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CONTENTS.

WE took notice some time ago of the report of the Supervising Architect for last year, as it was made known through the papers. The printed report has now been issued, in its regular form of a slender octavo. It is as concise as it is its habit to be, containing memoranda of the condition and progress of the thirty buildings which have been in construction or under alteration in the Supervising Architect's office during the year; a statement of the appropriations and expenditures made thus far for all buildings now under construction; a list of contracts outstanding or completed during the year; and the usual tabular statement of the cost of construction up to date, of all the buildings in charge of the Treasury Department. These last now number one hundred and fifty-five custom-houses, sub-treasuries, post-offices, court-houses, mints, and other buildings, ranging in value from the New York Post Office, which has cost for site and construction, $8,984,706, and the Treasury Department at Washington, which has cost $6,618,304, to the two seal-fisheries in Alaska which together have cost $6,099. We recounted before (*American Architect*, No. 99) the chief recommendations and some of the facts of the report. It contains photographs of perspective designs for four new buildings, — the combined custom-houses and post-offices at Albany, N.Y., Austin, Tex., and Utica, N.Y., and the court-house and post-office at Harrisburgh, Penn., — as well as a drawing showing some slight further emendations of the Chicago Post Office, which, as we are glad to infer from the report, must now, after all its vicissitudes, be fairly under roof. Mr. Hill's designs show a marked divergence from the Gothic work of his predecessor, Mr. Potter, — as Mr. Potter's did from those of his predecessor, Mr. Mullett, — being mostly in a *quasi*-Italian style, but treated with a good deal of freedom, and generally with breadth and massiveness that give them a dignity becoming their office, of which the designs for the buildings at Austin and Utica are good examples. It is rather to be regretted that it is not the habit of the Supervising Architects to publish plans of the buildings with their outward illustrations. It is impossible to appreciate the merit of an exterior without seeing the plan from which it is deduced; and if the similarity of requirements in different custom-houses and post-offices compels a certain monotony of planning, it is the more instructive to see how this is made to consist with variations in the exterior treatment. A concise description of the arrangement and construction of the new buildings, when they first make their appearance, would also, we think, add materially to the interest and value of the reports.

WE have received a printed report of the important case of Hunt *vs.* Stevens, to which we have lately alluded (*American Architect*, No. 109, Jan. 26, 1878). The report gives only the pleas and arguments of counsel, the charge of the judge, and the verdict: it does not give, what would have been of especial interest, an account of the testimony of the experts called as witnesses; so that it does not add materially to the information about the case before given in the papers. The turning-point of the case was the question whether the employment of a special superintendent by the client — a builder whom Mr. Stevens selected and paid, apparently of his own motion, as building superintendent and clerk of the works — should be held to have relieved the architect of responsibility for the excellence of the work; though it had been paid for on his certificates. There was not in the agreement made by Mr. Hunt with Mr. Stevens any such disclaimer of responsibility as one would have thought prudent in such a case, Mr. Hunt's expression being only that he waived a portion of his fees in consideration of the employment by Mr. Stevens of some competent person as superintendent and clerk of the works, thereby saving him time and trouble, while he still agreed himself to superintend the building as architect. It is likely that a client as wary and exacting as Mr. Stevens showed himself to be might have demurred at releasing his architect from responsibility, though he showed clearly enough that he preferred the mechanical supervision of a builder to that of the architect by his arrangement of deducting forty per cent — a large allowance — from his architect's commission, and paying it for Mr. Paul's services. However, the judge charged in effect that to thus deduct from the architect's commission for the purpose of paying a superintendent was really to relieve the architect from accountability for mechanical defects, in view of the statement in the memorandum that the abatement was in consideration of the time and trouble to be saved him.

THE charge of the judge on the matter of superintendence is of some importance, for it recognizes a distinction between kinds of superintendence which are and should be known to be different, though the distinction is very commonly ignored. The words are: —

> "While the contract devolves upon the plaintiff the duty of exercising, as architect, a general superintendence over the construction of the building, to the extent of seeing that his plans and specifications are substantially adopted and followed, and that no essential deviation therefrom is permitted, it is to be construed as exonerating and exempting him from responsibility for mere defects in material or workmanship, and for want of mechanical skill on the part of the various artisans, mechanics, and laborers employed in the construction of the building, as well as from that close observation and supervision which would be requisite for the prompt detection of such defects."

There are, in fact, two different kinds of superintendence; and the difference, to which we have taken occasion more than once to call attention, is indicated as clearly as need be in these words of the charge. It is common for clients to confound them, and so far as they are performed in ordinary practice, it is usually expected that they will both be performed by the architect. Nevertheless it is quite desirable that they should be discriminated, and it would even be an advantage if distinct rates of compensation were assigned to them: because, in the first place, one of them cannot be properly performed except by an architect, while the other may by a builder; because, also, many clients who are willing to pay an architect for the first would prefer, like Mr. Stevens, to assume the second; and because the architect's regular compensation is not sufficient in most cases to cover the second if it is as thoroughly performed as many clients expect, and as it may be. The appointment of clerks of the works is the best device perhaps that has been adopted thus far to meet this emergency, and may be recommended as a valuable safeguard either to clients who fear that they shall not get as much attention as they expect from their architects, or to architects who have exacting clients to deal with; it being remembered that the architect retains the responsibility if the superintendent or clerk is his servant, and is relieved from it if he is the servant of the client.

A QUESTION at law which has just been decided in France, between the heirs of the famous painter Ingres and one of his patrons, touches an important issue of the rights of painters and their sitters, and perhaps one that may be made to

cover — as it certainly would be well if it could — some privileges and abuses of photographers. One of the most celebrated among the hundreds of portraits that Ingres painted is the beautiful portrait of Mme. Moitissier. He spent much labor over it, making a number of sketches and studies for it. These sketches he kept, as artists usually do. Not long ago the person into whose possession one of them had come, proposing to sell it, offered it first to M. Moitissier for about three thousand francs. M. Moitissier refused to pay this price, and demanded that the picture should be either given up to him or destroyed, claiming that neither the heirs nor the artist himself had a right to make use of the likeness of a sitter. The question was carried into court, and judgment was given that the sketches and studies made by an artist for a portrait were his property, and therefore should remain in possession of his heirs; but subject to the especial restriction that they could neither be sold nor exhibited without the permission of their subject or the persons interested in his behalf. This decision may be fairly considered as having a bearing by analogy, though a somewhat remote and indirect one, on the rule of practice which has never, so far as we know, been duly considered by the courts, though it is sufficiently settled by general usage, that the plans and drawings which an architect prepares in directing the construction of a building shall be his property rather than his client's.

It is not easy, from any thing we have yet seen, to infer the exact reason why the South-street Bridge in Philadelphia gave way last week. The piling on which the fallen piers rested was thought to be insecure, and the work of shoring it up was going on. But the bridge had been closed for travel only one day, which betokens a pretty narrow escape for those who were in the habit of using it. The accounts of quicksands and infirm piling are curiously at variance with theories that are broached of piers sliding out sideways and breaking off the arches like pipe-stems. The fact remains, however, that a bridge of solid, or apparently solid, masonry, which had only been in use for two or three years, and which ought to have stood for a century, suddenly went all to pieces, some four hundred feet of it falling bodily into the swamp it crossed. It is expected that it will cost $300,000 to repair it; but it might be worth while to make sure first how solid the construction is of the part which remains standing. The mayor, who was one of the commission that built the bridge, now proposes to replace the fallen part with a solid causeway, and calls attention to the fact that the Market-street Bridge, which was built just before the Centennial, its predecessor having burned, and which is crossed by the Pennsylvania Railroad, cannot be expected to last more than another year. He advises that this bridge be rebuilt in solid stone, and a hundred feet wide, — advice that we may hope will be followed, at least as far as material is concerned. Philadelphia has had the handsomest bridges in the country: it would become her to have the best.

The burning of the Excelsior Building in New York, which destroyed two churches with it, is one more warning against the unsuitability of our present methods of construction for our present forms of building. The Excelsior Building took fire in the basement, no matter how, and being provided with an open elevator-well, the flames were carried directly up to the seventh story, where they spread out under the roof. In a short time the bystanders saw a singular sight: the basement and the upper stories were all ablaze, while the second, third, fourth, and fifth stories were dark. The truth is, we have developed our buildings into new forms, while our construction has lagged, and is far too primitive for our present needs. It was comparatively safe to build small houses and shops three stories high, with wooden stairs, floors, and partitions, and open hoistways; but when it comes to putting up the huge structures of New York seven or eight stories high in the same way, we find that such a construction is outgrown and is fatal.

The Massachusetts strikes continue, and in some places serious disorders have again been threatened; but on the whole the position of the Crispins seems weaker, and the manufacturers are getting more independent by gradually filling their shops with outsiders. In Lynn, which has been the headquarters of the movement, there is comparative quiet, though the men, as represented by the board of arbitration of the Crispins, persist in their refusal to close the strike until the manufacturers discharge the new men. The manufacturers are willing to accept arbitration in the matter of wages, but reject it at the hands of the Crispin order, which they will not recognize, and positively refuse to dismiss their new hands; and so the deadlock continues, but with increasing advantage on the part of the manufacturers, who have now, it is said, some four hundred non-Crispins at work. The last accounts indicate that in London the masons, having spent something like thirty thousand pounds in a vain struggle, are growing disheartened, and the strike is giving way. Meanwhile there is an effort in Massachusetts by employers of women, on behalf of their operatives, and in direct opposition to all the aims of the trades-unions, to induce the State legislature to confer on women the right of making contracts for labor, and to repeal the law which *restricts* their hours of work to ten hours a day.

The question what shall become of the Castellani Collection is still undetermined. The hope of preserving it to this country grows less and less, as the impossibility of raising the necessary $150,000 appears clearer, but the trustees of the Metropolitan Museum of Art in New York have not given up their effort to secure its pottery. They think that it may still be possible to raise the sixty thousand dollars for which they hope to buy this part of the collection, although as yet only twenty thousand have been pledged. It is not likely that we shall soon again have the opportunity to secure so considerable a collection of pottery, or one so valuable; and it would be a decided check to the Museum if this should be taken away. United with the Di Cesnola collection, it would give at least the beginning and a broad foundation for a very ample and representative collection of pottery, one to which Americans would bring their additions from time to time with pride. Collections, like fortunes, grow rapidly after they reach a considerable size, and such an one as this would be a shining mark for patriotic contributions. The last word, however, received just as we go to press, is that the trustees have decided that Signor Castellani's price is too high, and that the collection is already packed to go to Paris.

It is perhaps not so much to be regretted if the negotiations for supplying New York with an obelisk have failed, considering the experience of the Londoners, who seem to find it even more difficult to make room for theirs than to bring it across the seas. The question of its position appears as far as ever from a settlement, and the last movement of Mr. Dixon has been to ask permission from the Metropolitan Board of Works to set it up at the top of the Adelphi steps, between Charing Cross and Waterloo bridges. The arrival at the London docks of the Cleopatra, as she is called, made quite a stir. Conspicuously painted, in red above the water-line, and yellow below, and with two red houses on deck, she attracted a great crowd as she was towed into the docks. Afterwards she was towed up and moored above Westminster Bridge, to give the public an opportunity of visiting her.

THE LABOR TROUBLES. — III.

Communism.

In our last article on labor we called attention to the tendency of working-men to form themselves into a class, and to use their collective force for the advancement of class interests over general interests; to the disturbing and even dangerous influence this tendency was likely to have in modern society. The most serious aspect of the case, however, we passed over for the time, and that is its communistic aspect. This, it seems to us, is so serious that neither politicians nor employers of labor are justified in overlooking it; so serious that it may, if it continues to grow as it has during the last ten years, at any time lead either to legislation of a very revolutionary kind, or to violent social disorders. The things that give weight to the movements of the working-men, and freight them with danger to society, are their coherence, and the fact that they almost all — whatever the forms in

which they show themselves, and wherever they are brought forward — involve attacks upon the right of possession, upon that security of property which is, after the security of life, the chief factor in all the progress of civilization, the chief bond of social order: in other words, they all mean communism. They are attempts either to compel an allowance from private means without giving what is commonly considered an equivalent for it, that is, to enforce a rate of wages above what the natural working of society fixes: or to extract a living from the public treasury, by ordering public works for the sake of making work, and fixing an arbitrary standard of wages; or by demanding actual subsidies from government, bonuses, government loans, and distribution of public lands; by the abolition of the poll-tax without restriction of suffrage, that is, by claiming the right to spend the public revenue without contributing to it: or else it is by yet more aggressive measures, looking to actual spoliation or tyranny, by the dispossession, as proposed by the working-men's convention in San Francisco, of land-owners who have acquired more than they think proper, or by the plunder of corporations, or the abolition of contracts. Even the most moderate of these things are to be accomplished, not by the ordinary means which work social reforms, by discussion, negotiation, and the growth of public opinion, but by *force majeure*, by legislation for class interests, by the banishment of those who interfere with them, — the expulsion of the Chinese, — by taking away the right to labor altogether from those who do not support these movements; by striking and intimidation.

We are not prepared to believe that the majority of working-men accept all these aims as their own, yet they support the trades-unions that pursue them; nor that the trades-unions themselves will give their indorsement to all the means by which they are pursued, yet the means are used in their name, by their members, and with no real resistance from them. Even the extremes of violence to which the labor troubles have from time to time given rise, or the utmost pretensions of the agitators whose business it is to incite the working class to mischief, have never met with any adequate disclaimer, much less with any real resistance, from those in whose name they are urged and executed. Men in the heat of an eager struggle are seldom scrupulous with regard either to means or allies. It was in the name of the working-men of San Francisco that attempts were made to burn the Chinese quarter; and it was at the meetings of the same men apparently who have just framed their platform demanding the abolition of Chinese labor, and the sequestration of the property of land-owners, that Kearney proposed to lead his band of hoodlums to the City Hall, hang the government attorney, burn the laws, and distribute the property of the Pacific Railroad. The worst riots that have occurred in the country since the draft-riots in New York — which were themselves, if not instigated, at least inflamed, by class-feeling — were the result of the strike of the most respectable trades-union in the United States, the Brotherhood of Locomotive Engineers.

It is this recklessness of means, and this readiness to alliance with the criminal classes, that is the worst and the most threatening feature of the labor movement. It is perhaps not strange, when it is the doctrine of working-men that legislation ought to secure them the hours and wages they wish, and work to do whether it is needed or not, or aid and support when work is slack, when they are taught to think themselves entitled to a share in the profits of capital not of their own saving, — it is not strange that they should grow to depend more and more on the state as their savior from the trouble of getting a living, and the public as a community from which they are warranted in getting as much as they can, and for as little as they can give in return; that the line of demarcation between the working-man and the tramp should be so easily passed. The loss of the old gradations among workmen, the efforts of the trades-unions to level all down to one grade which necessarily approximates to the lowest, and the consequent facility with which men pass and repass between the conditions of workmen and vagrants, — all these tend to obliterate the wholesome distinction between the industrial and the idle classes of society. The aggressive propositions to which the political leaders of working-men have accustomed them to listen are of a kind to invite the support of the worst members of any population; and these, wherever they are at hand, gather round them by a sure predatory instinct, ready for any disorders, and delighting in opportunity for violence. That neither leaders nor followers are likely to stick at any allies, or any means, when it comes to a downright struggle, is clear enough to any one who reads the lesson of the last few months.

Nevertheless, before we set apart the working-men and their ignoble allies for too exclusive a condemnation on the ground of their tendency to communism, it is worth while in justice to them to remember some influences which, though they certainly do not excuse their measures, do encourage the tendency. The actual spirit of communism, veiled under various aspects, is a more prevailing thing than we often give ourselves time to consider. There are many conspicuous persons and even classes who set themselves in the true spirit of the trades-unionist to extort their living from the world with the least possible return of service to it. It is natural that the working-man should take his cue from those whose success is visible to him in the things in which he can best distinguish it, — in wealth and social or political influence. The very avocations of the men who are to him the nearest examples, the contractors for whom he works, make their success turn more on the cleverness with which they take advantage of the condition of the markets than on rendering a good return in work for their profits. He sees the greater part of the world he looks at engaged not so much in sober work as in an aleatory scramble, for wealth which, if it is secured, comes out of other people. The successful speculator is to him an example of a man whose success is in turning to his advantage the changes in his fellows' affairs, rendering absolutely no service to the world, but getting his part of its goods by mere cleverness of contrivance, and therefore taking what he gets from other men, or from the community, without an equivalent. He sees the successful politician neglecting the cares of good government to consolidate his party, and secure his living or his spoils. Both these are to him types of a kind of success which he can admire, and which is a mere tribute exacted from society. If he lives in a country where there is a hereditary aristocracy, he sees these, to him the most enviable of men, living on properties and privileges whose reasonable descent he cannot trace, and rendering no return which he can estimate; either living aloof in a luxurious privacy, or taking part in the world only to rule, which he, like his betters, regards as a privilege and not a service. We need not wonder greatly if he learns instinctively from the speculator to wring his prosperity from such chances to take advantage of his fellows as events put within his reach, or from the politician to give his energy to the ascendancy of his party rather than to his work, or from the nobleman to think that the world owes him support, or from all three to make it his ambition to live upon the world and not to work in it. The truth is that there is the essence of communism in the belief that the world owes anybody a living, or in the purpose to wrest a living from it without making any return; and it is the same thing in spirit whether it is held by a tramp or a footpad, by a workman or a granger, by a Wall-street speculator or a Prussian Junker, a ward-room politician or a king. With so many shining examples before him, we cannot wonder that the workman, who has no one to instruct him that the security of property is the foundation on which the fabric of civilization is built, should be tempted to rest his prosperity on the law of might, and contemn the rights of other people.

At any rate there are many things to remind us how slight, on the whole, the barriers are that defend modern society from anarchy. If any cause should unite, not one brotherhood or one trades-union, but the working class in the United States, in such a movement as brought on the railroad riots of last summer, it is hard to say where we should end. There is no sign of such a movement, but we cannot say that it is impossible. Society exists by the poise of a great many nicely balanced forces, constructive and destructive. Though it may not be immediately endangered by those we have been discussing, it is well to have our eyes open to the elements of instability that exist. It is not much, perhaps, that architects can do; but it becomes them, since they continually have to do with workmen, to keep some watch on them, to understand as well as they can their aims and feelings, and to be awake to what good influences it may be in their own power to favor.

PAPERS ON PERSPECTIVE.

IV.—THE DIVISION OF LINES BY THE METHOD OF TRIANGLES.

The third paper first set forth the convenience, in making a perspective drawing, of putting into perspective the plan of the object to be drawn, and of sinking this plan so far below the representation of the object as to get it quite free from the picture. Plate III. affords further illustration of the use of the perspective plan. The plan of the gate-house on the left is indeed below the picture, having in fact been drawn on another piece of paper, and removed, as suggested in a previous paragraph (47). But the plan of the one in the distance on the right is given, and it serves to determine all the principal horizontal dimensions. The plan of the principal building, the barn in the valley, is drawn above it, instead of below, as is sometimes most convenient, especially in high buildings, in the upper parts of which it is of advantage to have the perspective plan near at hand. It is often a convenience, also, to make several plans, set one above another, taken at different levels. In the plate, for example, we have first the plan of the walls, to determine the position of the doors and windows, and the apparent depth of the jambs, and then just above it the plan of the eaves, showing their projection, and the position of the brackets beneath them. As only the front part of the building is seen, only the front part of the plan needs to be drawn. In putting in the eaves, advantage is taken of the "vanishing point of 45°," V_2, to make them equally wide on each side.

In this plate the slope of the roofs and gables of this building, as well as of the smaller one with a hipped roof beyond it, is indicated by the same letters as in the previous plates, and their vanishing points accordingly by V^N, $V^{N'}$, etc., as before. The gables of the little gate-houses are so steep that their vanishing points are quite out of reach; and these gables are, in fact, drawn by the method of diagonals, as described in the previous paper (54). The slope of the steps is given by V^{st} and $V^{st'}$, and the trace of the inclined planes of the bank by T L M^I and T L $M^{I'}$. Their position shows that the banks are a little steeper than the roof of the barn. The diagonal braces of the fence have nearly the same slope as the barn shed, converging to points just below V^N and just above $V^{N'}$.

In this plate the centre, C, is again quite out of the middle of the picture. The station-point, S, the proper position of the eye, is about six inches in front of C.

The previous paper then took up the first of the two methods by which a line given in perspective may be divided up in any given proportion. It was shown that this, though called the Method of Diagonals, finally leads to the division of such a line by means of a triangle, one side of which is formed by the line to be divided, and one side by an auxiliary line, drawn parallel to the plane of the picture in any convenient direction and divided in the given proportion. The points of division are transferred from this auxiliary line first to the third side of the triangle, by lines parallel to the perspective line, and directed to its vanishing point; and then to the perspective line by lines actually parallel to the auxiliary.

69. Both these steps are obvious and simple applications of the proposition that lines drawn parallel to one side of a triangle divide the other two sides proportionally. But it does not yet appear what is the real direction of this third side of the triangle, nor in what plane it really lies; that is to say, the vanishing point of this line and the vanishing trace of this plane are not yet determined.

70. The other method of dividing perspective lines, called, *par excellence*, the Method of Triangles, is a more direct application of the same principle. The auxiliary line, as before, is drawn parallel to the plane of the picture; but the points by which it is divided are now transferred directly to the perspective line by lines drawn parallel to the third side of the triangle. Plate III. is devoted to the illustration of this method. Fig. 7, 1 and 2, shows the difference between this method and the preceding. In each of the triangles here shown, the base is divided proportionally to the parts set off on the left-hand side. But in the upper ones the division is effected by the Method of Diagonals, as in Fig. 3, 5; in the lower ones the same result is reached, more directly and simply, by the Method of Triangles.

71. This application of the principle in question, however, though more direct and simple, is in one respect less easy of adaptation to lines given in perspective. For the two systems of parallel lines, employed in the Method of Diagonals, may be drawn without difficulty, the first having the same vanishing point as the line to be divided, and the second being actually parallel to the auxiliary line, since that line is parallel to the picture. But in the Method of Triangles the lines by which the points are transferred are parallel to the third side of the triangle, whose vanishing point is not known. It is accordingly necessary first to find the vanishing point of this line.

72. This may be done at once, when, as in the plan of the eaves, at the top of the plate, the plane in which the auxiliary triangle lies is known; that is to say, when its trace or horizon has been already ascertained. The auxiliary line here lies in the horizontal plane, and the given line lies in the same plane; the whole triangle is accordingly in the horizontal plane, and all its lines have their vanishing points in the Horizon, — the given line at V L, the auxiliary line at an infinite distance, and the third side of the triangle at V_1. This point is ascertained simply by prolonging this side until it reaches the Horizon. If now it is desired to find the position of the ten brackets that support the eaves, it is easy to lay off on this auxiliary line nine equal divisions, and to complete the triangle: by drawing lines parallel to the third side, the distances set off on the auxiliary are at once transferred to the perspective line by lines converging to V_1. This auxiliary vanishing point is called the vanishing point of proportional measures, or simply the point of measures. The auxiliary line also is called the line of proportional measures, or simply the line of measures.

73. It makes no difference, of course, at which end of the perspective line, the line of proportional measures is drawn, so that it is parallel to the picture. The relative position of the doors, windows, etc., in the lower plan, for example, are laid off at any convenient scale on lines of measures, drawn from their further ends, and the points of division transferred to the lines to be divided by means of the points of measures V_2 and V_3, both of which, of course, are also on the Horizon. But it is obviously conducive to precision to have the line of measures touch the nearer end of the line to be divided, since, in general, converging lines give more accurate results than do lines of divergence.

Neither does the size of the proportional parts laid off upon the line of measures affect the result. In Fig. 7, 3, the base of the triangle is divided into the same four equal parts, whether the parts taken on the adjacent side are large or small. Any convenient scale may be used; and that scale will in general be found most convenient which makes the line of measures about as long as the perspective line to be divided, and which brings the point of measures within easy reach.

74. In the same way a line lying in a vertical plane may be divided by means of a vertical line of measures; the point of measures or vanishing point of the third side of the triangle and of the lines drawn parallel to it being now in the trace of the vertical plane. If a line lies at the intersection of two planes, it is a mere matter of convenience whether the line of measures is taken in one plane or the other, or in which trace the point of measures is taken.

Thus the seven parts into which the length of the barn in Plate III. is divided may be taken either on a horizontal or on a vertical line; that is to say, upon a line of measures parallel to the trace of either plane. Thus in the left-hand side, the points at the bottom of the wall, which determine the position of the doors and windows, may be got either by means of a horizontal line of measures, as shown, with its point of measures on the Horizon, at V_4, or by a vertical line of measures, namely, the corner of the barn, on which the same proportional parts are laid off at a somewhat smaller scale, with its point of measures on the trace of the plane L Z at V_5. Here the first triangle lies in the horizontal plane, and the second in the vertical plane, the first on the ground and the second in the side of the barn, as they seem to.

75. If a line lies in a plane inclined to the horizontal plane, as each inclined line of the gable-ends of the barn lies in the plane of its roof, a similar procedure may be followed. A line of measures may be taken in that plane, touching the given line at one end and parallel to the picture, the point of measures being now in the trace of the plane of the roof.

76. And as in the horizontal plane a line parallel to the picture is horizontal, and in vertical planes vertical, — that is to say, in both cases parallel to the trace of the plane it lies in, — so in the case of an inclined plane, a line lying in it parallel to the picture is parallel to the trace of the system to which the plane belongs.

77. That this must be so, follows from the general proposition, that, if one system of parallel planes intersects another system, their lines of intersection are all parallel.

For a line lying in any plane, and parallel to the plane of the picture, may be regarded as the intersection of that plane by a plane parallel to the picture. But the trace of the system of planes in which the line lies is the line in which a plane parallel to that plane and passing through the eye intersects the plane of the picture. We have thus two inclined planes parallel to each other, intersecting two vertical planes parallel to each other. Their intersections are accordingly parallel, and the line in question is parallel to the trace of the inclined plane in which it lies; and since it is parallel to the picture, its perspective is parallel to itself, and also is parallel to the trace: *Q. E. D.*

78. Moreover, if any plane of that system of planes is extended so as to cut the plane of the picture, that intersection is also parallel to the others and to the trace in question.

79. The perspective of an inclined line can then be divided in any required proportion, as easily as that of a horizontal or vertical one, by drawing through one end of it a line of measures parallel to the trace of the inclined plane in which it lies, and taking the point of measures on that trace.

Thus in the plate the position of the brackets or purlins on the gable of the barn is found by dividing each slope into six parts, by means of a line of measures drawn parallel to the trace of the roof in question; and as the sloping lines of the gable lie not only in the plane of the roof, but also in a vertical plane R Z, parallel

to the side of the barn, the position of the six brackets can be found either by laying off equal parts, on vertical lines, with points of measures on the trace of R Z, at V_6 and V_7; or by laying off equal parts upon lines of measures parallel to the traces of the planes of the roofs, that is to say, parallel to T L M for the left-hand slope and to T L M′ for the other, with points of proportional measures at V_8 in T L M, and V_9 in T L M′, respectively.

In the former case the triangles lie in the plane of the gable-end; in the latter, each lies in the plane of its own roof.

80. It follows from the above, that if any object bounded by plane surfaces be cut through by a plane parallel to the plane of the picture, the line of intersection on each face will be parallel to the trace of the plane in which it lies. This is exemplified in the plate, where the dotted line, A A, running along the ground and over the barn, follows this law. If the front corner of the building were sliced off parallel with the picture, this would be the line of the cut. The same thing is exemplified on the front corner of the other building.

We shall find use for this by and by, when we come to the perspective of shadows.

81. Finally, just as in the Method of Diagonals we found at last that the auxiliary line, or line of measures, may be taken in any direction, at random, so here the same thing is true. For here too any line, drawn at random from either end of a perspective line, in any direction, may be regarded as the perspective of a line of measures beyond it, parallel to the picture and drawn parallel to the trace of the plane in which it lies. This trace then will be parallel to it; and since the plane contains the perspective line, its trace must pass through the vanishing point of that line; for the trace of a plane passes through the vanishing points of all the lines that lie in it (13 c); if then through the vanishing point of the line we wish to divide, we draw a line parallel to the assumed line of measures, we shall have the trace of a plane in which they both lie; and upon this trace the third line of the triangle, joining the other end of the perspective line with the last point taken on the line of proportional measures, will have its vanishing point. This point, the point of measures, can be found just as before, by prolonging the third line, the base of the triangle, till it touches it.

The principle that the line of measures may be drawn at random in any direction, the corresponding point of measures being taken on a line or trace drawn parallel to it through the vanishing point of the line to be divided, is illustrated in the division into five equal parts of the hip of the roof of the smaller building in the middle distance. Here the line of measures is drawn arbitrarily, at about 60°, the auxiliary trace being drawn through V^P, the vanishing point of the hip, and its point of measures, V_{10}, determined on that trace.

The triangle here seems to lie in the plane of the roof, but in fact it has nothing to do with it.

82. Moreover, since the only characteristic of this auxiliary trace, relatively to the conditions of the problem, is this, that it passes through the vanishing point of the line to be divided, it follows that any line drawn through the vanishing point of a given line may be regarded as the trace of a plane in which the given line lies, and will contain the point of measures corresponding to a line of measures drawn through either end of the given line parallel to it.

83. This gives us, in other words, this famous proposition: —

Of any two perspective lines having the same vanishing point, one may be taken as the trace of a plane passing through the other; and if a third line be drawn parallel to the first, and touching one end of the second, any parts taken upon this third line may be transferred to the second in their true proportions by means of a point of measures taken upon the first.

The position of the vertical bars of the cresting upon the ridge of the gate-house on the left is determined in this way, five equal parts being laid off upon a line drawn from the further end of the ridge parallel to the eaves of the roof, as a line of measures, and the point of measures, V_{11}, taken on the eaves.

The way in which the position of the vertical bars of the gate below is determined also illustrates this preposition. A line touching the top of the gate is drawn parallel to the ridge-pole, which has the same vanishing point, V_L. Equidistant points are taken on this line, and transferred to the top of the gate by a point of measures, V_{12}, taken on the ridge-pole. This reduces the labor of dividing up a given perspective line in any required proportion, to almost nothing.

84. Here, as in the corresponding case in the previous paper, care is to be taken not to fancy that the line of measures, and the triangle determined by it, really lie in the plane they seem to lie in.

In this last case the triangle lies in an imaginary inclined plane, and is no more vertical, as it seems to be, than the point of measures is on the ridge, as it seems to be: it is really in the infinitely distant trace which the ridge covers and coincides with.

Plate III. also furnishes illustrations of two points of general interest.

The first of these is the use of the point V_X, the vanishing point of horizontal lines making an angle of 45° with the principal directions, R and L, to determine V^N, when V^M is given, the lines that slope up to the left being supposed to make the same angle with the ground as those that slope up to the right. If these inclinations are equal, the inclination of the planes R N and L M will be equal, as in the case of these roofs; their lines of intersection, P, will lie in vertical planes making 45° with the principal vertical planes; their trace will be a vertical line passing through V_X, as shown in the previous paper (42); and V^P will be at the intersection of this trace with T L M. If now T R N be drawn through V^R and V^P, V^N will be found at its intersection with T L Z, and $V^{N'}$ will be at an equal distance below.

The point $V^{P'}$, which determines the direction of the line P', at the intersection of the two banks in the further corner of the barn-yard, is found in like manner.

The second point is illustrated by Fig. 8, which shows how the true direction of the lines Q or Q′, whose vanishing points are at the distant intersection of the nearly parallel traces T R N and T L M′, or of T R N′ and T L M, may be obtained by means of the common device for directing a third line to the intersection of two given lines, as shown in Fig. 9.

This is applied in the plate, Fig. 10, to find the true direction of the left-hand line of the hipped roof, just below the point C.

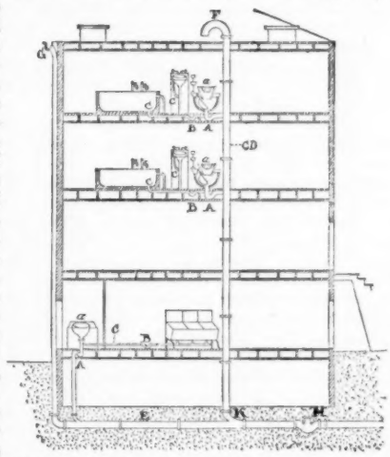
The next paper will treat of the exact determination of the directions and magnitudes of perspective lines.

THE SANITARY PAMPHLET OF THE NEW YORK BOARD OF HEALTH.

SOME months ago the Health Department of New York City issued a pamphlet entitled "Defective Drainage of Dwelling-Houses." It was prepared by Drs. Russell and Post, Sanitary Inspectors, and Mr. Nealis, Sanitary Engineer of the Department. The pamphlet was widely circulated with the official indorsement of the Department.

It may be said at the outset, that a literal adoption of the directions set forth would lead to a decided improvement in the interior drainage of very nearly every city house in America. At the same time it would leave the house with grave defects; and it is to be regretted that the committee did not qualify themselves for their task by a fuller study of the subject, and that they did not make their diagram conform more exactly to their written instructions.

The diagram shows a four-story house, with a cellar where no water is drawn, a ground floor with water-closet and laundry trays, a main floor with no water, and a third and fourth floor each with bath, wash-basin, and water-closet. The main drain is buried under the cellar bottom, and runs from front to rear of the house. Near the front, but inside of the foundation wall, a running trap is indicated, with a handhole at the top. Farther back, there rises a main soil-pipe which passes through the roof, and is capped with a semicircular bend. The laundry trays on the ground floor stand near to the soil-pipe, but do not discharge into it. The appliances on the third and fourth floors stand near to the soil-pipe, and discharge into it through the outlets of the water-closets, which adjoin it. The laundry trays discharge by a long horizontal waste-pipe into the outlet of the water-closet which adjoins the rear wall. Below the point of junction, there is a trap from which a soil-pipe descends to the underground drain, quite near to the rear wall. This soil-pipe is neither ventilated nor vented. The underground drain passes beyond the rear foundation wall, and becomes the outlet of the rain-water spout from the rear gutter. We are justified in holding the authors to their diagram, because they say that "it exhibits all that is essential, and illustrates the vital principles of efficient house drainage." Our comments upon it are these: —



1. In place of the underground drain, we should recommend an iron soil-pipe, starting just under the ground floor near the rear wall, and running out just above the cellar bottom through the front wall. The running trap in this drain, we should place outside of the foundation wall in a covered well. We should make this trap a very deep one.

2. For rear ventilation, we should continue the soil-pipe, full bore, through and above the gutter, independently of the rain-spout, capping it with an Emerson ventilator.

3. We should admit fresh air to the soil-pipe inside of the running trap, by one of several devices adapted to that end.

4. The main soil-pipe (rising through the house) should not be turned over at the top, but should be capped with an Emerson ventilator.

5. If the water-closet on the lower floor must discharge into the underground drain, as shown, we should ventilate the top of its trap. Arranging the drain as indicated in paragraph 1, the direct ventilation would be sufficient.

6. The laundry trays should discharge with a trapped outlet into the soil-pipe which they adjoin.

7. The traps of the water-closets should be connected by an air-pipe with the upper part of the soil-pipe, above the highest connection of a waste-pipe, to prevent siphoning.

8. The bath-tubs and wash-basins on the third and fourth floors had better discharge directly into the soil-pipe, having traps close to each of their outlets. If to discharge through the water-closet trap, the pipes should lead into the dip of the trap, not into the air-space above the water-seal. If the trap at the basin and tub has a dip greater than the immersion of the outlet into the closet water-seal, it is this latter which will give way under the forcing effect of the flow.

9. Under no circumstances should such long horizontal waste-pipes as are shown leading from the bath-tubs and the laundry trays be permitted if they can be avoided; and in the case in hand they might be avoided.

10. In our opinion, for a private house, a six-inch soil-pipe and drain is needlessly and indeed injuriously large: the small flow of water constituting the waste of a single family will have its flushing power sufficiently taxed in keeping even a four-inch pipe passably clean. So far as the removal of obstructions is concerned, three-inch would be better than four-inch, but for free ventilation a four-inch pipe has decided advantages.

Turning to the text of the pamphlet, the following points seem to us erroneous. The traps indicated, it is said, will "retain sufficient waste water to seal them against the passage of gases." No water-trap will prevent the passage of gases, and in those shown there would be danger of siphoning.

We are told that gases permeate the water of the trap "when it has stood for a long time:" it has been known to pass entirely through an ordinary trap in fifteen minutes. It is recommended to curve over the soil-pipe above the top of the house: all curves offer resistance to the flow of air, and the course recommended is equivalent, so far as ventilation is concerned, to a reduction of the diameter of the pipe. It is recommended to ventilate "by a rear roof leader emptying into the sewer-pipes:" as Mr. Philbrick has shown, and as all sanitary engineers have known for years, this is a most dangerous and mischievous expedient. It is directed to drain yards and areas "by pipes emptying into the house sewer:" the manner of doing this should have been clearly indicated, for it is by no means easy to do it safely.

"A persistently wet cellar should be provided with a separate, blind drain *emptying into the trap of the house sewer.*" This is astounding! Better a "persistently wet cellar" (with ample ventilation) than even the possibility of the set-back of foul sewage which a drain arranged in this way is almost certain to expose us to. Such a drain should deliver, at whatever cost, into the street-sewer, or into porous ground. If into the sewer, there should be a decided fall to prevent the possibility of a set-back, a deep trap to prevent the return of currents of sewer-air, and an air-pipe back of the trap to insure the escape of air that may pass, in the event of possible unsealing, or by transmission through the water.

The pamphlet closes with a recommendation of the universally condemned bell-trap to protect the outlet of a privy-vault, — which privy-vault we should ourselves hardly undertake to recommend.

It is not to be questioned that the effort of the authors was laudable and praiseworthy, and we repeat that nearly every city house would be benefited as to its drainage by a literal following of their advice. It seems necessary to say, however, that instructions for sanitary drainage emanating from the health department of a great city should have been made to accord more nearly with well-known fundamental principles which are of record, and which are within easy reach.

THE ILLUSTRATIONS.

HOUSE OF WILLIAM MATTHEWS, ESQ., HARRISON, N.Y. MR. R. M. UPJOHN, ARCHITECT.

Mr. Matthews's house is at Harrison, Westchester Co. It is built of the stone of the country, with red and yellow stone finish. It occupies a commanding situation, and can be seen for a long distance. The interior of the building is carried out in a manner to correspond with the exterior, and is finished in hard wood.

ALTERATIONS TO THE BUFFALO RINK, BUFFALO, N.Y. MESSRS. OAKEY AND BLOOR, ARCHITECTS.

The drawings require little explanation further than to say that the rink runs through from Franklin to Pearl Streets, and that Pearl Street is seven feet higher than Franklin. This difference has been divided, making a flight of steps up from Franklin and down from Pearl. The total length of building is two hundred and thirty feet, the width within walls ninety feet. The passage through the centre is twenty-five feet wide, and the galleries above are set back as shown in order to gain light. The main construction is the system of laminated wood ribs originally built to cover the whole space: upon these is built the open timber work and skylight; immediately below these ribs is a decorated sheet-iron cove; the balconies and bridges are of cast and wrought iron. The offices on the second and third floors are mere sashes and wood finish, while the shop-fronts on first floor are of brick, stone, iron, and plate-glass. The passage is paved in tile, and all interior brickwork will be Toronto brick with red bands, red joints, and white limestone finish. The exterior is sufficiently shown by the elevation, the *voussoirs* being composed alternately of lime and Medina stone, and on the exterior the cornice above is of brick and stone, the spandrels being filled with encaustic tile. The window over the entrance arches at each end will be tinted lead lights.

HOUSE AT ST. PAUL, MINN. MR. A. M. RADCLIFF, ARCHITECT.

This house was built in St. Paul last spring. It is of wood painted and sanded. Its greatest length is 54′ 8″, the greatest breadth is 34′ 10″. The basement is used principally for a laundry and work-room. The attic is used partly for a billiard-room. The contract for this house was taken at $5,500, exclusive of heating apparatus.

THE SUMMER HEADQUARTERS OF WILLIAM M. HUNT, ESQ., AT MAGNOLIA, MASS. WILLIAM RALPH EMERSON, ARCHITECT.

"The Hulk," so called from its fancied resemblance to an old stranded ship, with its ropes for lifting the gangway stairs, its davits for raising the doors of the carriage-house, and the employment of whale ribs and vertebræ for braces, railings, and ornamental features, was built by adding an old barn and carpenter's shop together at Mr. Hunt's suggestion, and affords accommodation for horses, carriages, sleeping-quarters, and a large painting-room.

PERSPECTIVE STUDY. PLATE III.

See the "Paper on Perspective" in this number.

REPORT OF THE ELEVENTH ANNUAL CONVENTION OF THE AMERICAN INSTITUTE OF ARCHITECTS.

[Held at Boston Oct. 17, 18, and 19, 1877.]

SECOND DAY'S SESSION, OCT. 19 (*continued*).

The report of the Finance Committee was submitted by Mr. Longfellow.

The report of the Finance Committee was accepted, and Mr. Longfellow offered a resolution prepared by the Committee, appointing a Committee of Ways and Means, which should take especial consideration of the best means to increase the membership of the Institute, and of its financial condition, and levying instead of the regular annual assessment a special tax for 1878 of fifteen dollars on every Fellow not member of a Chapter, and half that sum on every other Fellow, and on every Associate not member of a Chapter, and remitting the direct dues of Associates belonging to Chapters; directing, also, the said Committee to present to the Convention an estimate for the expenses of the year, and to levy upon the Chapters a tax, in ratio of membership, sufficient to make up the portion of such estimate not provided for by the special tax on members.

Mr. Haight objected that the resolution took from the Trustees certain functions which they were required by the By-Laws to exercise, and vested them in the new committee proposed.

He raised a point of order that the change proposed involved a change in the By-Laws, which could not be made except after twenty days' notice.

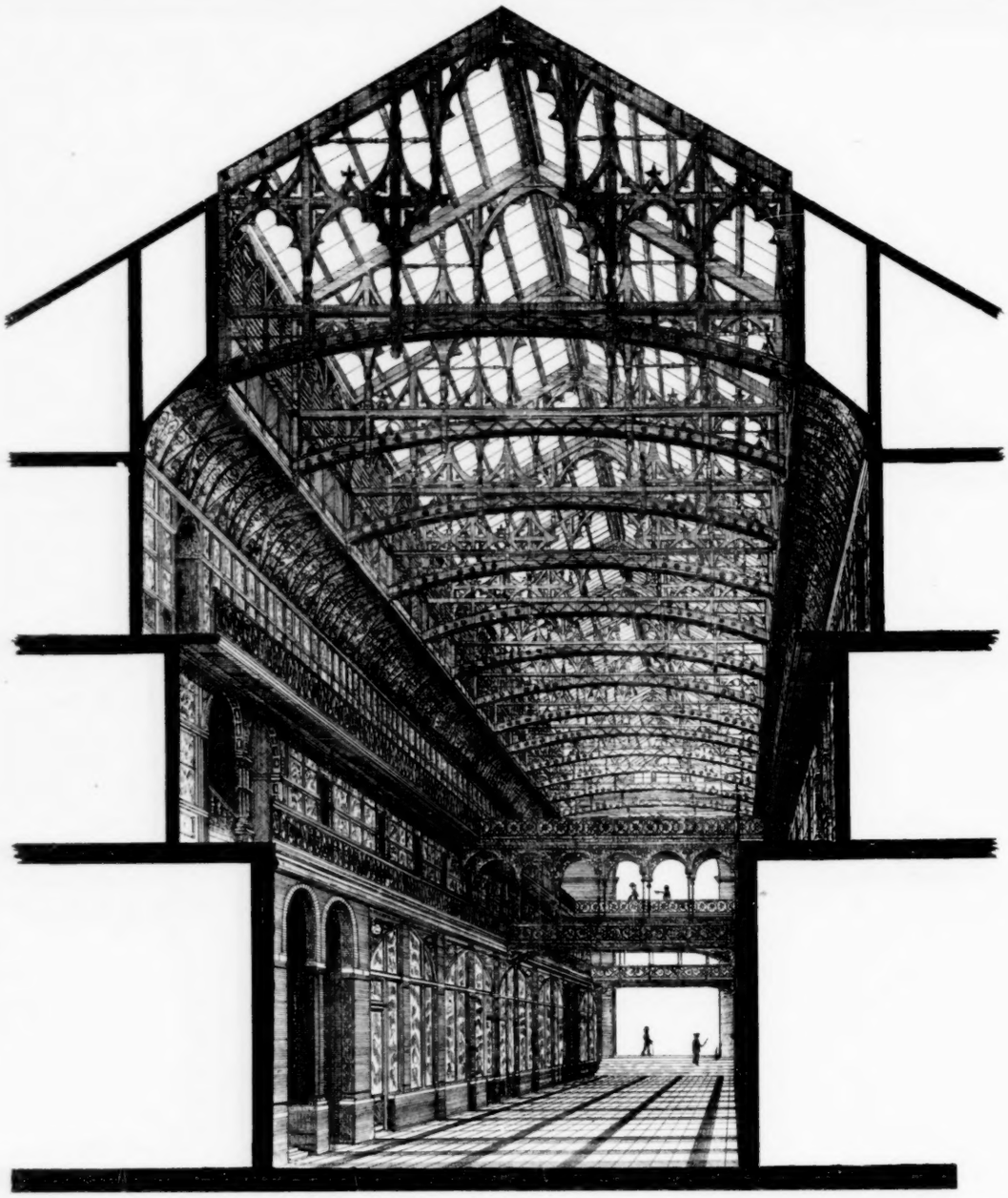
Mr. Longfellow said that the Committee had thought that it might be desirable to have an expression of opinion from the Convention on the point of order raised by Mr. Haight. He thought the by-law relating to the subject could be temporarily suspended by a vote of the Convention, in conformity with the general usages of similar bodies.

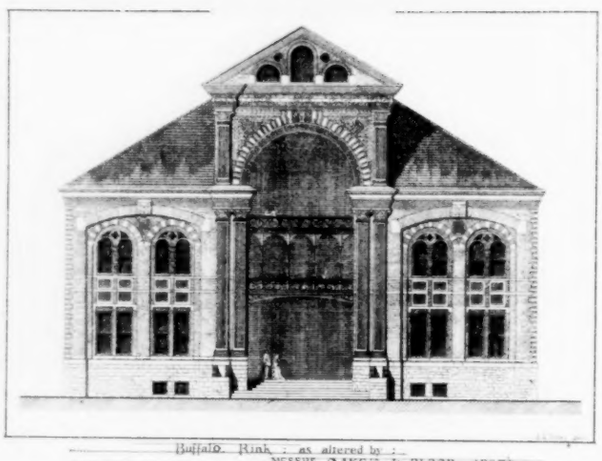
In regard to Mr. Haight's remark that the proposed committee would take away some of the duties of the Trustees, he thought that new duties were rather created, which might indeed be given to the Trustees instead of the new committee, if the Convention so desired; the point of the proposition was in the duties to be performed, not in the persons who should perform them.

In regard to the financial measures advocated, he wished the opinion of the Treasurer.

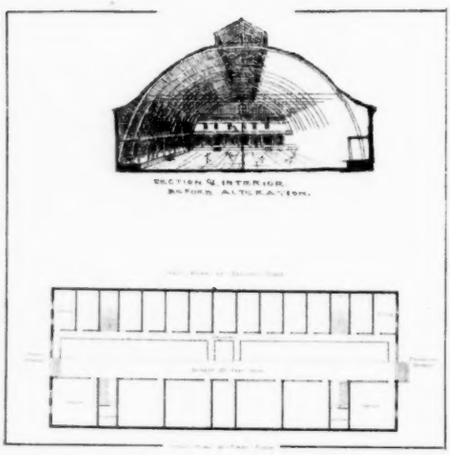
Mr. Hatfield said that for the first time in the fifteen years in which he had been Treasurer, there was this year a deficit, due, undoubtedly, to the action of the Convention last year in reducing the income of the Institute by about twenty-five per cent. The hope that the reduction of the dues would attract new members had proved fallacious.

The measures proposed by the Committee on Finance struck him in some respects favorably, while in other respects he feared there might be difficulty in raising the money as proposed in the resolutions. As far as the prerogatives of the Trustees were con-





Buffalo Rink : as altered by :—
MESSRS OAKEY & BLOOR ARCH'TS



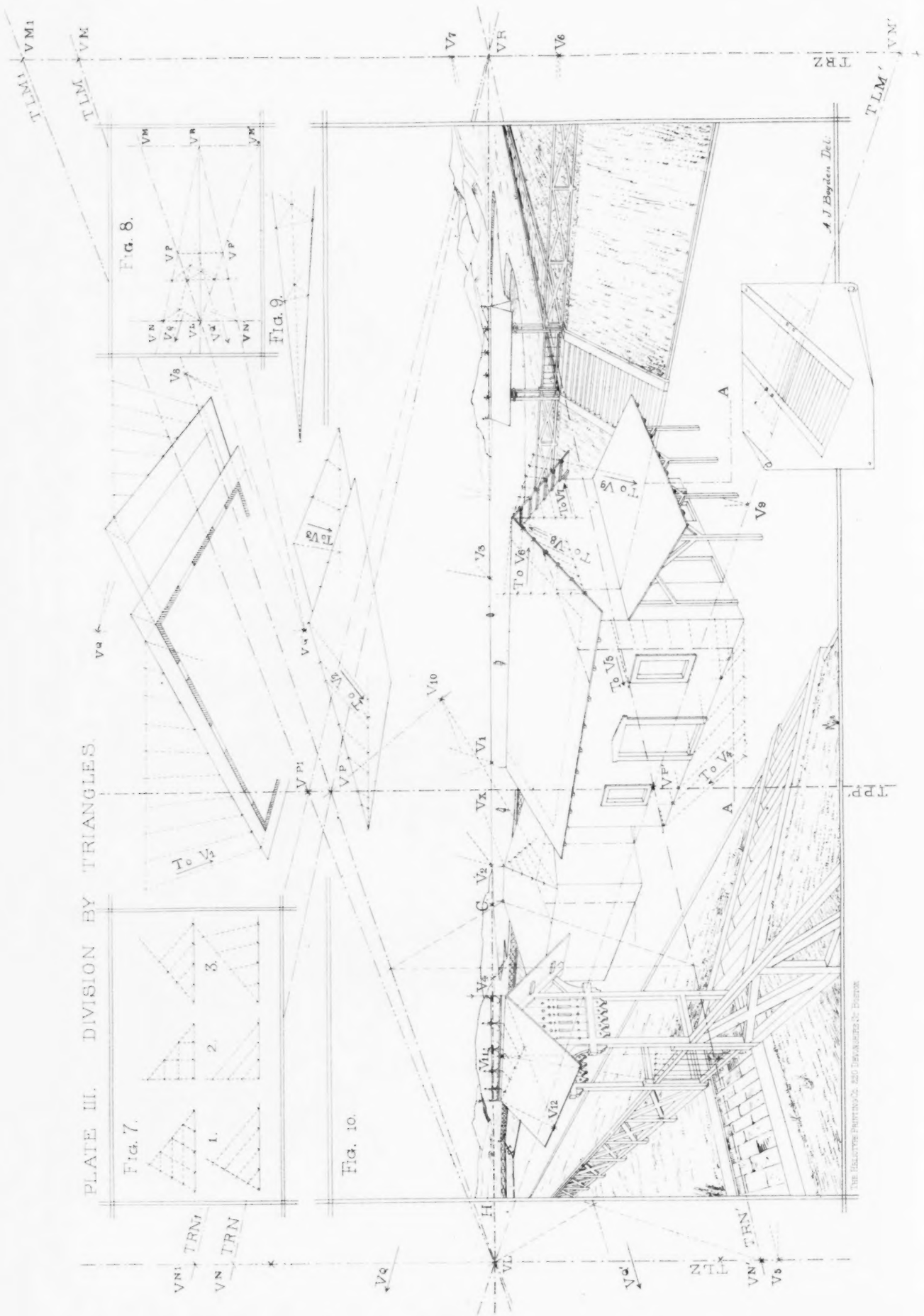
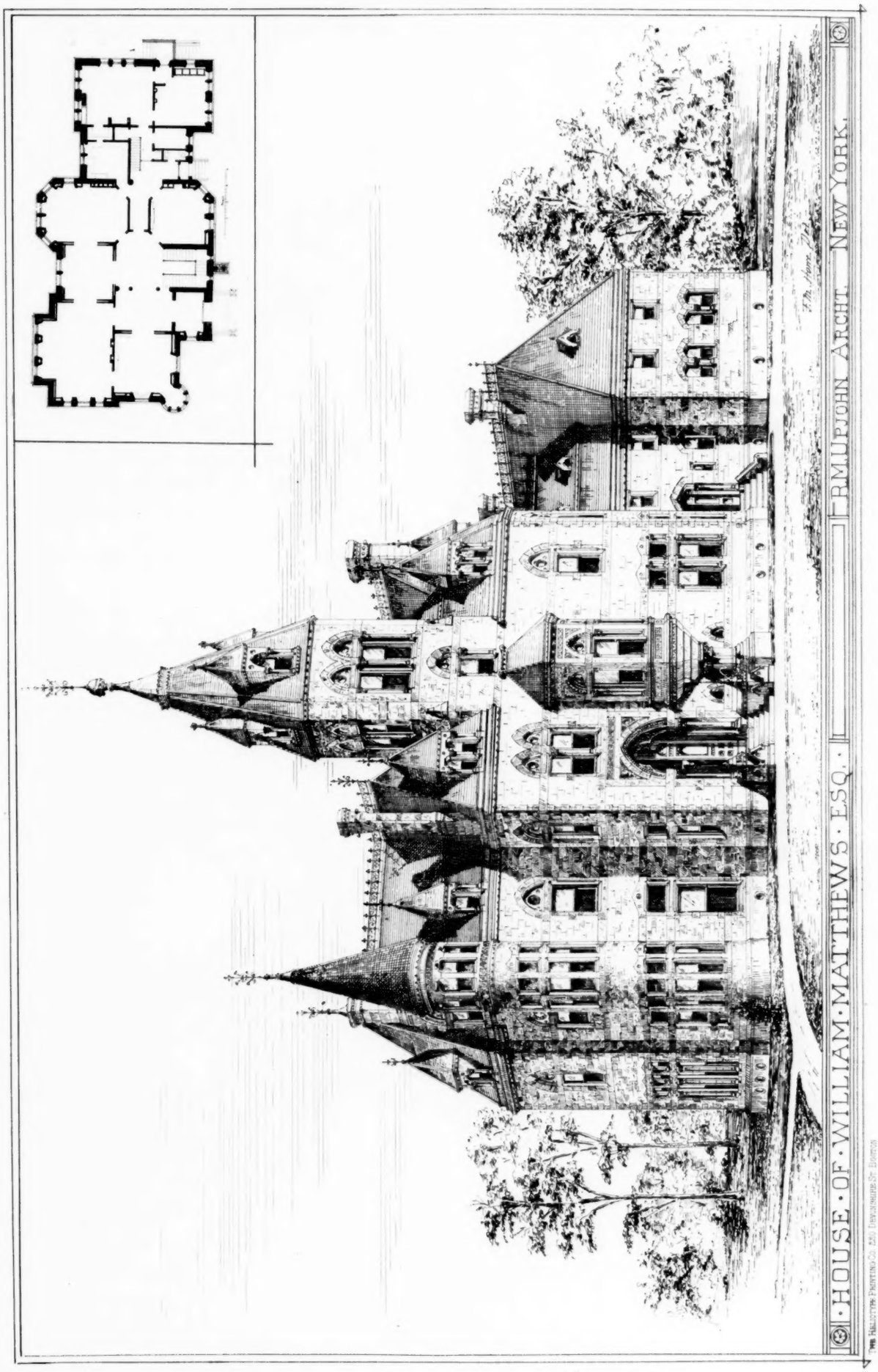
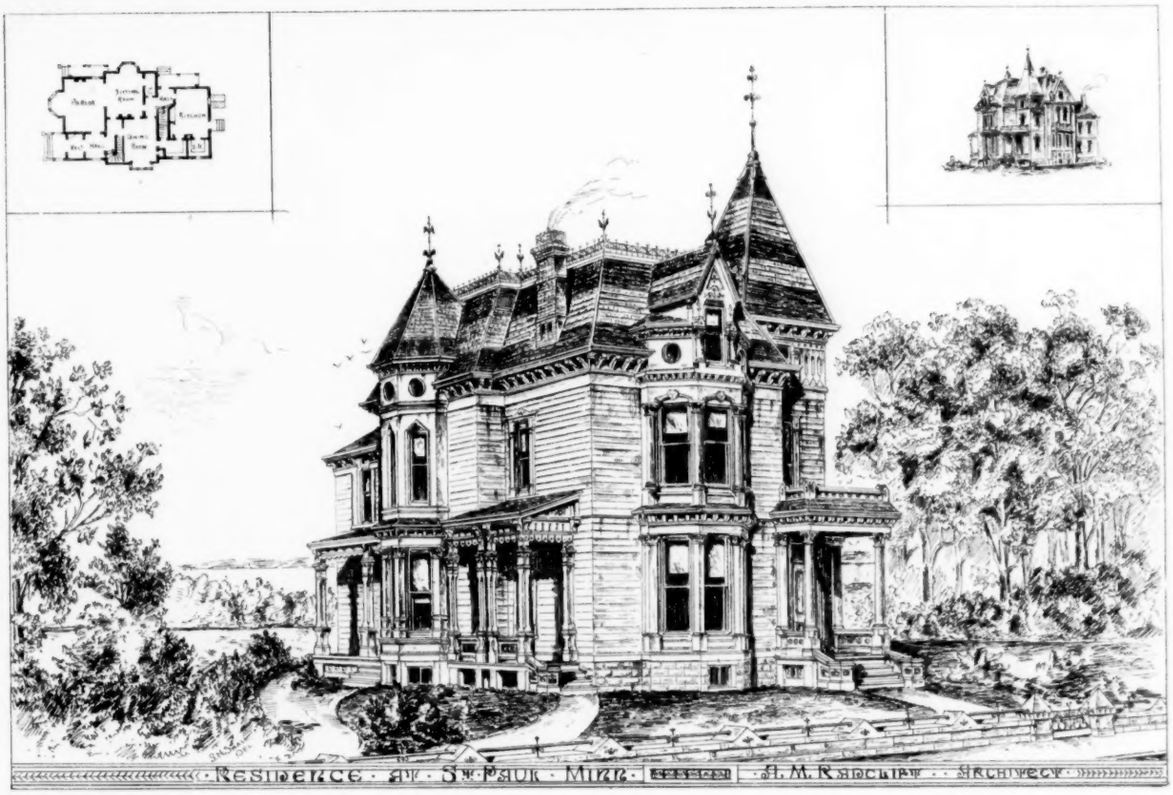


PLATE III. DIVISION BY TRIANGLES.
Fig. 7.
Fig. 8.
Fig. 9.
Fig. 10.
TLM'
TLM
TRZ
TPP'
TRN'
TRN
A. J. Bayden Del.


HOUSE · OF · WILLIAM · MATTHEWS · ESQ. ·
R.M.U.P. JOHN ARCHT. NEW YORK.



THE HELIOTYPE PRINTING CO. 240 DEVONSHIRE ST. BOSTON.

cerned, he thought it very proper that a Committee of Ways and Means should be appointed out of the Convention, the legislative body, whose recommendations should be carried into effect by the Trustees, as the executive department, in the manner proposed; and he thought such a committee might be of great assistance to the Trustees.

He thought the proposition to consider the resolution under a suspension of the by-law requiring notice to be given of any change, might, if carried into effect, render difficult the collection of the Institute dues from some members who were not attached to any Chapter, and whose payments were to be increased by the resolution.

They might complain that they were not represented at the Convention, not belonging to any Chapter, and that they had a right to the prescribed notice of any change in the By-Laws affecting them.

MR. WIGHT remarked that the action of the previous year, in reducing the dues from members twenty-five per cent, was a compromise between the views of certain Boston and Chicago members, who urged a reduction of fifty per cent, with the object of increasing the membership, and those of the Treasurer and other gentlemen, who opposed any reduction; and was satisfactory to neither. It was a hasty, and he thought, unwise action. He thought the proposition of the Finance Committee a wise one, and a nearer approximation to what some of the members wished to have done last year.

MR. HATFIELD read some statistics showing that within the past three years there had been a considerable falling off of membership.

MR. WARE proposed two amendments, — that the part of the Committee's resolution relating to changing the dues of Fellows not members of Chapters should be stricken out; also, that a clause should be added, that the suspension of the By-Laws should not take effect till it had the unanimous consent of all the Chapters. The committee accepted both Mr. Ware's amendments.

MR. HATFIELD proposed to amend the Committee's resolution, so as to make the assessment on all Fellows who are members of Chapters ten dollars. Adopted.

MR. HAIGHT spoke against the resolution, as substituting an indefinite for a definite provision of money to meet the expenses.

MR. LONGFELLOW explained that the Committee's proposition provided just as definite a revenue as the old method, taxing the Chapters in some cases and members in others, but all in a fixed sum, instead of taxing each member a fixed amount. He thought the Chapters were as likely to meet their obligations as individuals, and the revenue was therefore as certain in one case as the other.

MR. WARE suggested, in answer to those who feared that the scheme of the Committee might be defeated in the Chapters, and therefore the Institute be left with a deficit, that the Treasurer should by vote of the Convention be authorized to levy *pro rata* upon the Chapters a sufficient amount to make up any deficit which should become apparent during the year. In this way, if the Committee's scheme were defeated, the deficit would be provided for, and if not, there would be no deficit.

MR. MCARTHUR asked if the amount to be levied on the Chapters was indefinite, so that the Trustees might expend at their discretion, and the Chapters would be assessed for the amount.

MR. HATFIELD and MR. STONE remarked that the Committee proposed was to report before the adjournment of the Convention the estimates for the year, and also to determine the deficit, and report the same to the Trustees, and levy the assessment on the Chapters.

The resolution of the Committee as amended was then adopted as follows, by a vote of 13 to 2.

Resolved, That a special Committee of Ways and Means for the coming year be appointed by the Chair, — said committee to consist of three (3) members, one of whom shall be a member of the Board of Trustees, whose duty it shall be to take special consideration of the best means to increase the membership of the Institute, and of its financial condition. The Committee shall present to this and the next Convention estimates of the probable expenses of the ensuing years, according to which the amount of money to be raised for those years shall be determined. The action of the By-Laws which regulate assessments shall be suspended. That for the year 1878 the Institute shall levy upon every Fellow not a member of a Chapter, an assessment of fifteen dollars; and upon every Associate not a member of a Chapter, an assessment of seven and a half dollars; and upon every Fellow member of a Chapter, an assessment of ten dollars. These assessments shall be collected by the Treasurer of the Institute in the usual way; and no other assessments shall be levied by the Institute on individual members. The remainder of the sum required by the estimate of the Committee of Ways and Means shall be levied by a tax upon the several Chapters in proportion to their number of members, both Fellows and Associates, said tax to be adjusted by the Committee, and submitted to the vote of the Convention; provided that this resolution shall be submitted to the votes of the Chapters, and unless it is accepted by them, the method of levying the revenue herein set forth shall not be adopted. Carried.

MR. HATFIELD remarked that the resolution as adopted did not embody the last suggestion of Mr. Ware.

MR. WARE moved that the Finance Committee, in case the scheme should not be accepted by the Chapters, be authorized to levy a tax *pro rata* upon the Chapters to make up the deficit. This was adopted, and the Convention adjourned till evening.

EVENING SESSION.

The Convention met at eight o'clock, President Walter in the chair.

The President appointed the following gentlemen a Committee on Ways and Means: Messrs. Longfellow, Stone, and Richardson.

Papers on Religious Architecture were then read, by Mr. Cady, Mr. Peabody, Mr. Cummings, and Mr. Haight. Mr. Ware also read a paper sent by the Rev. J. H. Hopkins.

Discussion of the papers was deferred, to give place to the report of the Nominating Committee presented by Mr. McArthur.

The Convention proceeded to a ballot, with the following result: —

President, Thomas U. Walter, of Philadelphia.

MR. WALTER accepted in a few words, and on motion of Mr. McArthur the thanks of the American Institute of Architects were presented to the retiring Secretary, Mr. A. J. Bloor, as follows: —

Resolved, That the thanks of the American Institute of Architects be presented to the retiring Secretary, A. J. Bloor, for the indefatigable and faithful performance of the duties of the office for a period of four years.

Resolved, That these resolutions be suitably engrossed, and communicated to Mr. Bloor.

Carried.

MR. LONGFELLOW declined the office of Secretary for Foreign Correspondence, on the ground of other pressing duties; and the Nominating Committee were requested to present a substitute.

MR. STONE suggested that it was desirable that the Associates should avail themselves of their right to become Fellows; then there would be no difficulty in filling the offices.

A resolution was offered by Mr. McArthur, and adopted, that the Secretary should if possible notify the members of the Board of Trustees at least one month in advance of a meeting, of the subject which is to come up for discussion at the meeting.

MR. BLOOR offered the following resolution, touching a recommendation of the report of the Board of Trustees: —

Whereas, It is of the first importance to the advancement of good architecture in America, that the public administration of the building service of the country should be infused with the scientific and artistic elements which belong to the profession of architecture, and not left to the merely mechanical tendencies which at present prevail in it; and

Whereas, A Committee on Examinations such as exists in connection with the New York Chapter, and which has official relations with the local building authorities, is obviously the most practical vehicle for reaching and influencing the governmental authorities: therefore

Resolved, That the Chapters of the Institute be recommended to organize Committees of Examination to act with their local building authorities, and spare no efforts to get the building service throughout the country into the well-organized condition, not only as regards utility and safety, but as regards beauty and architectural harmony, which prevails in the principal cities of Europe with results so satisfactory alike to the resident and the traveller.

The resolution was referred to the Board of Trustees.

MR. WARE, on behalf of the Committee of Arrangements, called the attention of the Convention to the remark in the President's address, that "the interest of architects demands, and the interest of society demands still more, that a proper diploma, after proper examination, should be given to architects before they are allowed to practise;" and offered a resolution that "in the opinion of this Convention it is important to adopt some means by which persons who have never pursued any systematic course of architectural study, and are wholly unfit to take upon themselves the responsibilities of the profession, may be distinguished from architects who have been properly trained, educated, and prepared for the practice of their art." Mr. Ware proceeded to say that suggestions of this sort had been made repeatedly both in this country and in England, but hitherto, partly from the reluctance of the profession to take the first steps, and partly perhaps from a sentiment in the community unfavorable to any form of privilege or exclusiveness, nothing had been done in either country. A change had manifestly begun in public feeling on this point, however, one indication of which might be seen in the frequent appeals in the newspapers for some means of protecting the community against incompetent practitioners; and it seemed as if a proper time had arrived, if not for doing, at least for considering what might be done in this regard.

MR. LONGFELLOW thought a resolution of the kind proposed was in itself inoperative. If a movement could really be made in the direction suggested, it would be very desirable that the Convention should express its mind as to any means for carrying out the movement; but it was a difficult question, and one which should not be taken up unless there were symptoms of a distinct outside impression that some action was necessary. Within two days the Boston papers had made a sort of appeal to the Convention to take the matter in hand, and he thought discussion very desirable. He proposed that the matter be referred to the Committee on Professional Practice, with instructions to report at the next Convention, or at this if they found it practicable.

MR. WARE suggested that the passage of the resolution would throw on the Committee on Professional Practice a great deal of labor, and would require them to take the responsibility of solving a very difficult question which had hitherto baffled the skill of the

profession both here and in England. He hoped therefore that before the resolution passed, they might have the views of the gentlemen present, and especially of the President, whose suggestion it was.

The President thought it impossible to treat such a question by discussion in convention, or even in the occasional meetings of a committee. He thought it should be referred to the Committee on Education, rather than to that on Professional Practice, and offered an amendment to that effect. The resolution was adopted with this amendment.

The Auditing Committee announced that they had found the Treasurer's report correct, and the report was accepted.

The Treasurer remarked that the new scheme of finance did not take effect till the next year. The deficit shown on the report was for the six months only since the last system had been in operation; and as this system had six months yet to run, the deficit at the end of the year would be double that shown.

The Convention then adjourned.

Friday, Oct. 19.—Morning Session.

President Walter in the chair.

The President thought that instead of publishing the proceedings of the Convention in pamphlet form, it might be as well to print the report in the *American Architect and Building News*.

It appeared that this journal had a larger circulation than the pamphlet reports had had, and it was voted that it be henceforth the medium for publishing the proceedings of the Conventions.

The report of the Boston Chapter was passed over by vote, and that of the Rhode Island Chapter taken up for consideration, and the subject matter finally referred to the Board of Trustees.

A desire having been expressed that the report of the Rhode Island Chapter should be published, the matter was referred to the Committee on Publications.

Mr. R. S. Peabody read a paper prepared by Mr. McKim of New York, on "Colonial Architecture."

Mr. Loring of Chicago read extracts from a paper on Terra-Cotta, showing what had been done in that material in the last four years.

It was voted that Mr. Loring be empowered to publish portions of a recent paper on Terra-Cotta by Mr. Sturgis, to which his own paper was in part an answer, with his comments thereon, in connection with the records of the Convention.

The Committee on Ways and Means then reported the following estimates for the expenses of the Institute for the year: —

Secretary's expenses	$500
Treasurer's "	200
Expenses of the Convention	150
Committee on Publications	250
Reporting Proceedings	100
Editing Report	100
Incidental expenses	227

The report was accepted.

The Committee on Nominations reported that Mr. Longfellow, who had been chosen Secretary for Foreign Correspondence, and had declined, had withdrawn his declination, and would discharge the duties of that office.

Mr. Ware called attention to the provision in the By-Laws by which a member elect is required to send to the Board of Trustees drawings and specifications of some of his work, saying that some good architects were unwilling to submit to this provision, and he would move that the trustees be instructed to waive it, where, in their judgment, it should be desirable to do so.

Mr. Stone thought this would be unwise. The Board of Trustees might appoint one of their number to receive such drawings, etc., which might be less objectionable to the candidate than having them submitted to the full board, but he thought the provision should not be abandoned.

Mr. Ware accepted this amendment.

A suggestion was made that the Presidents of the Chapters might be authorized to examine plans submitted by candidates. One of the Trustees remarked that they had found a general reluctance on the part of elected members to comply with this regulation of late years. No definite plan was agreed upon, and the subject was dropped.

On motion of Mr. Ware, the Board of Trustees was requested to consider and report to the next Convention on the advisability of a change in the constitution by which practising members of the Chapters should be *ipso facto* members of the Institute, without another election by the Board of Trustees, the election by the Trustees being then required only in the case of candidates not members of any chapter: —

The following resolution was proposed and adopted.

Resolved, That the Board of Trustees be requested to confer with the proper authorities of the United States Government with a view to inducing Congress to authorize the Treasury Department or War Department to make practical tests of all so-called fire-proof materials and methods of construction, and make reports thereon.

Mr. Ware announced that the Boston Society of Civil Engineers had placed in his hands a communication relative to the metric system. Referred to the Board of Trustees. It was voted to recommend to the Board of Trustees to arrange for the next meeting of the Convention at Washington, D.C.

Votes of thanks were passed to the Government of the Massachusetts Institute of Technology, for its kindness in placing a room at the disposal of the Convention, and other courtesies; to the Trustees of the Boston Museum of Fine Arts, for the invitation to visit their building; to the committee in charge of the Old South Church, for an invitation to inspect the Loan Collection; and to the Boston Chapter, for its entertainment and civilities.

Mr. Ware invited the members to inspect the new mechanical workshops connected with the Institute of Technology, and see for themselves what the Institute was doing for professional technical education.

The President of the Boston Chapter, Mr. E. C. Cabot, then delivered the following address, after which the Convention adjourned *sine die*.

Closing Address.

I am glad of this opportunity of saying a few words to you, and of expressing the feelings of cordial fellowship which the members of this Chapter feel towards their professional brothers from other cities. We hope we may have succeeded in making your stay agreeable. We all feel glad to receive you in Boston, to show you what we are doing, and to ask your advice and sympathy.

In your walks about the city, you have had an opportunity of examining some of the most important works which have engaged us. Less than twenty years ago all this district of the city, where we now are, was water or mud flats: so that all the buildings are of recent date. A great calamity which at the time seemed irreparable swept away most of the business portion of our city; yet to-day one can hardly point to any trace of that terrible experience; and the district which it laid waste is now covered with finer, and, I hope, more durable structures. An examination of these sections of the city will show pretty well the present condition of architectural taste and ability amongst us, and will, I trust, be found creditable.

Some of us who can look back nearly half a century remember on this same burnt district pleasant old-fashioned streets, full of trees shading sumptuous mansions surrounded by broad gardens, and miss the air of quiet gentility which old Boston presented before the business prosperity of the *city* required the destruction of these comfortable homes. Now when that old colonial architecture is receiving so much attention, we look in vain for those refined examples of wood and iron work which we so well remember in those old houses.

Then followed a period when the master-builder had lost his respect for precedent; and, having things his own way, replaced this interesting work by blocks of granite stores in long dismal rows which seemed almost as if turned out by machinery. Their only merit, that of apparent substantialness, proved but a poor dependence.

Thirty years ago, when I commenced practice in this city, there were but half a dozen architects, and several of these had been bred as engineers. There was but little sympathy between them; their designs were carefully guarded from each other, and their libraries kept locked. We had few books of reference, and photographs were almost unknown. Twenty years later, a few members of the profession, which had in the mean time rapidly increased in numbers, proposed to form a society of architects, and called a meeting of all persons who were practising in the city. About fifty assembled. Some articles of association were drawn up; a portion of those present signed them, and formed the Boston Society of Architects. This society, now a Chapter of the Institute, has held regular meetings since that time; at first fortnightly, and afterwards once a month. The meetings were at first well attended, and much interest was shown in the discussions. Then followed a period when but few came; but the effort of those few was earnest for the best interests of the profession; and, as young men joined our ranks, the meetings have increased in interest, and it is not unusual to have twenty members present.

A topic for discussion is always announced previous to the meeting; sometimes a subject of practical or æsthetical interest, and sometimes a building. The discussions are made as informal as possible, — architectural conversations, as it were.

Of late the Chapter offers annual prizes for the best work in the architectural school of the Institute of Technology, and also to encourage excellence of workmanship among the mechanics of the city.

The result of all this has been to promote amongst us the most friendly professional relations. As artists, we cannot live without sympathy; and through the earnest love of our work and this cordial intercourse we must look for the elevation of our professional practice.

Galvanized Iron. — It is stated that one firm in Pittsburg produces a large part of the galvanized iron used in the manufacture of cornices, window-tops, sills, etc., in this country. The sheets of iron are rolled, and after being dipped in acid to remove all scales and make them smooth, are dipped in the zinc or spelter, and drawn out of the pans or vats, first-class galvanized iron. Sheet-iron coal-buckets are first manufactured, and then zincked by the dipping process, and in this way are made water-tight.

PAINTING AND SCULPTURE AT THE CENTENNIAL EXHIBITION. — III.

[The report of Mr. John F. Weir in behalf of the judges of Group XXVII., embracing Plastic and Graphic Art.]

GERMANY.

GERMANY'S exhibit, as a whole, in painting was one of but average merit, and we looked in vain for the works of some of her more distinguished artists. It was, however, so far characteristic as to enable us to form a just conception of the leading tendencies of this school.

German art is divided into two distinct schools, — those of North and of South Germany, — and there are few points of resemblance between them. The art of Northern Germany is inspired by the influence of the Düsseldorf school; that of South Germany by the school of Munich. The former is almost exclusively devoted to *genre:* the latter has been devoted to history-painting; and their styles are quite as distinct as those of two separate nations. The Munich school rose into prominence through Overbeck, Cornelius, Schnorr, and Kaulbach; while the Düsseldorf school achieved its high reputation through Schadow, Lessing, Bendemann, Camphausen, Hildebrandt, Richter, Hübner, Becker, Knaus, the Achenbachs, and others, who have made recent German art favorably and widely known. The Munich school has of late in a measure forsaken its strict adherence to history, and as a school of art-discipline it is a formidable rival of the famous *École des Beaux-Arts* in Paris, in some respects perhaps surpassing the latter. With the character of Düsseldorf art we were made familiar in this country some twenty years since through the "Düsseldorf Gallery" in New York, which for some time formed a great attraction, and was a very adequate exponent of the merits of this school. German art is always pure in sentiment, generally, of late, domestic in character, and actuated by the influence of subject rather than treatment. In technical qualities it is usually monotonous in color and precise in execution, not imaginative in any suggestive or subtile way, but carefully wrought out in story. These may fairly be said to be its more prevalent characteristics; but there are not lacking superior qualities in the productions of German artists of the first rank that are unsurpassed in any school: this is particularly true of the works of Ludwig Knaus.

In historical painting the German school is often formal and conventional, intellectual rather than emotional, cold and dry in execution; but in domestic subjects the prevailing sentiment is always cheerful, healthful, and pure. In landscape, with the exception of a few distinguished painters, — the most notable being Andreas and Oswald Achenbach, — the rendition is decidedly formal and mannered. Portraiture in landscape is more generally the aim, and there is little attempt to draw from the inspirations of nature the simple elements of form and expression which in the French school have made this branch attain the highest level of art.

In the German exhibit the most attractive landscapes were "Storm at Vlissengen," by Andreas Achenbach; "Harvest in Holland," by J. von Starkenborg; "In the Park," by F. Hiddemann; and "Environs of Munich," by R. Von Poschinger. Mr. Achenbach's picture was not one of his best, but it gave a good idea of the admirable quality of his art. "The Venetian Nobleman," by C. Becker, was likewise not adequately representative of this artist's best qualities. There are much finer examples of his work in some of our own private collections.

In portrait-painting the most notable works were G. Richter's portrait of the Hon. George Bancroft; the Crown Prince of Germany, by C. Steffeck; and "A Lady with a Rose," by G. Gräf. There were no pictures of superior and conspicuous excellence in this collection, so that it is difficult to select any for special mention. The collection, as a whole, was one of about equal or average merit; and, while representative of the general characteristics of German art, it hardly did justice to individual artists of this school.

In sculpture the German exhibit was not important, — a bust, in marble, of Count von Moltke, by L. Brunnow, and a colossal bronze statue of Prince Bismarck, by H. Manger, being the most noteworthy.

AUSTRIA.

The exhibit of Austria in painting was a very creditable one, though the distinctive excellence of the collection was due to the conspicuous merit of a few works of unusual power, — notably Hans Makart's immense canvas representing "Venice rendering Homage to Catherine Cornaro," which, in richness and splendor of color, in largeness of composition, and in facile freedom of execution, is well worthy of high praise. This picture attracted a great deal of attention at the Vienna International Exhibition, and has been greatly commended by the press. It is of a style of art that is essentially decorative, but in that large sense in which many works of the Venetian school are so classed. The motive, or theme, is one which seeks expression through the medium of color rather than in form or the other elements of pictorial art; and in this particular it is one of the most successful attempts of recent art. The drawing does not exhibit that knowledge of the human form which is a first requisite of the leading schools, but as a triumphant display of the charm and power of color united with a large style of composition it is in many respects masterly. It is also a successful manifestation of independence in art, guided by a true artistic instinct; and this is to be commended when successful, as it is in this case, in view of that tendency to exalt accuracy of detail at the expense of expression. A portrait study, by Charles Probst, has exceptional merit. The expression and attitude are very natural, and the technical treatment skilful. It was one of the best portraits of the Exhibition. Two portraits by Henry von Angeli are characteristic, though not representative of this artist at his best. It would have added greatly to the interest of the Austrian exhibit had Von Angeli contributed something in *genre*, — as, for instance, such a work as "The Avenger of his Honor," which is widely known. "The Page," by J. Canon, is particularly pleasing; the coloring is rich and harmonious, reminding us somewhat of Rubens, and the execution is free and finished. "Bathsheba," by A. George Mayer; "Pan and Bacchantes," by Eugene Felix; "Girl of Upper Austria," by Ernest Lafite; "The Nun's Reverie," by G. A. Kuntz, — are all works of merit, though not excellent if we apply to them a high standard of criticism.

In landscape, Austria did not exhibit works of decided merit; and perhaps nothing in this branch of art was more pleasing than the pictures of Louisa von Parmentier.

In water-color painting the pictures of Ralph Alt are worthy of mention; and in etching the exhibits of W. Unger deserve high praise; they are admirable in some of the finest qualities of this art.

While it is not an uncommon thing to confound the art of Austria with that of Germany, a very decided distinction subsisted between the exhibits of the two nations. There was a marked evidence of a recent advance in the progress of Austrian art, which finds no better illustration than in the works first cited, particularly in that of Hans Makart.

BELGIUM.

Belgian is closely related to French art. It is well disciplined, vigorous, and generally unconventional. The Belgian exhibit was one of the best; and, though we missed some names that would have given completeness to this representation, — such as Gallait, Wappers, Baron Leys, Alfred Stevens, Willems, Lamorinière, and Alma Tadéma, who exhibited elsewhere, — nevertheless the collection, on the whole, showed favorably the characteristics of this school.

"The Confederates in the Presence of Marguerite of Parma," by Franz Vinck; "The Sculptor," by Victor Lagye; "Dante and the Young Girls of Florence," by N. de Keyser; "Saturday in the Monastery," by Franz Meerts; and "Griseldis," by Jules Wagner, are the most prominent works in *genre:* and in landscape, "After the Rain," and "Before the Thunder-storm," by G. Van Luppen; "Mill on the River Scheldt," by Jacques Rosseels; "Autumn," by F Keelhoff; and "Using the Life-Boat," by Th. Weber, are the most favorable examples. "Deception," by Jean Portaels, though disagreeable in expression, exhibits great skill in technical treatment. "A Christian Martyr in the Reign of Diocletian," by Ernest Slingeneyer, was one of the most powerful and impressive pictures of the Exhibition. There is a solemn thoughtfulness in the conception of this admirable work, which places it in the foremost rank of recent art. Too high praise cannot be awarded those manifestations of true art that rise superior to the ordinary level of external qualities which are apt to be over-esteemed at the present time. There is a silent power, a true dramatic interest, that stimulates the moral sense, in this picture, which cannot well be too highly commended. While we find the sensibility pleasingly affected by technical surprises, it is rarely that our deeper feelings are stirred as they are by this solemn and effective picture by Ernest Slingeneyer.

Belgian art has had a decided influence on the art of Northern Germany; and geographical influences have in turn largely affected the style peculiar to this school. The influence of France on the one hand, and that of Holland on the other, are not infrequently perceptible in Belgic art, which nevertheless has distinct qualities of its own that render this school deservedly famous.

In sculpture, A. F. Bonré contributed several studies of animals, and P. Comerin some terra-cottas, that are worthy of mention.

THE NETHERLANDS.

The exhibit of the Netherlands was fairly representative of the admirable qualities of recent Dutch art. While there is evident adherence to the traditions of this school, there are not lacking strong suggestions of external influences that are rapidly demolishing old distinctions of this kind. With such a mighty ancestry of famous painters, it would be strange if Dutch art were not of high order of excellence; and something of this influence may be found in the works of C. Bischop. Two portrait studies, entitled "At Church" and "Dieuwke," were unsurpassed by any thing of the kind in the whole Exhibition. Admirable in expression, in force of chiaroscuro, and in richness of coloring, these pictures are worthy of highest praise. The tones are clear and deep, and the roundness and relief of the forms are rendered with great skill.

"The Deacons of the Silversmiths' Guild Conferring a Certificate," by J. A. Stroebel, while tending toward the conventional, is nevertheless admirable in many estimable qualities, broad and simple in treatment, and pure in tone. "The Card-Players," by J. Israels; "On the Beach," by J. Bosboom; "Gamblers, Seventeenth Century," by H. F. C. Ten Kate; "Norwegian Women," by H. A. Van Trigt; "Hauling up the Fishing-Boat," by A. Mauve; "Haymaking in Normandy," by W. C. Nakken; and landscapes by J. W. Bilders and J. F. Van Deventer, are well worthy of special commendation; and "Still Life," by Miss M. Voss, was quite superior to any thing of its class in the Exhibition.

On the whole, the exhibit of the Netherlands in painting was a favorable one. Wherever there is evidence of a proper adherence to the style and methods that have prevailed with so much credit in the past, Dutch art maintains a high place, and in some respects, as in the works of Bischop, has qualities that are unexcelled at the present time. Landscapes and cattle-pieces abounded, and in *genre* there were not wanting examples of conspicuous merit.

CORRESPONDENCE.

THE SAMENESS OF PARISIAN FAÇADES. — PECULIARITIES OF PARISIAN BUILDING-LAWS. — FIRES IN FRANCE. — THE PALACE ON THE TROCADÉRO.

Paris, Jan. 20, 1878.

Almost simultaneously with the Boulevard St. Germain, on the left bank of the Seine, the new Avenue de l'Opéra was opened. It runs from the Palais Royal to the new Opéra, and gives for the first time a fair view of the latter. Had this avenue been finished at the same time as the Opéra, the latter would have escaped some of its severest criticisms, for the great projection of the *foyer* and staircase hall formerly masked much of the main building. Although, perhaps, no sites in the world are more conspicuous or coveted than those on this avenue, I doubt if any one here looked forward with particular interest to what these buildings would be architecturally, and so no one is surprised to find them just like all other *maisons-à-loyer*, with shops on the ground floor. What with the uniform requirements of such apartment-houses and the strict city building laws, they have grown to be regarded as a fixed type in which no novelty can be expected.

The American architect on taking his first walk in Paris is generally attracted by the fine details he sees on all sides. Orders, mouldings, cornices, and graceful *cartouches* are well studied. But before long he awakes to the fact that whether near the Luxembourg or the Parc de Monceaux, there is great monotony in the unbroken blocks of these handsome five-storied façades. Fifth Avenue with its rows of brown-stone porches is not more monotonous; and then Fifth Avenue is not repeated all over New York. There are two reasons for this sameness of frontage. The first is that hired apartments are the usual lodgment of the population, the different stories corresponding to the various grades of wealth; and the proprietors build them to meet the average wants of lodgers. Like all ready-made articles, they have little variety; for any personal fancy or caprice of the builder, to which the picturesqueness of streets is generally due, might injure the value to the average lodger. So a certain number of stories, windows, and balconies become the natural if not necessary thing. The more of the latter, the better; for, though rarely used, an apartment with one commands a higher price. Again, as the height of the stories, with projection of cornices and balconies, are regulated by strict building laws, the problem to introduce variety is no easy one for the best trained architect. Strange to say, the *maisons-à-loyer*, of which Paris may be said to be composed, are not built by such, but by what are vulgarly called "*boutique*" (shop) architects, who rarely have had careful training either at the *École des Beaux-Arts* or elsewhere. They have as draughtsmen succeeded to a business, or from influential connections stepped into a good practice. Not having the habit of making original designs, — for few of them are called to build any thing but this one kind of building, — they accept the current type.

On the other hand, the young men who enter the *École des Beaux-Arts* are generally poor and unknown. Even if they gain the coveted *Grand Prix*, which annually sends a student to Rome for four years, and on their return as *protégés* of the government have a chance at the public buildings, they, however celebrated, get little private practice. The wealthy banker or proprietor has personal acquaintances to whom he intrusts his building; and one can count on one's fingers the private edifices by well-known architects in the last hundred years. The result is that the best architects are ill off; and the costliest private architecture of Paris varies but in the sculpture of the consoles, or in the pattern of the gilt scrolls in the white-walled salons. In America we are apt to look to Paris as a city where art is fully appreciated; but one hears among architects quite as much about the stupidity of the public in architectural matters as at home. Of course every thing is relative; but it is certain that the French public is far less ignorant in all that relates to painting and sculpture than in the matter of architecture, which should really be the art of the people.

I mentioned above the building laws, which are very complete; and especially in that vexatious subject of party-walls and obligations are most explicit. The strictness in regard to their façades is not however so conspicuously an advantage. No façade can have more than five stories, nor exceed twenty metres in height, and must then have a court-yard of at least forty metres area, and this height only on thoroughfares of at least twenty metres wide. There are three other classes of heights, varying with the width of the street. The height of roof cannot exceed one-half the depth of the building. Cornices cannot project more than the width of the wall at its summit. Balconies are only allowed by special permission, and then in streets ten metres wide; and except this no construction is allowed on corbelling. The minuteness in regard to placing signs is at first sight ludicrous. For instance, names of streets must be five centimetres (2 inches) higher than the street-lamps. Flags are forbidden, and cloths and drapery can be used as signs only by the dyers. Lights and reflectors projecting more than 16 centimetres (6¼ inches) must be unmounted when not in use, or else allowed to burn all night, etc. This excess of regulations has however its virtue in matters of hygiene: for example, no story can be less than 2.60 metres (8½ feet) in height; and no room lighted or ventilated by a well can be used as a sleeping-room. No well can have less than four metres (10½ square feet) area. Water-closets must have direct ventilation with the open air, etc. Twenty days before breaking ground, the architect must send a complete set of drawings to the authorities to be sanctioned; and a geological section of the ground turned up in the excavations must be sent in. Another notice is sent when the foundations are finished, and again before the roof is put on. Besides this, there is continual government inspection to prevent bad or unhealthy construction. No chimney-flue can communicate with another. They must be round or with rounded corners, and cannot be carried obliquely at an angle greater than 30°. No chimney-flue or wall of fireplace can be within 16 centimetres (6¼ inches) of a wooden partition or construction. The strict laws, and habit of using incombustible materials, almost preclude serious fires; and one can live years in Paris and never see a burning building. In four years I have seen one, and that, though uncheeked, merely burnt through from front to rear on the same floor, and did not pass through ceiling nor floor. This is the usual extent of the fires; so the law, which makes the owner of the apartment where it originated responsible for all subsequent damage done, appears less preposterous. For putting out fires quite mediæval laws still exist, and are in full practice in the provinces. The police have the right to catch any passer-by, and make him or her help in putting out a fire. One evening at Tours, on my way to an entertainment, I was suddenly arrested and ordered by an officer into a gang of men and women passing buckets of water to a fire out of sight several blocks off. As I was in evening dress I expostulated; but, to the high satisfaction of the gang, I was thrust into it before the bayonet of one of the soldiers guarding it, for all were watching an opportunity to desert. Later a man was chased and cut at for running away. However, after getting thoroughly wet, I finally made my escape. It is no wonder that a French crowd runs from a fire as quickly as ours do to it. The French fire department seems primitive beside our fine organization; and undoubtedly our engines are the most powerful in the world, but let us hope we may learn to do without them.

There is another interference of the government in building, which would perhaps harass us more than any of the preceding cases. That is their high tax on building, in the form of a fixed tariff on nearly all external features: for instance, one franc per square metre for façade wall; balconies, from ten to twenty francs per metre in length according to the projection; per metre, window-guards pay five francs, gutter-pipes ten francs, Venetian blinds twenty francs, etc. Signs and all ornaments whether sculptured or painted are also taxed, as well as scaffoldings and temporary obstruction of sidewalks. Surely such sumptuary laws ought to cut down profusion and useless ornament.

Since writing in my last letter about the Palais du Trocadéro, I have found some details in regard to the great circular theatre which is to be used for concerts and distribution of prizes. It is to be 50 metres (162 feet) in diameter, with an orchestra or stage for 400 musicians, but so arranged that part of the parquet can be taken in and room made for 1,200 performers. The whole number of seats will be 6,000, of which 4,000 are in the amphitheatre. A large organ at the back of the stage will have bellows worked by steam. The height of the ceiling is 32 metres (113 feet). The whole is to be lighted by 4,000 gas-jets, and the ventilation will be effected by numerous reservoirs of hot and cold air. Among the curiosities to be exhibited at the "*exposition rétrospective*" in the circular galleries of this building, are the principal pieces of sculpture and architecture obtained a few years ago by M. Delaporte in his government expedition to Cambodge, and which have been stored at Compiègne. There are "several finely carved statues of Buddha, a statue with eight arms, two kneeling giants with five heads and ten arms, two women nude to the waist, etc., capitals, entablatures, etc., exquisitely sculptured." The first part of the catalogue certainly sounds like a travelling circus show; but as they are of colossal size and from the ruins of Kimers, it will save their reputation.

The last street novelty is the construction of two small light-

houses on the Pont de la Concorde, which are to throw an electric light upon the façade of the Trocadéro, some twenty minutes walk down the river. Summer before last, driving home in the evening from the Bois de Boulogne, one saw the Arc de Triomphe brightly illuminated, and could trace the light to a pencil of rays coming from the new skating rink, — a capital advertisement. R.

NEW YORK BUILDING-STATISTICS.

NEW YORK.

THE report of the Superintendent of Buildings for the year 1877 shows some noteworthy facts which illustrate the drift of architectural work in this city. More buildings at less cost would seem at first blush to indicate a meaner style of work, a poorer grade, and a lower class of work; but it is questionable whether this be so. Every indication points to the conclusion that it is the cost and not the quality which has been reduced; in other words, that we can build as well and as extensively as we did a half-dozen years ago, at something like one-half or three-fifths the price. The mechanics stand idle, material is offered at incredibly low prices, and contractors are ready to estimate on very close margins. There have been a great number of dwellings erected at costs below $10,000, to be occupied by families able to pay a rental of from $25 to $35 per month; plain, substantial, comfortable residences for the middle classes, now the best-provided and most secure portion of the community. Several important buildings have been projected during the year; among them the Seventh Regiment Armory to cost $350,000, and the Jauncey Court buildings on Wall Street to cost $225,000. In taking the figures it must be borne in mind that the estimates are placed upon the plans by the owners themselves. Generally they are the figure given by contractors, and for the average dwelling and tenement a glance at the sizes would detect any glaring irregularity in the estimates; but the finish in the interior may make a very great difference between houses otherwise similar; and as the building department is mainly concerned with questions of strength and stability the inspectors are content when these are secured, and pay little attention to finish or ornamentation; but on the whole, the estimates are pretty fair. Now and then some speculative builder will mark up the price to assist him in selling to advantage; but with the usual practice of buildings to overrun rather than underrun their estimates, the figures below may be very near the truth. The rule about including public buildings is somewhat mixed in practice. Nominally the superintendent has entire control over all building operations within the city limits, but in the case of public edifices this is not strictly enforced: thus the Court House extension, now under the superintendence of Mr. Eidlitz, which is to cost nearly $500,000, does not appear in the reports. Nor do the anchorages and series of great arches and viaduct under the East River Bridge Co.'s control appear in the report. School-houses and engine-houses come for register, but seemingly only by courtesy to the building superintendent.

Taking merely the general figures for the past year, in comparison with the previous year, the statistics show: —

	1876.	1877.
Plans for new buildings submitted	760	773
No. of buildings included in same	1,379	1,432
Estimated cost	$15,898,240	$13,349,414
New buildings begun	1,191	1,316
" " completed	1,277	1,204
Plans for alterations submitted	1,090	1,226
No. of buildings affected	1,177	1,308
Estimated cost of alterations	$3,635,478	$3,215,125
Alterations begun	1,028	1,135
" completed	1,072	1,217

Of the 773 sets of plans for new work submitted, 719 were approved, and 54 rejected. Of the 1,226 plans for alterations, 1,160 were passed and 66 were rejected. Of the new work in progress over the city, there were on Jan. 1, 1877, 651 jobs, and on Jan. 1, 1878, 726. In alterations the figures stood on Jan. 1, 1877, 125; and on Jan. 1, 1878, 124. In connection with this matter of building statistics, I have been at some pains to go back over the record, and have collated all the official figures which are accessible. Prior to June 1, 1866, no registration of plans had been attempted. Under the old fire-wardens, plans were looked at and approved; and in the first stages of the building department, plans were usually stamped and returned to the owners. The figures below, therefore, are for each calendar year since 1866, and for that year only from June 1.

Of buildings judged unsafe from any cause, the work of the department has been carried as follows: —

Year.	Made safe.	Taken down.	Total.	Year.	Made safe.	Taken down.	Total.
1866	225	32	257	1872	398	38	436
1867	335	22	357	1873	819	58	877
1868	235	22	257	1874	1,466	67	1,533
1869	305	38	343	1875	1,586	90	1,676
1870	478	52	530	1876	1,531	71	1,662
1871	892	62	954	1877	1,088	67	1,155

The following table is a complete exhibit of the work of the department for the past eleven and a half years. It would seem from it that the average cost of a new building in this city has been $13,741, and that with some additions of work not formally reported to the superintendent, the aggregate sum spent in adding to the plant and material on Manhattan Island has reached the enormous sum of about $350,000,000. The falling-off in the trade within the past few years is very manifest. The alteration column seems to run along with great regularity, in numbers as in cost; but of new work the falling-off has been most marked. The table is a new and interesting one, and could serve as the basis of no slight argument and discussion for our builders and architects, but without further comment I give it: —

Year.	Plans submitted.		No. of buildings.		Estimated costs.		
	New.	Alterations.	New.	Alterations.	New.	Alterations.	Total.
1866	478	70	917	70	$6,836,005	$23,150	$6,859,155
1867	1,164	328	1,985	358	25,029,480	2,200,153	27,229,733
1868	964	318	2,012	353	33,223,543	2,157,945	35,381,488
1869	1,266	1,226	2,348	1,325	39,351,088	4,228,174	43,559,262
1870	1,206	1,161	2,635	1,362	32,646,423	3,764,624	36,411,047
1871	1,416	1,281	2,518	1,373	37,580,016	4,351,981	41,931,997
1872	1,090	1,173	1,281	1,318	21,944,330	2,788,379	24,732,709
1873	825	1,043	1,311	1,139	22,276,645	3,496,995	25,773,640
1874	878	1,333	1,388	1,429	16,786,077	3,532,147	20,318,224
1875	819	1,204	1,406	1,258	18,236,770	3,200,438	21,437,208
1876	760	1,099	1,379	1,177	15,898,240	3,635,478	19,533,718
1877	773	1,226	1,432	1,308	13,349,414	3,215,125	16,564,539
	11,639	11,462	20,612	12,470	$283,138,031	$36,594,589	$319,732,620

W.

THE GEOLOGICAL FOOTPRINTS AT BELLONA, N.Y.

CHICAGO, Jan. 30, 1878.

EDITOR AMERICAN ARCHITECT AND BUILDING NEWS.

Sir, — In your issue of Jan. 5, in the "Notes and Clippings," on page 8, there is an item accredited to a correspondent of the Rochester *Democrat*, in regard to "Geological Footprints in the limestone bed of Koshong Creek," at Bellona, N.Y., which might mislead. Professor Berlin H. Wright, who has examined the so-called "footprints," says that they are not footprints at all, but simply are the result of the combined action of the atmosphere and water, dissolving and washing away the softer portions of the limestone. His opinion is indorsed by his father, Professor S. Hart Wright, A.M., Ph. D., also by Professor S. Botsford Buckley of Austin, Tex. Professor Buckley obtained in Clark County, Ala. (many years ago), the fossil bones of the zeuglodon now in the Warren Museum, Boston, Mass. All of the above-named gentlemen are familiar with the geology of that locality. Professor James Hall, State geologist of New York, also indorses Professor Wright's theory. Professor B. H. Wright says that the stone is the "Tully limestone," and that it is overlaid with the "Genesee slate," and the slate is overlaid with the drift of the "glacial period," which have since been worn away. I glean the above from letters published in the local paper, — Yates County *Chronicle*.

SCRIBO.

NOTES AND CLIPPINGS.

WATER TANKS. — Alfred Wright, Secretary of the Chicago Board of Underwriters, has issued the following circular, dated Jan. 16: —

In view of the disasters which have resulted from the location of water-tanks in the upper stories of buildings where fires have occurred, and with the conviction that similar or still more calamitous consequences are likely to follow where such destructive agencies are permitted to exist, this board is forced to insist upon the observance of the following stipulations in their construction and arrangement: All water-tanks, if constructed of wood, must be open at the top; if of metal or other material than wood, they shall rest upon a foundation of brick, or some walls of solid masonry, or upon heavy iron girders, both ends of which shall rest upon solid brick or stone walls. On all buildings (with their contents) having water-tanks not constructed in conformity with above standard, a charge of not less than 10 cents per $100 will be added to the basis rate. This action shall take effect from this day; but on any Building now provided with tanks not conforming to above requirements, if altered and constructed in compliance therewith before March 1, 1878, this charge of 10 cents will be rebated. If the change be not effected before March 1, then the rebate will only be allowed from the date of the improvement.

THE OLD SOUTH CHURCH. — The following statement concerning the Old South preservation fund may prove interesting: There has been paid for building and land, $409,000, and in addition for interest on mortgages and taxes and expenses, $20,500, making a total of $429,500. The treasurer has received money to the amount of $228,500, or 53.7 per cent of the entire amount, enabling him, after meeting all current expenses and interest, to pay off the third and second mortgages on the property, and reduce the first mortgage from $225,000 to $204,000, and leaving him with about $3,000 on hand. In addition to this, there are several thousand dollars of conditional subscriptions, the larger portion of which, it is thought, will be ultimately collected.

Building Accident. — While workmen were engaged in tearing down an old building at Columbus, O., on Feb. 16, the second section of the floor gave way, carrying with it one of the side-walls of the structure. Two laborers, who were caught by the falling *débris*, received serious injuries.

A Curious Explosion. — One of the most inexplicable explosions took place recently, at the Pine Iron Works in Montgomery County, Penn., when a teamster tipped a cart-load of hot cinders into a snow-bank. This apparently innocent action produced an explosion which is described as "fearful." Houses a hundred yards away were violently shaken, and persons near by were burned and cut by the flying cinders. Even had the snow been chambered out by the hot mass, a hole would probably have been formed large enough for the rapidly generated steam to escape through without causing the explosion.

The Public Inspection of Elevators. — The fall of an elevator in a clothing-warehouse in Cincinnati, on Feb. 16, whereby five persons were very seriously injured, reminds us that it would be well that these conveniences of modern life should be subject to the periodic inspection of a properly qualified officer. Such inspection would probably have averted the mishap in question; for the fall was occasioned not so much by defect in the design or construction of the elevator, — although the safety-catch failed to work, — as by the gradual wear and tear of constant use; for examination showed that the suspending wire rope was worn beyond the limit which could support such a weight.

R. I. P. — It is said that since the attempted violation of Lincoln's tomb, the Mount Vernon mansion and the tomb of Washington have been connected by a burglar-alarm.

New Journals. — The many processes by which illustrations may be produced cheaply, and with a degree of artistic excellence which often is remarkable, have enabled publishers of existing trade and technical journals to materially enhance their practical value by a liberal use of explanatory cuts. They have encouraged also the growth of new technical journals. The most recent of these is the *Scientific News*, a semi-monthly of eight quarto pages, which promises to cover very much the same field that is already occupied by the *Scientific American*. Another, which will cover a smaller field, is the *American Machinist*, a monthly journal of sixteen quarto pages. Of its character, the editors say, "*Those who wish to recommend their wares to our readers can do so as fully as they choose in our advertising columns, but our editorial opinions are not for sale. We give no premiums to secure either subscribers or advertisers. We are not engaged in procuring patent-rights, or in selling machinery; nor have we any pet scheme to advance, or hobby to ride.*" Another and more distinctively trade journal is the new weekly paper, the *Dry Goods Trade*. All these journals are published in New York.

Sewers and the Rate of Mortality. — In response to a resolution passed by the Chicago City Council, the Commissioner of Health has prepared a report relative to the prevalence of scarlet fever and small-pox at the locations of the greatest mortality. The report is interesting, if only to show the influence of sewerage on the city's health. The following table summarizes the statistics: —

Wards.	Scarlet Fever.		Small-pox.		Acres.	Population.	Feet of Sewerage.
	Cases Reported.	Deaths.	Cases Reported.	Deaths.			
1	21	4	....	....	476.55	14,800	88,650
2	40	9	1	....	394.12	16,354	55,070
3	30	6	....	....	433.41	15,123	62,000
4	96	16	1	....	1,070.40	21,568	93,600
5	167	70	12	4	2,879.51	37,343	89,300
6	147	79	13	2	4,242.10	31,258	77,800
7	170	51	1	....	1,523.56	31,393	101,770
8	154	47	....	....	644.21	31,216	95,580
9	52	12	....	....	289.28	14,264	60,370
10	52	17	2	....	259.57	12,606	65,580
11	66	16	....	....	573.19	17,717	80,209
12	89	20	4	1	2,401.18	19,839	86,380
13	90	27	....	....	1,439.60	16,350	58,450
14	140	55	52	21	3,276.89	47,812	98,416
15	100	33	1	....	1,109.06	24,076	69,730
16	67	35	12	4	534.60	20,520	60,640
17	114	24	2	....	383.79	19,109	62,870
18	45	10	....	....	561.09	16,643	102,750
	1,640	521	101	32			

The Royal Academy. — We are pleased to learn that Mr. Alfred Waterhouse, the architect of, among other important buildings, the Assize Courts, and the new Town Hall, both at Manchester, has been elected Associate of the Royal Academy.

The Manchester Town Hall. — Up to the end of August, 1877, the Manchester Town Hall had cost £775,882, or about $3,879,410.

Eliminating Phosphorus from Iron. — A process for eliminating phosphorus from molten cast-iron has been invented by a Sheffield (England) gentleman. It consists in the employment of chlorine, which, being injected into or brought in contact with the iron, effects a separation of the phosphorus from the iron. The chlorine is applied in a gaseous form, which is done before the iron has been subjected to the air — as, for example, in the Bessemer process, or in the ordinary puddling or other decarbonizing process.

Discovery of a Roman Amphitheatre. — An important discovery has lately been made in Vintimiglia, between Nice and Genoa. According to an old saying, the ancient Entemerium, the *urbs magna* of Strabo, stood upon the Plains of Nervia. The French Government has given to Professor Girolamo Rossi the insignificant sum of 600 lire with which to institute a search in this locality. At the very outset he has struck upon a magnificent amphitheatre, built entirely of cut stone from the neighboring quarries of Turbia. Its plan is an ellipse, the longer axis of which is 115 feet, the smaller about 100. In beauty and solidity it bears the characteristic marks of Roman civilization. The discovery has already attracted many visitors to the quiet little town.

The Porcelain Tower. — The celebrated Porcelain Tower, near Nanking, China, is described by a traveller, who says: "In the quiet evening we made our way out of the city by the south gate, through a well-constructed tunnel, and shortly stood upon an eminence over whose surface was a mass of *débris*, consisting of broken bricks, tiles, and plaster several feet thick. This was all — all that was left of that which, for its historic beauty, the ingenuity of its construction, and its great cost, took rank with the wonders of the world, — the famous Porcelain Tower. It must have been very beautiful in its perfection, if we accept the statements of its various historians, who differ so little in their accounts that one does for all. From them we learn its form was octagonal, nine stories high, tapering as it rose to the height of 261 feet from the ground; the circumference of the lower story being 120 feet. The body of the pagoda was of brick, but its face was composed of porcelain tiles of many colors. Each story formed a kind of saloon, through which ran the spiral staircase leading to the summit, and whose walls were covered with small gilded idols resting in niches, the entire apartment being richly painted and gilded. Each story was defined by a projecting cornice of green tiles, from whose points gilded bells were hung. The roof was overlaid with copper; and above it rose a mast thirty feet high, capped by a golden ball, and coiled about by an immense band of iron, appearing like rings from below. The base of this shaft was an iron ball formed of two halves, the outer surface of which is magnificently embossed. I say is, for one half rests where it fell, the only tangible thing in the mass of ruin. The other half, weighing twelve tons, being broken by the fall, was recast into a temple bell. Standing before the half which is left, we query, Who were they that fashioned this beautiful casting, worthy the hand of a master? Whose writing and inscription embellishes its face, unlike any Chinese workmanship? Whose skill was great enough A.D. 1430, to place a ball of iron thirty-six feet in circumference, weighing twenty-four tons, upon a pedestal 261 feet high? This ball was the receptacle for various treasures calculated to ward off evil influences, among which were 'night-shining jewels,' pearls, books, gold, silver, thousands of strings of 'cash,' satin, silk, and priceless medicines. The number of bells on the structure was 152, and the interiors was illuminated by several hundreds of lamps, while the exterior required 128 to light it. It took nineteen years to build it, and cost $3,313,078. Of all this, not one story rests on the other; lightning, fire, and war have laid their hands upon it, and it fell, its final destroyers being the Taeping rebels, about twenty years ago. It stood in the grounds of a large Buddhist monastery, which fell at the same a prey to the fanaticism and rapacity of the invaders. One work of art within the grounds escaped destruction, — a pure white tortoise, bearing upon its back a perpendicular tablet with an inscription. This, with one solitary priest, keeps watch and ward over the ruins of bygone glory." — *Exchange.*

Sewer Ventilation. — The New York *Sun* advocates ventilating sewers by iron tubes or shafts, about 16 inches in diameter, which shall be carried up some hundred or more feet into the air. In each of these shafts are to be placed eight four-feet burners. These with a fifty feet draught, estimating the rate of the upward current of air at 4 miles or 21,120 feet per hour, would exhaust 506,880 cubic feet in every twenty-four hours; and by a small number of these shafts costing about $700 each, the air in the sewers of a large city could be changed daily. In addition to this, the soil-pipes are not to be trapped, but are to be carried up above the roof and left open; the object being not to allow sewer-gas to escape in that way, but to allow fresh air to be drawn into the sewers by the action of the gas-jets in the shafts: the current of air will thus always be in the direction away from the house. The cost of such shafts for the city of New York would be about $50,000.

Strength of Iron at Different Temperatures. — G. Pisati and G. Saporito-Ricca find that the strength of iron at different temperatures shows peculiar irregularities. The strength in a wire which is exposed to a dull-red heat diminishes, with increase of temperature, from 14° to 50°, then increases to 90°, diminishes rapidly to 120°, remains constant to 200°, sinks slowly to 235°; then comes a sudden increase, which is followed by a gradual diminution. The strength is greater at 300° than at 140°. — *Dingler's Journal.*

A Japanese Bell. — At the temple of Ularo, in Kioto, Japan, is to be seen the largest bell in the world, hanging in a tower on the hill, and is said to be very perfect in tone. By measurement it exceeds the great bells at Peking, China, and at Moscow, both of which are cracked. Where the bell was cast, and by whom, is lost in the shades of antiquity. Chinese and Sanscrit characters cover the entire surface of the bell, but no modern Japanese scholar or priest can translate them. This bell is twenty-four feet in height, and sixteen inches thick at the rim; and when the priests sound it (at eight o'clock every evening), its majestic booming is heard miles down the valley. None of the bells in Japan have "clappers," but are sounded by suspended levers of wood, used like a battering-ram, and striking the bell on the outside.

The Sutro Tunnel. — The Sutro Tunnel is 18,680 feet in length.