to do what was needed, without stint of money. That our architects exercise a more complete control over the details of the building operations carried on under their charge than their European brethren, may perhaps be true, though our own impression is very much the reverse of this; but on reading the remainder of the discussion we are disposed to think that some, at least, of those who took part in it would find the Americans dangerous rivals in theory as well as practice. One gentleman did not quite credit the stories of the results which the architects in the States were "said to achieve." The admission of fresh air over hot pipes, for instance, which was spoken of, would on a frosty day have the effect of chilling one side of the pipe while the other side remained hot, and "under such conditions iron pipes were only too likely to go to pieces." But this novel contribution to the science of heating was less startling than a remark made, according to the *Builder's* report, by another gentleman who had travelled in America, and found the rooms warmed by stoves very uncomfortable, not only on account of their being very hot, but "because the heated wrought-iron allowed carbonic acid gas to pass easily through it." Of course, the foundation of this astonishing assertion is to be discovered in Deville and Troost's famous experiment, by which, after burning coal for a long time in a cast-iron vessel heated to a bright redness, a faint trace of carbonic oxide was found in the air outside of it. This, they thought, had passed through the pores of the iron, but we believe that the experiment has never been successfully repeated, and it is now more than suspected that the gas was formed on the exterior of the vessel, from the carbon always present in cast-iron. To deduce from this experiment the inference that carbonic acid, a very dense gas, passes "easily" through the pores of compact wrought-iron is therefore unwarranted, to say the least. We wonder that some of the speaker's audience did not remind him that steam, a far more subtle gas than carbonic acid, finds no escape through wrought-iron boiler-plates under a pressure of hundreds of pounds to the square inch, and that such plates, even of extreme thinness, are found capable of keeping even hydrogen safely imprisoned.

SOME SUGGESTIONS FOR THE CONSTRUCTION OF BUILDING ACTS.¹

THE subject upon which I propose to make a few suggestions has been so often discussed, that I cannot hope to offer you anything new, but the necessity for some law to regulate building makes it obligatory that we should keep the subject before the people, and that we, who are looked to to assist in framing such laws, should be fully persuaded in our own minds of the necessity of improved building acts, and should have a clear perception of the desirable features of such acts.

I hold that those who erect buildings should be compelled to build them so that they shall serve their purpose without danger to the life or property of others; that those who erect buildings for large or small, public or society meetings, should be compelled to take reasonable precautions to protect the lives and promote the safety of those who may assemble therein; that those who erect buildings should be compelled to build them in such a manner as to diminish the risk, to the minimum, of causing or spreading fire, and that the owner, the builder and the architect should severally be held responsible for any failure causing the loss of life or property by the fall of a building or other accident, the courts deciding upon whom, and to what extent, the responsibility and penalty shall fall.

Let us consider what manner of act is requisite to meet these wants and to what extent it should be made applicable.

1. The act should be a State law, in order that suits under it may be brought in the State courts, and in order that the opportunity for special local legislation may be reduced to the minimum, and, consequently, little or no opportunity should be allowed to city or town councils, or to selectmen to exercise discretionary power under the law, for in the exercise of such discretion the very purpose of the law may be wholly defeated, and its most essential requirements violated to satisfy the demands of a large or powerful constituency.

2. The act should be made to apply to all parts of the State, and not, as is now almost universally the case, to the largest cities alone. This may at first seem unnecessarily stringent, but if we stop to consider that a small factory village or a flourishing manufacturing town may have its houses—be they many or few—as compactly placed as in the large city; and that the one theatre or hall or other place of public assemblage therein may be surrounded as closely with inflammable houses as in the city, and that either of them is as liable to be crammed with what may become a panic-stricken audience as any—the largest theatre in the largest city—we at once see that restrictive building acts should not be confined to the large cities. So too, the large factory, wherever located, should be provided with the same safeguards as the extensive manufactory in the large cities; in other words, where the same conditions exist, the same law should be made to apply, whether it be in the city, in the town, or in the village.

3. The machinery for enforcing the law should be simple, direct, and effective, and power should be given to the head of the department, created by the law, to promptly stop the work upon the building erecting in violation of the law, provided those erecting it refuse or neglect to comply with its provisions, while he in turn should be held to a strict accountability, if he be found maliciously persecuting the owner, contractor, or architect.

4. Power should be given to the judges of any of the State courts to issue an injunction, in term time or during vacation, when properly applied to by the Inspector or any of his subordinates, or upon the sufficient testimony of any private individual in cases of extreme emergency.

5. The penalties under the law for violation of its provisions should be cumulative and so great as to make the law absolutely restrictive.

I think I have shown that a building act should be a State law, and, consequently, it would be a great gain if matters, which could be as effectively covered by city or town ordinances, were eliminated from the law.

The provisions of the State law should be such as are universally applicable and those relegated to city or town ordinances which are deemed necessary by each community, and which are dependent very largely upon local conditions alone. In this category I should embrace:

(a) All those matters pertaining to fencing-in the building-site, providing plank walks for passers-by, encumbering the highways with building materials and rubbish, maintaining lights at night, and any other provisions to promote the convenience of those who have occasion to use the streets.

(b) Permission to dig up the streets, to construct coal-vaults or boiler-rooms under the sidewalks or highways, and the necessary rules for their use, so that they shall not be sources of danger.

(c) Permission to connect with the public sewers and all the details connected therewith, including the discharge of water from roofs by leaders, and the manner in which they shall be connected with the system of drainage, and also the permission or prohibition of their discharge upon the surface of the sidewalks and streets.

(d) Permission to erect balconies, bay-windows, awnings, signs, cornices, door and window caps, and canopies over the public highways, and the manner in which they shall be constructed, if permitted.

Let me ask, in parenthesis, that the members of our profession press for the removal of the prohibitions to project over the street with such structures, in those towns and cities where they are not

allowed, and to endeavor to obtain the passage of ordinances regulating their proper construction, in place of those prohibiting them.

(e) Permission to erect stables; and rules governing their method of construction so that they shall not be an annoyance to the neighborhood in which they are allowed to be built, but providing for their safe construction as to fire and strength in the building act.

(f) Permission to erect slaughter-houses, rendering-establishments, breweries, or other establishments which may be injurious to the public health, or which may be offensive to the senses of smell and sight, and rules to regulate the removal of offal. If these do not properly belong to the subjects to be regulated by town or city authorities, they certainly should not be embraced in a building act, but should be regulated by the State Board of Health.

(g) Rules for storing or manufacturing inflammable or explosive materials, for the removal and disposition of shavings in wood-working establishments, and for the storage and piling of lumber.

(h) Permission to erect coal or grain elevators and churches, subject to such restrictions as they may choose to impose.

(i) Rules governing or prohibiting the occupation (not the construction) of tenement-houses, in rooms below the surface of the ground, in common with animals, or in other ways unfit for human habitation.

Having enumerated the matters which should be relegated to towns and cities, before entering upon the consideration of the provisions which it seems to me necessary to engraft into a building act, permit me to say that there is great danger of making the law too minute, and of giving the officers created by the law the power of exercising petty surveillance over the individual where he alone would suffer from bad methods of construction. We cannot too often stop and ask ourselves, "Is this provision simply in the interest of good building, or is it a necessity for the protection of the rights and safety of the public as against the selfishness of the individual?"

I. The law should require the fullest precautions to be taken to prevent the loss of life and the injury or destruction of neighboring property, while tearing down old buildings on the site of the proposed new, and in excavating beneath the foundations of the old buildings adjoining. And as the habit of digging deep for our large buildings is increasing, the officers under the building law should be compelled to watch closely such operations, and should be empowered and directed to apply speedy remedy in cases of danger, with power to enter upon the premises of either the person about to build, and whose operations are the presumed cause of the danger, and of the person whose building is endangered. The officers in such cases must also have the power to decide as to the danger at once, and to apply immediately an effective remedy, leaving the future to settle where the responsibility for damages and for labor lies.

II. One of the most difficult and delicate questions in connection with the erection of new buildings, and one which it is often impossible to regulate by law, is that of the party-wall. It is easy enough to lay down rules for its minimum thickness from foundation to coping, and as to whether it shall rest upon piles or upon the ground, when both parties owning adjoining estates are willing to enter into an agreement to build a party-wall; but we all have, probably, experienced great difficulty in persuading parties to erect them, and I think we more frequently fail than succeed in bringing about such an agreement. Here in Philadelphia, however, I believe the State law allows either of two adjoining parties who propose to build to place the centre of the wall on the division line between the two estates. When we do not succeed in effecting an arrangement for the erection of a party-wall, then arises the difficulty, already alluded to, of endangering the wall and in fact the whole building standing upon the next estate, and frequently the added difficulty of an easement acquired by the existence of projections over the line between the two estates, and often involving the question of location of the line because of adverse possession for more than twenty years, thus stopping the party about to build from obtaining complete possession of what is rightfully his own, and forcing him to make his wall thinner than he wishes, or losing the use of as much land as the projecting portions of the wall of his neighbor encroach upon him. Added to the above difficulties is that other trouble of making a thoroughly good wall with one face plumb from foundation to coping, and losing all the advantage of a broad base and of an equal distribution of strains on both sides of the wall. If there is any legal way to meet and overcome these difficulties, I have failed to discover it, and should be glad to hear from those who have been more successful than myself what that remedy is, in order that it may be engrafted in future building acts. Another trouble has often arisen in our practice, of finding a party-wall already built which is inadequate to support the proposed increased load. This may be overcome in building acts by empowering the inspector to appoint a committee of experts to decide whether it is safe to allow the increased load to be placed thereon, and if they find it not safe, compel the owners to take the wall down and properly rebuild it, or strengthen it so that it will be safe. The parties owning the wall must themselves settle the question of division of cost.

III. How shall we compel persons to build walls, piers, etc., of sufficient thickness to ensure their being able to carry with safety the load which is placed upon them? Shall we lay down arbitrarily that walls of certain heights shall be of certain thicknesses, that the piers shall have a prescribed area and be strengthened by stone binders, and so on, *ad infinitum*, providing for all possible contingencies and for all possible changes of occupation, and based on supposing every

¹ A paper read at the Fourteenth Annual Convention of the American Institute of Architects, by Alfred Stone, F. A. I. A.

wall to be built of only fair materials and by ordinary workmen; or, would it be better, as has been suggested in this Institute, that "all minute directions as to the depth and thickness of arches, the thickness of walls, sizes of beams and lintels, and all questions of that kind, should be left to the architect in charge of the building, and failing that, to the builder, and finally to the owner, and each of them in turn should be held strictly accountable for the construction of the work which he directed?"

I confess that this latter plan seems to me the most desirable, supplemented by the provision that every building erected for a dwelling-house shall have its walls and floors of sufficient strength to carry a load of 70 lbs. per square foot of floor in every part of the building at the same time, and that buildings other than dwellings shall be assumed to have walls and floors capable of carrying a load on each and every floor of 100 lbs. per square foot, unless there be posted in each story of the building a certificate from the responsible party designing or superintending the building—be he architect, builder, or owner—stating the load that the floors and walls are guaranteed to carry safely. It is to be understood that the factor of safety must be at least four, and that an allowance of 40 lbs. per square foot must be made for wind and snow pressure on the roof.

The inspector of buildings, under the building act, should be required to examine all plans before they are put into execution, and he should be required to enter upon his books, before the contemplated building is begun, the weight of load intended upon each square foot of floor, and he should be empowered, if he saw that the building was not in his judgment strong enough to carry safely the contemplated load, to stop all work at any time during the progress of the building, and compel the builder to make the work strong enough, or to change the record of safe load on his books and on the certificate posted in the building to what, in his judgment, it could safely carry; and if the owner, architect or builder was not satisfied with his decision, they should have the power to appeal to three experts, whose decision should be binding upon all parties concerned. There should be provision in the building act for testing the strength of cast-iron designed to sustain heavy loads, and especially, as provided in New York, for testing the strength of wrought and cast iron arched-girders, and the result of such tests should be plainly marked on every such piece of tested work.

The provisions of the law to prevent danger from fires are too extensive for me to treat upon at any length in this paper, but at some future time I hope to prepare a paper upon this branch of our subject. One cannot do better than to consult the requirements of the manufacturers' mutual insurance companies established in New England, and the numerous papers prepared by the indefatigable Mr. Atkinson upon this branch of building, before deciding what provisions are necessary in a building act which is universal in its application. At this time, however, I would add that it is important that building acts should be free from the expression "*fire-proof*," or, if used, the acts should contain a definite statement of what is meant by that expression. Unprotected iron-work certainly should not be so classified, and yet there is not a building law extant in this country, I think, in which unprotected iron and brick construction are not, by implication at least, declared *fire-proof*. There is, however, much that can be safely embodied in a building act to lessen danger from fire, and fortunately much that will add but little to the cost of buildings.

The first and most important thing is to destroy the system of horizontal and vertical flues all connected together, and extending from cellar to attic in nearly all of our wooden houses and in many of those built of brick. These may be stopped by filling between the studs throughout their whole height with cheap, or soft or even light hard bricks, and by filling between the floor-joists, where they bear upon walls or partitions, with the same; or, as a cheaper plan, filling between the floor-joists as above, and filling on each story between the studs of all walls and partitions with brick, and between furrings with concrete of broken brick cement and lime mortar for a height of one foot above each floor.

Provision should be made to plaster the outside of all chimneys—not to nail furrings to chimneys, and to keep all timber at least one inch away from all brickwork of chimneys; to keep steam-pipes from all wood-work; to provide for trimmer-arches under all hearths; for an air-space in the backing up of a grate or fireplace; to keep smoke-pipes away from wood-work; to provide that there shall be no inaccessible spaces between ceiling and roof; to avoid building box-cornices of wood, which will carry fire rapidly, unless shut off at frequent intervals with brick partitions, and to compel the carrying up of all brick walls to or through the roof boarding. These simple provisions and many others of like character, which the profession as a rule require with more or less thoroughness, if universally adopted would diminish sensibly the percentage of fires; but it does not seem to me expedient for us to compel the use of iron to the extent contemplated in most building acts, but leaving owners more free to use good, solid timber construction if they prefer, and in warehouses compelling them, if they use it, to adopt the factory method of building, or some of the many devices that have of late years been tried, such as encasing creosoted wood in plaster or in terra-cotta, leaving the solid beams exposed, and plastering upon wire lathes, or by using plaster or terra-cotta blocks nailed to the under side of the floor between the beams, or by filling between the floor-beams, on the French plan, with hollow earthenware and plaster, or by using the Dénnet plan and numerous other efficient devices.

For rooms of large area, filled with combustible materials, for theatres behind the curtains, for manufactories, anywhere, in fact, where their unsightliness would not render them objectionable, and often for stairways, especially in hotels and apartment-houses requiring the use of the automatic sprinklers to prevent a fire from gaining headway, a recently invented device of this kind, known as the Par. melee Automatic Fire-Extinguisher, is made so that the heat of the fire shall set it into operation. It consists of a water distributor made water-tight by a cap soldered to its base, the solder being an alloy which melts at 155° to 160° Fahrenheit, and is strong enough to hold the caps water-tight under a pressure of 600 pounds to the square inch. I have seen experiments tried with them in a wooden building with the floor covered with the driest shavings and a pile of dry kindling-wood and shavings laid up in the most inviting manner to burn and the match applied: the fire soon reached the roof of the building and was burning fiercely. In two minutes from the time of applying the match the first cap was unsoldered, and in a short time the fire was entirely extinguished, and the roof of the building though badly smoked was not burned or charred in the least. I do not know that it would be policy to compel this apparatus to be put into buildings, but certainly it would be far less expensive, and apparently more secure, when used in connection with ordinary wooden floors than brick-and-iron floor construction—but what could be more secure than a room with a brick-and-iron floor and sprinklers similar to those described above?

Many building acts require iron doors as a protection against fire between rooms and between buildings, but nothing could be more deceiving than to imagine that they are any protection from fire, when subjected to great heat. A door of one inch pine boards in two thicknesses at right angles with each other, and nailed with wrought nails, clinched, and then covered on both sides with tin is of far more value, in fact, it may be properly called *fire-proof*.

I find I have already trespassed too long upon your time, without touching upon many points which need to be considered, and which you have in your minds anticipated, and will close with this simple suggestion, that as, and when we have an opportunity,—unless it be deemed important enough for us to make the opportunity,—when, I say, we have the opportunity to aid in the construction of a building act, it will not be copied from those made before the days of iron construction, but will recognize the new methods and conditions of to-day, with provisions allowing some scope for the ingenuity of architects who do not care to follow in the old ruts, and not based on poor construction with bad material, but will be elastic enough to allow the economical use of good material scientifically distributed, even when not applied in customary ways.

HINTS ON HOUSE DECORATION.¹—II.

Now, as to the outside of our makeshift house, I fear it is too ugly to keep us long. Let what painting you have to do about it be as simple as possible, and be chiefly white or whitish; for when a building is ugly in form it will bear no decoration, and to mark its parts by varying color will be the way to bring out its ugliness. So I don't advise you to paint your houses blood-red and chocolate with white facings, as seem to be getting the fashion in some parts of London. You should, however, always paint your sash-bars and window-frames white to break up the dreary space of window somewhat. The only other thing I have to say is to warn you against using at all a hot brownish-red, which some decorators are very fond of. Till some one invents a better name for it, let us call it *cockroach color*, and have enough to do with it.

So we have got to the inside of our house, and are in the room we have to live in, call it by what name you will. As to its proportions, it will be great luck indeed in an ordinary modern house if they are tolerable; but let us hope for the best. If it is to be well proportioned, one of its parts, either its height, length, or breadth, ought to exceed the others, or be marked somehow. If it be square, or so nearly square as to seem so, it should not be high; if it be long and narrow, it might be high without any harm, but yet would be more interesting low; whereas if it be an obvious but moderate oblong on plan, great height will be decidedly good.

As to the parts of a room that we have to think of, they are wall, ceiling, floor, windows and doors, fireplace, and movables. Of these the wall is of so much the most importance to a decorator, and will lead us so far afield, that I will mostly clear off the other parts first as to the mere arrangement of them, asking you meanwhile to understand that the greater part of what I shall be saying as to the design of the patterns for the wall I consider more or less applicable to patterns everywhere.

As to the windows then: I fear we must grumble again. In most decent houses, or what are so called, the windows are much too big, and let in a flood of light in a haphazard and ill considered way, which the indwellers are forced to obscure again by shutters, blinds, curtains, screens, heavy upholsteries, and such other nuisances. The windows, also, are almost always brought too low down, and often so low down as to have their sills on a level with our ankles, sending thereby a raking light across the room that destroys all pleasantness of tone. The windows, moreover, are either big rectangular holes in the wall, or, what is worse, have ill-proportioned round or segmental heads, while the common custom in "good" houses is either to fill these openings with one huge sheet of plate-glass, or to divide them

¹ A paper read by William Morris before the Birmingham Society of Artists.

across the middle with a thin bar. If we insist on glazing them thus, we may make up our minds that we have done the worst we can for our windows, nor can a room look tolerable where it is so done. You may see how people feel this by their admiration of the tracery of a Gothic window, or the lattice work of a Cairo house. Our makeshift substitutes for those beauties must be the filling of the window with moderate-sized panes of glass (plate-glass if you will) set in solid sash bars; we shall then at all events feel as if we were indoors on a cold day—as if we had a roof over our heads.

As to the floor: a little time ago it was the universal custom for those who could afford it to cover it all up, into its dustiest and crookedest corners, with a carpet good, bad or indifferent. Now I daresay you have heard from others, whose subject is the health of houses rather than their art (if indeed the two subjects can be considered apart, as they cannot really be), you have heard from teachers like Dr. Richardson what a nasty and unwholesome custom this is, so I will only say that it looks nasty and unwholesome. Happily, however, it is now a custom so much broken into that we may consider it doomed: for in all houses that pretend to any taste of arrangement, the carpet is now a rug, large it may be, but at any rate not looking immovable, and not being a trap for dust in the corners. Still I would go farther than this even, and get rich people no longer to look upon a carpet as a necessity for a room at all, at least in the summer. This would have two advantages: First, It would compel us to have better floors (and less draught), our present ones being a chief disgrace to modern building; and secondly, since we should have less carpet to provide, what we did have we could afford to have better. We could have a few real works of art at the same price for which we now have hundreds of yards of makeshift machine-woven goods. In any case it is a great comfort to see the actual floor; and the said floor may be, as you know, made very ornamental by either wood mosaic, or tile and marble mosaic; the latter especially is such an easy art as far as mere technicality goes, and so full of resources, that I think it is a great pity it is not used more. The contrast between its gray tones and the rich positive color of Eastern carpet-work is so beautiful, that the two together make satisfactory decoration for a room with little addition.

When wood mosaic or parquet wood is used, owing to the necessary simplicity of the forms, I think it best not to vary the color of the wood. The variation caused by the diverse lie of the grain and so forth, is enough. Most decorators will be willing, I believe, to accept it as an axiom, that when a pattern is made up of very simple geometrical forms strong contrast of color is to be avoided.

So much for the floor. As for its fellow, the ceiling, that is, I must confess, a sore point with me in my attempts at making the best of it. The simplest and most natural way of decorating a ceiling is to show the under side of the joists and beams, duly moulded, and, if you will, painted in patterns. How far this is from being possible in our modern makeshift houses, I suppose I need not say. Then there is a natural and beautiful way of ornamenting a ceiling by working the plaster into delicate patterns, such as you see in our Elizabethan and Jacobean houses; which often enough, richly designed and skilfully wrought as they are, are by no means pedantically smooth in finish—nay, may sometimes be called rough as to workmanship. But unhappily, there are few of the lesser arts that have fallen so low as the plasterer's. The cast work one sees perpetually in pretentious rooms is a mere ghastly caricature of ornament, which no one is expected to look at if he can help it. It is simply meant to say, "This house is built for a rich man." The very material of it is all wrong, as, indeed, mostly happens with an art that has fallen sick. That richly designed, freely wrought plastering of our old houses was done with a slowly drying tough plaster, that encouraged the hand like modeller's clay, and could not have been done at all with the brittle plaster used in ceilings now-a-days, whose excellence is supposed to consist in its smoothness only. To be good it must shine like a sheet of hot-pressed paper, so that, for the present, and without the expenditure of abundant time and trouble, this kind of ceiling decoration is not to be hoped for.

It may be suggested that we should paper our ceilings like our walls, but I can't think that it will do. Theoretically, a paper-hanging is so much distemper color applied to a surface by being printed on paper instead of being painted on plaster by the hand; but, practically, we never forget that it is paper, and a room papered all over would be like a box to live in. Besides, the covering of a room all over with cheap recurring patterns in an uninteresting material is but a poor way out of our difficulty, and one we should soon tire of.

There remains, then, nothing but to paint our ceilings, cautiously and with as much refinement as we can, when we can afford it; though even that simple matter is complicated by the hideousness of the aforesaid plaster ornaments and cornices, which are so very bad that you must ignore them by leaving them unpainted, though even this neglect, while you paint the flat of the ceiling, makes them in a way part of the decoration, and so is apt to beat you out of every scheme of color conceivable. Still, I see nothing for it but cautious painting, or leaving the blank white space alone, to be forgotten if possible. This painting, of course, assumes that you know better than to use gas in your rooms, which will, indeed, soon reduce all your decorations to a pretty general average.

So now we come to the walls of our rooms, the parts which chiefly concern us, since no one will admit the possibility of leaving them quite alone. And the first question is, how shall we space them out horizontally? If the room be small and not high, or the wall be much broken by pictures and tall pieces of furniture, I would not divide it horizontally. One pattern of paper, or whatever it may be, or one

tint may serve us, unless we have in hand an elaborate and architectural scheme of decoration, as in a makeshift house is not like to be the case; but if it be a good-sized room, and the wall be not much broken up, some horizontal division is good, even if the room be not very high.

How are we to divide it then? I need scarcely say not into two equal parts: no one out of the island of Laputa could do that. For the rest, unless again we have a very elaborate scheme of decoration, I think dividing it once, making it into two spaces, is enough. Now there are practically two ways of doing that: you may either have a narrow frieze below the cornice, and hang the wall thence to the floor, or you may have a moderate dado, say four feet six inches high, and hang the wall from the cornice to the top of the dado. Either way is good according to circumstance; the first with the tall hanging and the narrow frieze is fittest if your wall is to be covered with stuffs, tapestry, or panelling, in which case making the frieze a piece of delicate painting is desirable in default of such plaster-work as I have spoken of above; or, even, if the proportions of the room very much cry out for it, you may, in default of hand-painting, use a strip of printed painting, though this, I must say, is a makeshift of makeshifts. The division into dado and wall hung from thence to the cornice is fittest for a wall which is to be covered with painted decoration, or its makeshift paper-hangings.

As to these, I would earnestly dissuade from using more than one pattern in one room, unless one of them be but a breaking of the surface with a pattern so insignificant as scarce to be noticeable. I have seen a good deal of the practice of putting pattern over pattern in paper-hangings, and it seems to me a very unsatisfactory one, and I am, in short, convinced, as I hinted just now, that cheap recurring patterns in a material which has no play of light in it, and no special beauty of its own, should be employed rather sparingly, or they destroy all refinement of decoration and blunt our enjoyment of whatever beauty may lie in the designs of such things.

Before I leave this subject of the spacing out of the wall for decoration, I should say that in dealing with a very high room it is best to put nothing that attracts the eye above a level of about eight feet from the floor—to let everything above that be mere air and space, as it were. I think you will find that this will tend to take off that look of dreariness that often besets tall rooms.

So much, then, for the spacing out of our wall. We have now to consider what the covering of it is to be, which subject, before we have done with it, will take us over a great deal of ground and lead us into the consideration of designing for flat spaces in general with work other than picture work.

To clear the way, I have a word or two to say about the treatment of the wood-work in our room. If I could I would have no wood-work in it that needed flat-painting, meaning by that word a mere paying it over with four coats of tinted lead pigment ground in oils or varnish, but unless one can have a noble wood, such as oak, I don't see what else is to be done. I have never seen deal stained transparently with success, and its natural color is poor, and will not enter into any scheme of decoration, while polishing it makes it worse. In short, it is such a poor material that it must be hidden unless it be used on a big scale as mere timber. Even then, in a church-roof or what not, coloring it with distemper will not hurt it, and in a room I should certainly do this to the wood-work of roof and ceiling, while I painted such wood-work as came within touch of hand. As to the color of this, it should, as a rule, be of the same general tone as the walls, but a shade or two darker, in tint. Very dark wood-work makes a room dreary and disagreeable, while unless the decoration be in a very bright key of color, it does not do to have the wood-work lighter than the walls. For the rest, if you are lucky enough to be able to use oak, and plenty of it, found your decoration on that, leaving it just as it comes from the plane.

Now as you are not bound to use anything for the decoration of your walls but simple tints, I will here say a few words on the main colors, before I go on to what is more properly decoration, only in speaking of them one can scarce think only of such tints as are fit to color a wall with, of which, to say truth, there are not many.

Though we may each have our special preferences among the main colors, which we shall do quite right to indulge, it is a sign of disease in an artist to have a prejudice against any particular color, though such prejudices are common and violent enough among people imperfectly educated in art, or with naturally dull perceptions of it. Still, colors have their ways in decoration, so to say, both positively in themselves and relatively to each man's way of using them. So I may be excused for setting down some things I seem to have noticed about those ways.

Yellow is not a color that can be used in masses unless it be much broken or mingled with other colors, and even then it wants some material to help it out, which has great play of light and shade in it. You know people are always calling yellow things golden, even when they are not all the color of gold, which, even unalloyed, is not a bright yellow. That shows that delightful yellows are not very positive, and that, as aforesaid, they need gleaming materials to help them. The light, bright yellows, like jonquil and primrose, are scarcely useable in art, save in silk, whose gleam takes color from and adds light to the local tint, just as sunlight does to the yellow blossoms which are so common in Nature. In dead materials, such as distemper color, a positive yellow can only be used sparingly in combination with other tints.

Red is also a difficult color to use, unless it be helped by some

beauty of material, for whether it tend toward yellow and be called scarlet, or toward blue and be crimson, there is but little pleasure in it, unless it be deep and full. If the scarlet pass a certain degree of impurity it falls into a hot brown-red, very disagreeable in large masses. If the crimson be much reduced, it tends towards a cold color, called in these latter days magenta, impossible for an artist to use either by itself or in combination. The finest tint of red is a central one between crimson and scarlet, and is a very powerful color indeed, but scarce to be got in a flat tint. A crimson broken by grayish-brown, and tending toward russet, is also a very useful color, but like all the finest reds is rather a dyer's color than a house-painter's, the world being very rich in soluble reds, which of course are not the most enduring of pigments, though very fast as soluble colors.

Pink, though one of the most beautiful colors in combination, is not easy to use as a flat tint even over moderate spaces; the more orange shades of it are the most useful, a cold pink being a color much to be avoided.

As to purple, no one in his senses would think of using it bright in masses. In combination it may be used somewhat bright if it be warm and tend toward red; but the best and most characteristic shade of purple is nowise bright, but tends towards russet. Egyptian porphyry, especially when contrasted with orange, as in the pavement of St. Mark's at Venice, will represent the color for you. At the British Museum, and one or two other famous libraries, are still left specimens of this tint as Byzantine art in its palmy days understood it. These are books written with gold and silver on vellum, stained purple, probably with the now lost murex or fish-dye of the ancients, the tint which Pliny describes minutely and accurately in his "Natural History." I need scarcely say that no ordinary flat tint could reproduce this most splendid of colors.

Though green (at all events in England) is the color widest used by Nature, yet there is not so much bright green used by her as many people seem to think; the most of it being used for a week or two in spring, when the leafage is small, and blended with the grays and other negative colors of the twigs; when "leaves grow large and long," as the ballad has it, they also grow gray. I believe it has been noted by Mr. Ruskin, and it certainly seems true, that the pleasure we take in the young spring foliage comes largely from its tenderness of tone rather than its brightness of hue. Anyhow, you may be sure that if we try to outdo Nature's green tints on our walls we fail, and make ourselves uncomfortable, to boot. We must, in short, be very careful of bright greens, and seldom, if ever, use them at once bright and strong.

On the other hand, do not fall into the trap of a dingy, bilious-looking yellow-green, a color to which I have special and personal hatred, because (if you will excuse my mentioning personal matters) I have been supposed to have somewhat brought it into vogue. I assure you I am not really responsible for it.

The truth is, that to get a green that is at once pure and neither cold nor rank, and not too bright to live with, is of simple things as difficult as anything a decorator has to do; but it can be done, and without the help of special material; and when done such a green is so useful and so restful to the eyes, that in this matter also we are bound to follow Nature and make large use of that work-a-day color, green.

But if green be called a work-a-day color, surely blue must be called the holiday one, and those who long most for bright colors may please themselves most with it; for if you duly guard against getting it cold if it tend towards red, or rank if it tend towards green, you need not be much afraid of its brightness. Now, as red is above all a dyer's color, so blue is specially a pigment and an enamel color; the world is rich in insoluble blues, many of which are practically indestructible.

I have said that there are not many tints fit to color a wall with; this is my list of them so far as I know: A solid red, not very deep, but rather describable as a full pink, and toned both with yellow and blue,—a very fine color, if you can hit it. A light orangey pink, to be used rather sparingly. A pale golden tint, *i. e.*, a yellowish brown—a very difficult color to hit.

A color between these last two, call it pale copper-color. All these three you must be careful over; if you get them muddy or dirty, you are lost.

Tints of green from pure and pale to deepish and gray—always remembering that the purer the paler, and the deeper the grayer.

Tints of pure pale blue from a greenish one the color of a starling's egg to a gray ultramarine color, hard to use because so full of color, but incomparable when right. In these you must carefully avoid the point at which the green overcomes the blue and turns it rank, or that at which the red overcomes the blue and produces those woeful hues of pale lavender and starch blue which have not seldom been favorites with decorators of elegant drawing-rooms and respectable dining-rooms.

You will understand that I am here speaking of distemper tinting, and in that material these are all the tints I can think of; if you use bolder, deeper, or stronger colors, I think you will find yourself beaten out of monochrome in order to get your color harmonious.

One last word as to distemper which is not monochrome, and its makeshift, paper-hanging. I think it always best not to force the color, but to be content with getting it either quite light or quite gray in these materials, and in no case very dark, trusting for richness to stuffs, or to painting which allows of gilding being introduced.

I must finish these crude notes about general color by reminding

you that you must be moderate with your color on the walls of an ordinary dwelling-room; according to the material you are using you may go along the scale from light and bright to deep and rich, but some soberness of tone is absolutely necessary if you would not weary people till they cry out against all decoration. But I suppose this is a caution which only very young decorators are likely to need. It is the right-hand defection; the left-hand falling away is to get your color dingy and muddy, a worse fault than the other because less likely to be curable. All right-minded craftsmen who work in color will strive to make their work as bright as possible, as full of color as the nature of the work they are doing will allow it to be. The meaning they may be bound to express, the nature of its material, or the use it may be put to, may limit this fulness; but in whatever key of color they are working, if they do not succeed in getting the color pure and clear, they have not learned their craft, and if they do not see their fault when it is present in their work, they are not like to learn it.

(To be continued.)

PALLISER'S SPECIFICATIONS.

THE idea of using ready-made specifications does not generally commend itself at first to the experienced architect. As in other professions, every man, after having gone through a certain amount of practice and experience, acquires his peculiar set of rules, which he thinks in some respects superior to all others, and he is disposed to look down upon those who are willing to adopt forms invented by others, as inexperienced, or too eager to save themselves labor, perhaps to their clients' cost. Such a feeling as this operates, we are convinced, to the disadvantage of those who could profit most by these labor-saving inventions,—those who have sufficient knowledge and experience to interpolate, omit and amend such parts of the printed blanks as may be requisite for shaping them into precisely the form they desire. Few architects can afford to have printed blanks of their own, even if they could spare the time necessary for constructing one out of the multifarious examples with which they have to deal, and seeing for themselves the difficulty of making a single form which would suit all the cases in their own practice, they fail to realize how successfully this difficulty can be met. In Palliser's Specifications¹ we have the first example within our knowledge of a fairly complete set for brick buildings, as well as those of wood, and it is high but deserved praise to say that with the proper amount of additional matter to suit the peculiarities of particular buildings, for which ample blank spaces are left, such specification could easily be made as thorough and full as the most scrupulous architect need desire. In various points we should desire to make more definite stipulations than the authors think necessary, but such details are easily added, and there is a satisfaction in the use of legible forms, where every necessary point is sure to be found suggested, if not expressed, which can only be appreciated by trial.

Some trifling points in the specifications may, we think, be criticised, while some others show modes of building which differ from those used in other places. For instance, the only kind of plastering described is a sort of two-coat work, consisting of a single rough coat, completed with a coat of hard-finish, of lime-putty and plaster of Paris. Our impression has always been that hard-finish was too brittle to be used over a single brown coat, but we are glad to have it corrected; nevertheless, we should generally prefer to put three coats on the ceilings, for the sake of being able to level it with screeds, if nothing else. New York architects, we fancy, will hardly be content with anything short of three-coat work everywhere.

We do not quite approve of the manner described for laying tile floors,—on a concrete bed three inches thick. So large a mass of wet concrete introduced almost at the end of the work has always seemed to us, common as it is, objectionable; and we should be disposed to substitute brickwork for the concrete. Nothing is, we believe, said about the thickness of trimmer-arches; nor about levelling them up to the proper height for receiving hearths. Probably the writer has never met with the sort of mason who lays such arches two inches thick and squabbles over an extra charge for a hod of mortar and rubbish to level up with.

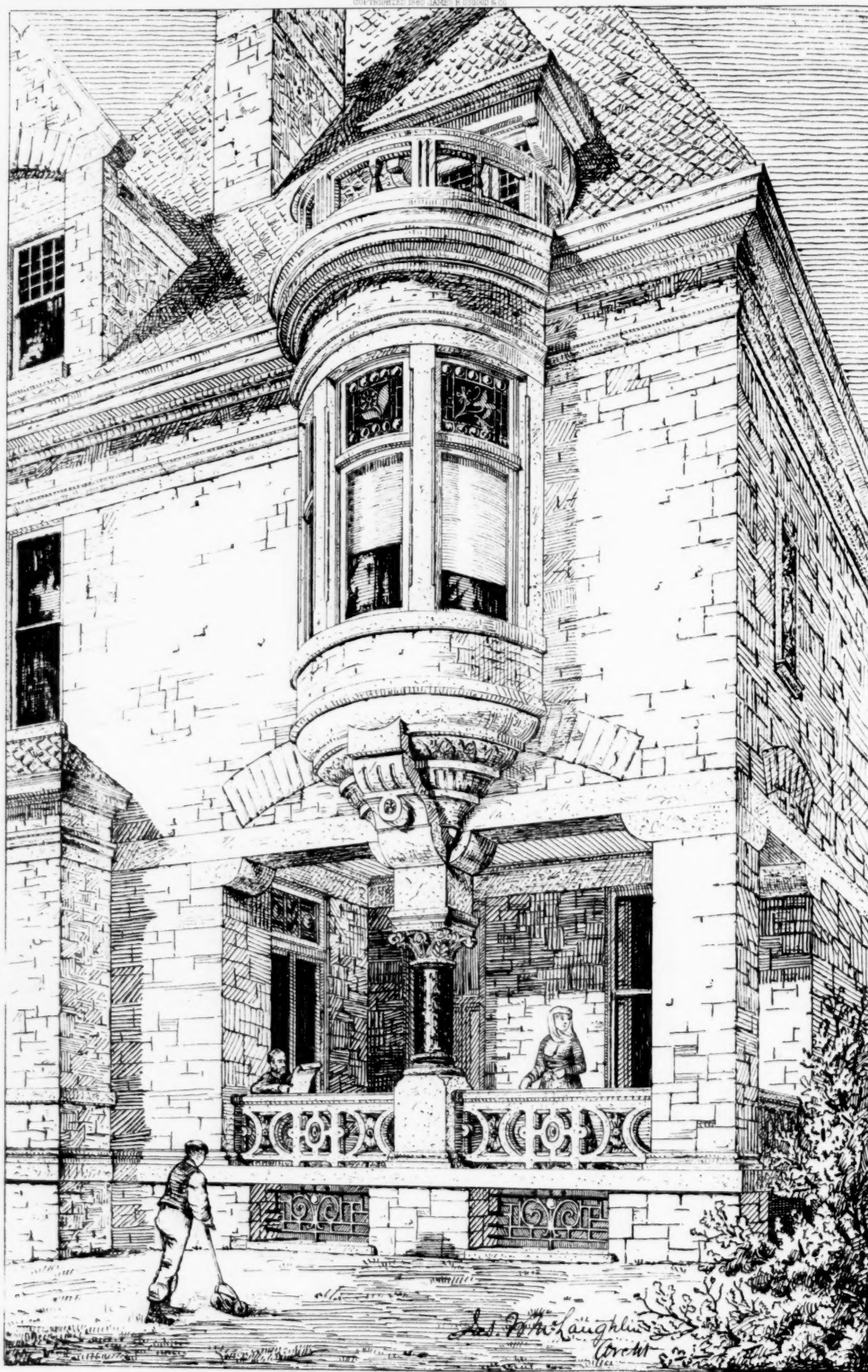
Such slight matters as these are really of no consequence, and do not detract from the value of the whole work, which shows throughout the hand of a thoroughly experienced architect—one not only experienced in a certain class of work, but in a great variety of processes and modes of finishing. The plumbing specification is very nearly a model of its kind; and that for boiler and steam fitting is a particularly useful addition to the whole.

THE ILLUSTRATIONS.

CASTLE LICHTENSTEIN. DRAWN BY MAX SCHROFF, ARCHITECT, NEW YORK, N. Y.

THIS castle is situated on a rock 730 feet in height, forming one of the spurs of the Suabian Alps, and is entirely isolated from the main land by surrounding ravines, and is approachable only by means of the drawbridge. It was designed in the spirit of a mediæval castle for the kings of Württemberg, by the renowned professor of architecture, Charles Heideloff, one of the preservers of round and pointed Gothic (the old German style). Nothing but an inspection of this building can convey a correct idea of the vast amount of room concentrated upon this lofty spot. The cellars, stables, barns,

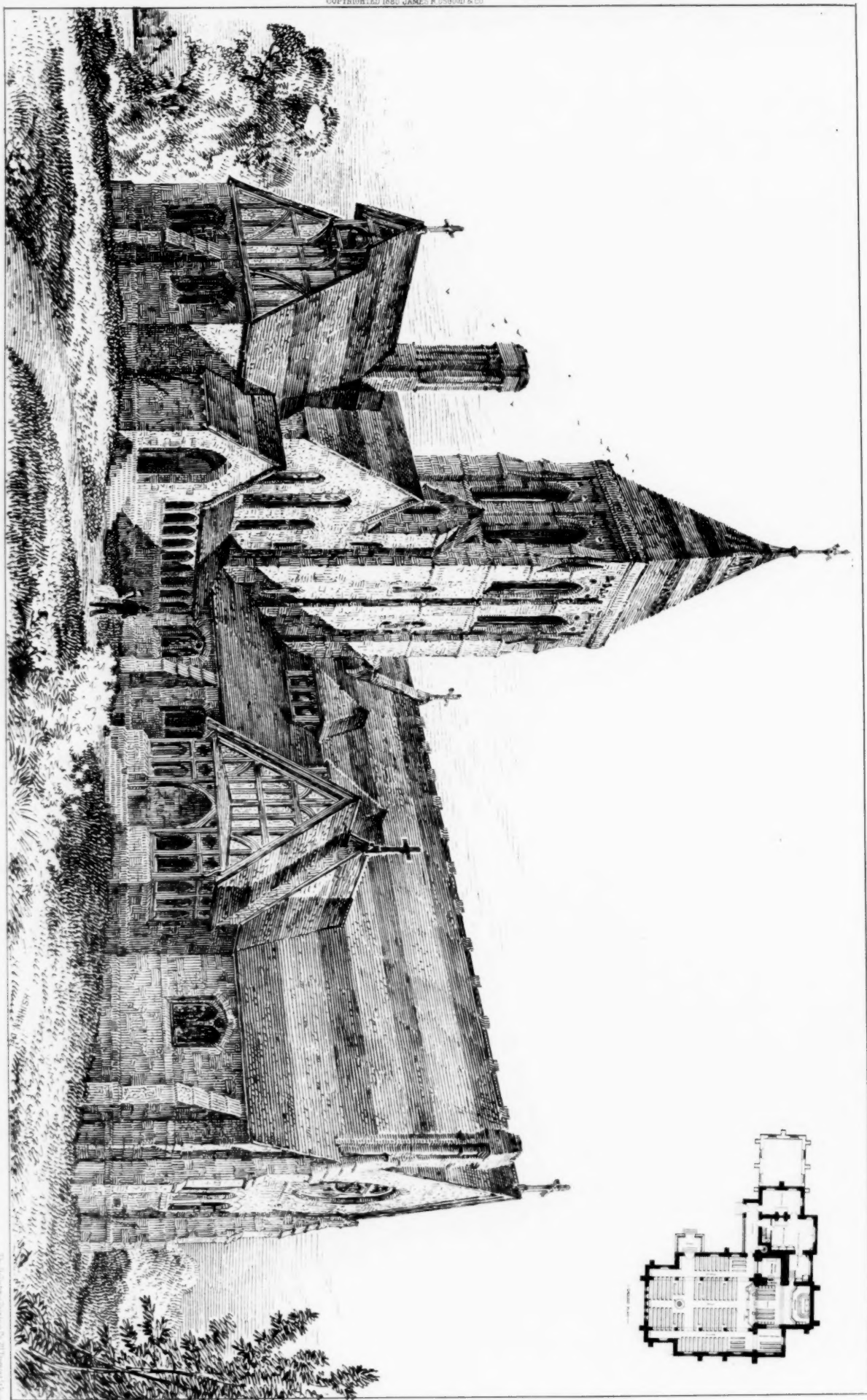
¹ Specifications prepared and published by Palliser, Palliser & Co., Bridgeport, Conn.



The Engraving - Published by G. B. Towner & Son.

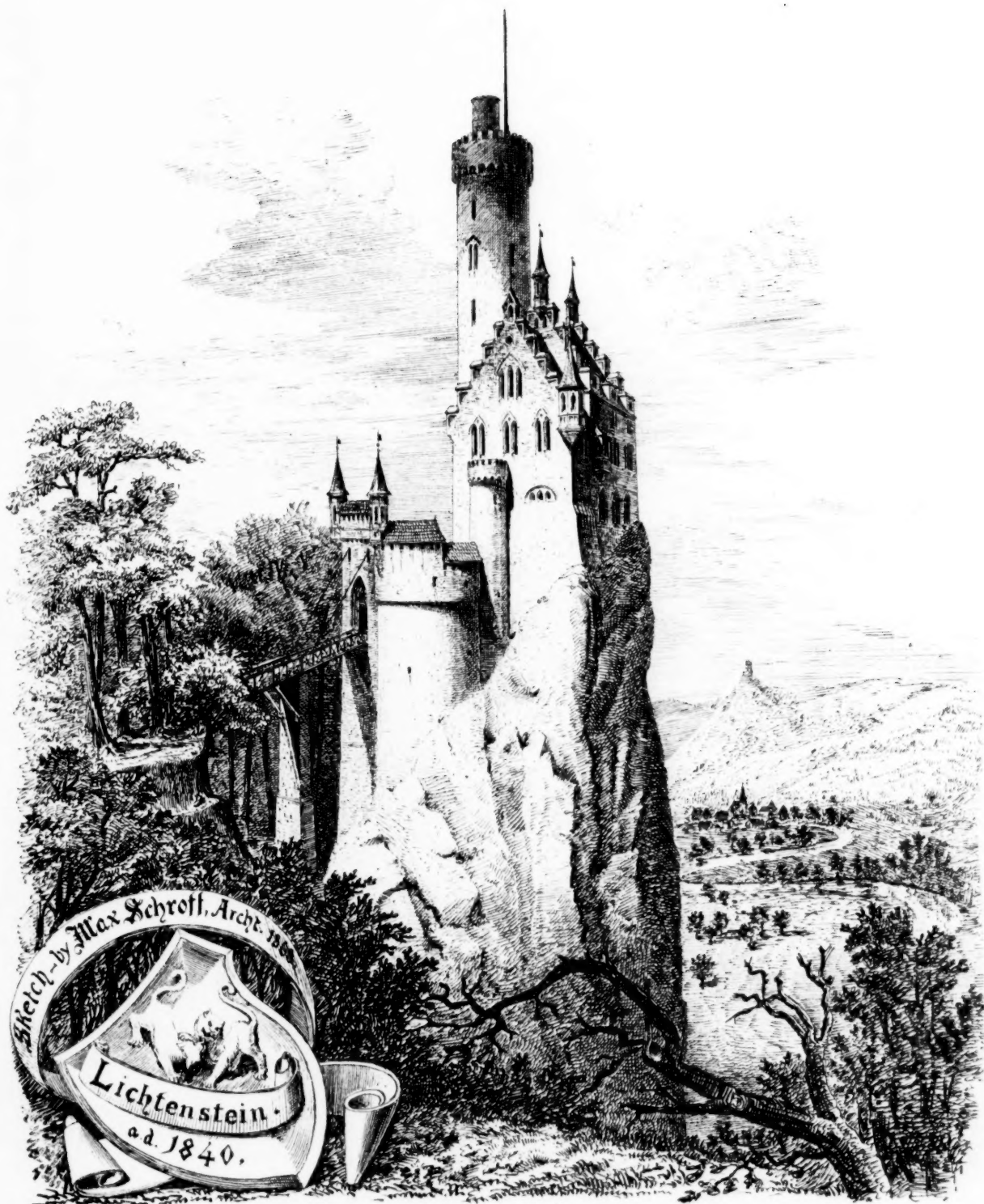
Loggia and Oriel.—J.W. McLaughlin, Arch't

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PROPOSED CHRIST CHURCH AND SCHOOLS.

H. M. CONGDON, ARCHT.



wells, and many other domestic offices are cut in the living rock, and in fact, the building following the formation of the rock, prevents the detection of the points where the rock ends and the building commences, and leaves the impression that the rock and the building — which is of a durable limestone, beautifully wrought — are one. So definitely expressed, and identical with the rock is the form of this building, that if the latter were removed the surrounding landscape would seemingly suffer and the rock be found wanting in its natural "finial." The blending of nature with art is so gratifying that the perfection of the design is at once felt, and leaves nothing more to wish for. The same master-mind pervades the interior, which is full of interest, in plan and construction to the greatest credit of the architect. Passing the portcullis, we enter successively three courtyards with fortified galleries communicating, and well spiked with cannon; the interior court is spacious enough for "knightly tournaments" on horseback, and is surrounded by arched galleries of stone. The perfectly wrought circular staircase, guarded by two knights in armor, commands our attention, and impresses one with the idea of solidity and simplicity of those times when stone-cutting was still a scientific art, and "machine tooling" was out of question. On ascending to the first story one can inspect the great hall, library, museum, dining-rooms, the chapel, the court of inquisition, filled with relics and instruments of torture of bygone centuries, and the private cabinet of the King. The upper stories contain chambers for the chase and dormitories. The majestic round tower rises to a height of 120 feet from its base, and contains besides the minor rooms three large halls, one over the other, for different purposes of scientific research, the uppermost being an astronomical observatory. Still higher up, among the battlements, the view over the surrounding country is immeasurably beautiful and well rewards the trouble of ascending. This castle was built in 1840 by Duke William of Württemberg, upon the ruins of a former castle called *Lichtenstein*, subsequently changed into a forrester's lodge and used as such up to the time of the erection of our present subject.

COMPETITIVE DESIGN FOR A HOTEL ENTRANCE-HALL, BY MR. J. S. SCHWEINFURTH, NEW YORK, N. Y.

An honorable mention was awarded to this design in the late competition.

PROPOSED CHRIST CHURCH AND SCHOOLS, PORTSMOUTH, N. H. — MR. H. M. CONGDON, ARCHITECT, NEW YORK, N. Y.

LOGGIA AND ORIEL TO HOUSE OF A. S. WINSLOW, ESQ., CINCINNATI, O. — MR. J. W. McLAUGHLIN, ARCHITECT, CINCINNATI, O.

CORRESPONDENCE.

BUILDING AT HARTFORD, CONN.

HARTFORD, CONN., Dec., 1880.

It is a commendable custom on the part of the local press in this city to make a statement in December of the money spent during the year in building projects and in architectural work, which are not necessarily one and the same thing, at least in this locality. It is roughly estimated that over five hundred thousand dollars have been expended in Hartford for building purposes during 1880, not including the liberal libations which have been poured out from the national treasury to erect the post-office. This structure, in which we all feel a just pride, is familiarly known as the *new* post-office, but it has already grown gray in the service of waiting to have a French roof put on it, and will soon be old in the memory of the average citizen, when he thinks of the date when it was begun years ago. Of late the work of constructing the iron roof has been prosecuted, and, this completed, we may look for the finishing of the interior before another yearly building statement appears.

In the matter of private residences Hartford is to be congratulated upon their variety and their increasing excellence, from an architectural standpoint, which cannot fail to attract the attention of a critical observer. To this class of buildings several noteworthy additions have been made during 1880, from designs both by outside and by local architects. On Woodland Street, and near the home of "Mark Twain," a house is being built by Dr. G. P. Davis, from plans by Mr. Withers, of New York. It is about eighty feet long and three stories in height, being built of pressed brick with finish of brown-stone. The building is irregular in outline, a characteristic feature being a bay-window of most ample proportions extending through two stories, and well placed. Philadelphia moulded brick are introduced effectively at door jambs and elsewhere, and carving in stone, notably gargoyles upon the front of the house, add to the exterior embellishment of the design. The work is of a substantial character, and when completed will cost about \$30,000.

A dwelling-house on Washington Street for Mr. J. H. Root, which was begun last spring, is now approaching completion. The building has a frontage of 60 feet and is 54 feet deep; it is three stories high, with a tower carried up an additional story. The front is marked by two gables, characteristically treated. The house is built of brick, relieved by Portland-stone and moulded brick, which are used for label moulds, special brick being manufactured for the purpose. Carving both in stone and in brick is effectively introduced. The interior will be finished in a variety of woods, including oak, cherry, black walnut, white wood, etc., the finish being enriched with carving. The summer room in the tower commands an exceptionally fine view in all directions. The design and plans are by W. C. Brocklesby, of this city. This architect is also building on Collins Street a house for Mr. G. H. Seyins. The building is about 40

by 47 feet, and is built partly of brick and partly of wood, a portion of the work at the first story being sided up with California red-wood, oiled. A feature of the front is an exterior chimney, showing introduction of diaper brick; on the west side a bay-window in two stories is carried out, the upper portion finished with a pediment embellished with wood carving in high relief. Carving is elsewhere introduced exteriorly, particularly noticeable in a series of boldly executed rosettes at the front gable, and also upon the side of the house, where a large panel in natural flowers and foliage is effectively displayed. The house, which is three stories high, is covered by a roof of high pitch, which will have finish of terra-cotta, from the Boston Architectural Terra-cotta Works.

Several new houses upon the Lord's Hill have been built during the past season. Among others, a ten-thousand-dollar dwelling for Mr. George Kellogg, from plans by J. C. Mead. The house is of pressed brick and brown-stone, three stories high, the east elevation being diversified by a circular bay-window, carried up above the main walls, and crowned with a conical roof.

Plans for a cottage, by George Keller, architect, are being carried out at Woodland Street. The house faces to the west, directly opposite the extensive and costly mansion of the late James Goodwin. The building is of brick and Portland-stone, and three stories in height, with gables to north and west. Mr. Keller has also had in hand during the year the erection of the large addition to the State Insane Asylum at Middletown. The contracts for the work amount to a hundred thousand dollars, this sum, together with a goodly amount for furnishing, having been appropriated by our last legislature, after considerable controversy over the subject. The project embraces a central building, 35 feet by 104 feet, having a square tower of lofty proportions, and two flanking wings, each 35 feet by 151 feet, the wings being irregular in outline. The line of the curtain-walls upon the front is broken by a bay extended through each story, and each extremity is flanked by a pavilion breaking the main line of the structure, both on front and rear. The buildings are three stories high, with attic above. The kitchen, laundry, etc., are in the rear of the main or central structure. The work is well advanced, and a portion of the building is roofed in. The materials used are common brick, and Portland-stone for caps, sills, belts, etc. This stone is also used for the three clock-faces of the central tower.

A large building upon Main Street, the lower story used for a store and the upper floors for lodging apartments, is being completed from plans by J. Bachmeyer, architect. The front is of pressed brick, with finish of Forest City stone. The building is four stories high. The store, soon to be occupied, has some of the finest show windows of plate-glass in the city. The estimated cost of the structure is \$70,000.

The project long discussed by the Unitarian Society, of erecting a building, is consummated, or nearly so. The structure is denominated a "church edifice," and will be used for purposes other than those strictly connected with religious worship, as may be inferred from the words of an interested member of the committee, who told the writer, while entering the vestibule: "We are going to have something beside preaching here, and that (pointing to a hole in the wall) is the ticket-office!" The building is on Pratt Street, the main floor being at a considerable elevation above the ground. The audience-room is arranged theatre-wise, and will be fitted with orchestra chairs, the seating being upon the circular plan, with an incline toward the stage. A gallery extends around three sides of the building, and the united capacity of main floor (or parquette) and gallery will be about seven hundred. In the basement, reached from the wide entrance corridor by staircase, is a series of rooms for social gatherings. The approach to the structure is through a tower, which is carried up and finished with gable. The exterior walls are pierced by round-arched windows, the building being well lighted upon three sides. The material used in construction is brick, with terra-cotta, moulded brick and brown-stone for finish. The building was planned by J. C. Mead, and when completed will have cost, exclusive of organ, fifteen thousand dollars.

In some portions of the city the stimulus recently given to manufacturing interests has occasioned the erection of some few buildings of this class; and following in the wake of the establishment of new manufactories, there is felt a want in certain sections, for good, first-class, healthy tenements, and next season will probably see some steps taken in the right direction to furnish more desirable homes to the working classes than have hitherto been offered them. The architectural outlook for 1881 is, upon the whole, encouraging, and several building projects, both of a public and private nature are upon the *tapis*. Among the latter, it is announced that an extensive scheme either wholly or in part is to be undertaken by the Messrs. F. and J. J. Goodwin, upon Asylum Street. Drew Street is to be opened from the above street (one of the principal ones in the city) to connect with Pearl Street on the south, thus advantageously dividing into building lots marketable property all of which, some three or four hundred feet frontage on each street, is owned by the above named parties, who intend to build a block of stores fronting on Asylum Street, to be followed in time by other structures both upon the new street and occupying other valuable frontage on the remaining portions of the land.

A picturesque design by Messrs. Kimball and Wiedsell for a dwelling-house for Mr. Franklin Chamberlin, will be carried out in the spring. The house is to be of stone with finish of brick.

Other houses are also contemplated in the western portion of the

city, while just beyond the city limits in that direction, upon what is known as Prospect Avenue, Mr. Yung Wing, the Chinese Commissioner, will put up a large house in the coming spring.

During 1880 the most careless observer of houses in this city cannot fail to have noticed a marked change in the matter of exterior painting. Not only of frame dwellings but of the vulnerable portions of brick houses. Time was, when Hartford boasted but one cottage bathed in Indian red; the contagion spread and for a short time the contrast with the cold orthodox colors which had hitherto ruled supreme was altogether pleasing. But during this year the result of what was formerly a red letter day in the history of Hartford architecture has become apparent in a new form. We have had a sort of fever, not exactly a scarlet fever but at all events a rash of some kind, which has broken out upon the blinds of our houses. The thoughtless painter is, in part, answerable for it, and he has painted not wisely but too well. Without any reference to the prevailing color of the house, the blinds have been subjected to the merciless red brush, and the violent contrasts which they make against the coldest kind of cold grays, is something which strikes a chill to the heart of many, except the heartless painter. Among the reforms to be brought about by our legislature on its January review, doubtless some measures against the profuse use of red paint will be suggested.

CHETWOOD.

COMPETITION FOR THE PROPOSED MONUMENT TO THE LATE KING VICTOR EMMANUEL.

THE following is the programme of the competition for a monument to be erected in Rome for the late Victor Emmanuel II, first King of Italy, which we publish *in extenso* on account of the national importance of the work:—

Art. 1.—In execution of the law of 25th July, 1880, and of the Royal Decree of the 13th September instant, a competition is opened for the erection of a monument in honor of the late Victor Emmanuel II, liberator of Italy and founder of its unity.

Art. 2.—All artists, Italian or foreign, are admitted to the competition.

Art. 3.—No limit is put to the invention of the competitors, either in regard to the conception and the style, or in the choice of the locality where the monument could be erected.

Art. 4.—The projects ought not to exceed in cost nine million Italian lire (£360,000 sterling).

Art. 5.—The plans and models must be executed in manner to clearly show the idea of the designer.

Art. 6.—The projects must show the address and signature of the author, or a device to be repeated on the envelope of a sealed letter, in which are to be indicated the name and address of the competitor. Only the envelopes of those who have won the prizes will be opened.

Art. 7.—According to the terms of the law, 25th July, 1880, the competition will end at five o'clock in the afternoon of the 23d (twenty-third) September, 1881.

Art. 8.—The projects must not be consigned before the 25th (twenty-fifth) August, 1881, to the Secretary of the Royal Commission at the Home Ministry (*Ministero dell' interno*).

All projects, with the exception of those which have won the prize, are to be claimed within two months after the date of the publication of the judgment.

Art. 9.—Before judgment the works presented will be exhibited in public.

The judgment will be published by the Royal Commission in the official paper of the Kingdom (*Gazzetta Ufficiale del Regno*) in a report.

Art. 10.—Three prizes, the first of 50,000 Italian lire (£2,000 sterling), the second of 30,000 Italian lire (£1,200 sterling), the third of 20,000 Italian lire (£800 sterling) shall be respectively and in rank of merit awarded to the authors of the best three projects.

To obtain a prize one must have not less than ten favorable points.

Art. 11.—The award of the prizes shall not bind the Government as to the choice of the projects to be executed, nor shall the author of the chosen project claim that its execution should be entrusted to him, in preference to others.

Art. 12.—The Commission charged with awarding the prizes, with the choice of the project, with the collection of the offers for the monument and with the care of the good execution of the work, was named by a Royal Decree on the 13th September instant, and is as follows:

The President of the Council, who has the Presidency of the Commission, and: Prof. Giuseppe Bertini, engineer; Prof. Camillo Boito, engineer; Commander Raffaele Canevari, engineer; Prof. Count Carlo Ceppi, engineer; Hon. Commander Cesare Correnti, deputy of the Parliament; Prof. Giovanni Duprè, sculptor; Hon. Marquis Alessandro Guiccioli, deputy; Hon. Prof. Ferdinando Martini, deputy; Hon. Commander Tullio Massarani, senator; Prof. Domenico Morelli, painter; Hon. Commander Marco Tabarrini, senator; Prof. Vincenzo Vela, sculptor; Hon. Marquis Francesco Vitelleschi-Nobili, senator; Syndic of Rome; President of the Academy of St. Luke; Hon. Baron Francesco De Renzis, deputy, Secretary.

Rome, the 21st September, 1880.

The President of the Royal Commission,
CAIROLI.

The Secretary of the Royal Commission,
DE RENZIS.

LONDON FOGS.

A PAPER was read on Friday, the 3d ult., by Capt. Douglas Galton, C. B., F. R. S., at a meeting of the Balloon Society, in which he discussed:—First, What is the cause of that condition of atmosphere generally understood by fog, and can it be controlled, or can fogs be diminished? Second, What are the distinctive characteristics of the conditions of atmosphere called fog in London? What are the evils resulting therefrom? and is it possible by the efforts of the population, to diminish the frequency of London fogs or to mitigate any evils arising from them? Captain Galton said that mists and fogs are visible vapors floating in the air near the surface of the earth. They are produced in various ways—by the mixing of cold air with air that is warm and moist, or generally by whatever tends to lower the temperature of the air below the dew-point. When rivers are much warmer than the air they give rise to fogs, because the rapid evaporation from the warm water pours more water into the atmosphere than it can hold suspended in an invisible state, and consequently the surplus vapor is condensed into mist by the colder air through which it rises. There are conditions of atmosphere when no actual fog is apparent in which darkness prevails, and what are called dry fogs, or sometimes blight. In some cases they are clearly due to smoke, as, for instance, the smoke of burning prairies, which may extend over vast distances. After remarking that in London there were moist fogs, there were dry fogs, and there often existed the condition of darkness without definite fog, Captain Galton continued:—The London basin may be described generally as formed of clay, which retains the moisture from rainfall; deposits of gravel rest in many places in the clay. These deposits are not usually of great depth. The River Thames runs through the centre of London. The surface of the metropolitan area, when built over, is generally well drained, and all moisture which falls is rapidly removed; but there are numerous spaces not built over, where the rain sinks into the soil, as, for instance, the parks, squares, gardens, etc., and there are also bodies of water in London which contribute moisture. These may be noticed as constituting a local cause of fog. Independently of the local cause of fog, which, no doubt, may always be mitigated to some degree, there remains the permanent cause, which arises from the geographical position of England, a comparatively small island surrounded by the sea, and that is a cause over which we can have no control. The height to which fogs prevail above the surface of the ground is very variable; but, as a rule, they rise only to a comparatively moderate height. Frequently the summit of a mountain is clear when the valley is full of fog. The distinctive character of London fog arises from the vast amount of impurity present in London air. The greater the aggregation of human beings on one spot, the greater the tendency to impurity in the air. The dust of the street contributes largely to pollute the air, and this source of pollution varies with the degrees of care exercised in scavenging the town. For instance, New York is not well scavenged as a city. In New York, in consequence of burning anthracite coal, they have scarcely any smoke; but the air is filled with dust. The scavenging of the London streets is much better, and the quantity of this sort of impurity, although large, is consequently much less than in New York. But London suffers largely from the imperfect combustion of fuel consumed. Sunlight is absolutely necessary for the proper development of plants and animals. We cannot determine the extent to which this absence of light acts to cause the general feebleness of the children of London parents; but we may feel certain that it plays an important part in the causation of many conditions of constitutional feebleness. We suffer in London from two causes, viz., the fog and the smoke. We may feel certain that we cannot remove those causes of fog which are produced by the moisture of the atmosphere. Some of the persistent characteristics of the London fog may, however, be directly due to the presence of smoke, and it therefore remains for us to consider how far we can remove the canopy of smoke and other impurities which cuts off our daylight and which renders our fogs so deleterious. Open spaces should be created. Of course, if we could cut London in two from north to south by a broad open space, as it is cut in two from east to west by its river, it would do something to break up the cloud of smoke. In the year 1852, Sir Joseph Paxton proposed to carry a broad boulevard around London. It was a very feasible scheme in those days; it is a pity it was not carried into effect. Open spaces, carefully underdrained, and so situated as to favor the circulation of air through the centre of London, would form a most important feature in promoting the health of London, if such things were possible. The next point is, how can smoke be diminished? The creation of smoke from factories in London could be easily stopped, as it has been elsewhere; but it is in the private dwellings that the great difficulty arises. The elimination of smoke from dwelling-houses may be obtained by several methods: (1) The use of fuel not emitting smoke; modifications in existing fireplaces which might result in preventing smoke from the bituminous coal; (2) alterations in our modes of heating and cooking, in order to dispense with open fires. The use of anthracite and smokeless coal is open to every one. This coal is used in Pennsylvania and New York, and in some parts of Wales, and affords very pleasant fires. Alterations of fireplaces are more or less available to every one. This leads us to the second point, viz., a change in our method of heating and cooking—that is to say, to resort to some general system of a supply of heat, just as now we have a supply of water or of gas. There might be many systems of conveying heat from some central dépôt to our

houses. Steam has actually been applied at Lockport and Detroit, in the United States, to heating the town and supplying hot water. Many years ago Dr. Siemens proposed to provide heat for manufactories at Birmingham from a central dépôt. Electricity might be used to convey to our houses heat as well as light. The problem of light by electricity for domestic use has been solved by Mr. Swan. But when we consider the enormous number of houses in the metropolis, the vast area over which the houses are spread, and the diverse interests concerned, the question becomes one too extensive to be seriously affected by individual exertion. It is not probable that the real evil can be touched by any course short of legislation. What are the grounds for legislation? The evil is great, and is necessarily increasing; it affects the health, it affects the comfort, it affects the well-being of all the inhabitants of the metropolis. Consequently, it is a case in which the inhabitants of the metropolis have a right to demand remedial measures.

A NEW STOVE.

DR. C. W. SIEMENS has made many experiments with gas-stoves and with different kinds of fuel, with a view to the prevention of smoke and the economy of heat, and, in an article contributed to *Nature*, he has shown that it is cheaper to burn the constituents of coal in their separated state than as they exist naturally; that is, a fire consisting of coke rendered and maintained incandescent by a supply of coal-gas is cheaper than one in which coal pure and simple is consumed. A gas-grate arranged in his billiard-room, in which the pipes were covered with pumice-stone, presented not only a cheerless appearance, but filled the room with fumes. "The products of combustion set up by the gas-flames ascend no doubt, so long as they are intensely hot, but in giving off their heat to the inert pumice-stone they rapidly cool, and, being heavier than atmospheric air, descend through the grate between the lines of gas-flames, and thus reach the apartment." This use of pumice or lump asbestos, has become very fashionable where gas-fires are preferred to coal, and when the stove is properly constructed so as to carry away noxious fumes, the fires are not only cheerful but economical. According to Dr. Siemens the first condition to be realized in an efficient gas-grate consists in suppressing all gas orifices except immediately behind the bottom bar, while the grate is made as a solid dead-plate. Instead of using pumice-stone, he prefers, as being more economical and efficacious, to transfer the heat of the gas-flames to coke or anthracite, which, when once heated, helps the gas to increase and maintain a sufficient temperature for radiation through its own slow combustion. This use of the gas in the front of the fire gives the cheerful appearance so much desired, and the hot carbonaceous matter through which it passes on its road to the chimney, insures its complete combustion, and the minimum of wasted heat. The coke or anthracite under these conditions is practically in a very slow combustion stove, but, notwithstanding the absence of grate-bars, the mass of fuel becomes red throughout, and heat is lost at the back, or is not utilized as it might be. To remedy this defect, Dr. Siemens has devised an arrangement which yields the remarkable results above mentioned, and which is thus described in the *English Mechanic*:—An iron dead-plate is riveted to a plate of copper $\frac{1}{4}$ -inch thick in such a manner that the copper-plate extends 5-inch above and below the point of junction. This copper-plate forms the back of the fire-grate, and the iron-plate is the bottom. The latter extends to within 1-inch of the lowest bar, and its lowest surface is level with the upper edge of the bar which fits close to the iron bottom of the stove. This bottom plate is fitted with a trap-door opening downwards for the removal of ashes, and at the back it is bent downwards for a few inches, forming a passage for a current of air. It will be understood that there is thus a hollow bottom to the grate, and in the front part of this, just behind the lowest bar, is a $\frac{1}{2}$ -inch gas-pipe with holes about 1-20-inch in diameter, spaced zigzag about $\frac{3}{4}$ -inch apart. Thus, when the gas is ignited, the jets play over the edge of the dead-plate through the inch space left between that and the lowest bar. As the mass of coke or coal becomes hot, the heat is imparted to the copper-plate forming the back of the stove, and here is the great merit of the device. The portion of the copper-plate beneath the dead-plate—that is the part in what would be the ash-pit—is fitted with a frill of thin copper, that is, a corrugated sheet which is riveted to the stout plate, and fills up the space left between the portions of the iron plate which is bent down and the copper back. Copper being a good conductor of heat, the frill soon becomes hot, and the corrugations or frills, which are arranged vertically, impart heat to the air which passes up through them to the hollow bottom of the grate, where it impinges against the gas-jets, and increases their brilliancy. A piece of lead, about half a pound in weight, placed in this hollow bottom or air-passage through the trap-door, melted in five minutes, proving that the temperature exceeded 619° Fahr. An ordinary stove can be modified to suit gas, by simply placing a close-fitting ash-pan beneath the grate-bars and running the gas-pipe behind the lowest bar; but the fire will be less brilliant than when the hot-air arrangement above described is adopted. The consumption of gas and coke per day of 8 hours was found to be 62 cubic feet of gas, and 22 pounds of coke, which, at 8s. 6d. per 1,000 cubic feet, and 18s. per ton respectively, give a total of 4.725d., or .524d. per hour. The same grate before conversion consumed about 47 pounds of coal, which at 23s. per ton, equals 5.7d., or .633d. per hour. The alteration thus gave an economy of one penny per day; but what is of more importance, there is now no

difficulty in keeping the temperature of the room at 60° Fahr., which never could be done when the fireplace was a coal-grate. Add to those facts another—that the fire is now smokeless, and the advantages of Dr. Siemens's stove are apparent. The first cost of such a grate will, of course, be considerable, but it will probably not be more expensive than many of the stoves, patented and otherwise, which at present are soliciting public patronage. Dr. Siemens has taken up the question without the idea of profit, and he will supply builders and others with the necessary directions to insure success.

FIVE PER CENT.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—The varied experiences of an architect, in his professional practice, if brought to the observation of the general public, would afford some food for reflection, and correct many erroneous impressions as to the value of his services.

It may be stated that the minimum scale of charges, as laid down by the American Institute of Architects, is not always obtainable, and all architects are not in a position to refuse work offered them at a less remunerative price—on the principle that half a loaf is better than no bread.

Viewed either in their artistic or executive capacity, architects present a variable scale of talent and value, and, at first sight, it may seem strange to some persons that all should claim a similar rate of remuneration for their services. The pictures of some artists are of high value compared with those of others, and ought not the most talented artistic architect be paid highest for his work? Probably this might ultimately become an important factor in the scale of charges, but, unfortunately, the aesthetic element in professional architecture is much on a dead level, and the discerning eye of the public, which perhaps needs more educating in this than in any other of the fine arts, is still slow to appreciate artistic differences. If there is any exceptional talent recognized, unless it is backed by a thorough administrative business capacity, we may be sure it will avail nothing, but where both desirable qualities are united, an additional share of business will flow to that architect.

The work of an architect is affected by the degree of intelligence possessed by the builders who carry out his designs. All who have had the experience of a country practice can testify to this; yet here is an element in the labors of an architect, of which the public take little cognizance. To illustrate this, allow me to give some facts derived from observation in this city during a practice of nearly a year. The art of stone-cutting appears to me to fall short of that degree of excellence to be seen in other cities, and in preparing details for different firms of stone-cutters, we found it necessary to make drawings with the utmost care, showing all the joints; for one of the contractors made some of the most deplorable blunders in the method of jointing stone, that ever stone-cutter could conceive. In another case several moulded stones, after being delivered at the building, had to be condemned because the section of the mouldings was quite unlike the full size drawing furnished. Two bases supposed to be worked from the same drawing were different. To have to correct all this was very troublesome and annoying, and certainly an architect cannot be expected to stand in a stone-cutter's yard all day and direct him, nor can he suffer his design to be marred by the imperfect carrying out of his details. Another firm of stone-cutters are prone to execute their work in a very rough fashion, when they near the crowning cornice; they seem to think that mouldings badly cut will look as well at forty feet distance as if they had been rightly worked.

This is but an outline of much more that could be laid to the stone-cutters' account. It, of course, would lead us to consider the education and training of workmen in their several occupations, how this could be improved. One could wish that their training could give them some feeling for art, or that some of the talent that avails itself of an architectural training would flow into the channels of the building and executive field. But the point it is desired to illustrate is this: that, while the labors of an architect, by the complexity of our civilization, are ever becoming more extended, requiring a more varied knowledge of many things, unless some part of his task is lightened by the supplemental work of the builder—enabling, for instance, more of the minutiae of detail to be left in the hands of the builder—the minimum rate of remuneration ought to be more than five per cent.

The letting of contracts to several individuals, instead of having one builder responsible for the whole building, is another source of increased work to the architect. Take stone-cutting and wall-building, for instance. It is customary in this city for one contractor to cut the stone and another to set it: the stone-cutter requires one set of details and the stone-setters another, which means more work for the architect, to say nothing of the inharmoniousness which sometimes prevails amongst the different contractors on one building.

If the scale of the American Institute charges has been based on that of the Royal Institute of British Architects, it is a mistake; for all who have been engaged in the practice of architecture in England and America know that the work required of an architect in this country is greater than in England. There, as a general rule, the artisan does more for himself,—here, the architect does more for him.

Yours truly,

R. B.

A STUDENT'S TRIP ABROAD.

BOSTON, Jan. 4, 1881.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—At the suggestion of a friend, I send the following items of expense of my recent tour abroad, hoping it may be of use to other students:—

Ocean passage, (first cabin),	\$110.00
General Continental travel, (Cook's tickets),	79.40
Extra Continental travel, (second class),	20.00
Travel in England and Scotland, (third class),	15.75
Lodging expenses,	26.42
Living expenses,	28.31
Fees, carriage rides, etc.,	32.41
Purchases, (not articles of necessity),	68.15

\$380.44

By travelling in second cabin on the ocean, and third class on the Continent, this amount could be considerably reduced.

Excellent lodgings were found in England and Scotland for 25 cents, and breakfast for 8, 10 or 12 cents. At a first-class boarding-house in Florence, the lodging and breakfast cost 1.50 lire, about 30 cents. The tour occupied 101 days. ART STUDENT.

NOTES AND CLIPPINGS.

A LARGE OAK TIMBER.—A firm in Albany county, New York, has contracted to furnish to the Navy Department for \$1,900 a stick of oak timber 90 feet long and 5 feet square at the middle.

A LARGE RESERVOIR FOR BALTIMORE.—Baltimore has just finished Lake Montibello, the huge reservoir that is to store 500,000,000 gallons of the Gunpowder Creek water-supply, soon to be brought to the city through seven miles of tunnels. The lake covers 60 acres, and is a mile and a half in circumference.

THE PENNSYLVANIA RAILROAD IMPROVEMENTS.—The improvements of the Pennsylvania Railroad Company at Fifteenth and Market Streets will require about a square acre, or 100 tons, of heavy three-eighth inch hammered glass, which is to be used as skylights.—*Philadelphia North American*.

DANGEROUS OZONE APPARATUS.—The experts of the local board are now vexing their souls over the new-fangled ozone cones for revivifying the atmosphere in stores and offices. These cones contain sticks of phosphorus in water, and so long as the jars are uninjured there is no danger, but if any unforeseen event should tumble one of them down from its shelf and spill the water, the phosphorus in a short time would ignite. The danger is regarded as remote, but unless the insurance committee consent, the owners of the patent will not succeed in introducing them down-town very generally. The mere mention of phosphorus in such a connection causes the underwriter to shudder with fear.—*The Spectator*.

HOW RAILWAY TIME IS KEPT.—There are in use between Albany and New York 13 electric clocks, two of the number being placed in the waiting-rooms, and one in the despatcher's office at the Grand Central Depot, New York. The time on the clock in the depot at East Albany corresponds exactly with the time in New York. Each one of the clocks is connected with the general superintendent's office in New York, in which the railroad time is kept on what is called the "big clock." Conductors, train men and others are compelled to keep their watches in strict conformity with the superintendent's clock. It is set by standard time, and connected with the time service department of the gold and stock telegraph. The time is distributed all over the line each week day as follows: At 10 o'clock 58 minutes and three seconds A. M., the word "time" is sent by the main office to the telegraph stations between New York and Albany. This word is repeated for 28 seconds, during which time operators must see that their instruments are adjusted. At 10 o'clock and 50 seconds, seconds commence beating, and continue for 50 seconds. The word "switch" is then sent over the wire, and operators having electric clocks connect them immediately with the circuit known as No. 9 wire. Ten seconds are allowed in which to make the connection. At 11 A. M., with one touch of the New York key, the hands on the different clocks are set to 11 o'clock.—*The Iron Age*.

THE FRYER GARBAGE "DESTRUCTOR."—The disposal of city garbage is a constantly growing difficulty in large communities. The borough of Leeds, England, claims to have solved the perplexing problem by cremation. Journals of that section aver that the city has been able to dispose of street sweepings, etc., not only satisfactorily but profitably, by means of a "destructor," the work of an inventor named Fryer. The destructor consists of six cells or compartments, formed of ordinary brick, and lined with fire-bricks. It covers an area of 22 feet by 24 feet, and it is 12 feet in height. Each of the six cells is capable of destroying seven tons of refuse in twenty-four hours, and has a sloping furnace with hearth and fire-grate covered in by a reverberatory arch of fire-brick, with one opening for the admission of the refuse, another for the escape of gases into the flue, and a furnace frame and doors for the removal of the clinkers. At intervals of about two hours the clinkers are withdrawn through the furnace doors, and a further charge is shovelled in at the top of the furnace. The result is that everything is consumed, or converted into clinkers or fine ash. Some of the cells are provided with an opening for the introduction of infected bedding, diseased meat, etc. The cremation is carried on without being in any way a nuisance. No fuel is employed, and the heat of the furnace is used to produce steam to drive an engine working two mortar mills, which grind the clinkers, removed from the destructor and mixed with lime, into a strong mortar, which is readily sold at 5s. a ton. The destructor first built consumed 30,041 tons of rubbish in two and a half years. The cost of an establishment with one six-celled destructor, a carbonizer with eight cells, a boiler, a steam-engine, two mortar mills, cooler, building, chimney, etc., is about \$22,000. Only six men are required to attend to the whole process.

THE COST OF LONDON MUNICIPAL ENTERTAINMENTS.—Much has been said about corporation extravagance, and not without good reason. It certainly behoves the corporation of the first city in the world to bear its honors with dignified hospitality, but surely there is a limit even to banquets. This propensity for municipal banquets is traditional, as well as a present day hard matter of fact, and perhaps to precedent as much as anything we owe the present luxurious entertainments in the Guildhall. As an instance of what these entertainments cost, Mr. J. B. Firth, M.P., furnishes a few figures relative to a recent banquet and ball given by the corporation; we print them for the benefit of those who may be curious to know some of the various ways in which the rate-payers' money is expended. Here are a few of the items:—

Cleaning statues.....	£40	0	0
Banquet and refreshment.....	5,098	0	0
Wines.....	1,731	0	0
Superintendence of wine.....	124	15	0
Mineral waters.....	51	10	7
Menu cards and ball programmes.....	559	0	0
Banquet and ball tickets.....	344	17	2
Lithographic plans.....	65	12	0
Vocalists.....	233	0	0
Bands.....	314	0	0
Toast-master.....	27	0	0
Arranging and collecting plate.....	117	0	0
Wands.....	67	0	0
Gloves, perfumery, and hairbrushes.....	115	0	0
Calling carriages.....	16	16	0
Refreshments for committee.....	300	0	0
Gold casket for the Prince of Wales and distinguishing badges for committee.....	549	18	0

Where the rest of the £27,517. 5s. 10d. spent on this little entertainment went Mr. Firth does not tell us, but the above items are sufficient to show that banquets form no small item in the civic expenditure. But of course to a corporation that is wise enough to spend £11,000 in the erection of an obstruction in the Strand, argument against its excessive extravagance must seem as foolish as it has hitherto proved futile.—*British Architect*.

THE ALBANY CAPITOL.—In his annual address, Governor Cornell says, "The work on the new Capitol building has, under the liberal appropriations of the last legislature, made marked progress during the past season. Every effort has been made by the Commissioners to complete the apartments designed for the Senate and Executive Department, in anticipation of the meeting of the Legislature, as required by law; but unforeseen obstacles have prevented the full realization of this object. These sections of the edifice are, however, well advanced, and it is confidently expected that they will be fully completed within a very few weeks. The financial transactions of the Commissioners for the current year have been as follows:

There was on hand Jan. 1, 1880, an unexpended balance of previous appropriation.....	\$73,169.62
Chapter 73, Laws of 1880.....	100,000.00
Chapter 138, Laws of 1880.....	1,900,000.00
	\$1,673,169.62
Expended during the year 1880.....	1,251,989.02
Balance on hand.....	\$421,180.60

Nearly, if not quite, all of this amount will be required to pay balances which will become due on contracts when completed, and other expenditures not yet reported. A serious defect was recently discovered in the groined arch above the Assembly Chamber. A large stone in one of the ribs of the arch was found to have been fractured and completely severed. Notwithstanding a thorough investigation, the superintendent has been unable to make any satisfactory explanation of the cause. The broken stone has been removed, and it is hoped that no further trouble will occur. It will be well, however, for the Legislature to satisfy itself of the present safety of that portion of the building."

FIRE LOSSES IN THE UNITED STATES FOR FOUR YEARS.—The following table showing the fire losses by months for the past four years, in the United States and Canada (excepting December, 1880, whose record not being yet made up, must be estimated), is copied from the fire tables of the *Insurance Chronicle*:

	1880.	1879.	1878.	1877.
January.....	\$4,603,000	\$12,384,000	\$5,637,100	\$5,331,100
February.....	7,022,200	6,180,600	5,428,900	4,747,000
March.....	6,761,500	7,273,200	7,468,100	7,091,800
April.....	7,580,400	9,109,600	5,287,900	5,959,100
May.....	6,462,700	8,905,100	6,029,300	7,586,500
June.....	5,696,800	7,020,100	4,941,400	28,233,100
July.....	5,325,300	5,511,200	5,383,800	7,577,900
August.....	6,398,300	5,166,300	5,890,000	5,389,400
September.....	6,944,000	5,614,100	4,558,800	7,199,400
October.....	7,697,100	4,745,800	6,971,400	5,455,700
November.....	5,171,200	6,819,200	6,315,100	7,215,000
December.....	16,250,000	6,132,800	6,353,400	5,129,800
Total.....	\$76,513,100	\$84,862,700	\$70,266,400	\$97,526,800

SPONTANEOUS COMBUSTION.—A city paper says that Fire Marshal Sheldon ascribes the conflagration that occurred last month at the establishment of Hertz & Co., Nos. 313 to 323 East Twenty-second Street, to this lurking cause of destruction. He has addressed a communication to the new Board of Fire Underwriters upon the subject, in which he says that the fire originated on the fourth floor, which was used for the oiling, polishing and varnishing. For the oiling and polishing a grass was used, which, at the close of the day was supposed to be collected, taken down to the engine-house, and there consumed. But on the evidence of the watchman it appeared that it was sometimes left in barrels on the floor where it had been used; that he had on occasions taken it from these barrels, spread it out upon the floor, and once spread it upon the sidewalk, where it ignited. Thus is declared another source of danger to the fire underwriter, and also shows that though the regulations of an establishment may embrace all the elements of care, when their enforcement is left to the caprice of an irresponsible boy, they are not of a protective character.—*The Spectator*.

* Estimated.

BUILDING INTELLIGENCE.

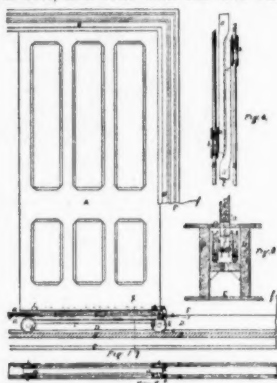
[Reported for The American Architect and Building News].

[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.]

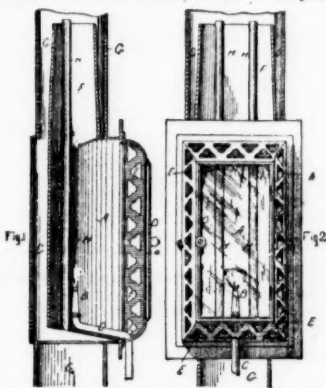
235,067. SLIDING DOOR.—(No model).—David K. Miller, Knoxville, (Pittsburg P. O.) Penn. This invention consists in a carriage having a rail above the floor on which the door is secured, and a rail parallel with the first below the floor, to which the wheels are secured, so as to run on a track below the floor, the upper and lower rails of the carriage-frame being connected at one end only by a bow or cross-bar, which passes through a slot or opening in the floor, which slot lies wholly within the pocket, thus affording a smooth floor through the doorway without tracks or cuts, and at the same time securing all the advantages of a bottom mounting. A represents a sliding door, and B the casing. The floor is shown at C, the joist at D, and ceiling at E. The door, A, is mounted and operated as follows: A frame, *a a'*, is formed by bending a bar of metal into *U* form. For this purpose a *T*-bar is best, and bent with the web outward, as



shown, the web, *c'*, of the lower bar, *a'*, projecting downward, and the web, *c*, of the upper bar, *a*, projecting upward. Such form of bar combines strength, stiffness, and lightness, while the web furnishes convenient means of attachment. This frame is arranged, as in Fig. 1, with one arm, *a*, a little above and parallel with the floor, and the other arm, *a'*, below the floor and between the joists, D, Fig. 3. The connecting bow or *U*, *e*, of the frame, passes through a slot, *e'*, cut in the floor in line with the door, but back of it, and in the pocket, F, between the walls. It is thus entirely covered and out of sight. The length of this slot is, of course, equal to the distance which it is desired to slide the door. The space between the lower flat face of arm *a* and the upper surface of the floor may be varied as desired; but in any case it is best to adjust it so as to run clear of carpets, thresholds, or other finishing. In fastening the door, A, to this upper bar a groove is plowed in the bottom edge of the door for receiving the web, *c*, as in Fig. 3. Bolts may then be passed through the door and web, as in Fig. 1; or screws may be passed through the flange or flat face of the bar into the edge of the door. The under bar, *a'*, of the frame is supported on rollers, *b b*, which may be journaled directly to the under web, *c'*, or to brackets, *b'*, which are riveted to and extend a little way down from the web. The purpose of this is to permit of the use of larger wheels than would otherwise be practicable. It is best to use four wheels, *b*, and arrange them on opposite sides of the bar, as in Fig. 2. Two or three may be used, however, the usual rabbeted guide in the upper door-casing serving to keep the door in proper position. In ordinary cases it is best to extend the frame, *a a'*, of the door-carriage about the width of the door, though either bar, *a* or *a'*, may be made longer or shorter, if preferred. In the case of wide and heavy doors the lower bar, *a'*, and its track are made longer than the width of the door to insure smooth and easy movement; and in case of double doors the front extension of bars *a a'* may be bent a little to one side, and the adjacent flanges along the lapping parts of the bars may be sheared off, as at *r*, Fig. 4. In such case, where the extended ends of the bars lap, it is well to use but one wheel at the front end of each bar and journal it on the outside of the bar, as also shown in Fig. 4. When it is desired to increase the strength or stiffness of the truck frame, *a a'*, without material increase in its height, it may be done by using *T*-blanks having a comparatively deeper web, *c c'*. The invention is not limited to the particular form of frame, *a a'*, or arrangement of wheels or tracks shown, but include frames having bars above and below the floor, connected at one end only through an opening in the pocket, and having tracks arranged below the floor, on which the frame moves. While the device has been described as carrying the door from below, yet substantially the same device may be employed and arranged in a similar manner for hanging the door from above.

235,217. VENTILATING APPARATUS.—James H. Doland, Malden, Mass. This invention relates more particularly to the ventilation of water-closets. It consists of the arrangement, within the room to be

ventilated, of a chambered box, heated by gas, and also constructed for the air of the room to pass into it, and being heated, thence to pass upward and out of the building at any desired point, in combination with independent flues, which at their lower ends open directly to the effluvia and vapors arising from the water-closet in a manner to receive them and conduct them to the outer air above, heated as they will be-



come by contact with the heated walls of the inner chamber through which the common air of the room passes, before they can escape into the room. A is a chambered box, and B a gas-burner. E are openings in the sides of the box, A, for the air of the room to pass into the chamber of the box, and to be thus heated; F is a passage leading from the upper end of the gas-chamber, A, and from thence, running upward, it opens into a passage, G. This passage, G, is at the back and sides of the gas-chamber, and one of its walls makes the back and side walls of the gas-burning chamber, A. This passage, G, below the gas-chamber, is in communication with the water-closet which it is desired to ventilate, and is so arranged as to secure the entrance of the effluvia and vapors from the water-closet into such passage before they can escape into the room, and above the gas-chamber, A, and the passage, F, it runs to the outside of the building at any desired point. H H are flues passing upward through the gas-chamber and passage, F, and opening at their lower ends into the back passage, G, below the gas-chamber, and at their upper ends into the passage, G, above the passage, F.

236,137. AUTOMATIC ELEVATOR GATE.—George Ackermann, Cincinnati, Ohio.

236,141. HEATING AND VENTILATING.—Wm. F. Beecher, Cincinnati, Ohio.

236,151. AUTOMATIC VALVE TO CHECK WASTE WATER.—Elliott C. Furney, St. Louis, Mo.

236,163. SCROLL SAW.—William Jones, Portland, Ind.

236,184. PNEUMATIC BRAKE FOR ELEVATORS, ETC.—John H. J. Schmidt, Cincinnati, Ohio.

236,189. COMBINED LATCH AND LOCK.—Edward Snyder and Israel Adams, Worcester, Mass.

236,199. BLOWER FOR OPEN STOVES AND GRATES.—Geo. Wellhouse, Akron, Ohio.

236,215. LEAD PENCIL.—Thomas B. De Forest, Birmingham, Conn.

236,226. NET FOR FIRE-ESCAPE PURPOSES.—William L. Hunt, Port Hope, Canada.

236,229. COMBINED LOCK AND REVERSIBLE LATCH.—Edwin A. Kimball.

236,232. SPRING-ROLLER.—J. Christopher Lake, Philadelphia, Penn.

236,239. CLAMP.—Edward L. Morris, Boston, Mass.

236,247. HEATING APPARATUS.—Eugene F. Osborne, St. Paul, Minn.

236,282. REFLECTOR FOR SPIRIT LEVELS.—Walter W. Vaughn, Stockton, Cal.

236,307. FILTER.—James A. Crocker, Boston, Mass.

236,311. WATER TANK REGULATOR.—Patrick W. Doherty, Boston, Mass.

236,315. ALARM BOLT.—Adam Egloff, Royer's Ford, Penn.

236,319. APPARATUS FOR MOISTENING THE AIR.—James G. Garland, Biddford, Me.

236,329. DOOR CHECK.—Edwin V. Heaford, Covington, Ky.

236,348. FIRE-ESCAPE.—Samuel T. Mickey, Mt. Airy, N. C.

236,351. SASH CORD FASTENER.—Thomas Morton, New Windsor, N. Y.

236,366. PAINT MIXING MACHINE.—Wm. M. Shoemaker, Philadelphia, Penn.

236,370. FIRE-PLACE.—James G. Smith, Alliance, Ohio.

236,384. FIRE-PROOF BUILDING.—Joseph H. Walker, Worcester, Mass.

236,396. COMPOSITE ROOF.—Cyrus M. Warren, Brookline, Mass.

236,393. AIR-VALVE FOR STEAM RADIATORS.—Waterman D. Bristol, Springfield, Mass.

SUMMARY OF THE WEEK.

Baltimore.

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

Dr. John T. Montmouir, three-st'y brick building on South Caroline St.

J. T. Lotz, addition and improvements to dwell., on Gilmore St., between Harlem and Edmondson Aves.

Geo. Muller, addition and improvement to dwell., 43 South Broadway.

There were 1496 permits for the erection of new buildings issued for the year 1880, being 34 more than for the previous year. The estimated value of the houses is much more than in 1879, when it amounted to \$1,671,335.

POST-OFFICE.—Mr. Hill, Supervising Architect, says the plans, specifications and estimates for the new Baltimore post-office will be ready this week.

GRAIN ELEVATOR.—The committee appointed at a recent meeting of the grain merchants of the Corn and Flour Exchange to secure a suitable location for an elevator for water-borne grain, have received about twenty offers of sites. The bids will be opened in a few days. They desire a lot 180' to 200' front and 200' deep.

STORES.—Mr. S. S. Clayton is about to erect two new stores, with dwellings above, on Gay St., near Exeter St., to be 38' x 100', four stories high of pressed brick with stone trimmings; cost, \$10,000. Mr. Chas. L. Corson is the architect.

HOUSE.—Messrs. J. A. & W. T. Wilson have completed plans for a residence for Mr. F. M. Colston, to be built on the west side of St. Paul St., near Chase St. It is to be 24' wide and 78'6" deep. The front is of pressed brick, with all openings emphasized by a free use of New Brunswick red sandstone. The roof is of red tile, and contains a large window of five lights, crowned by a pediment elaborately carved in wood. The interior is largely finished in cherry. Geo. A. Blake, builder.

Boston.

BUILDING PERMITS.—During the year 1880, 803 permits were issued from City Hall. 494 of these were for wooden and 309 for brick buildings. Only one permit has been issued so far this year.

BUILDING IN DECEMBER.—There were issued at the City Hall, in December, permits for 20 wooden and 6 brick buildings. The wooden included 3 dwellings, 3 manufacturing structures, and a grain elevator. The latter, for the Hoosac Tunnel Dock and Elevator Company, will be 75' x 325' in ground dimensions, and will be on Water St., Charlestown. The brick structures include a residence, Commonwealth Ave., a warehouse for iron on Oliver St., near Purchase St., and a lumber dry-house on East Dedham St., near Albany St. There have been permits issued the past year for 494 wooden buildings, against 575 in 1879; 309 brick, against 203; and 2100 repairs, against 2380. The gain in brick more than compensates for the loss in wood and repairs, and the value of real estate improvements for the year will probably foot up nearly 25 per cent more than in 1879. There are only three or four lots left unimproved in the burnt district, but there is a probability of further extensive mercantile building operations on South St., and in that section of the city, the coming season. Additional improvements on the Back Bay are also planned, and there is a prospect of considerable building of low and medium renting houses, in the outlying wards.—*Commercial Bulletin*.

Brooklyn.

BUILDING PERMITS.—Between Troy and Albany Aves., two-st'y frame stable and car house, 110' x 214'; owners, Broadway R. R. Co., 21 Broadway; builder, F. Brady.

Cook St., Nos. 192 and 194, two-st'y frame storage shed, 50' x 40'; gravel road; owner, H. Shepherd; architect, T. Davies; builders, Iron Clad Manufacturing Co.

Gates Ave., n. s. 20' e Marcy Ave., three-st'y brick store and dwell., 22' x 45'; owner, John Carberry, cor. Gates and Marcy Aves.; architect, S. W. Osnum.

Park Ave., s. s. 56' w Broadway, two-st'y frame dwell., 25' x 40'; cost, \$2,200; owner and builder, George Lofler, 138 Floyd St.

Chicago.

BUILDING DURING 1880.—Building operations have been a little restricted, owing to the rise in prices of material after the yearly rental rates were fixed. However, the totals show more than last year. Up to last May there were houses and stores to let in every part of the city beyond the business centres, and in all the suburbs. The marked increase in demand which prevailed at the renting season, and has been since constantly growing, soon absorbed all the vacant room, so that now and ever since September there has been no adequate supply. Builders were taken by surprise, and immediately a number of large blocks were erected, the largest one being the Crilly & Blair improvement on West Madison and Halsted Sts. The Madison St. front was completed in a marvelously short time, and both the stores and flats are all rented. The Halsted St. buildings are nearly finished, and tenants are waiting for them. This is only a sample of many of less importance. During the year the building permits numbered 4,000—about 33 per cent more than in 1879, and the frontage covered was 45,000 feet, over eight miles, and the cost stated at the office, which is generally one-fifth below actual expenditures, footed up between \$9,000,000 and \$10,000,000.—*Real Estate and Building Journal*.

Cincinnati.

REVIEW OF THE PAST MONTH.—During the month of December the following building permits have been issued:—

W. B. Smith, one-st'y frame.....	\$ 3,000
T. T. Haydock, carriage factory.....	16,000
P. H. McCrory, 3 two-st'y frames.....	5,500
Samuel C. Tatum & Co., four-st'y brick.....	5,000
Levy Jones, two-st'y brick.....	3,000
Pat. Dorsey, two-st'y brick.....	1,400
Nine permits for repairs.....	7,800

Total permits for the month, 16; total cost...\$41,700

FOR THE YEAR 1880 the total number of permits issued were 636, and the total cost was \$1,521,700. These figures are taken from the records kept by the Board of Public Works, but by no means do they represent the real amount of building done in this city during the past year. It would perhaps be safe to say that one-fourth should be added to the number of permits taken out, and 33 per cent to the cost of building, which would make the permits about 800, and the cost about \$2,000,000.

The year 1879 was figured on the same basis as is

(Continued on the next page.)

Publishers' Department.

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FAIR HAVEN MARBLE & MARBLEIZED SLATE COMPANY (Fair Haven, Vt.), Marble and Marbleized Slate. Page viii.
CLARK, BUNNETT & CO. (New York), Steel and Wood Shutters. Page xii.

WANTED.

COMMUNICATIONS from parties in towns of the West and Northwest, having a population of 10,000 and over, who keep themselves posted on building operations in their respective towns. Address stating present occupation, "Opportunity," in care of the Editors of the AMERICAN ARCHITECT, 211 Tremont St., Boston, Mass.

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BUILDING INTELLIGENCE.

the past year, and the total building operations showed \$2,300,000.

Louisville, Ky.

BUILDING PERMITS. — Since last report, owing to the intensely cold weather, building operations have been nearly entirely suspended. Only a few permits have been issued since our last report, all of minor importance.

HOUSES. — C. S. Mergell, architect, is preparing drawings for a fine house for Mr. Dexter Belknap. It is to be of pressed brick and variegated stone, and will cost about \$15,000.

WAREHOUSE. — Mr. W. H. Redin, architect, is preparing plans for Mr. Julius Barkhouse for a large warehouse.

FACTORY. — Chas. Meyer, architect, will shortly rebuild the factory of Messrs. Fabel & Sons, recently burned.

GRAIN ELEVATOR. — The erection of a large grain elevator is being discussed, with good prospects of being carried into execution at an early day.

STATEMENT, showing number buildings erected and altered in the city in 1880: —

Month.	Brick.	Frame.	Total.	Value.
January.....	13	31	44	\$65,334
February.....	16	23	39	53,770
March.....	16	29	45	65,455
April.....	16	33	49	72,835
May.....	21	34	55	103,912
June.....	25	27	52	93,990
July.....	17	24	41	48,980
August.....	29	25	54	172,877
September.....	17	35	52	94,682
October.....	8	30	38	37,415
November.....	4	17	21	16,142
December.....	4	9	13	13,460
Total.....	186	317	503	\$828,852
Value of permits in 1879.....				650,288
Increase 1880.....				\$178,564

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Number permits 1879.....	518
" " 1880.....	503
Decrease 1880.....	15
Value of alterations, 1879.....	\$158,357
" " 1880.....	157,517
Decrease, 1880.....	\$840
Number permits issued for alterations, 1879.....	465
" " 1880.....	365
Decrease in 1880.....	100
Total value of improvements, 1880.....	\$980,369
" " 1879.....	808,645
Increase, 1880.....	\$177,724

New York.

BUILDING PERMITS. — Park Ave., cor. Sixty-Third St. six-st'y brick and limestone apartment house, 75' x 96'; cost, \$100,000; owner, Thos. Kilpatrick, 152 East Sixtieth St.; architect, C. W. Romeyn.

Thirtieth Ave., corner Twentieth St., three-st'y brick offices, 22' x 30'; cost, \$2,800; owner, Cheney Towing Line Co., foot Little Twelfth St., North River; architects, Wm. E. Bloodgood and J. C. Doremus.

Jackson St., Nos. 18 and 20, five-st'y brick tenements, 39' 3" x 55', tin roof, iron cornice; cost, \$16,000; owners, Schoneberger & Licht, on premises; architect, Wm. Jose.

Thirtieth St., Nos. 14 and 16, w. three-st'y brick stable and dwell., 45' x 88'; cost, \$20,000; owners, W. & J. Sloane, 647 Broadway; architect, H. T. Sloane; builders, N. & H. Andrus and A. C. Hoe & Co.

Bayard St., No. 11, four-st'y brick tenement, 29' x 36'; cost, \$9,000; owner, Wm. K. Thorne, 100 Broadway; architect, Geo. W. Da Cunha.

Division St., Nos. 58 and 58 1/2, four-st'y brick tenement, 25' x 46'; cost, \$10,000; owner, Wm. K. Thorne, 100 Broadway; architect, Geo. W. Da Cunha.

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BUILDING INTELLIGENCE.

3 three-st'y Connecticut brown stone dwells., 16' 8" x 45'; cost, each \$6,500; owner, Catharine McDonald, 104 East One Hundred and Tenth St.; architect, Matthew Coogan.

Fifty-Fourth St., ss, 175' w Sixth Ave., 4 two-st'y brick stables and dwells., 25' x 90'; cost, each \$6,000; owner, Ezekiel J. Donnell, 44 West Fifty-Eighth St.; builders, L. N. Crow and McGuire & Sloan.

Elizabeth St., w s, 100' s Canal St., 2 four-st'y brick and Tuckahoe marble police station-house, etc., 50' x 62' and 21' extension, rear building two stories high; cost, \$44,000; owner, Police Department, New York; architect, N. D. Bush.

Fourth Ave., corner Sixty-Fourth St., 6 four-st'y brick and brown stone dwells., 20' 10" x 60', and two-st'y extension, 10' x 13'; cost, each \$18,000; owners, architects and builders, Wm. P. and A. M. Parsons, Grand Union Hotel, Forty-Second St. and Fourth Ave.

ALTERATIONS. — Broadway, Nos. 455 and 457, portion of side wall strengthened, elevator hatch enlarged and boiler power increased; cost, about \$5,000; owner, Jas. A. Hamilton, 80 Franklin St. and 132 Madison Ave; architect, Joseph Edwards; builders, Jno. Allen and Jas. Hood.

East Houston St., No. 318, raised one story, flat tin roof and iron cornice, stairway altered, and front alterations; cost, \$2,000; owner, Mayer Schutz, 359 Broadway; architect, Henry Fernbach.

NEW BUILDINGS are still only talked about, and architects are not disposed to speak of the coming year's work before preliminaries are settled. We can only report that should there be no extraordinary rise in the price of building materials, and workmen content themselves with fair wages, this year's operations will exceed those of any preceding year. Buildings now going up have been greatly retarded by the severe weather. The United Bank building and the French Trans-Atlantic Steamship Company's building are built to the top stories.

CHURCH. — The vestry of the Church of the Holy Spirit, the Rev. Dr. Guilbert, rector, has secured the northeast corner of Madison Ave. and Sixty-sixth St., and will at once begin to build a new church there. (Continued on next page.)