

THE AMERICAN ARCHITECT AND BUILDING NEWS.

Vol. VII.]

Copyright, 1880, HOUGHTON, OSSOOD & CO.

[No. 211.]

JANUARY 10, 1880.

Entered at the Post Office at Boston as second-class matter.

CONTENTS.

SUMMARY:—

The Tay Bridge Disaster.—Construction of the Bridge.—Theories of its Fall.—The West Side Association in New York.—Distribution of Houses.—The Preservation of a Water-Front.—Speculative Builders and City Lots.—Fires and Narrow Streets.—Savoury Advertising 9

METHODS OF STUDY IN DRAWING 11

VIOLLET-LE-DUC ON GOVERNMENT MANUFACTORIES 12

THE ILLUSTRATIONS:—

Design for the Washington Monument.—The Mechlin Town-Hall.—Alterations to a Cottage.—House at Newton, Mass. 12

CORRESPONDENCE:—

Letter from Hartford 12

THE LATE M. DENUELLE 14

THE THEATRE WAR AT LYONS, FRANCE 14

THE GREAT CHANOINE DAM AT PITTSBURGH, Pa. 15

A NOVEL RAILROAD 15

NOTES AND CLIPPINGS 16

THE papers have been full for a week of the destruction of the Tay bridge. The disaster was indeed the most appalling of its kind: a half mile of bridge, with a train of cars containing a hundred passengers, disappeared instantly and absolutely in the midst of a violent gale, and not one survivor was left, nor anything to show clearly what the manner of the accident was. It was as unseen, mysterious, and complete as the loss of a ship at sea, and this in the middle of a river, close by a great town, on a moonlight night, and with men watching at either end of the bridge. The bridge itself was the last great achievement in bridge building of British engineers, and one of the most conspicuous, having called out great admiration, with some criticism and some prognostications of failure. It was built in the seven years between 1871 and 1878, at a cost of a million and three quarters of dollars, and was designed by Mr. Thomas Bouch, C. E., who is now Sir Thomas Bouch, having been knighted for this achievement. It was an iron lattice-girder bridge, of light and bold construction, in eighty-five spans, and nearly two miles long. The rails were carried on the upper chord of the girders except over the channel in the middle of the Firth, where for about half a mile the girders were raised so that the trains passed on over the lower chord, leaving a clear way beneath of eighty-eight feet above high water. A great part of the piers rested on a bed of clay overlaid with loose sand, the foundations being cylindrical iron caissons, thirty-one feet in diameter, sunk through the sand to the clay and filled with brick and concrete. Upon these hexagonal brick piers were built up to five feet above high-water mark and capped with stone. These carried trestle-piers of cast-iron columns, which under the raised girders consisted of four columns abreast, braced and stayed, and protected against the current and floating bodies by an additional starling or cutwater column on each side. The raised middle portion was in thirteen spans of two hundred and forty-five feet each, which were built continuously in sections of four spans, these being the largest spans in the bridge. This part, and a considerable length on each side of it, were straight, but the two ends joined the shores in long curves of 1,320 feet radius. The whole thirteen spans over the mid-channel were overturned with the train and disappeared, leaving only the brick substructures of the piers visible. The arrival of the train was signalled from the south end of the bridge, and persons who were watching for it at the north end speak of having seen what seemed to be a shower of sparks falling into the water, but there was no farther sign.

THE discouraging thing, from the engineer's point of view, is the difficulty of deciding, when all the evidence seems to be swept away, to what the disaster was due. If, as is apprehended, the quicksands at the bottom swallow up the train and the fallen material before they can be examined, this difficulty may never be overcome. Theories are common enough. It has been claimed that the bridge fell before the train reached it; but as we have said, the train was telegraphed north at the moment it reached the bridge, and five minutes later communication was suddenly broken. Some argue that it was the centrifugal force of the train coming round the curves that, aided by the wind, overturned the bridge; but the part that fell was the straight part between the curves, at a considerable distance from either.

Others argue that the wash of the river must have undermined the piers; but it is distinctly stated that the masonry of all the piers remained. The complaint has been made that the girders were not sufficiently anchored to the piers; but piers and girders seem to have gone together. Another theory is that the train must have been blown from the track, and by its impact carried away the girders. This is the theory suggested by Sir Thomas Bouch himself, who supposes, it is said, that the falling sparks must have been struck out by the dashing of the train against the girders,—a rather far-fetched hypothesis, it seems to us. Yet it is difficult to see why the overturning of the train against one of the trusses should have carried down a whole half mile of bridge, girders, roadway, piers, and all, at least unless the whole mass was so critically balanced against the pressure of the wind as to be ready to fall, in which case the overturning of the train seems unnecessary to the result. A careful examination of details may give more decisive reasons for an opinion, but it looks as if the fallen section of the bridge must have been so near yielding to the force of the gale as to have been almost in a condition of unstable equilibrium, in which the added lateral pressure due to the resistance of the train to the wind was enough to overbalance the whole. The part that fell was the part which, being thirty feet higher than the rest, gave the greatest moment to the overturning pressure, and which, so far as appears, was under no other disadvantage; the whole of that part fell, and no more; it fell altogether as one mass, and the axis of its motion was apparently where we should expect, at the foot of the iron piers.

WHILE the bridge was building, two of its girders and a supporting pier were once blown down, and some engineers prophesied stoutly that the bridge could not stand against the winds it would encounter. Their prophecy seems to have been fulfilled. The engineers who constructed it, however, were confident of the security of their calculations, which, allowing, for a surface of 800 square feet in each girder exposed to the wind, an equal area in each pier, and the same for a passing train, give a total exposed surface of 2,400 feet for each span. With this surface exposed, they argued, it would take a wind pressure of 96 pounds per foot to overturn the bridge, whereas only 21 pounds was to be expected. The *Engineering News*, in reviewing the structure of the bridge, computes the exposed surface of each span with the added train to be really equivalent to three or four times as much, and claims a possible wind pressure of 40 or 50 pounds. We suspect that the *Engineering News* may come nearer the actual conditions.

THE extraordinary success and convenience of the elevated railways in New York have given a great impetus to building in the northern part of the island. The rapidity with which houses are spreading over parts of the city which before were neglected on account of the easier access of remoter suburbs, served by railroads, has roused capitalists who own real estate in the more eligible parts of the upper streets to consider how the new regions which are coming into the market shall be built up. The tendency which has shown itself in the lower part of the island to give the eastern side to poorer and middle class buildings, and to concentrate the more costly houses in the streets on the west side, gives the cue to a corresponding division of the upper parts, and there has been lately considerable discussion and some controversy as to how this distinction shall be maintained around and above Central Park, or whether it shall be maintained at all. An association of real estate owners, incorporated in New York last spring and called the West Side Association, has for its object, as specified in its certificate of incorporation, to protect and promote the interests of those who own real property on the western side of Eighth Avenue and abreast of the Park, or as far up as One Hundred and Twenty-fifth Street. They intend to build and maintain a library and reading-room within the limit of their jurisdiction, for which provision is made by assigning to it, in addition to what may be raised by special subscription, whatever may remain unexpended from the receipts of the association at the end of each year. The number and scope of the influences with which such an association may naturally be led to concern itself are suggested by the list of sub-committees into which this one has divided itself, namely, committees on Laws and Legislation, Taxation and Assessment, Parks and Public Places, Streets and Avenues, Rapid

Transit, Croton Water, Buildings, and Drainage. Among the measures which have been advocated, as shown in the reports of their meetings, are the grading and pavement of Eleventh Avenue, the improvement of what is called Morningside Park, and the passage of a new building law.

THERE are a good many opportunities of public usefulness open to such an association as this, as to that which, with a somewhat analogous purpose, though with a different scope and a less personal interest, has lately been formed in Boston. However it may be in countries and times when towns grow slowly, it is certain that the rank and unregulated growth of our cities leads to a great many unnecessary sacrifices of general convenience and of beauty, and consequently to enormous after-expense when the time comes to correct mistakes, or to permanent deformity when it proves too late to correct them at all. In the rush with which in prosperous seasons we build up our new towns or quarters, there is no time for study of opportunities, or for a wholesome natural selection to make itself felt. Mere accidents of ownership, of caprice, or of passing individual convenience take the place and do the work that belong to forethought; mere routine and the habit of the surveyor or builder decide questions that need careful and skilful study. The permanent character of whole districts is often determined by a chance priority of occupation, especially in residence quarters, where one tenement-house, or two or three poor cottages, or half a dozen expensive dwellings, may set the fashion for generations. One member of the West Side Association urged at a recent meeting that persons who had built houses in that region to rent at six or seven hundred dollars a year had made a great mistake, and had found that those houses quickly degenerated into tenement-houses. Another argued in favor of such houses as profitable investments, saying that on the east side they were occupied as fast as they were finished; but the general desire seemed to be to encourage the building of more expensive houses on the west side, and to remand the cheaper building to the east side. As this agrees with the main tendency of things at present, it will probably be possible, with reasonable effort, to control it. Priority of occupation tells more than anything else in such a matter, and how much may be accomplished by it may be seen in the success of the Back Bay movement in Boston. The tendency of population to classify itself may be taken as irrevocable. The wealthier inhabitants of a town are sure, in the end, to be found collected in one quarter, the people of moderate means in another, and the poor in another. This being the case, it is a fair option with the proprietors or controllers of any given quarter to choose which class they will invite. A certain odium is apt to attach to efforts to reserve any territory for the use of the rich; but after all a place must be found for the rich as well as the poor, and the communities in which they live get the benefit of the outward beauty which the public shares with them.

THREE things would seem likely to engage the attention of whoever is concerned for the condition of upper New York. The first is the river-front. On most of the east side, we presume, not much can be done for this, but at least the upper half of the Hudson River front is still open to salvage. The unnecessary degradation of the water frontage, which might be the most beautiful part of a city, both from the land and from the water, is one of the most unhappy mistakes, as well as one of the most universal, of our river and sea-port towns. It is due, not only to the claims of business, but to insensibility, and a neglect which in many cases borders on stupidity, so common and so unnecessary is it. One of the most singular instances is the Back Bay district in Boston, where in a region laid out with an idea of special elegance, and with perfect freedom and control of the conditions, the fronts of the first houses in the city were deliberately turned away from the finest prospect the city proper affords, and the superb river line given up to shabby back-yards and neglect, — a neglect which it has only very lately occurred to her people to try to remedy, at a considerable added expense. So in New York herself, the Battery, though it was saved by its public ownership from being given over to shipping and wharves, in spite of the unequalled splendor of its situation was perversely abandoned to shabbiness till two or three years ago an effort was made to redeem it. The excuse of remoteness will not apply to the upper shore, and, though the ultimate encroachment of the gradually extending fringe of piers cannot be estimated, it will be many years, at all events, before the upper

half of the western water-front can be injured by them; while the western branch of the Hudson River Railroad, running close down by the water's edge, might easily be so dissembled as not to offend, and by a judicious use of roadway and margin, if the soap factories and other unattractive establishments which have begun to disfigure the shore north of the wharfage were choked off, a marginal avenue might be made which would be without parallel in the country, either for the beauty of its effect or for the attractiveness of the houses.

A SECOND point is the interference of the building speculator. The speculative builder has his use in New York, where a great part of the householders want to get their houses ready-built. First and last, nine tenths of the population of the city, we suppose, have been housed by him, a considerable portion of them very well housed after their fashion, but with a monotony, a want of special study and of beauty, that makes the residence streets of New York drearier than those of almost any other city. He may build a good house or a bad one, — more commonly the latter, — but his object is profit and speed; and even if he had the sense of beauty or knowledge of effect, which it is not his business to have, he would not give the time and thought to the treatment of the quarters which he builds up that private owners might and must if they are to beautify them. His profit lies in the multiplication of the commonplace, and it is in vain to expect elegance from him. Where any effect of elegance is wanted, it must be the fruit of skilled effort and special study, and the speculative builder may be left to those persons who are not sensitive to their surroundings, or cannot pay to control them, who have no special requirements, or are content or obliged to slip into whatever house they find ready. The majority of householders in a changing community, like that of New York, cannot have their houses built to suit them; but many can, and the only way of accounting for the extraordinary rarity of houses so built, which is the peculiarity of that city, is by assuming that people have been in too great a hurry to think about their houses.

THE third point is the subdivision of territory into house-lots. The laying out of streets as they are laid out in upper New York is not favorable either to beauty of effect or to directness of communication between important points; nor does it lend itself well to the best use of ground of an uneven surface, such as that of the northern half of the island. In this respect, however, the city is possibly committed beyond the likelihood of change, though it is thereby committed to great sacrifice of opportunity. The ordinary subdivision into lots of twenty-five by one hundred feet is still subject to modification, and has proved itself, though suited to the wants of the speculative builder, very ill adapted to the varied requirements of a city. It does well for shops, but the parts of the city where it obtains are those where shops mostly do not. For people who wish to build their own houses and to have them of different sizes and shapes it proves itself extremely inconvenient; and for apartment-houses, which are coming more and more into use, it is, by reason of the small proportion of outside wall to area which it gives, and the consequent lack of light and air, still more unsuited. However opinions may be divided between formal regularity and picturesque irregularity as a matter of elegance, the experience of many centuries shows that the convenient disposition of city territory is one which allows its inhabitants to go from point to point directly, without turning unnecessary corners, and gives them lots of land of all shapes and sizes for all sorts of uses. The older part of New York is on the whole a better model than the new.

WE notice that some journals of other cities make the late fire in Boston a reason for attacking her narrow streets and recommending wider ones. Boston streets are narrow, and wide streets have their advantages, — their disadvantages too, — but the fire question has not very much to do with them. So long as houses are built to burn by the block, a few feet more or less from sidewalk to sidewalk will not make much difference. While adjacent buildings are so built as to set fire to one another, to widen the streets is but saving at the spigot to waste at the bung. When they are no longer so built the width of streets will not enter into the question. Reform, to be of use, should begin at the other end. The Boston City Government has already raised the question of making changes in her building laws. There is much room for improvement, and the first thing to secure, in default of actual incombustible construction,

which is hardly to be looked for yet, is that warehouses and public buildings should have at least fire-proof stairs and elevators, mill-floors, and unfurred walls. Just as we write we hear of the fire in the Turner Hall, in New York, where the burning of the stairs destroyed four of the proprietor's family and injured six others, and doubtless some of them fatally.

ONE cannot help wondering who it is that encourages the manufacturers of building appliances to offer architects commissions for the use of them. We have received a card advertising a patent Automatic Valve Overflow Wash-Basin, and with it a supplementary card offering to architects who approve of the Automatic Overflow Valve "a commission of fifteen per cent for their time and trouble" in specifying it. The automatic valve is intended to exclude bad odors from the waste-pipe, and suggests the thought that the vent by which the proprietor thus disposes of his surplus profits is guarded by a similar contrivance. The extra cost of one of these wash-bowls is, we find by the card, \$1.25. Fifteen per cent on this is eighteen and three quarters cents, — sufficient payment possibly for the clerical labor of adding a line to a specification that is already paid for by some one else; we do not know how many such commissions it would be necessary to return to the enterprising plumber in purchase of the wash-bowl that would be needed by the architect who would put his hand to such transactions. We commend this double-action device for simultaneously cleansing and soiling the hands of our profession to the *Sanitary Engineer*.

AMONG the losses which we owe to the fire which burned us out was that of our address-book. This is a matter of no small inconvenience, and we shall be obliged if all our correspondents will take pains to give us their addresses in full.

METHODS OF STUDY IN DRAWING.

[From Mr. Poynter's Lectures on Art.]

THERE is no doubt that the simplest way of beginning is to make copies of drawings in outline, beginning with easy forms, and progressing to the more difficult; and the School of Design drawings-books by Dyce are admirably adapted to this purpose. But this course may easily be carried too far, and in my opinion is useful only at the very earliest stage, as a means of acquiring steadiness of hand. The youth who comes to a school of art to study may be supposed to have displayed sufficient fondness for drawing to have practised it in some form or other from his earliest years, and therefore to have acquired some elementary knowledge. The surest and best method, therefore, for him on entering the school, is to begin to make outline drawings from the round, that is, from solid objects, by which, under proper direction, he can attain as great steadiness of hand as he could from the flat. In pursuing this preliminary course his object will be to train both eye and hand in an equal degree, by endeavoring to draw with certainty as well as with accuracy; that is to say, he should, after first adjusting on his paper the proportions of the object he is copying, try to make his outline at once clear and correct, and draw it with as firm and steady a hand as a young student can command under the difficulties with regard to accuracy which must beset him at the outset.

The object, then, of the student is first to attain to a definite conception of the form before him, and in this he will fail unless he can express it on paper with a definite outline; next, to acquire the power of expressing the form with certainty and rapidity, which he will never do if he acquires a habit of drawing inaccurately to begin with, though he may have the full intention at the time of altering his lines to get them right in the end. In the third place, he must acquire steadiness of hand. This he must gain by the habit of drawing his lines continuous from one determined point to another, without retouching, or, as it is called, painting the line, — a point as important in figure as in ornamental drawing; the quick, and at the same time certain, apprehension of the form he is copying, and the correct rendering of it on a flat surface being the end the artist aims at throughout his whole career.

Thus much conceded, the question arises as to the best models for a beginner to work from. My answer would be that he cannot do better than to begin with what he intends ending with, that is, the study of the figure.¹ All else is usually but time lost; at whatever stage the drawing of the figure is taken up, the student will find it as difficult as if he started with it at first. At the same time I admit that what are called drawing-models, that is, solid geometrical figures in wood, may be of occasional use in the case of young or helpless students. If a student, placed before a cast of a statue or head, shows himself incapable of rendering it in any way intelligibly, he may

well be set to do a few drawings in outline from geometrical models; when, if he does not soon show signs of progress, it is probable that he has mistaken his vocation; but this is, of course, a matter for the discretion of the instructor, some students being much slower than others. It would be dangerous, however, to devote too much time to this stage of study; especially when carried to the extent to be observed in the schools of the Science and Art Department,² it involves a mere waste of time; and the student should practise by preference from casts of heads, hands, feet, etc., proceeding by degrees to full-length antique figures.

There is a danger, therefore, of the student acquiring a mannered way of seeing and drawing the muscular and constructional indications, and it is much better that he should proceed as soon as possible to study them as they really present themselves to him — that is, in light and shade — than that he should confine himself to a hard and unreal outline. I may, however, remark in passing that a student may derive much benefit in this early stage, if he looks at, and in leisure moments copies, good outline drawings of the figures, such as Flaxman's illustrations to Homer and Æschylus, so as to learn how far it is possible in pure outline to express the markings of the muscles and joints in the nude figure.

These illustrations have another advantage in being excellent studies of composition for beginners; and although Flaxman may sometimes be found to give to the faces of his heroes a somewhat exaggerated expression, through a mannerism, contracted apparently in the endeavor to impart to them something of the character of the ancient tragic mask, yet there is a knowledge of the human form, and a grace and purity of design displayed in the grouping of the figures and arrangement of the draperies, which is well worth the attention of the young student.

We suppose the student to have now arrived at the stage of what is commonly called "shading" his figures, and he enters upon the study of *tone*, which is probably, of all the departments of study to which he has to devote himself, the most subtle, the most complicated, and the most comprehensive. I might almost go on to call it the most important, for it is so intimately bound up with the study of form and color, that it cannot be kept separate, and is, so to speak, continually interfering with the apprehension of them. It is, however, precisely the point of which our English students, teachers, and painters (always omitting from the latter category certain men of eminence, but including those who practise the most popular kind of work) appear to have the most imperfect appreciation. This I believe to be due entirely to the general system of education in our art schools. You will find that as a rule the pictures in our exhibitions are, in their several degrees, strong on every point but this one.

I have no hesitation in saying that I believe most of the want of perception of unity of tone among our artists arises from the common habit of laborious work with the chalk-point. This use of the point, at all events in the way which is prevalent in our art schools, not only involves loss of time, and the sinking of the study of form and tone in that of mere execution, but concentrates the attention of the student on minute details which blind him to the general effect. It is for this reason that I have always advised my students to make use of the stump, rather than of the point, in shading their drawings; for the former, while it allows of any amount of finish of modelling, lends itself particularly well to the production of broad effects of tone, and is, moreover, much easier for a beginner to manage than the complicated method of shading with the point. There is, it is true, an intelligent use of the point in drawing, which proceeds naturally from the study of the construction of the figure; but it should be contracted in actual drawing from the figure, and the lines made in shading with the point should always be indicative of the construction. Any student who shows a disposition to work in this way with the point should be encouraged in the use of it; but for the majority the stump is by far the best means of learning to shade. As there is doubtless a certain amount of mechanical difficulty to be got over in its employment, it is here again that drawing models may be made use of in teaching the beginner how to make flat and evenly-gradated shades; care being taken that he does not spend more time over this than is necessary to facilitate his work for the future.

This first mechanical difficulty got over, the one main point the student has to attend to is the general tone or effect of the object he is working from, whatever it may be. And this he will find his great difficulty, not only as a beginner, but all through his course of study, and indeed through his life; it is so easy to see detail, and it is so difficult to subordinate it to the general tone. The student must constantly keep in mind his subject as a whole, while at the same time he does not omit to give all details their proper value. A prevailing fault with our students, and indeed with experienced painters, is that of making the reflections too strong, and therefore throwing the whole work out of tone. This fault arises among students from the desire to express distinctly everything that is seen; and in the process of doing this they forget the general balance of light and shade. With painters the desire is rather to give a spurious brilliancy to their pictures at the expense of truth. It is useless in making a study of a head, for instance, to have the proportions and features correct in outline, if in shading they are

¹ It must be understood that these remarks are throughout addressed to students of figure-painting for pictures. For ornamental design a more extended course of outline drawing from the first is necessary.

² As much time used to be wasted over highly-stippled drawings of cubes and cones in schools of art, as over the antique figures referred to in Lecture III.

out of tone. A half-tint too dark, or a light too bright, will destroy the unity of the work, and will cause it to present an assemblage of features, each in itself possibly right, but bearing no reference to the general roundness of the head.

There is also in connection with this subject another point to which attention must be directed. It is not only by dwelling on detail that a student may err in not giving the proper tone to his figure; the whole key of the drawing may be too dark or too light. The former is generally the fault of students who are in earnest about their work; this arises from their looking too much at the shades with reference to each other, without due reference to the surroundings; that is to say, from their paying attention only to their *relative*, and not to what for convenience I may here call their *absolute*, strength in the scale of light and dark. It is very common, for instance, to see the darkest shadow in a drawing from a cast made absolutely, or very nearly, black. Now with reference to other shadows in the figure it may appear to be so — still more with reference to the lightest parts; but let the student look at anything really black (as, for instance, the shadow under the sleeve of a black coat), and he will then find the real value of the shade he is representing in the scale of tones in the room where he is working. This want of reference to the surroundings is the real cause of the blackness so frequently seen in drawings; by bringing the darkest shade to its proper value in the scale from black to white you will then have to lighten by degrees the whole of the rest of the shading to bring it into proportion, and the drawing will gradually acquire its proper tone.

The importance of the correct perception of tone has given rise in France to a system of drawing by tone merely, to the ignoring of constructive drawing; the result is that there is no school where tone (or, as they call it, "*les valeurs*") is better understood; the absurdities and crudities of modern English art in this respect being unknown there. At present the French devote themselves too exclusively to this side of art, and the result is that in their seeking after its subtleties they have almost arrived at the conclusion that one object is as good to paint as another; a female head or a piece of raw meat being looked upon as equally suitable for the exercise of their skill in painting. There is no necessity for carrying matters to this extreme; the great Italian painters were none the less masters of tone because they devoted themselves to the study of form, and to the higher points of construction and ideal beauty. But it must be kept in mind that no amount of anatomical or constructional knowledge of drawing is of value without a true perception of tone. A figure which, as we say, is "all to pieces" in this respect, however correct the outline, will never stand the light of intelligent criticism. It is our want of perception on this point that makes foreigner's laugh when they see our pictures; and with regard to most of our work of the more popular sort, the laugh is fully justified.¹

VIOLETT-LE-DUC ON GOVERNMENT MANUFACTORIES.

[We find in a late number of *L'Art* the following autograph letter from M. Viollet-le-Duc to a correspondent whose name is not given. It is printed in fac-simile in *L'Art*, and is characteristic enough of the writer's progressive tendencies in art, — as in all other matters, — to be interesting.]

My Dear Sir, — Artists are not fit to manage anything whatever; they find it hard enough to manage themselves. The manufacture at Sèvres in the hands of an artist would fall, if possible, still lower. The artist would wish to impose his taste upon it, the spirit of clique would invade it, and we should have something either perfectly null or ridiculous.

In principle, neither the manufacture at Sèvres, nor that of the Gobelins, has any *raison d'être*; these establishments may have been of use at the time when the jealous power of Louis XIV. suppressed the corporations, and when it was necessary to substitute a royal monopoly for the monopoly which he suppressed. It is with this as it is with the academies, — under pain of seeing the fine arts and the manufacture of decorative objects lapse into barbarism, it was necessary to supply the place of the republican institution which was suppressed by a royal institution. But in our day this has no meaning. Private industry has emancipated itself by free competition, and suits its productions to the needs and tastes of the public.

To-day private manufactories make us beautiful tapestries which only differ from those of state manufacture in being six times as cheap, without exaggeration. They make porcelain at Limoges, when they choose, almost as well as at Sèvres, and the products of these private establishments even have an original quality which the house at Sèvres does not attain.

The elements exist; if the public taste rises manufacture will rise. It is its interest. It is for the education of the public, then, that we must provide in this as in many other things. The chief ill-effect, in my opinion, of these establishments supported by the state is that they give a certificate of perfection to objects which are often of a

very inferior order. There ought not to be a state art any more than a state religion. The public, especially in France, is disposed to believe that everything which bears the indorsement of the state is irreproachable. This is a misfortune. It is not for the public to accept standards of taste; it belongs to it to impose them. We ought, then, to give it the means of forming this taste, and nothing more. Give it museums made for study, and not to amuse idle people. Give it good schools, and when it has learned to see and to discriminate, industry will be obliged to supply what suits it. All the attempts which have been made within ten years to improve ceramic art have been made outside of Sèvres. This art has evidently made efforts and sensible progress. Sèvres has nothing to do with it. What, then, is the use of this establishment? To support a certain number of mediocrities, and to manufacture at fabulous prices objects which everywhere in open market go for a price below that of manufacture. Therefore, even the prestige of the establishment does not sustain itself in the public mind. Let them appoint as many commissioners as they will; let them put at the head of the factory at Sèvres, or that of the Gobelins, an artist of high rank; this will not change their principle, which is no longer in accord with our habits.

The state constitutes itself a manufacturer of porcelains, or of tapestry. Tell me, is not this altogether ridiculous, when all the world can manufacture tapestry and porcelain? How then, if these establishments were made to test new processes, and to make experiments with the support of the public revenues, which private persons cannot make? This would be endurable. But no, far from this; these manufactories make it a point to maintain unaltered all their ancient methods, to serve as asylums for routine, and because this is their way we are asked to believe in their superiority. Is not this absurd? These establishments could be maintained under a monarchy because their workshops turned out very costly objects, which the sovereigns of France could offer to their fellows. The things may have been ugly; officially they were the best there was to give. But let us hope that we shall have no more monarchs to make presents. If the Republic wishes to make offerings to its neighbors, nothing is more in character than to address itself to private industry. Here is a veritable stimulant for that (for the industry).

As for ceramics applied to buildings, the English have been beforehand with us, and sell their productions everywhere. We have followed in their wake. Is it Sèvres that has taken the lead? No, it is private manufactories, and already they produce good things. Sèvres undertook one day to make stained windows. She made them detestable from all points of view, both of art and of manufacture. Private industry quickly surpassed her, and Sèvres closed her atelier. This example alone proves that Sèvres can produce nothing, do nothing for progress, and that she is only the refuge of a manufacture which is a thing of routine, costly, and open to attack on the side of taste.

You would have Sèvres give up gimeracks to try high art. Sèvres is impotent by her very organization, from the director down to the fireman. All of them have but one purpose, — to do to-day what they did yesterday, — and if they should lose sight of this object for an instant there would be nothing left for them but to withdraw; for private industry alone has the motives which justify it in departing from the conventional at its own risk and peril. How can you expect a director or even a superintendent to take it upon himself to lose twenty or thirty days, material and time, that is to say, twenty thousand francs or so, for the sake of any experiment whatever? It is a necessity to turn out a production which conforms to tradition and nothing else. Nobody's responsibility allows him to set off on a venture.

Then, in my opinion, there is but one conclusion — *delenda est*, as it is with many other things. Ceramics applied to architecture will take care of itself, and is doing so already, before Sèvres dreams of such a thing. Very truly yours, VIOLETT-LE-DUC.

THE ILLUSTRATIONS.

DESIGN FOR THE WASHINGTON MONUMENT. MR. ALBERT NOERR, ARCHITECT, WASHINGTON, D. C.

THE OLD TOWN-HALL AT MECHLIN.

THE *Building News*, from which we copy this illustration, regrets that the draughtsman who contributed the drawing was unable to furnish a description of the building, and we can but do the same.

ALTERATIONS TO A HOUSE AT —, BY MR. J. P. PUTNAM, ARCHITECT, BOSTON, MASS.

HOUSE OF SAMUEL FARQUHAR, ESQ., NEWTON, MASS. MR. J. H. BESARICK, ARCHITECT, BOSTON, MASS.

CORRESPONDENCE.

NEW WORK. — THEOLOGICAL LIBRARY. — A LAW-SUIT. — THE SPRINGFIELD EXHIBITION. — THE REREDOS OF CHRIST CHURCH.

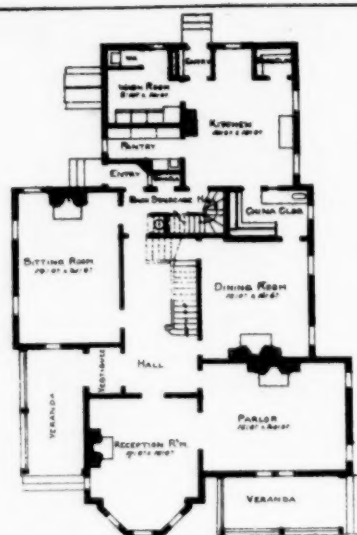
HARTFORD, CONN.

THE building statistics for 1879 show that something over half a million of dollars has been expended in Hartford, for the year, upon all classes of structures, completed works and others yet unfinished.

¹ That there has been great improvement in English art in this respect within the last decade there can be no doubt. The particular garish look that was common to English exhibition-rooms is much modified of late; and French artists remarked on the great general improvement in English art in the Paris Exhibition of last year (1878), compared to what they saw of it in 1857. I was gratified to hear from a French artist of distinction an opinion which is a confirmation of my own, that our art has improved and will continue to improve, because the English take what is good from other schools without sacrificing their originality. He compared it with the art of the Belgian, Italian, and other schools, which can only imitate.



SECOND FLOOR PLAN

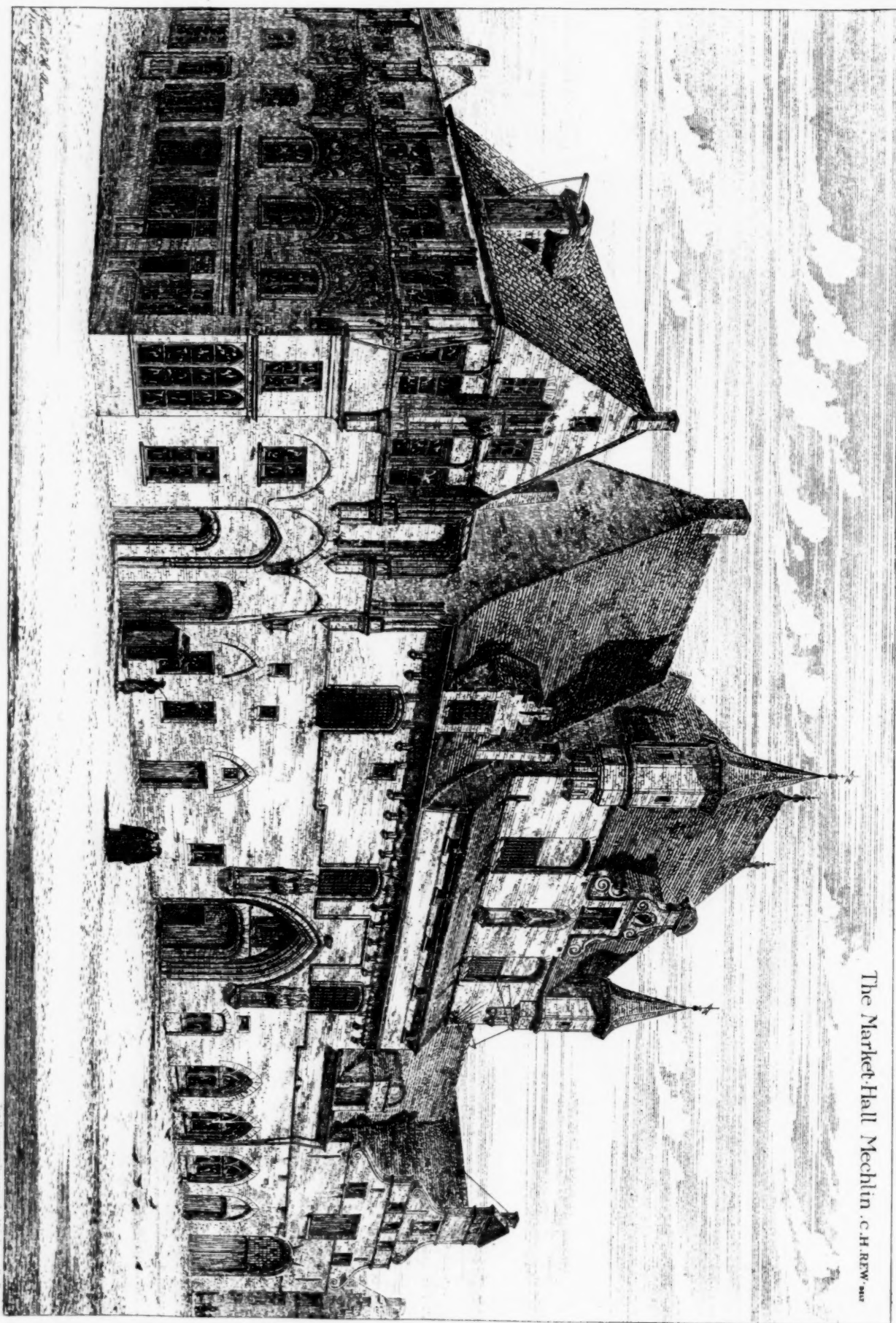


FIRST FLOOR PLAN

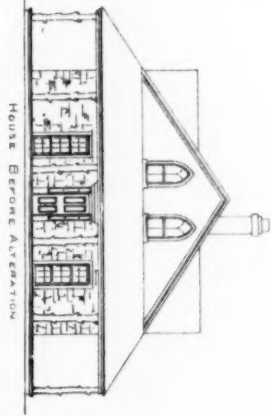


AT HOLLAND PRINTING CO. 156 PEARL ST. BOSTON

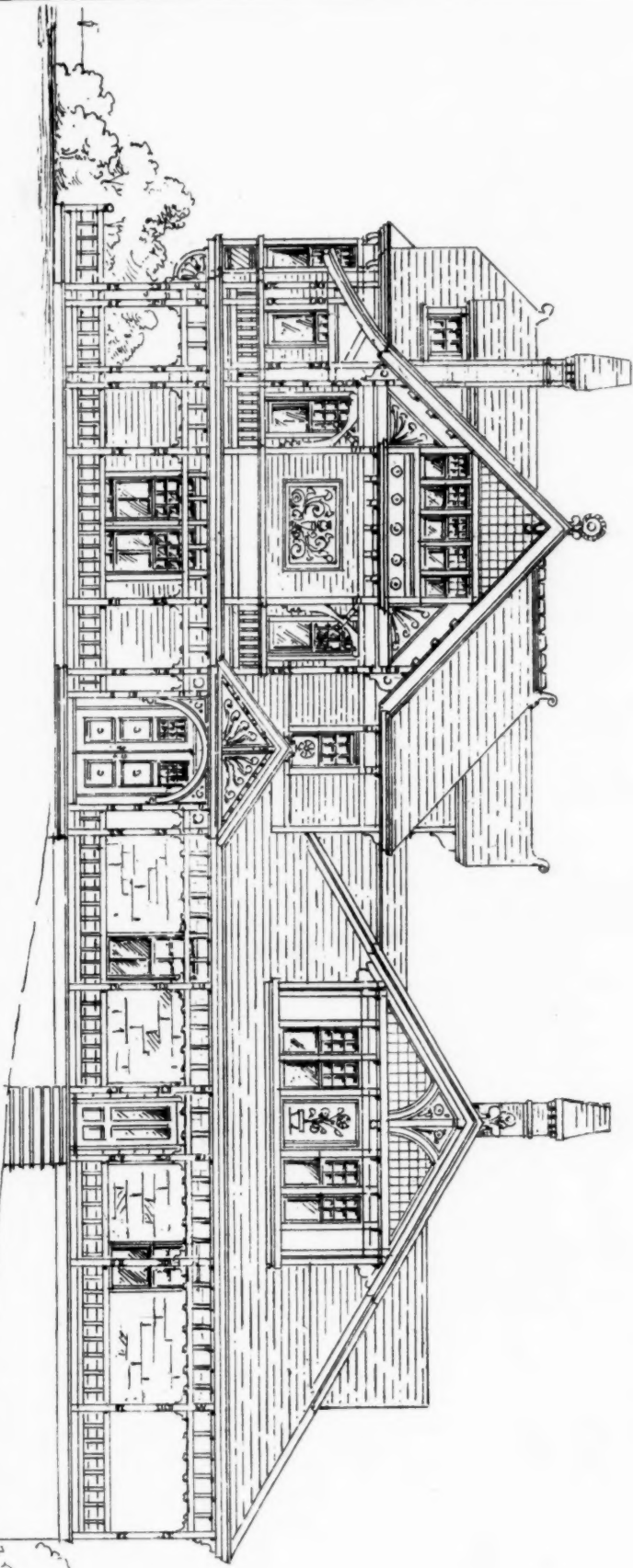
House for Samuel Farquhar Esq. Sargent St. Newton Mass.



The Market Hall Mechlin. C. H. R. W. 1880.

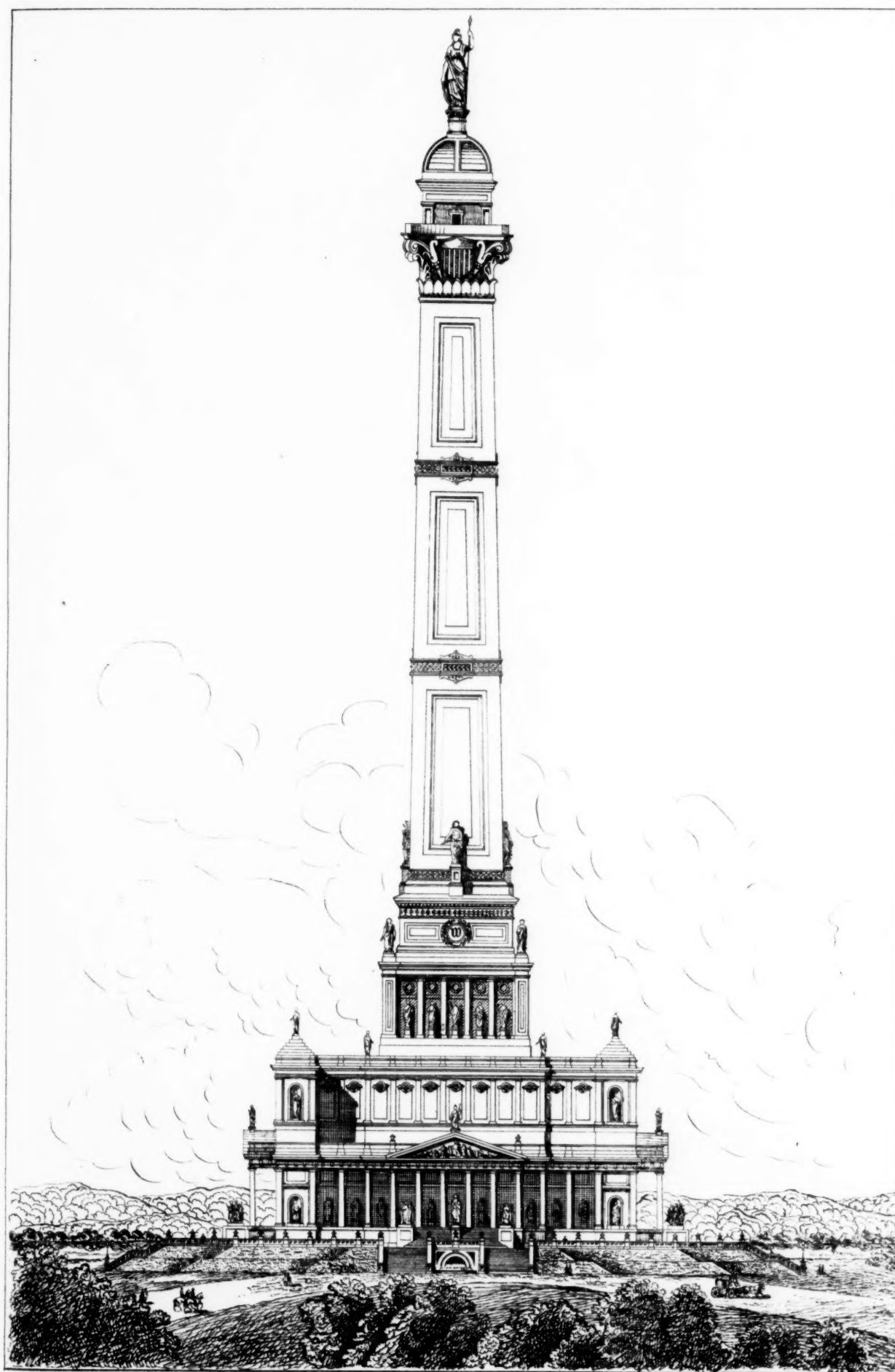


*House at — after alteration
J. Pickering Putnam, Archt.
Boston, Mass.*



FRONT ELEVATION.





THE HELIOTYPE PRINTING CO.

DESIGN FOR THE WASHINGTON MONUMENT
ALBERT NOERR, ARCHITECT.

185 PEARL ST. BOSTON.

This showing is much better than was anticipated in the earlier part of the year. Among domestic work not before mentioned can be instanced the important additions to the residence of Rev. Francis Goodwin, upon Woodland Street. The house is of brick, and was originally built from plans by W. T. Hallett, architect, of New York, the alterations and additions being carried out from designs by Mr. Goodwin. Exteriorly the additions show the continuation of existing ornamental brickwork, and the harmony of the original structure is preserved. The front of the dwelling has been improved by the addition of a well-designed porch. Beyond the limits of the city, to the west, a wooden house is building from plans by H. J. Hardenburgh, of New York. It almost overlooks the town of West Hartford, and stands well up from the ground upon heavy granite foundations. The building is three stories in height and has a frontage of about forty feet. The front has an effective treatment of pediment, and the construction of the roof is such as to admit of great interior height for chambers in the uppermost story. The ground floor has a central hall, with staircase at the end, and flanking parlors to right and left.

Upon the same road from the city, and within easy driving distance, the house of Cornelius J. Vanderbilt, which is being built by J. C. Mead, of this city, is rapidly progressing. The site is what is known as "Vanderbilt Hill," on which some time ago stood the old house occupied for years by Mr. Vanderbilt. The structure now building is of wood, with brick underpinning upon massive foundations of brown-stone, which were necessitated by the nature of the location. The frontage of the house toward the road is some fifty feet; on this side, as well as on the east and west, extend piazzas of exceptionally ample width. At a prominent and objective angle an octagonal tower some seventy feet high is being built, which will secure an extended view upon all sides. The ground-floor plan shows a wide hall in the centre connecting with a second hall at right angles, in which is the staircase and at the extremity of which is a side entrance to the house. Parlors, twenty by thirty-six, open to the right and left of the main hall, the dining-room being connected at the rear with one of them, and the entrance being from the large hall. The chamber floor gives most ample room. A portion of the house lately occupying the site will form a part of the L of the new structure. The interior will be handsomely finished in woods.

The Connecticut Theological Seminary, whose "tinkered" architecture was mentioned in a former letter, has extended its brick and mortar territory by the erection of a library. It comes under the head of semi-detached buildings, and being so closely allied to the main structure it has imbibed, or to speak with temperance, has been imbued with, the same notions in respect to architectural effect which are thrust upon the public by its more ambitious and lofty companion. It can be truthfully described by one of those comprehensive generalities which announce that "it is in keeping with the general design." It is. A stone porch has just been finished at the main entrance.

Architecture and the law have again embraced each other. As the decision of the case was peculiar, for one side at least, it may afford a note of interest to the readers of the *American Architect*, and the gist of the affair can be briefly stated as follows: A was employed by B to prepare and submit sketches and plans for a small brick dwelling to be built in this city, both parties being residents of Hartford. A sum for furnishing necessary drawings to complete the structure was agreed upon by A and B, the amount being so absurdly meagre that for the sake of architectural posterity it shall not be mentioned here. This amount was doubled by B, with the understanding that the combined fees should insure superintendence by the architect. A, who was pressed for time, agreed with C, a draughtsman, to assist him with the sketches and plans, for a certain amount of money, his duties under the agreement not to extend to detail-work. A small sum was offered for one or two special detail drawings. The work was carried out to completion, and the money received by C in two payments. C performed a large amount of service, as shown by drawings of various scales and full-sizes, beyond the stipulations of agreement, for which he sent — some time after the expiration of the labor — a bill; and payment not being forthcoming a suit ensued. It should be stated that the majority of the drawings were executed at night in the residence of A. The case was tried in the court of common pleas, and judgment was rendered in favor of the defendant A. During the progress of the suit several local architects were put upon the stand to testify, as experts, to the worth of the drawings made by the plaintiff, and one point was strongly illustrated in their testimony, namely, the real value of architectural service; the bill upon which the suit was based being in no instance greater than the worth adjudged by the experts, and in some cases falling below it. The meagre amount of the architect's fees, before referred to as covering the cost of professional service, coincided nearly with that of the plaintiff's bill. The decision of the case, unlike that which we once chronicled of a suit for estimating, brought against Trinity College in this city, did not seem to rest upon the fact that unremunerated labor had been performed, but that the sums promised by the defendant to the plaintiff for work were duly paid, and therefore it would appear that the obligations of the defendant were at rest. There seems to have been no consideration of the fact that work over and above the value of that performed for the stipulated sum was done by the plaintiff. This, however, was the case, and the work comprehended numerous full-sizes,

which were not only drawn, but designed, by the draughtsman, and formed the major part of the basis of the bill rendered. The decision of the Trinity College suit excited no little comment, as it was at variance with all precedent theretofore existing in relation to payment for estimates upon contemplated work, while the judgment rendered in the above suit — which was of itself a comparatively small matter — is equally surprising, as it presents the public with opposite views of the value of services rendered by one party to another.

The formation of art associations in the smaller cities, with the natural desire of their members for exhibitions to illustrate their progress in the arts, as well as to stimulate public taste, led to the announcement of an art exhibition at Springfield, Mass., which was duly opened by the association of that city during the past month. The organization was incorporated a year ago, and opened schools, which have been well attended, in the various branches of art. The exhibition, which was the first public one given, lasted five days, and was, all things considered, a success. Beside the exhibits of members, valuable contributions to all the departments were sent in from various parts of New England as well as from New York. The loans of paintings and water-colors from the latter city lending infinite attraction to the galleries.

The architectural exhibit in a separate room was largely representative of Boston, well-known architects contributing, as well as the architectural department of the Institute of Technology. There was a generous exhibition of drawings by local architects, in which Messrs. Ferry & Gardner figured conspicuously, the designs for the new *Republican* offices being among their contributions. Hartford architects were represented by Mr. Keller and by Mr. Brocklesby, each of whom exhibited several designs. The drawings were mostly line drawings, although there was a goodly sprinkling of water-colors, and the subjects embraced many departments of architecture and all classes of buildings from churches to the humblest country house. Messrs. Ware & Van Brunt exhibited a town-hall design, a collegiate building, together with their competitive design for Trinity Church, Boston, including sections, elevations, etc. Messrs. Peabody & Stearns showed the admirably executed sketches for a country house lately reproduced in the *American Architect*, a design for a bank building, a library, and several others worthy of note. Two or three interiors, by W. W. Lewis, and also some cottages by the same architect, were readily recognized. From Providence Messrs. Walker & Gould sent a view of a high-school design. Three designs for houses were contributed by H. F. Kilburn of New York. The Institute of Technology was represented by about a dozen designs, mounted and framed and chiefly finished in color, academies, museums, railroad stations, and town-halls being among the number. Another addition to the general exhibit was that of the author architect, E. C. Gardner, who sent in a perspective and plans of Dr. Holland's country house, the plans of which were elaborately "detailed," even to the representation of the luxurious hearth-rug. A highly interesting department of the exhibition was that in which magazine illustrations were shown, as it afforded views of the original sketches by popular artists in this specialty, among whom are F. S. Church, J. E. Kelley, and others.

Boston bore off the palm in embroidery and needle-work, but was not as successful in china painting. The embroidery referred to was a pair of curtains, of thoroughly well-conceived design and most excellent workmanship, by the pupils of the Boston Embroidery School. The Household Art Company sent a tiled fireplace, and the Chelsea Pottery Works were well represented by several good specimens both in color and in design.

The writer may be pardoned another mention of the alterations and additions to Christ Church, Hartford, to chronicle the completion of the work, and to say a word touching the beauty both of design and of workmanship which characterizes the whole. The new chancel was consecrated and the chapel dedicated two weeks ago, at which time the semi-centennial of the consecration of the present church was celebrated. The chancel has a depth of sixteen feet, and is twenty feet wide; it is raised seven steps above the church floor and is tiled, the upper steps being of brown-stone. The rear wall is pierced by a lofty window filled with stained glass; the subject is the Transfiguration, and the window contains six large figures, the tracery lights bearing ecclesiastical emblems. The window is by Heaton, Butler & Bayne, of London. The chancel arch is of Ohio-stone, about forty feet high, the face bearing columns upon carved heads. The chancel contains a fine reredos in Perpendicular Gothic corresponding with the design of the church. It is of Caen-stone, and enriched with exquisite carving; the central bay is recessed and bears in relief, upon a diapered face, a cross with the Holy Dove above; the two side bays are elaborately panelled. The height of the pinnacled buttresses — which form the division of the bays — is nearly thirteen feet. The altar table, the pulpit, and the prayer-desk are of oak, characteristically enriched, and rendered extremely beautiful by carving. The chancel rail is of oak with polished brass standards; the credence, which is built into one of the chancel walls, is of carved stone. Taken as a whole, and viewed from an architectural standpoint, this work of Mr. Withers is by far the best ecclesiastical design of which Hartford can boast. The parish building, just completed, is well adapted to its various uses, and is a substantial structure of stone. The interior is handsomely finished in hard woods in their natural color; the windows throughout have leaded sashes filled with rich cathedral glass.

CHETWOOD.

THE LATE M. DENUELLE.

M. DOMINIQUE-ALEXANDRE DENUELLE, father-in-law of M. Taine, who died recently in Paris, was one of the most eminent decorative artists of the day. He was born in 1818. He was the son of a prominent manufacturer of porcelain, and in early life mastered the details of this pursuit. Having a taste for decorative art, however, he abandoned this occupation, and pursued his studies to that end, first in the studio of Duban, and afterward in that of Paul Delaroche. In 1842 M. Denuelle went to Italy, where he made studies of Italian monuments, which, on being exhibited in Paris, obtained for him a gold medal. In 1844 he was appointed on the Board of Commissioners of Historic Monuments, and at the same time decorator of the churches of Paris, his first work being the choir of the fine old church of St. Germain des Prés. In addition to the above may be mentioned, among the most conspicuous, the churches of Sainte Clothilde, Trinité, St. François Xavier, several chapels in St. Sulpice and St. Eustache, and, near Paris, the Abbey of St. Denis. Beside these churches, M. Denuelle's work may be found in the great cathedrals of Rheims, Amiens, Bordeaux, Beauvais, Orleans, Tours, and Avignon. Beside his work on religious edifices, M. Denuelle executed decorations in the most remarkable of the national and municipal structures of the country, together with many private hotels. Of these there is a long list. The most important are the Hôtel-de-Ville and Exchange at Lyons; the Château at Blois; the Prefecture, Museum, and Library at Grenoble; the Château at Maintenon; and various mansions belonging to the Dukes of Padua, La Rochefoucauld, and other great proprietors, including those of prominent bankers and manufacturers, such as Schneider, Pereire, Millaud Denière, etc. In Paris, his most remarkable works were the new apartments of the Louvre, the Palais de Justice, the Tribunal de Commerce, the Musée de Cluny, etc. Chief among his works, however, on which he has been engaged for the last two years, is the decoration of the Cathedral of Strasburg, which was to have been executed with Flandrin many years ago, but which, stopped by the death of that artist, has only been resumed since the Franco-German war, under the old contract with that town.

M. Denuelle acquired the highest honors of his profession, being the recipient of many medals, and occupying important posts on government commissions. Many of his works relate to the preservation of ancient mural paintings in buildings like the Cathedral of Avignon, a large number of his designs being published in the National Collection of Historic Monuments. He was recently appointed on the commission to examine into the condition of the Gobelines, the able report thereon being made by him.

Apart from his qualifications as an artist, M. Denuelle was esteemed for his personal qualities. Among his professional brethren, the leading architects and painters of Paris, he was especially cherished. His most valued friendships in this circle among the dead consist of Flandrin and Gleyre, of which latter artist he possessed many admirable works. He was likewise a friend and companion of Prosper Mérimée. M. Denuelle, beside the qualities which endeared him to his family circle, was the type of an artist and likewise of his countrymen. Of an impulsive temperament, regarding everything from an artistic point of view, ardent and devoted to his work, gay, full of enthusiasm when his tastes and sympathies were excited, and, although a grandfather, as youthful in his feelings as a boy, he is a striking example of French character.

M. Denuelle enjoyed an ample fortune, the fruit of his labor, and was eminently social and hospitable. He entertained largely, the weekly gatherings at his house during the winter being as enjoyable as any in Paris. At his home might be found the most celebrated literati, architects, and painters of the day. — *Evening Post.*

THE THEATRE WAR AT LYONS.

AN instance of Yankee-like push and disregard of tradition and *les convenances* has just occurred at Lyons, France, which has caused so much excitement in the city that the citizens are said to be actually divided into factions, one side supporting the innovators, and the other side supporting the existing state of things. The Continental system of subsidizing theatres with government appropriations is nowhere so generally practised as in France, where the theatres are regarded, even now that the country is a republic, as important political engines in governing the excitable people by furnishing them with occupation for their time and subjects for their talk. This national custom has been followed hitherto in Lyons, where the two theatres, Le Grand Théâtre, which can seat twenty-two hundred persons, and Le Théâtre des Célestins, which can seat seventeen hundred, receive together a government subvention amounting to thirty thousand dollars a year. At these theatres the best standard plays are produced, together with a fair number of new plays, yet their combined receipts can amount to but fourteen hundred dollars a night. Besides these two large theatres there are a number of smaller theatres where vaudevilles and lighter pieces are produced.

In spite of this somewhat discouraging prospect, a body of capitalists have been encouraged to build a new theatre, larger than the largest of the existing theatres, one which can seat twenty-four hundred persons, and give standing-room to six hundred more, and have entrusted the work to M. Jules Chatron, architect, to carry out.

M. Chatron has understood that in order to compete with the subsidized theatres, it was necessary that it should be both built and conducted on a basis essentially different from those on which the older theatres were carried on. The difference in the conduct of the new theatre has been effected by adopting the American system of employing star companies, who play short engagements, while the older theatres depend on their regular stock companies; but this innovation has been met by the older theatres by increasing the number and variety of plays put upon the boards. Thus during six weeks Le Théâtre des Célestins played twenty-two different pieces, while the new theatre, Le Théâtre de Bellecour, played only two.

The difference in the theatre building itself, which was, of course, to be the peculiar care of M. Chatron, has been effected by various striking changes in arrangement and innovations on the conventional treatment of theatres, the real object of which was to create a sensation, which are described by a correspondent of the *Builder* as follows:—

The façade is perhaps the part of the building which occasioned the most perplexity, and gave the architect the best opportunity of displaying his ingenuity. The company, or rather the few shareholders to whom this theatre belongs, succeeded in obtaining a site measuring more than 2,000 square metres, and valued at more than £40,000; but the portion of this land which gives on to the main thoroughfare of Lyons, the Rue de la République, close to the Place Bellecour, is extremely narrow. To add to the complication, the houses on either side do not match, the one is much larger than the other, and they are in no way adapted to the close proximity of a great public building. How far the architect, M. Jules Chatron, has made the best of these adverse circumstances must remain a matter of opinion; but, in every case, no one can deny that the façade of the theatre, in spite of its narrow dimensions, is at once imposing and original. The entrance is flanked by two immense statues, eighteen feet high, which are surmounted by a balcony, corbelled out in hard limestone. Above the balcony there is a monumental loggia, decorated with mosaics, bronze, gold, stained glass, etc. One of the peculiarities of this theatre is that there are three *foyers*, or crush-rooms, one above another, to correspond with each story, and all giving on to the street. The two upper crush-rooms are not yet furnished. Over the loggia there is a cupola, painted to imitate Florentine bronze, and relieved with gilding. This enables the eye to realize the height of the structure. Behind the cupola similar windows admit light into the body of the theatre in sufficient quantity for a meeting or concert to be held in the daytime without the aid of gas. Finally, on the summit of all, an electric light indicates to the whole town that the theatre is open, — the piece begun.

The side of the theatre giving on the Rue Bellecordière has a wall no less than one metre fifty centimetres thick, and thirty-seven metres high. This wall is united to the rest of the structure by tension-rods and enormous rafters in iron; fixed at their extremities in metallic pillars, and possessing, according to the verdict of the experts appointed to examine the safety of the building, every necessary element of strength and security.

It is impossible to enter, be it only the vestibule of the theatre, without being at once impressed with the novelty of the entire organization and structure. First of all that abomination of the French theatre, the *queue*, has been abolished. Instead of being obliged to stand packed close together in Indian file between palisades that look like cages in front of the ticket-office, the public is allowed to secure places at any time during the day without extra charge. Every place in the theatre is numbered, and thus, armed with his ticket, the spectator can walk in at any time, without being compelled to wait outside before the doors are open in order to secure a good place. This is certainly an excellent innovation, and avoids much confusion and crowding.

The entrance, or vestibule, leads to the most peculiar part of the theatre. This is termed the Indian café, which, built underneath the theatre, is circular in shape and entirely lighted, both day and night, by electricity. It would be most difficult to give anything approaching to a correct picture of this most fantastic place. The style of decoration is purely Indian, and not a little barbarous. Brick-red is the predominating color, but this is relieved with gold, green, blue, Indian faces painted here and there, and a little black. There is a colonnade all round, with red and gold pillars, while the wall beyond the pillars is covered with uneven looking-glass, that seem more like plaques of polished steel, fixed into a buff-colored frame-work. The pillars have for capitals elephants' heads, life-size, painted a dull green, with huge gold ears. There is a circular bar in the centre whence refreshments are served, — little tables dotted here and there for coffee, etc. The absence of gas and the tessellated pavement would render the place delightfully cool in summer, particularly as drapery is used instead of doors. The whole effect is harmonious, though it might be thought gaudy but for the fact that the high coloring is in keeping with the Indian style. In any case the result is most startling: the electric light throws a fairy like glamour on the scene, and it would be worth while visiting the theatre if only to see the café.

Below the café — that is, in the basement — another circular room, plainly decorated and not so lofty, serves as a restaurant, so that the visitor begins by dining in the room below the level of the earth, then ascends to the ground floor, where he takes his *demi-tasse*

and cigar, and finally, at the last moment, when the electric bell has given the signal, he goes up to the first floor and finds that his stall, numbered and reserved, is ready, waiting for him. The theatre itself is also a remarkable though less eccentric structure. Its size and importance may be gathered from the fact that it will seat 2,400 persons, though the seats are separated by divisions, to prevent overcrowding; and, further, there is standing room for 600 more persons. In the general style, M. Chatron has sought to effect a happy compromise between the Italian and French systems. In the ordinary French theatre each category of place varies in aspect and disposition. The first tier of boxes and the dress-circles predominate by their sumptuous decoration. In the Italian theatre, on the contrary, the decorations are uniform, whatever the height or nature of the place they surround. At the Théâtre de Bellecour a difference is made, but not so marked as is generally the case in France. Each row of stalls is raised one above another, so that the persons in the last seats can see perfectly; but the floor is level, the seats can be easily removed, and the theatre converted into a large ball-room. Around the stalls and on the same level there are thirty *baignores*, or large boxes, which hold eight people, and are only separated from each other by a division about three feet high. Behind these there is not, as in most theatres, a wall, but simply some heavy drapery; and, on the other side of the drapery, a wide space where persons can stroll round and talk, and, by pulling the curtains aside, obtain an occasional glimpse at the stage. To this contrivance, however, two very serious objections may be made: firstly, the sound of conversation disturbs those who are seeking to enjoy the play; while the rush of wind every time the curtains are moved is most distressing, at least in the cold weather which so often prevails at Lyons.

The general disposition of the interior of the theatre is very similar to that of the ancient Paris Opéra, in the Rue Lepelletier. There are four columns on either side of the stage, of a composite and remarkable style. The three galleries are richly decorated, the design including shields that bear the names of great composers and authors. The centre of the ceiling represents the rays of a star, to which the eight electric lights that hang underneath, instead of the ordinary gas lustre, give an appearance of reality. The rays of the star gradually lose themselves in clouds, which themselves frame allegorical and admirable paintings, representing Aurora opening the gates of the West to Apollo conducting the sun; and, where darkness of night still prevails, Tragedy and Death are menacing Love, nurtured in the soft glow of the dawning day. There is also a stalwart female, seated on a heraldic lion, receiving a crown from the hands of Renown, which is, of course, meant to represent the town of Lyons. Round the galleries we have both electric and the ordinary gas light. These are used sometimes simultaneously, sometimes separately, according to the exigencies of the play. In the decoration the most novel feature is the frequent admixture of red copper, which harmonizes wonderfully with the surrounding gold and silver, and with the rich crimson satin hangings and gold fringe.

The first floor or principal crush-room is preceded by a regular English bar, with three bar-girls, who have thoroughly understood the importance of personal appearance as a means of increasing the sale of refreshments. The crush-room is also Indian in style. The walls are covered with looking-glasses, framed in pillars, which, facing each other, give the room the appearance of an endless gallery, where the waving palm-leaves, poised above the central seat, are reproduced over and over again. The pillars are of a brick-red color. The room is lighted by electricity, which has a most curious effect of color on the large satin rosettes that surmount the doors. These are made of plaited blue and crimson satin, with red velvet and gold fringe.

The challenge which has thus been flung at the official theatres has been taken up by them in good earnest, and they have not only increased the number, variety, and excellence of their performances, but the official subvention has been doubled, and a large sum is to be spent in furnishing up their decorations, and making desirable alterations in their arrangements.

THE GREAT CHANOINE DAM AT PITTSBURGH.

The General Government is at present engaged in constructing, near Pittsburgh, Pa., an experimental lock and dam, which, when completed, will be among the largest works of the kind in the world. The dam will be the largest "movable" one yet built in this country, being designed after the Chanoine system in use in the Seine and other European streams. The object of the work is mainly to test the applicability of the Chanoine system to the improvement of the Ohio and similar streams. The success or failure of this costly experiment will have a most important bearing upon the future of the entire Ohio Valley from Pittsburgh to Cairo, Ill., and more particularly upon the coal trade of the first-named city.

The lock gates are unlike those in general use in every particular. They are immense affairs. In operation they will run directly across the lock at right angles to either wall. To enable them to be so operated immense recesses lead from the shore wall, each recess being 120 feet deep (long) and 15 feet wide. Into these the gates slide when the lock is opened. Each gate measures 118 feet in length, 10½ feet in thickness, and 14 feet in height; and these affairs will resemble, in place, a truss bridge on edge. Their material will be wood or iron. If of the former, they will weigh 80 tons each.

An offset in the masonry of the river wall serves as bearings for the outer end of each gate. The operating device for these ponderous gates will be turbine wheels, actuating upright and lateral shafting, so arranged in connection with suitable gearing, endless screw, reversing device, etc., as to draw the gate in and out of its recess upon seven pairs of iron rollers running upon rails. The latter are laid on the masonry at the bottom of each recess and across either end of the lock. Connecting the bottom of the upper recess with the bottom of the shore side of the lock is an immense arched tunnel termed the "filling culvert." Into it the water pours from seven circular inlets, 4½ feet in diameter, and fitted with balanced wing valves or gates, and is led to the lock, which is filled through ten openings, 3 by 3½ feet, and seventeen feet below the coping. By this means the lock can be filled or emptied in four minutes.

The dam will be 1,200 feet long, subdivided into three "passes" of 400 feet each. The channel pass, or that nearest the lock, will be that across which the movable or Chanoine dam will be placed. A solid sill of masonry and timber must first be laid across the bed of the river. To the timber is hinged a series of wickets of stout oak planks, each thirteen feet in length by three feet eight inches in width. A space of four inches separates the wickets, and a hinged prop or arm forms part of the wicket, the whole being so arranged that when the wicket is drawn to a position almost perpendicular, its prop, as to its free end, slides into a metal "step." This operation repeated constitutes raising the dam, inasmuch as every wicket is a duplicate of its neighbor. Lowering the wickets is instantaneously accomplished by means of a "tripping bar" extending along the series and resting upon the dam sill. By its agency each prop is disengaged from its "step," the water presses wicket and prop prone upon the bottom, and the channel is virtually clear of obstructions. The spaces mentioned as existing between the wickets are thus provided for: Over each interval a plank is laid, kept in place mainly by the pressure of water upon its upper surface. These planks are connected by links at their upper ends only, in such a way that when the dam is "tripped," the chain of planks, being connected, and the whole series being permanently fast at one end only, swings away with the current — a sort of floating chain, ready for service again when the dam is raised.

Such, in brief, are the devices constituting the main features of the Chanoine dam, which will rise and fall — according to the stage of water — across the channel of the Ohio at the point in question. When the river falls to less than a six-foot stage the wickets will be raised by gangs of men in boats working simultaneously toward the centre of the pass. When up, the crest of the dam will be twelve feet above the sill, and the "back water" will extend into the mouths of both the Alleghany and Monongahela Rivers. This, of course, means navigable water about the wharves of Pittsburgh and her sister city, Allegheny. At present, local towage is only possible during a portion of the year. — *Scientific American*.

A NOVEL RAILROAD.

MR. JESSE FRYE, a mechanical engineer in New York city, has on exhibition the working model of a novel railroad. Each wheel consists of a lesser and larger wheel, the smaller one resembling the hub of an ordinary wheel. The two are cast in one piece, the hub projecting inwards and being one fourth of the entire diameter of the wheel. The hub moves along the track by means of any power, and the large wheel, of course, moves with it, but entirely free of the track. A block of wood representing a car and having grooves on the under surface is fitted on to the larger circumference of two pairs of wheels; the track being double like an ordinary railroad track, and power being applied to pins in the axles, the car moves along at a rate of speed four times greater than the speed of the hub, and passes rapidly from one set of wheels to another. In other words, while all the wheels, which are in the form of an endless chain, move one foot, the car moves four feet, the motion originating in the hub, and being transmitted to the car through the larger wheel. It is designed to operate this system in an iron tunnel elaborately constructed in small sections and fitted together so closely as to be impervious to water and gases, the tunnel to be placed under ground or under waterways at any required depth. Within the tunnel are to be two compartments or avenues for two trains moving in opposite directions. The compartments will be just large enough to allow the trains to move easily, and the road or tunnel is to be somewhat in the form of a flattened ellipse, forming a circuit, the train being continuous and having neither beginning nor end. Thus a person going in one direction and remaining in a car would after a time find himself at the place from which he started. Mr. Frye claims that the close fitting of the trains in the compartments will overcome very greatly the resistance of the air, and so enable a high rate of speed to be maintained without loss of power. He also claims that axle friction is entirely done away with by his plan, and thus so much additional power gained. The compartments will be ventilated by stacks running up through the tunnel to the outer air. The steam engines are to be placed beneath the tunnel, one engine to operate a circuit. It is proposed to build the tunnel not by excavation but by burrowing or boring, thus obviating all damage to property on the surface. The cars will be coupled by means of a universal joint. Mr. Frye claims that by his system a speed of one hundred and fifty miles an hour can be attained. — *Exchange*.

PUBLICATIONS RECEIVED.

SPECIFICATIONS AND SCHEDULE OF MATERIAL FOR THE STEAM HEATING AND VENTILATING APPARATUS AT THE NEW IOWA STATE CAPITOL at Des Moines, Iowa, by order of the Board of Commissioners. Des Moines, 1879.

NOTES AND CLIPPINGS.

FALL OF A BUILDING. — The old Sweet Gum Hotel, at Mound City, collapsed and fell in on the occupants at 8 o'clock in the evening of December 29, killing two children and fatally injuring another child and a woman named Williams. It stood close to the Marine Ways, and was a large two-story frame house that was occupied during and soon after the war as a hotel and boarding-house.

THE FIRE LOSS FOR 1879 IN PHILADELPHIA. — The report of the chief clerk of the Fire Department shows that from January 1 to December 30, last year, the total number of fires occurring in the city was 739, nine less than in 1878, the largest number occurring in July, when 101 were reported. Among the largest were John Brown & Sons' mill, Eighth and Tasker Streets, January 20, loss \$180,000; Washington Butcher's Sons, March 24, 146 and 148 North Front Street, loss \$31,156; the fire at Crown, Fourth, and Rice Streets, April 6, loss \$391,439; the Point Breeze Oil Refineries, June 11, loss \$1,000,000; the grain warehouse on Market Street, west of Seventeenth, November 1, loss \$150,000; Megargee's paper warehouse, Sixth Street, above Chestnut, December, loss \$350,000; and the Oxford Presbyterian Church, Broad and Oxford Streets, December 3, loss \$50,000. The losses and insurances during the different months of 1879 and the previous year were as follows:—

	1879.	Ins.	1878.	Ins.
January,	\$187,826	\$342,475	\$511,044	\$2,274,550
February,	34,686	323,517	14,346	180,099
March,	78,008	930,353	367,781	1,143,386
April,	402,144	1,213,940	21,292	197,850
May,	35,914	321,225	89,867	350,973
June,	62,618	204,525	31,291	357,000
July,	60,776	475,792	13,658	290,350
August,	8,866	169,100	46,818	375,500
September,	21,001	260,525	23,132	443,107
October,	43,072	250,700	40,289	376,135
November,	200,000	300,000	297,000	247,000
December,	400,000	350,000	70,000	275,030
Totals,	\$1,534,911	\$5,342,154	\$1,526,518	\$7,510,950

THE UNITED STATES AT THE AUSTRALIAN EXHIBITION. — The Secretary of State, desiring to secure a good exhibition of American goods at the Melbourne International Exhibition, to be opened October 1, 1880, has appointed Thomas R. Pickering, of Connecticut, an agent on behalf of the United States Government to solicit exhibits. Mr. Pickering has opened an office in Post Office Building, New York city.

STORM ON THE ISTHMUS OF PANAMA. — After the rain-storm on the Isthmus, late in November, the bed of the Panama Railroad was five or six feet under water, with the exception of the first section from Panama for a distance of eight miles. For nine days rain fell continuously. The road was washed away in many places, and the iron bridges across the smaller streams were bent and twisted by the force of the torrents. The superintendent crossed the Isthmus from ocean to ocean in a small boat while engaged in directing the repairs.

DEATH OF ITTENBACH. — Professor Franz Ittenbach, a religious painter and contemporary of Professor Carl Müller, died in Dusseldorf, in the early part of the month, in his sixty-sixth year, having been born at Königswinter in 1813. He was attached to the Dusseldorf Academy of Fine Arts, and was a pupil of Professor von Schadow. After travelling in Italy, he on his return to Germany executed some frescoes in the Rhine Church at Reiningen. One of these has for its subject Christ and the Doctors. His Holy Family in Egypt is in the Berlin National Gallery. A number of his works are in this country. Colonel Thomas A. Scott, of Philadelphia, owns his Die Himmels Koenigin. His Madonna and Child belongs to Mr. Edward Mathews, of New York, and his Holy Family, which was in the H. N. Smith sale here a few years ago, is owned in Philadelphia. Professor Ittenbach was a Catholic and a deeply religious man. His works are distinguished by much sentiment and religious feeling, and are rich in color. Two years before his death he became blind, but an operation restored sight to one eye. He was a chevalier of the Order of the Prussian Crown and of the Order of Leopold of Belgium, and a member of the Viennese Academy of Fine Arts.

DEATH OF HÜBNER. — The death is announced from Dusseldorf, on the 5th inst., of Professor Karl Wilhelm Hübner, a well-known German genre painter. He was professor at the Dusseldorf Academy of Fine Arts, and in his sixty-fifth year. Born at Königsberg and the son of a poor laborer, he on leaving school, having shown a taste for art, became a pupil of J. Wolf, a portrait painter, who had a short time before left David's studio, in Paris. In 1837 he became a pupil of Karl Sohn, at the Dusseldorf Academy, and afterward of M. von Schadow. Large numbers — in fact, nearly all — of his pictures are in this country, and at one time commanded high prices. Professor Hübner visited America — where he has two sons, one of whom is in business in New York — in 1875. Another son, Julius Hübner, who died some four or five years ago, followed his father's profession. Professor Hübner was a chevalier of the Order of Leopold, which decoration he obtained when his *The Rescue from the Flames* was exhibited in Brussels, in 1854, and of other orders, and was a member of the academies of Amsterdam and Philadelphia. He was made professor in 1864, was very industrious, and produced many works which are noticeable chiefly for the stories they tell and their composition.

THE BED OF THE TIBER. — The enormous supply of lead needed in the water system of Rome for the daily distribution of a milliard seven hundred millions of litres came from English mines. The business belonged to the imperial fisc. Many masses of lead have been discovered in the sea-ports of Great Britain ready for shipment; one has been traced half-way on the coast to Spain, but none had been discovered in Rome. One has now been found at the bottom of the Tiber, fallen overboard in the moment of landing. It is sixty-four centimetres long, thirty-two wide, nineteen thick, and has the many stamps from the officers of the fisc, as well as the weight engraved. The weight is DCCCLXX, or eight hundred and seventy pounds.

A NEW TEMPLE BAR. — At a meeting of the Court of Common Council, held December 10, the City Lands Committee submitted for the approval of the court the model of a design for marking the boundary of the city's jurisdiction on the site of Temple Bar. In their report they stated that the structure would also provide a rest for foot-passengers crossing from the New Law Courts, sixteen feet being left on each side for vehicular traffic. It is stated that the extreme height will be thirty-three feet, the material to be used in the construction being either a hard white stone, or an equally durable and fine-grained material capable of withstanding the weather. The base and pedestals are to be made of gray or other granite, whilst the statues, which it is proposed should be of heroic size as well as the surmounting griffin, will be of bronze. The report was adopted *nem. con.* Mr. Bedford then moved: "That the Right Honorable the Lord Mayor be requested to take the necessary steps for obtaining Her Majesty's pleasure with reference to some important details connected with the proposed design." This also was agreed to unanimously. — *London Telegraph.*

A NEW STATUE OF PROMETHEUS. — The *Academy* states that the Berlin National Museum has just been enriched by what is declared to be the largest modern group of sculpture extant. The artist is Professor Gustav Muller, of Coburg, a sculptor long resident at Rome who has been engaged upon this work for eleven years. It is a Prometheus group, representing the bound Titan at the moment when the eagle first pierces his body with his claws, while two Oceanides, beautiful nude female figures, endeavor to loosen his chains. The one tries to ward off the bird, the other sinks down overcome with horror. The conception and execution are said to be very fine, and the figures, especially the female ones, are highly praised. The whole group is modelled out of one block of the finest and purest Carrara marble, weighing three hundredweight, which its owner regarded as such a unique mass that it was with difficulty that he was persuaded to part with it. With the exception of the very roughest outline, the execution of the group is entirely from Professor Muller's own hand.

THE WALLS OF NUREMBERG. — Nuremberg, in spite of many protests, has at last decreed that her wonderfully interesting old wall with its many towers must come down, to give the city a chance to grow. Rumors of plans to do this work have been current for some time, and there seems now to be no doubt of their melancholy truth.

TO REMOVE OLD PAINT. — A writer to the *English Mechanic* says: The cheapest and best solution that I know of I accidentally discovered, and it may be worth while to tell how, though very likely some may know of it. In trying experiments for press-copying some old letters, amongst others I used successfully a solution of one table-spoonful of vinegar and one ounce of washing soda to a half pint of water. A little of this was spilt on the painted window-sill, and in wiping it up the paint came entirely off, leaving the bare board quite clean. Try it; a gallon will not cost fifty cents.

ANNEALED GLASS. — Attention is called in the *English Mechanic* to a curious fact connected with the ordinary bottle glass, namely, that if it be cooled slowly, it may lose its vitreous properties, and be changed into what is called Réaumur's porcelain — an opaque and milk-white substance much resembling porcelain in appearance. To produce this change, the glass may be imbedded in sand and heated so as to soften it, but not sufficiently to fuse; if now it be cooled very slowly, it will be found to resemble porcelain in appearance, and to be considerably harder than the other glass. This interesting change is probably due to the partial separation of some of the silicates, especially those of lime and alumina, and their assumption of a crystalline form. This is a familiar fact, which may frequently be noticed in glass-works.

FLOODS OF THE TIBER. — Castiglione enumerates no fewer than thirty-six great floods of the Tiber between the birth of Romulus and the year 1598. The picturesque Ponte Rotto still bears witness to the fury of the inundation which in that year, beginning on the 25th of December, made the Roman Christmas a feast of despair. Its violence is attested to by the highest of the tablets affixed to the outer wall of the Church of Santa Maria sopra Minerva, — the church, by the way, which was assigned to the Archbishop of New York with his Cardinalian title. Yet neither in 1598 nor in 1557 nor in 1530, all of them disastrous dates in the municipal annals of Rome, did the waters rage more perilously than in 1870. They began to rise seriously in that year on December 26, and in three days attained their greatest height. For many days before the 26th, however, the clouds had been dense and the rainfall heavy along the whole upper course of the Tiber. At midnight on the 26th a clap of thunder shook the houses near the Ponte St. Angelo like an earthquake, and a picture was struck by lightning over an altar in the Vatican. During the inundation the post-office was closed for nearly sixty hours, and for two nights the city was in darkness through the suspension of the gas-works. It was in the midst of the desolation caused by this calamity that King Victor, on the 31st of December, for the first time entered the new capital of his crowned and completed kingdom of Italy. — *N. Y. World.*

COMMEMORATIVE MONUMENTS IN ITALY. — A hundred and thirteen commemorative monuments have, within the past twenty years, been erected in various parts of Italy to its great poets, scientists, philosophers, and artists of the past, and to the statesmen and warriors who aided in Italian unification.