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CONTENTS.

THE concession to the Prall Union Heating Company, of New York, has been signed by the mayor, and pipe-laying will soon begin. As our readers will remember, this corporation proposes to supply super-heated water in place of steam, the conversion into steam being effected where it is needed, by means of a valve, which admits only a small portion of water at a time, and allows it to expand into vapor by relieving it of a part of the pressure under which it had been retained. The temperature of the water which is supplied will be, it is said, from 350° to 400° Fahrenheit, so that this pressure will be enormous. The tension corresponding to a temperature of four hundred degrees is something like two hundred and forty pounds per square inch, so that the six-inch main pipes which are proposed will have to endure a strain of about twenty-five tons on every foot of their length. Of course, it is possible to make pipes of the requisite strength to resist such a pressure, but the utmost care in testing them will be imperatively necessary. It is reported that the super-heated water will be stored in a "reservoir," and thence distributed through the pipe system. What sort of reservoir it is proposed to use we are not informed, but would recommend that, whatever its construction may be, it should occupy a position as remote as possible from any buildings. The explosion of a powder magazine would be trifling compared with the bursting of such a tank, accompanied, as it would be, by the production of torrents of scalding vapor. Even the street mains will be, we fear, hazardous neighbors. It must not be forgotten that water under a high pressure is a far more dangerous affair than steam at the same pressure, inasmuch as such steam on being released from its confinement will occupy only some ten or fifteen times the space which originally contained it, while the water, with the utmost allowance for absorption of heat on vaporizing, will expand in an instant to at least two thousand times its original bulk, giving an explosive force, if the expansion takes place suddenly, much surpassing that of the same weight of gunpowder. We would earnestly recommend that thorough tests be made before the company commences business, and the practical safety at a large scale, of a system which has been condemned as dangerous with small apparatus, satisfactorily demonstrated.

A PROPOSITION is made to the New York Police Commissioners by Captain Horace B. Montross of that city, by which the latter agrees to remove all street-sweepings for the sum of two hundred dollars per day, or to include ashes also for fifty dollars more. He offers to give bonds for satisfactory performance of his task, and guarantees that no more complaints of dirty streets shall be heard from citizens or the press. At present the cost of removing these matters is about four hundred and fifty dollars per day, and a large part of the streets reek with filth. Captain Montross proposes to use the material in filling along the river front on the New Jersey side, for the Riparian and Dock Improvement Company. It would seem that an offer so favorable to the city tax-payers should be eagerly availed of, but when first made, last March, it met with no response whatever on the part of the Police Commissioners. It has now been repeated, and awaits an answer. Perhaps Captain Montross's plan for saving labor by using Mitchell's self-dumping barges, which dispense with the large force of men now needed to shovel out the garbage from the scows, may have discredited his whole scheme. It is understood that city officials look with unfavorable eyes upon any arrangement by which the city dispenses with the services of able-bodied citizens who are in a position to revenge themselves at the polls, for being deprived of employment, and these individuals are quite aware of their power, and enjoy it at the tax-payer's expense. We recollect that in the golden days of Tweed it was customary to have Broadway sprinkled by troops of men with watering-pots, not that an ordinary street sprinkling machine would not have done the work much more quickly and cheaply, — so the invidious said, — but because they only kept one man employed at the city's expense, where the other system supported a score.

MR. JAMES C. HOE, of the well-known firm of J. C. Hoe & Co., builders, in New York, died Sept. 12, at the age of sixty-seven years. For fifty-eight years the firm of which he had long been the head had occupied the same office at 10 Liberty Place, and during that time many important buildings had been carried into execution under their care. Niblo's Garden, A. T. Stewart & Co.'s retail store on Broadway, Tiffany & Co.'s warehouse on Union Square, and many other mercantile buildings and dwelling-houses were erected wholly or in part by them, and the late senior partner had become very widely known and respected for his business capacity, integrity and courtesy. About three months ago he was attacked by a gangrene in the right foot, and compelled to forego the active management of his business; and the disease increasing he was removed to his summer house on Long Island, where he died, surrounded by his family. Few men have led a more useful, active and upright life, and his example is not the least of the many benefits which he has bestowed upon his friends.

AN interesting competition has just been opened in Paris, for the decoration of the Place de la Republique. The elements of the decoration are to consist of four "Venetian masts" in bronze, a stone balustrade, rostral columns, and bronze candelabra, and each competitor is at liberty to present, besides models of the different objects, a *projet d'ensemble*, showing the grouping which he would suggest. For the best model of a mast, twelve hundred francs will be awarded, that for a rostral column receives one thousand, while the best candelabrum and balustrade receive six hundred each. Second prizes, of somewhat less than half the value of the first, will be also awarded. The constitution of the jury is characteristic of continental competitions in general; three delegates are sent from the Administration of Fine Arts, three experts are appointed by the Municipal Council, and four are chosen by the competitors; these ten, under the presidency of the Prefect of the Seine, are to make the awards on the seventh day after that set for the closing of the lists, (October 20). From the twenty-third to the thirtieth of October all the models are to be exhibited in public. This way of carrying on an open competition is very nearly a model of what artists need, and should demand, including, as it does, publicity, promptness in making the award, and a decision by experts whose qualifications no one can dispute. It is an honor to any artist even to hold his own among the competitors whom such an announcement will call out, and a high honor to gain a prize, just as it is degrading to meddle with competitions which are not to be decided by experts, and disgraceful to succeed in them by "wire-pulling" and influence. It should not take long for us American architects to make up our minds, while we are yet in a position to choose, which kind we will hereafter tolerate.

AFTER seven years of preliminary consideration, the project for widening and deepening the water communication between the East River and the Hudson, by way of the Harlem River and Spuyten Duyvil Creek, is likely to be soon carried out. It has always been practicable to navigate a small boat entirely around Manhattan Island, but the channel in some places is very narrow, and a large amount of excavation will be needed to increase it, as is proposed, to a depth of thirteen feet, and a width sufficient for the passage of steamers and floats of canal boats. For the latter craft the new route will be especially useful, as it will save those which now pass down the Hudson to its mouth, rounding the Battery, and then return northward again to the

piers on both sides the East River, several miles of difficult and troublesome navigation, while even for those bound to the elevators of the southern part of Brooklyn its comparative safety would make it desirable. Whether it would have sufficient advantage in distance to tempt vessels coming from the East, through the Sound, to the New Jersey shore, is doubtful, but a certain amount of commerce in cement, plaster, lime and other bulky products goes on between Rondout and Albany, with the other towns along the Hudson, and the New England coast, which would naturally make use of the new channel. Taken in connection with the improvements in the navigation of Hell Gate, which are still in progress, the Harlem canal may in future acquire unlooked-for importance. If Long Island Sound should become, as some people think it will when the present obstructions are removed, the great thoroughfare for all craft plying between New York and European ports, the eastern margin of the city would furnish them with most favorable wharfage, instead of the western shore, which they now prefer, and the canal would serve for bringing to them the grain and flour boats from Buffalo which supply a large part of their outward cargoes. Elevators would next be needed, and business would grow up around them rapidly, so that it is quite within the bounds of possibility that another generation may see a considerable change in the shipping centre of the city.

THE ENGINEER, ARCHITECT, AND UNDERWRITER.

Mr. Edward Atkinson's able and earnest address, read before the convention of Fire Engineers at Boston, September 14, is attracting very general and deserved attention, and echoes, so to speak, reach us from various directions of the warnings and complaints to which the author gives utterance, showing that a wide public interest is being awakened on the subjects of which the paper treats. To architects, especially, it should be of peculiar interest, not only for the instructive suggestions which it contains, but also on account of its clear and outspoken expression of opinion as to their shortcomings in the present practice of their profession. In addressing the fire-engineers Mr. Atkinson says: "The more I recognize their (the engineers') merits, the more I must condemn other classes in the community who are, perhaps, awarded, or at least often assume a higher standing, to which their merits do not entitle them." Further on, he repeats: "So far as I can judge, all that the architects do is to put up the most perfect specimens of combustible architecture, in order that you may have the satisfaction of putting out the fires which are sure to occur in them." This rather sweeping condemnation is mitigated subsequently by an admission "that there are a few conspicuous exceptions to the common rule," but "the vast majority," he says, "of those who assume the title of architect are masters only of the art of *sham*." So grave an accusation, brought by an authority of such ability, disinterestedness and experience, against a body of men who profess to exercise at least an average amount of intelligence and conscientiousness in their calling ought to be considered by them a serious matter. If, after self-examination, they find themselves really deserving of such censure, it is plainly their duty to acknowledge their sins, and begin the work of repentence and reform; if they are not guilty, or only partially so, the fact should be made known, that they may not suffer public condemnation by default. For ourselves, we honestly confess that we think these reproaches by no means undeserved. Mr. Atkinson's opinion, that most architects are ignorant of the requirements of a fire-resisting construction, we are sure is erroneous; but that a large majority of the buildings erected under their control show, not an "utter want of consideration of the danger of fire," but a very inadequate attention to the means of preventing it, cannot be denied. We know well the difficulties which attend the task of trying to promote reforms in matters of construction; the indifference of owners; the contemptuous depreciation of underwriters; the fixed habits of builders, and the very disproportionate cost of even a trifling innovation on the received methods. But these difficulties might long ago have been overcome if the architects, whom the public expects to be at least competent and willing to lead in building matters, had had the courage to act up to the convictions which they freely expressed among themselves, and to persistently urge those improved methods which experience taught to be valuable. No one's opinion in such matters can have so much weight as theirs, for the reason that they alone are supposed to weigh impartially all the advantages and disadvantages which a given system of construction presents, its relative cheapness, beauty, convenience, and many other considerations, but this only makes it the more their duty, if, as Mr. Atkinson says, it is possible to secure the unquestionable benefit of a comparatively incombustible construction without any sacrifice whatever of other desirable qualities, to know the methods by which it is attained, and put them in practice. It is very possible that their clients may not be willing to spend any extra sums in protection against fire, but it does not follow that they have no right to claim such security as architects, by means of knowledge and thought, can give them without inconvenience or increased expense; on the contrary, if, with reasonable care and knowledge, their professional advisers can obtain in ordinary cases a greater degree of safety than is now common, they are certainly bound to do so, unless expressly directed otherwise, and a failure on their part to trouble themselves about the matter is a plain neglect of their duty toward their employers. There may perhaps be a question whether those who profess the art of architecture ought to wait until they are spurred on by underwriters' associations and fire-engineers to the study of so important a question for themselves, but there can hardly be any as to the necessity for more general and united action in regard to utilizing the results of the experience of others. The prevalent modes of building are in this respect so bad that a single architect is at a great disadvantage in struggling against them. Even if sufficiently alive to the importance of his task to be sure of suitable provisions in his plans, he is continually embarrassed by unforeseen difficulties, by lack of precedents which might serve to instruct those who work under him, and by the routine habits of mechanics, who, with the best disposition to second his wishes, forget his express directions, neglect to look at the specifications, and often compel him reluctantly to give up what he knows to be right, because the only alternative is to cause loss to a well-meaning but heedless contractor. These troubles might be much lessened by a more general understanding and discussion in the profession of the objects to be attained. In this way each one would be helped to keep in mind all the important points, would be able to refer to other examples, and to find builders experienced in the application of the approved methods, while the mutual interchange of views and experiences would rapidly advance and confirm the new methods. This, we believe, must soon be done, if the profession as a body is to retain its influence in affairs of construction. The community is rapidly awakening to the losses and danger which it suffers year by year from preventable conflagrations, and will soon look sharply to find some one to bear the blame of them, and we, although we know well enough how much excuse they have, cannot deny that architects, if they had not only uttered the warnings which their superior knowledge suggested, but had even, when full control was committed to them, been less careless or indifferent about practising what they knew, might have done much to promote a better state of affairs. They have yet time to show themselves qualified to lead in better methods, and there is danger to them in neglecting to do so. Mr. Atkinson says, "No owner would be so idiotic as to sheathe an elevator-shaft with thin boards, and provide a wooden flue for fire behind them, after his attention had once been called to the stupidity of such a method; nor would he ever employ a second time an architect who had misled him into such a blunder, however effective the elevation of the building might be;" and there is, or soon will be, much truth in this assertion. For his part, he seems to have abandoned all hope that architects, as a class, can ever be depended upon to design more substantial constructions, and proposes, as a remedy for the great and increasing evils of inflammable construction, that the fire marshals or engineers of towns and cities should investigate the causes of all fires, and publish the results of their investigations, and should also watch the construction of new buildings, and be empowered to advise the owner or architect in regard to means for securing safety. Much as we should value the suggestions of such an official, it seems to us probable that some annoyance and even discredit to architects must result from his interposition between them and their clients, unless they prepare themselves in time to coöperate intelligently with him. They cannot afford to oppose or disregard his suggestions, and be overruled by him; that would be suicidal. Their only safety, as well as their plain duty, is to welcome him as a friend and ally, and the sooner this is done, the better it will be for the profession as well as the community.

THE OPEN FIRE-PLACE. — XXI.

RECAPITULATION.

WE saw in our first chapter how great a waste of fuel is incurred in attempting to heat by means of the open fire-place as it is now constructed. Absurd as it may sound, it is easily demonstrated by reasoning from the experiments there described, that to heat the rooms of a public building, like, say, our State House, to the temperature given by the present apparatus, a thousand tons of coal a day burned in open fire-places, without help of other heaters, would not suffice, because the draught has to be supplied entirely by the air at zero from without. If one single immense fire-place could be used to

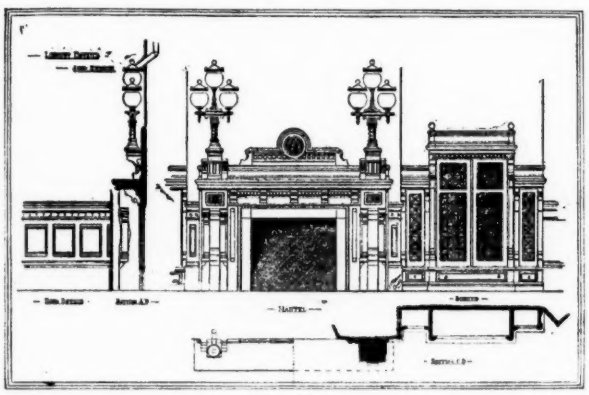


Fig. 230.

do the work, it would have to be as large as the United States Senate Chamber, a raging fire kept burning in it at a white heat, while the draught induced, if brought through a single opening a couple of meters square, would sweep everything before it with the fury of a hurricane. A fire-place built on such a grand scale would almost pay for its construction in presenting us with a picture of our extravagance vivid enough to lead us to attempt a saving; while small fire-places scattered in different buildings, but burning the same amount of fuel at an equal disadvantage, leave us still indifferent.

Returning again, with the improvements in mind which we have

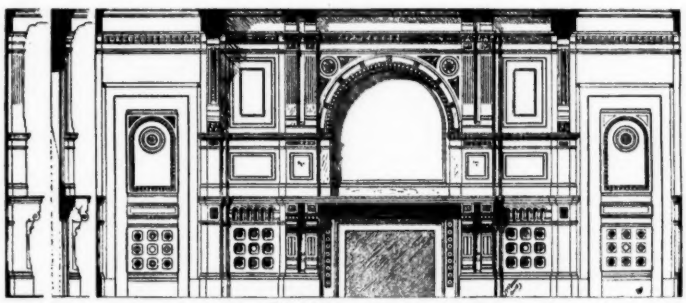


Fig. 231.

herebefore described, to our "ideal fire-place," to see how far such a saving is possible, and to what extent the ideal may be realized, we find a *real* fire-place, giving us the following: —

(1). All the heat generated by the combustion of the fuel, may be utilized in heating, and ventilating the house by the use of the distributors, and the combustion of the fuel may be made complete by using the modified form of the fire-place of Touet-Chambor in combination with the distributors.

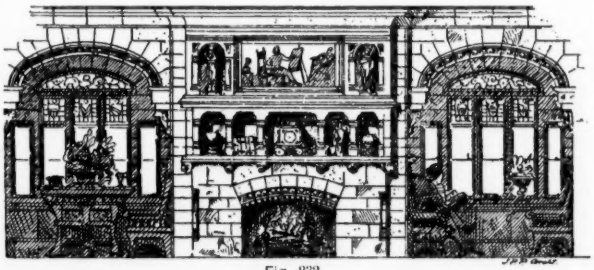


Fig. 232.

(2). The supply of fresh air introduced into the house to take the place of the foul air removed, is as pure as the source without from which it is drawn. It is warmed in winter to a temperature somewhat below that of the room; may be moistened enough (with ordinary furnace evaporating-pans attached to the distributor, if necessary) to give it its proper hygrometric condition; abundant enough to supply amply the fire, occupants and gas-burners; so distributed and located at its entrance as to cause no perceptible draught at any point; the gentle air-current so directed that it reaches every part of the room; so steady that no part of it passes twice over the same spot, or can be twice breathed by the occupants; and so regulated by simple valves, like that shown in Figs. 222 and 223, as to be under perfect control.

(3). The flues include a special gas-ventilator (the left-hand flue in Fig. 220) so arranged that the heat generated by the combustion of the gas is as far as possible retained in the room, and utilized by

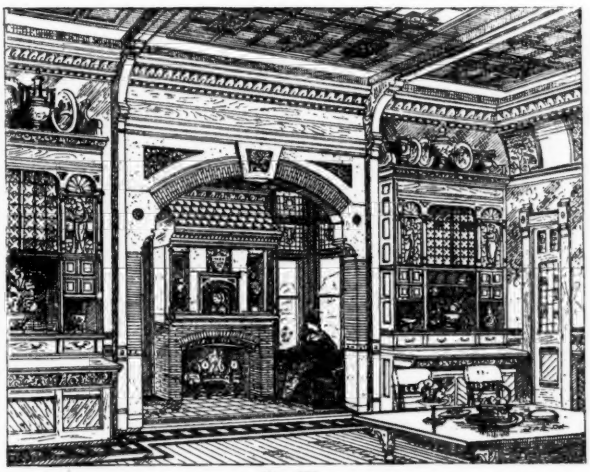


Fig. 233.

radiation from the ventilating-pipes attached to the chandeliers (Figs. 149 to 157) while the injurious products of combustion are removed at their source.

(4). A complete ventilation of the room is effected, both in summer and in winter, without opening doors and windows, by the use of a simple valve.

(5). The chimney being supplied with fresh air, and properly capped when necessary with a Van Noorden ventilator, (Fig. 224) and

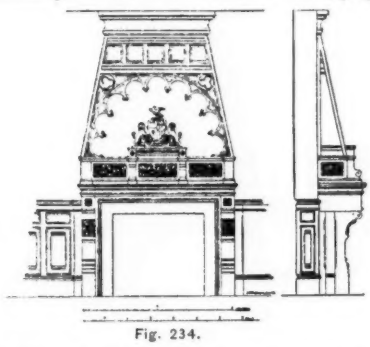


Fig. 234.

properly constructed as to height and form as described, never smokes.

(6). Finally, the construction of the fire-place and flues is simple; they are sufficiently durable, easily repaired in any part likely to require it, inexpensive, safe, and unobjectionable in appearance.

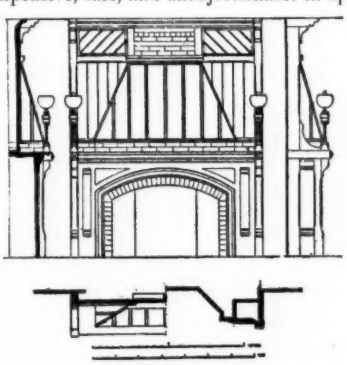


Fig. 235.

Eight of the accompanying cuts represent fire-places in various houses designed by the writer. Figure 230 represents the library fire-place in the house of John Erskine, Esq., Commonwealth Avenue, now building. The gas-burners are designed with ventilating-caps, the educt flues being shown in the section, and in plan. The material of this fire-place and of the rest of the standing-finish in the room is cherry. Figure 231 gives the dining-room mantel in the second story of the Hotel Cluny, Boston, built in 1877–78 and shown in

elevation in the *American Architect* for Aug. 3, 1878. This room is finished in cherry. The work is elaborately carved, but this is lost in the reproduction on account of the smallness of the scale. Figures 232 and 233 are two unexecuted designs. They are for a country house in stone, shown in perspective in the *American Architect* for June 10, 1876. The first mantel being designed for sculptured stone-work. The second is for a fire-place of stone and brick

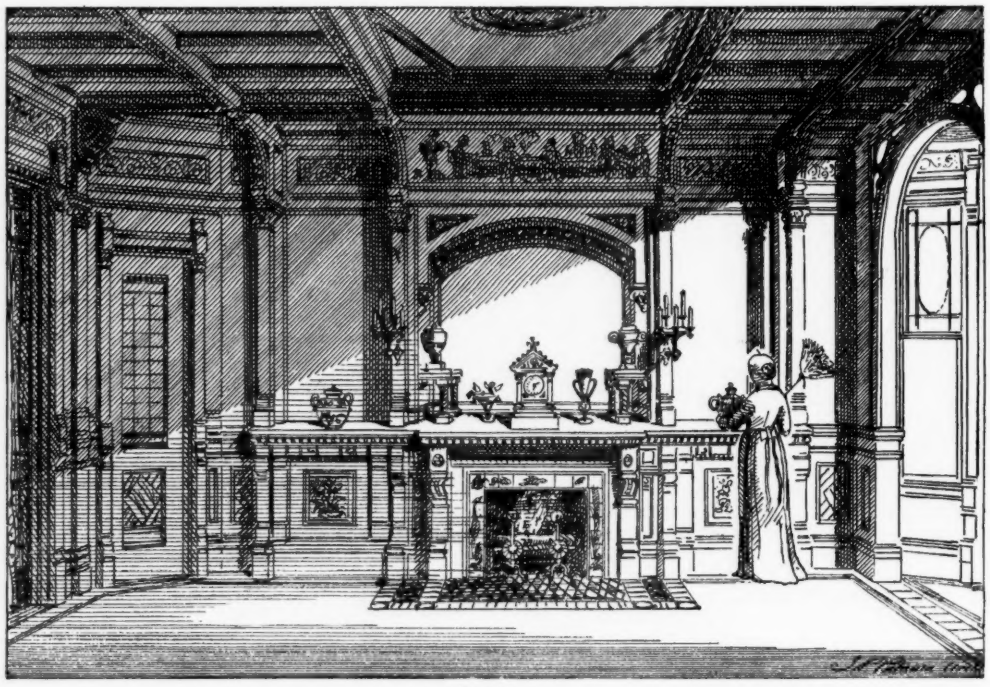


Fig. 236.

combined. The design is for a dining-room to be finished in oak. The ceilings and side-boards are from Talbert.

Figure 234 represents the hall mantel of a house in Kernwood, Salem, reconstructed in 1879. The finish of this hall is in chestnut, which was the wood originally used. The panels are filled with carving of natural foliage (chestnut leaves) and birds. The facing is of buff tiles, moulded to correspond with the floral decoration in bas-relief. The opening is 1.30 meters square.

Fig. 237.

Figure 235 is the mantel in the hall of a house in Andover, built in 1877. It is constructed of face-brick and ash wood.

Figures 236 and 237 give the dining-room and parlor mantels for the house of John Erskine, Esq., Commonwealth Avenue. (*American Architect* for April 24, 1880.) The former is of oak, and the latter of white pine painted in parti-colors.

Figure 238 is a dining-room fire-place reproduced from Talbert's Gothic Forms.

THE APPRENTICESHIP OF THE FUTURE.[1] — I.

The present state of British commerce brings home the conviction that it is no idle cry that has sounded ever and anon in our ears, warning us of the deterioration in the quality of our manufactures and in the average calibre of our skilled artisans. International Exhibitions have from time to time afforded the means of drawing comparisons between the work of other nations and our own work; comparisons by no means always in our favor, often the reverse. Apprenticeship with its wholesome rules, having decayed in everything but form, the lads who enter the shops are never properly instructed, but are made the drudges of the older workmen. What wonder that they acquire habits of idleness and carelessness that not only pursue them through the whole of their work, but, worse than this, corrupt and undermine their morals? What wonder that their manipulation is but half acquired, or that the methods and devices they learn to apply are those of half a century ago; ancient relics of prejudice and unscientific "rules of thumb," handed down by the tradition of the shops, a veritable survival of the unfittest? Without the shadow of a doubt the truth that there is — and alas that there is — much truth in the outcry concerning the inferiority of training and capacity of the British artisan, may be very largely imputed to the relaxation

[1] Portions of a paper by Mr. Sylvanus P. Thompson, in the *Contemporary Review*.

and degeneration of the old system of apprenticeship; for, with all its faults, it did at least provide that a skilled master should become personally responsible for the training of the apprentice in his craft. In that famous codicil to his will wherein Benjamin Franklin devised so many thoughtful legacies to promote the well-being of the

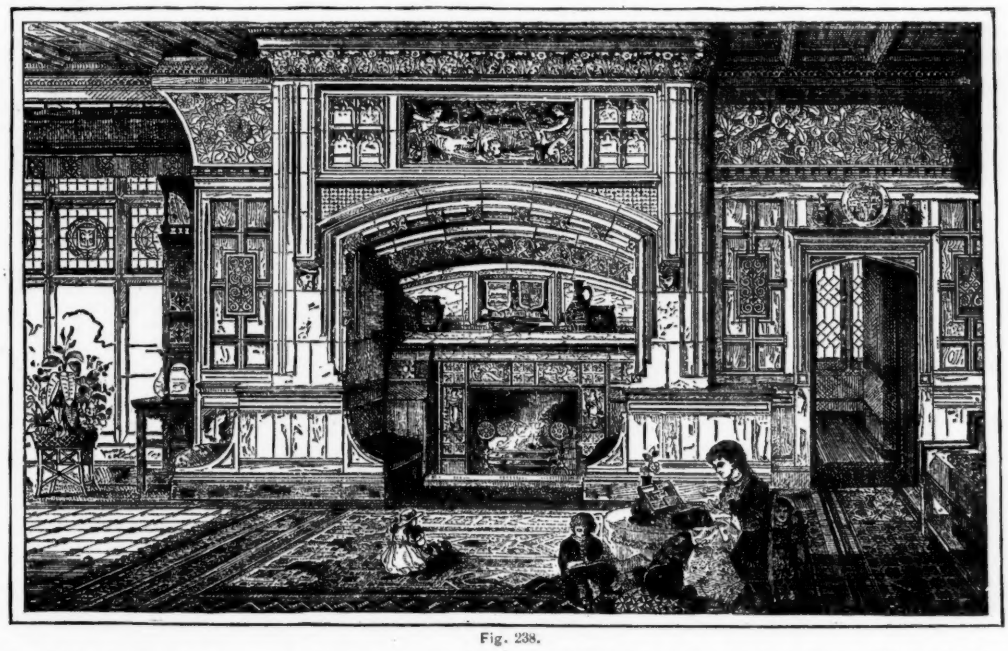


Fig. 238.

land and city of his adoption he wrote — and we must remember how intimate and many-sided was his acquaintance with the condition of labor in his day — these ever-memorable words: "*I have considered that, among citizens, good apprentices are most likely to make good citizens.*" If this be true, seeing how rare a good apprentice is in the present day, the aphorism instilled into our ears as schoolboys, *Boni cives rari*, threatens to receive a weighty comment from the experience of the nineteenth century! Be this as it may, a very little consideration will show how real is the crisis to be faced, and how irrevocably of the past the apprenticeship of the past is.

What, then, must be done? "Apprenticeship is absolutely necessary for the purpose of acquiring a practical knowledge of a trade; without this there can be no guarantee for good and efficient workmanship." Such is the dictum of one who speaks with authority from the point of view of labor, and the sentiment is the expression of that which all admit. Better education of the children — such, in fact, as is contemplated by the provisions of the Elementary Education Act of 1870 — may, it is hoped, quicken the intelligence ere the age is reached at which apprenticeship begins: but will it do more? Nay, have we not indeed some reason rather to look askance at the work of the School Boards, and the scheme of education which they offer to our juvenile artisan population? *Cæteris paribus*, the better educated our artisans are, the better workmen will they make; but we must take care that the education is of the right sort. Now, what will be the verdict of future generations on learning that the education which this great and powerful nation offers to the children of its artisans, to the class that will form the artisans of the next generation, was of a character purely literary, in no sense technical or even scientific? It is an education which, so far as it goes beyond the three elements of reading, writing, and arithmetic, is framed in all its essential features upon an exclusively collegiate type of studies; grammar, history, geography, foreign languages, and the like, being introduced, to the utter exclusion in all the most important of the successive "Standards" of any teaching of drawing, of mechanics, of the simplest facts of science or of natural history — of all, in fact, that most nearly concerns the workman throughout his entire career. In all the constructive trades the greater part of a workman's instructions are given to him in the form of working drawings. Yet we suffer the budding artisan to pass through the schools ignorant of the first rudiments of a science that is as essential to his work as are the four rules of arithmetic. And ought we, then, to be surprised if, in pursuance of the system we have deliberately marked out for the rising generation, we keep our future artisans, till they are fifteen or sixteen, employed in no other work than sitting at a desk to follow, pen in hand, the literary course of studies of our educational code, we discover that on arriving at that age they have lost the taste for manual work, and prefer to starve on a threadbare pittance as clerks or book-keepers rather than thrive by the less-exacting and more remunerative labor of their hands? At the present moment, this tendency to despise a life of honorable manual toil in straining after a supposed gentility would be truly pitiable, if the proportions it has attained did not awaken more serious apprehensions. It is an evil not confined to this country alone, but it is known, too, in the great cities of the States, of Germany and of France. In a recent most able work upon primary education and apprenticeship in France, M. Salicis, a naval officer and cantonal delegate, speaks in forcible terms of the distaste for work, of the children who leave the elementary schools of Paris: —

"These little bureaucrats, boys and girls, outlaws from real labor by no fault of their own, come naturally to the end of their school course with one fear before them — that of being forced to become workmen and workwomen; but with one wish also, the boys to become clerks, the girls shopwomen. And hence this undefined, uncertain, overstocked class of bookkeepers, cashiers, salesmen, clerks, agents with a thousand qualifications, scorning the cap and blouse for the sake of broadcloth and silk hat; and the corresponding class, still more to be pitied, of *young ladies*, of no shop perhaps, and some with the coveted bonnet, but, alas! how procured?"

Obviously, with such facts as these staring us in the face, we must admit a flaw in the training given in our primary schools if its result is in so large a number of cases to destroy the natural capacity for manual labor. The fault is not so much in the amount of education as in the nature of the studies. For many trades the training of the hand to work may, and in some must, begin at an earlier age than that at which many children leave the elementary school. In some trades, indeed, the masters definitely refuse to take apprentices above a certain age; if they did take them the union would interfere. The taste for manual work is imbibed at a very early age, and there is not wanting evidence to prove most distinctly that even a very small amount of manual labor introduced into the elementary school serves to keep alive the capacity for active employment, and the manipulative skill of the fingers.

The first and most obvious step to be taken to bring about the urgently needed remedy is to render at least permissive, if not authoritative, a reform more or less sweeping in character in the instruction given in our elementary schools to boys and girls between the ages of ten and fourteen. For this class of children the provisions of our existing educational code could not possibly be more unsatisfactory than they are, when regarded from the point of view that these children will in a few months have to work for a part at least of their own living. The crumbling edifice of apprenticeship is made to repose upon a basis of literary studies which positively unfit the young apprentice to enjoy the few benefits which that obsolete institution can still offer.

The case is beset, then, with a double difficulty; that while the old system of apprenticeship is less and less able to afford a training worthy the name, to the child of the artisan, the character of the education given him not only does not make up for that which apprenticeship cannot now give him, but even predisposes him against the career of manual toil to which apprenticeship is the necessary and only adequate introduction. The reform needed, then, as a first step, is the substitution of certain technical and scientific studies for some of the literary studies at present prescribed. Not that these literary studies are not in themselves good; quite the reverse; only they must be deferred till a little later in the educational course. Amongst the subjects that will in lieu claim prominence are drawing[1], and the elements of the physical sciences so far as they can be illustrated by the

[1] I am not here advocating drawing as a fine art, much as we may hope the fine arts might do for the culture of the future generation, but *drawing as a science;* by which I mean the representation of real objects to scale, as workmen have them represented in the drawings from which they work; as, in the higher development engineers and architects represent them. As is well known, this is frequently, though erroneously, described as "mechanical" drawing. Erroneously, for the sketches by which directions to workmen are conveyed may be of the roughest "free-hand" type, provided only they are constructed upon the scientific methods in use in all the best work-shops, and "figured" — that is to say, having the various dimensions accurately marked upon them.

common things of every-day life. That is the first and easiest step in reform, but it does not probe to its depth the malady; at best it is little more than skin deep. The distaste for work on the part of the artisan children on the one hand, and the incapacity and ignorance which result from the chaotic state of apprenticeship on the other hand, alike call for a more trenchant remedy. It is absolutely necessary, in the first place, that the children should enter earlier upon manual labor, that they may gain some skill with their fingers ere they pass the perilous point at which their taste or distaste for work may be acquired; and in the second, that their education, the training of their mental capacities should continue till a later period, when their minds are more matured and their faculties sharpened by experience. The whole question of technical education lies in the simultaneous solution of these two problems.

But how to arrive at a practicable solution? Shall we have a school in the work-shop, or a work-shop in the school? Or what other combination can we devise that will permit mental and scientific training to proceed after the age has been attained at which serious manual labor must begin? Hitherto we have been contented at most to organize night schools, evening classes, and so-called Mechanics' Institutes for our apprentices, leaving it to their own caprice whether they choose to employ their leisure hours in self-improvement or squander them in self-indulgence. On the continent of Europe somewhat different ideas have prevailed. In Belgium, Switzerland, Germany, France, and even Russia, there are innumerable examples of Technical Schools and Polytechnic Schools of all descriptions, which profess to teach with greater or less completeness the elements of certain handicraft industries. Overlooking the extreme diversity of type that exists amongst such schools, we have been apt mentally to throw them all together, and to refer to the supposed system on which they proceed as "the Continental system," in contradistinction to our British system of training, as we are pleased to term our obsolescent institution of apprenticeship proper. Nothing could be more misleading than this classification. It arises from lack of information as to the nature and work of such schools. It is not surprising, when such ignorance prevails, that the fallacy has in consequence been widely spread, that the long undisputed superiority of British-made goods was due to the superiority of the British system. On the contrary, that superiority which arose out of quite other economic causes, was the very thing which stirred up the Germans, Swiss, Belgians, and French to devise schemes for training workmen more efficiently and intelligently than was done in England, since only by such means could they hope to compete with her industries. Let the significant fact, that a very large proportion of the foremen of work-shops in our skilled industries are Germans or Belgians, attest the result of a higher technical training. Besides the innumerable *Gewerb-schulen* and *Real-schulen* of Germany, where a general preparatory scientific and technical education is given, that empire can now produce a long array of trade schools, sometimes organized as polytechnic schools, and sometimes devoted to particular trades, such as weaving, dyeing, or carpentry. In Switzerland such schools also abound; and in the commercial centres of Belgium they exhibit an extensive and healthy development. In France there are the technical schools of Douai, Chalons, and Aix, the Ecole La Martinière of Lyons, the Horological School of Bensançon, the Apprenticeship School of Havre, where workers in wood and iron are trained, and twenty others, including five or six in or near Paris. The technical schools of Paris present, indeed, so much diversity in their several organizations and results that it would be extremely difficult, even by going over a much wider area, to find so many different yet thoroughly characteristic types. To understand how completely different are the systems of organizations by which it has been sought to solve this great problem, it would be necessary to pass from the Polytechnicum of Zürich—the Technical *University, par excellence*—to the Horological School of Besançon, and from the *Kunst gewerb-schulen* of Munich and Nüremberg to the unrivalled Pædagogic School of Moscow, and even then the list of types would be less complete than that which is afforded by the schools of Paris. In that great capital, in addition to the Ecole des Arts et Métiers, the Ecole des Mines, and the Ecole Centrale des Arts et Manufactures, whose portals open only to an older and better educated class of students, and the great schools of modern type, such as the Ecole Turgot, the Collège Chaptal, and the Ecole Commerciale, in the Avénue Trudaine, which qualify their pupils for commercial and mercantile careers, there are a group of technical schools intended for those whose primary education is not yet, or only just completed, and in which not only theoretical technical instruction is given, but where systematic instruction in some useful handicraft forms a necessary feature. From amongst these diverse types we select four, for each one of which its promoters claim that its practical success solves the knotty problem of the day. These four schools are the *Ecole Communale*, in the Rue Tournefort; the *Institution de Saint Nicolas*, in the Rue de Vaugirard; the *Ecole Professionelle*, established by MM. Chaix et Cie. in their printing establishment in the Rue Bergère; and the *Ecole Municipale d'Apprentis*, in the Boulevard de la Villette.

The first two of these may be said to exemplify, though with striking diversity of methods, *l'atélier dans l'école*, the work-shop in the school; the third is an excellent instance of the school in the work-shop; while the fourth belongs strictly to neither type.

The *Ecole Communale*, situated in the Rue Tournefort, a crooked back slum behind the Panthéon, is the most recent of the group which we have selected. Founded in November, 1873, at the instance of M. Salicis, and with the co-operation of M. Gréard, the energetic Director of Primary Education for the Department of the Seine, it is intended rather to prepare for than to supplant apprenticeships of a more rigorous type. The pupils of this school are not apprenticed at all in the ordinary sense; there is no contract and they earn nothing. Most of them are very young — even as young as eight or nine years, nor have yet completed their elementary education. If they stay out the prescribed three years' course, they not only get as good a schooling as in any of the ordinary elementary schools, but they will also have seen something of constructive industry. During the first two years they are sent to work for a day at a time, in rotation, in one or other of the occupations of the work-shop. An "apprentice" will thus have one day in the carpenter's shop at the bench or the lathe; the next he will be learning how to forge a bolt; the next he will devote to metal-turning — all his exercises being directed by practical workmen in charge of the shops. During the third year he will settle down to some one pursuit. The hours of actual labor are short, for the chief part of the day is devoted to lessons, only an hour and a half each morning and afternoon being given to manual labor. All learn drawing and modelling. Every pupil works from drawings which he has previously made to scale: no matter what he does, whether he is making a mortise-joint, rabetting a window-frame, or filing down an iron nut, it is always done according to a careful sketch made beforehand. No articles whatever are made for sale; indeed all commercial elements are scrupulously avoided, and the objects given as exercises are hardly such as would serve a useful purpose: little joints of wood accurately squared; little cones or cylinders turned with perfect truth of line. Here and there a more valuable article, a model of a crane in metal, or a model system of bevelled gearing-wheels; but nothing more marketable. The genial director, M. Laubier, enters heartily into the work of his pupils. He has himself designed and executed many of their exercises,— the plaster casts, the geometrical models, and the ingenious scholastic appliances of the institution. He thinks his school to be the type of the elementary school of the future. He has need to be an enthusiast, to train successfully his fifty apprentices and his two hundred non-working children on a grant not exceeding £320 a year, salaries, tools, and materials included. He upholds the rotation system, believing extreme division of labor to be at this stage prejudicial to the development of the youthful faculties. He does not want to sell the produce of his work-shops, as the construction of objects which would be made to sell would not afford so good a training for his boys. He admits that they do not work as rapidly as apprentices who have been brought up amid the hourly exigencies of trade; but he adds that he prefers cultivating their intelligence to quickening mere manual dexterity; that will come later. And what are the results? "Our apprentices," says the director, "being at once fit for useful work on entering the factory, are less often employed to run errands; they are better treated, steadier. I could tell you of young lads of fifteen who are actually earning two francs and a half, and two francs seventy-five centimes a day, and who in six months more will be paid as regular workmen."

THE ARCHITECTURAL EMPLOYMENT OF TERRA-COTTA.

The two points to be chiefly borne in mind in designing for terra-cotta are, that the size of the pieces to be used is limited, and that the material, while incapable of the high finish and precision which can be obtained in stone detail, and still more in marble, possesses, before it goes into the kiln, absolute plasticity: it can be modelled by the hand with great ease and rapidity, and with as much variety as in drawing. There are other minor considerations to be noticed just now, but these two are the most important as affecting what may be called a terra-cotta style in architectural design, as distinguished from a masonry style. The first consideration manifestly points to the fact that buildings with large projections are unsuitable; they can never be carried out in a pure terra-cotta style, or without assistance, open or concealed, from other materials. The projecting cornice, which has its type in classic architecture, has therefore no proper place in terra-cotta architecture. It has been carried out, and in one very notable instance in this country in the front of the Science Schools, towards Exhibition-road, at Kensington, which is treated in a very bold manner, but where, unfortunately, the design is not true, and the features which appear to be brackets doing some of the heavy work of the upper part of the design require concealed supports to carry them. Those who know nothing of the nature and capabilities of terra-cotta may no doubt admire such a design, which, as a mere composition, is very effective; but, to say the least, it is surely undesirable so to design a building that the less respect will be felt for the design the more that people know about the material and the way it is put together. Let it be taken as a first rule, therefore, that nothing is to be attempted in terra-cotta architecture which is not capable of being honestly executed in the material, without the aid of concealed supports and ties.

The other condition is a much pleasanter one to contemplate, since it is not a restriction, but rather involves a declaration of entire liberty to the designer. He has before him a material capable of endless variety of treatment, and the whole value of which consists in its artistic treatment. If he wishes for a considerable amount of repeated ornament economically produced (and there are occasions when repeated ornament is the most effective and when economy

must be a consideration), he can have it more easily than in most materials, and without the consideration that he is setting workmen to carve repetitions of a detail mechanically one after another. But the real advantage of terra-cotta in architectural detail does not lie in its facility for producing repeated ornament with a mould, but rather in the facility which it offers for working continuous ornament by hand with constantly varying detail, and in a material where the designer's thought can be at once realized, improved on, and varied as he proceeds, with as little restriction as if he were making a sketch of it; or if the object is to produce at some special point a repetition ornament, this can be done by hand with far less labor than if carving were required, and with all the slight and hardly definable deviations from precise repetition which the human hand puts even into repetition work, as compared with what the mould can do. Indeed, in terra-cotta work, mould-repeated ornament should not be used except in the case of the very simplest kind of ornament, the mere common-places which serve to break a line or mark off a division in the design, and which it might seem hardly worth while to employ the human hand upon. And along with this facility of modelling ornament there is also the capability of employing, if stone-ware be used, a considerable variety of color which is indestructible, and more susceptible of cleansing, amid the contaminations of a town atmosphere, than any other building material.

Terra-cotta architecture, therefore, seems to point itself out, from the very qualities and capabilities of the material, as being essentially an architecture of ornament. Where it is not so, it has been mostly a material employed on grounds of economy where stone was scarce; and this, in fact, was the first origin of its extensive employment in architectural design; its capabilities of producing rich and varied ornament came afterwards. Terra-cotta has been called an art of the Romans, but Roman terra-cotta was hardly used as an architectural material. It was rather a material out of which a few ornamental objects were made, such as vases, etc.; we might, perhaps, call the very hard and impervious Roman building-tile terra-cotta, for such, in fact, it was, but then this was not architecture; this was merely the core of the building, to be covered afterwards with marble or stone, or in distant provinces, where these more costly materials were not available, probably with plaster. The first really architectural use of terra-cotta arose in the clay plains of North Italy, and it is from the productions of the architects of this district in the thirteenth, fourteenth, and fifteenth centuries that much of the inspiration of the modern terra-cotta designer in architecture has been or should be drawn.

In earlier specimens of these North Italian buildings in terra-cotta we find the greatest simplicity. In one or two of the old churches at Pavia, for example, there is hardly any ornament but the simple moulded brick cornice, in two or three projecting rolls one over another; the baked clay is used in the most unostentatious and straightforward manner as an economical building material. Later we find a gradual elaboration of ornament, especially in cornices, and also in ornamental work in panels and on the face of pilasters, the latter especially being a favorite way of applying a somewhat conventionalized floral ornament in terra-cotta relief. When we come to such a building as the Certosa at Pavia, we find richness carried, in some parts of the building, almost to its greatest possible extent in the materials used; and in some respects the Certosa is rather a warning against overdoing it. What may be called the constructive ornamental details, such as the designs of the cornices, are admirable; but the applied ornament in the panelling is often not at all satisfactory when examined in detail, and has faults of style which are lost, it is true, in considering the design as a whole, but which are very apparent on close examination. As a whole, too, it may be said that the Certosa of Pavia is too loaded with ornament, and that its principal façade narrowly escapes having what is sometimes termed a gingerbread effect. Richness of ornament, however beautiful in itself, requires to be massed and composed so as to show a certain predominant idea in its distribution, and to have some unornamented spaces to give the effect of contrast, otherwise the very richness of the ornament to some extent obscures its effect and defeats its object.

In some of the other North Italian buildings this is very admirably done. In the church of the Carmine in Pavia, for example, the ornament is for the most part confined to the cornices and horizontal strings, and is there admirably designed so as to bring out some of the best capabilities of the material. The main cornice, shows the curious struggle between classic and Gothic detail which went on in the north of Italy in the period just preceding the development of the classic Renaissance. We have classic mouldings and the classic dentil ornament at the top and bottom of the cornice, and Gothic details in the middle portion; and this kind of combination meets us over and over again in the architecture of this district and period. This however, is not a fact having any special reference to terra-cotta design; it would perhaps have shown itself equally in masonry design. But we see in this cornice one peculiarity which arises directly out of the nature of terra-cotta; the flat outline of the cornice, namely, and its slight projection as compared with its vertical measurement. The true classic cantilever cornice could not be executed in terra-cotta except on a very small scale, as it would require larger blocks than could be made. Accordingly, while the main divisions, vertically, of the classic cornice are clearly kept in mind here, while there is a kind of reminiscence of corona, bed-mould, and frieze, the effect which cannot be got by projection is sought for by increased depth, and by richness of surface ornament. Other characteristics may be observed in which the material has influenced the design. Thus the twisted rope-like string below what may be called the frieze of the cornice is a kind of design which is naturally and easily carved out in a plastic material that is worked while still soft; it is easy to mould; it would be much more difficult to carve in stone, and would hardly in that case repay the trouble. The same may be said of the somewhat similar but richer spiralized ornament which occurs above the "frieze." These ornaments are also peculiarly suitable for terra-cotta, for another reason which we may mention separately. The rather earlier cornice from the Certosa at Chiaravalle (a more masculine building than that of Pavia), is another example of the mixture of classic and Gothic feeling, and of the means employed to give force to the cornice where it is impossible to get projection. Here the upper mouldings are distinctly and almost purely classical; here again the space below them, with the line of toothed bricks breaking it in the centre, fills the place that would be filled by the frieze in a classic cornice; and again we have below this the Gothic feature of the miniature wall-arcade or corbels, — not here with the pointed arch, but still essentially Gothic. . . . .

The consideration of the difference which would have to be made in ornamental detail, especially of the classic type, in transferring it from marble or stone to terra-cotta or painted and glazed stone-ware, suggests another influence in the nature of the material which must also affect the ornament executed in it. This is, the impossibility of trusting to terra-cotta for absolute symmetry in the result, where ornament of very fine and precise outline is concerned. However well mixed and burned, the necessary shrinking and the almost inevitable slight degree of twisting in the kiln (though care and experience may reduce the latter to a minimum), render it impossible to trust to terra-cotta to give the precise, clear, and sharp symmetry of Greek detail, for example. And here is the meaning of that tendency to "twisty" detail which, as above remarked, shows itself in the North Italian terra-cotta work, in the twisted rope-like ornaments of the cornices, in the columns with twisted or spiral flutings, as if they had undergone a test for torsion. The prevalence of this "twistiness" was the result of an intuitive perception on the part of the terra-cotta architects of Italy, that as the material would warp and twist more or less (and their terra-cotta probably twisted much more than our more scientifically mixed and burned stuff), it was better to import a certain degree of twisted character into the details, to avoid hard straight lines and attempts at symmetrical detail, and to impart to the design such a degree of irregularity of line that accidental irregularities arising in the manufacture would be the less observable.

Another point in regard to the general treatment of the walling of terra-cotta buildings may be noticed: in many of the Cinquecento terra-cotta buildings there is an entire absence of any attempt to obtain a completely homogeneous wall surface, in regard to tone and color; the surface is as varied and broken up in this respect as that of a brick building. This, again, carries out our idea as to terra-cotta as the material for varied and picturesque effect rather than for symmetrical neatness. In this respect it seems to us peculiarly valuable as affording an opportunity for giving to buildings of classic type of design the variety of detail and of surface which is desirable in a northern climate and in the smoke of large cities. For our decided conviction is that terra-cotta architecture is essentially suitable rather for classic than for Gothic types of building. It has an appearance of surface treatment about it which is much more in harmony with the feeling of classic, or at least of Renaissance architecture, than of Gothic, in which latter we look rather for the appearance of great mass and solidity than of elegant surface ornament; and if the revived taste for classic design which seems to be impending is really developed, it may perhaps be found that terra-cotta will offer to architects a material in which they may carry out the classic types of design with a great deal of really new modification, and in a material admirably suited to the conditions of modern city architecture. — *The Builder.*

THE ILLUSTRATIONS.

HOUSE AT SUNNINGHILL, ENGLAND. MR. R. NORMAN SHAW, ARCHITECT.

THESE plates are reproduced from the pages of the *Building News*.

DESIGN FOR A MODEL SCHOOL-HOUSE. MR. ROBERT BROWN ARCHITECT, BOSTON, MASS.

This design was submitted in the competition instituted by the proprietors of the *Plumber and Sanitary Engineer*.

The cottage of U. S. Grant, Jr., which was published in our last issue, was designed by Mr. Bassett Jones, architect, of New York.

THE GROWTH OF SCULPTURE.[1]

THE material which mainly contributed to the due æsthetic development of this free Hellenic genius was undoubtedly marble. Had the Greeks, with all their other circumstances left the same, possessed no stone to sculpture except the hard porphyry or syenite of Egypt, can we for a moment suppose that they could ever have produced the Aphrodite of Melos or the torsos of the Parthenon? Indeed, what little we know of their chryselephantine work leads us to suppose that even in this comparatively manageable ma-

[1] Portions of a paper by Mr. Grant Allen, published in *Cornhill*.

terial their plastic art fell decidedly short of their marble figures. But if the Hellenes had been entirely deprived of the pure and even-grained stone from which they constructed not only their statues but also their great architectural works, can we possibly believe that their whole æsthetic development would not have been something entirely different from that which we actually know it to have been? Amongst ourselves, the sculptor is a specially trained artist, who supplies a purely æsthetic want, felt only by a small fraction of our cultivated classes. But in Hellas, where noble marble temples continually rose on every side, and where the demand for images of the gods was a common demand of ordinary life, every craftsman in wood or stone grew naturally into an artist. The material upon which the stone-cutter worked gave free play to the native genius of the race. Those who seek to explain Athenian art by the Athenian character alone, forget to take into account this important physical factor given us in the white cliffs of Paros and Pentelicus. . . .

It was not in bas-relief, however, but in isolated statues, that the Hellenic genius and the quarries of Paros were to prove their united potentialities. The statue, I believe, has two separate origins. The one origin, from the bas-relief through the seated or supported figure, I have already traced, and its history is now a common-place of æsthetic chronicles. But the true relations of the second have apparently been hitherto little noticed in connection with the first. All nations make themselves images of their gods in wood or clay, and where these materials are unattainable, in feathers, like the Hawaiians. Now the earliest Greek gods were in wood; and from these doll-like wooden gods, as has often been noticed, descended the chryselephantine statues of Phidias, overlaid with ivory to form the face and limbs, and with gold to represent the drapery. It is quite in accordance with the usual archaism of all religious usages that these essentially wooden statues continued to the last the representatives of the chief gods in the most important temples — the protecting Athene of the Parthenon, and the Pan-Hellenic Zeus of Olympia. Nor is it a less striking fact that the chryselephantine statues seem always to have retained some traces of archaic conventionalism; that their drapery hung in folds which concealed the whole figure; and that the Zeus of Olympia himself, the most reverend god of universal Hellas, was represented, like most very ancient statues, in a sitting attitude. It is the glory of Hellenic sculpture that it ventured even in its gods to discard the sacred forms sanctified by antique usage: yet even in Hellas itself some traces of the conservatism natural to religion must inevitably be expected to exist.

But the marble statues — which form, after all, the real symbol of Hellas in all our minds — are the lineal descendants of the bas-reliefs, and so had a purely architectural origin. Whereas, however, in Egypt and Assyria the separate stone statue flanking a doorway or gate always remained more or less architectural in character and use, and never really took the place of the wooden image, in Greece, the marble figure — owing no doubt in part to the plasticity of the material — became at last wholly individualized, separated itself on a pedestal from the architectural background, and practically superseded the wooden or chryselephantine figure for all but the most venerable purposes. The archaic marble colossi from Miletus in the British Museum represent Hellenic sculpture in an almost Egyptian stage, the stage in which Hellas received the rudiments of art from Assyria. The figures are seated in the attitude which we all know so well as that of Pasht. "They are stiff and motionless, the arms closely attached to the body, and the hands placed on the knees; the physical proportions are heavy and almost awkward, the execution is throughout architecturally massive, and the organic structure is but slightly indicated." The drapery wholly conceals the human form. There is not a touch in these ungainly figures which at all foreshadows the coming freedom of Greek art. They are simply conventional, and nothing more. But the ancient sitting statue of Athene preserved in the Acropolis at Athens, though much mutilated, shows an immense advance. The attitude is unconventionalized; the foot, instead of being planted flat as in the Miletan colossi, is lightly poised upon the toes alone; the limbs are partially uncovered; and the undulating folds of the drapery are clearly prophetic of the later Athenian grace. The nude standing figure known as the Apollo of Tenea (in the Glyptothek at Munich) gives us in some respects a still further progress. The anatomy is excellent; and the attitude, though stiff, is surprisingly free for an unsupported and isolated figure of so early date. The arms still hang by the side; but they hang free in marble, instead of being welded to the body as in porpyry. Both soles are firmly planted, but one foot is in advance. Altogether we have here a statue caught in the very act of *becoming Greek*. It is, in fact, an accurate but awkward and ungraceful representation of a real man, standing in a possible but ugly attitude. Note, too, the important fact that this figure is *nude*. Most of the archaic Greek statues are fully draped, and the conventionality of religious art kept many of the greater gods draped to the last. The Zeus of Phidias wore vestments of gold, and even in the freest days, no sculptor ever ventured to disrobe the wedded majesty of Here, or the maiden majesty of Pallas. But there were two great gods whom even the antique conventionalism represented in the nude — Apollo, and perhaps Aphrodite; while, with Hermes and Eros, as well as in the lesser figures of Heracles, Theseus, and the heroes generally, individual imagination took freer flights. The bronze Apollo of Canachus, to judge from preserved copies, though still largely adhering to a conventional type, yields evidence of some feeling for beauty of nude form. Thenceforward Hellenic sculpture rapidly advanced, especially in its nude productions, towards the perfect grace of the Periclean period. The isolated nude statue is, in fact, the true ideal of plastic art: it represents the beauty of form in its purest organic type. The groups from the pediment of the temple at Ægina are admirable examples of the struggle between conventionalism and freedom in the developing Hellenic mind. In the very centre stands a fully draped Athene, conventional in treatment and awkward in proportions, with a lifeless countenance, and graceless figure wholly concealed by the stiff folds of the robe. The great goddess still retains her archaic and time-honored type. But at her feet lies a nude warrior of exquisite idealized proportions, in a natural and graceful posture, and carved with anatomical accuracy which would not have disgraced the glorious sculptor of the Parthenon himself. To trace the growth of the art from this point on to the age of Phidias, would involve questions of that higher æsthetic criticism which I wish in the present paper to avoid. We have reached the point where Hellenic sculpture has attained to perfect imitation of the human figure: its further advance is toward the higher excellence of ideality, expression, deep feeling, and perfect appreciation for abstract beauty of form.

And now let us look for a moment at the part borne by Greek individuality, Greek freedom, and Greek democracy in this æsthetic evolution. While in Egypt, as we saw, the regal and hieratic influence caused the primitive free manner to crystallize into a fixed conventionalism; while in Assyria it checked the progress of art, and restricted all advance to a few animal traits; in Hellas, after the age of freedom, it became powerless before the popular instinct. While Egyptian and Assyrian gods always retained their semi-animal features, in Hellas the cow-face of Here and the owl-head of Athene fell so utterly into oblivion that later Hellenic commentators even misinterpreted the ancient descriptive epithets of the Achæan epic into *ox-eyed* and *gray-eyed*. Only in conservative Sparta did Apollo keep his four arms; only in half-barbarian and enslaved Ephesus did Artemis keep her hundred breasts. In European and insular Hellas, for the most part, the sculptors chose to represent the actual human form, and, in their later age, the nude human form by preference over all other shapes. In Egypt and Assyria the king in his conventional representation was the central figure of every work. But in Hellas, even in the archaic period, we find plastic art in the employment of private persons. The monument of Aristion represents a citizen, in the armor of a hoplite, sculptured on his own tomb; the Orchomenian monument similarly represents a Bœotian gentleman in civic dress. In the later Athenian period, portrait busts of distinguished citizens seem to have been usual. But it was on the gods, as the common objects of devotion for the whole city, that the art of the republican Greek states mainly expended itself. And here again we see the value of Hellenic individuality. For while in Egypt a Pasht from Thebes was identical with a Pasht from Memphis, and while even in Hellas itself Zeus and Athene and the other national gods tended to retain conventional types, yet in each city the special worship of the local heroes — Theseus and Cephisus, and Erechtheus and Heracles (rendered possible by the minute subdivisions of Hellenic states) — permitted the sculptor to individualize and originalize his work. From this combination of causes, it happens that Greek sculpture is modelled from the life. Egyptian artists probably never worked from natural models; they worked apparently from their own imperfect recollections, or copied the imperfect recollections of their predecessors. The Greek sculptor worked from the human figure, familiarized to his eye in the contests of the palæstra, and we see the result in the frieze and metopes of the Parthenon. At length we get sculpture almost wholly divorced from religion in the Discobolus and the Narcissus, the Niobe and the Thorn-extractor. Hellenic art discovers its full freedom when it shakes off its religious trammels, and when its purpose becomes merely æsthetic in the service of the wealthy and cultivated Greek gentleman. The older school gives us gods and heroes alone; the later school gives us simply ideal figures and *genre* pieces. As the Renaissance emancipated Italian painting from the perpetual circle of Madonnas and St. Sebastians, so the Periclean awakening emancipated Athenian sculpture from the surviving conventionalism of Heres and Hestias.

Finally, we must remember that Hellenic art flourished most in the great commercial cities. It is not in Dorian Sparta, with its conservative, kingly, and military organization, that we must look for the miracles of sculpture. As Thucydides predicted, Sparta has passed away and left nothing but the shadow of a great name. It is at Athens, Corinth, Rhodes, and the Ionian colonies that plastic art produces its master-pieces. And even the most careless thinker can hardly fail to remember that it was not in feudal Paris or London, but in the similarly mercantile cities of mediæval Italy and the Low Countries, that modern painting went through the chief stages of its early evolution.

I have thus, I hope, given their full value in each case to the original characteristics of race and to the subsequent reactions of the physical and social surroundings. But the point which I have especially endeavored to bring out in this paper is the immense concomitant importance of a suitable material for the embodiment of the national feeling. Just as it seems to me that porcelain clay has colored all the art-energies of China, and feathers all the art-energies of Polynesia, so does it seem to me that granite has directed the whole æsthetic handicraft of Egypt, and marble the whole æsthetic handicraft of Hellas. My text has been too large to expound other-

wise than in a rapid sketch; but I trust the broad outlines, such as they are, will bear filling in from the memory and observation of the reader.

ON THE NECESSITY FOR A REGULAR INSPECTION OF LIGHTNING CONDUCTORS.[1]

On the present occasion I wish to bring under the notice of the Association, a few cases of damage resulting to buildings, which had lightning conductors attached, which have come under my own observation. The adducing of such cases furnishes the best argument, I imagine, not only for a record being kept of all accidents, but of a regular inspection of buildings which have lightning conductors attached to them.

On the 10th of October, 1878, a furniture repository situated at the back of Victoria Station, Westminster, was struck by lightning, although a conductor was attached to the building. The warehouse, which is built of brick, is 110 feet, by about 80 feet wide, the roof is flat and covered with lead. At the southeast corner, a slate-covered tower with 4 feet of iron cresting, rises to the height of 20 feet above the roof. To this ornamental iron-work a solid copper band lightning conductor $\frac{3}{4}$ inch broad by $\frac{1}{8}$ inch thick, and weighing .43 pound per foot, was attached. A terminal made of $\frac{5}{8}$-inch diameter copper tube, with three discharging points 6 inches long, screwed into the rod 3 inches from the top, rose 3 feet above the iron cresting. The rod was attached to the iron-work by means of copper wire, and the band to the slates and brickwork by gun-metal clips. The copper was of very good quality, having a conductivity of 92 per cent. The electric discharge fell on the point of the lightning conductor, bending it, driving out two of the discharging points, and twisting the third. The iron cresting was shattered, and considerable damage done to the tower. Part of the discharge was no doubt carried off from the lead roof by the rain-water pipes, which were in metallic communication with it. On testing the conductor shortly after the accident, I got no deflection of the galvanometer needle, and on opening out the earth terminal found the conductor carefully insulated in concrete.

On the 10th of June, last, lightning struck the point of the conductor at St. Mark's Church, Skelton, slightly bending it; but did no further damage. The conductor was made of $\frac{5}{8}$-inch diameter copper rope, and had a conductivity of 52.50 per cent. On testing the conductor, while rain was falling, I found the resistance to be 600 ohms. The conductor was buried 9 inches among bricks, lime, etc., and carried 15 feet from the building. On Saturday, the 26th of June, 1880, a heavy thunder-storm passed over South Lambeth, the lightning doing considerable damage to All Saints Church. The building in question, the style of which partakes of the characteristics of the thirteenth century, consists of a nave 92 feet 6 inches long, 25 feet wide, and 36 feet high to the plate-level of the roof, a chancel 31 feet long, 20 feet wide, and 48 feet to the ridge, also north and south aisles 13 feet 3 inches wide. A stone cross 4 feet high stands on the apex of the west gable, and another of similar size stood 92 feet 6 inches from it on the east end of the nave, a ridge of red tiles separating them. A $\frac{3}{8}$-inch diameter copper rope conductor, consisting of 49 wires, was attached to the cross on the west gable, a 5 foot point made of copper tube rising 18 inches above it. On the afternoon of the 10th, lightning was observed to strike the point of the conductor, then dart to the stone cross of the east end of nave, throwing it down and injuring the roof of the north aisle. On testing the conductor a few days after the building was struck, I found the lightning-rod had no "earth" whatever, the rope being simply stuck 2 inches in loose rubbish. The copper was very impure, the conductivity being only 32.10 per cent, or about double that of iron.

In July last, about half-past five in the morning, lightning struck one of the chimneys of Normanhurst Court, near Battle, Sussex, notwithstanding a lightning conductor was attached to it. Normanhurst stands on high land, and commands a magnificent view of the whole Channel from the South Foreland to Beachy Head. The buildings are constructed of hard blue stone, roofed with Brosely tiles; and are in the style of the age of Francis I. There were two lightning conductors on the buildings; one on an octagonal tower, which rises from the southwest angle, having a balcony and a lofty stone spire about 120 feet high, the other on the southeast chimney, which was struck, about 126 feet distant from the tower. The lightning conductors consisted of 12 copper wires, 15 B. W. G., woven into the form of a band 1 inch broad, and weighing .36 pound per foot. The air terminal which rose 3 feet above the chimney coping, consisted of an iron point 12 inches long, covered with a composition which on scraping appeared to be lead; this was attached by means of a coupling-joint to a copper tube 6 feet long, and weighing .28 pound per foot. The copper band was connected to the rod by another coupling-joint. The chimney coping consisted of eight ornamental stone pinnacles 3 feet high and 2 feet square at the base. The terminal rod was placed on the centre of the chimney, and insulated from it. The lightning discharge struck the chimney, destroying three of the pinnacles, which falling through the roof below, did considerable damage. The air terminal was bent, and the composition on the point melted three inches. The wires near the terminal point were likewise partly fused, and, on taking out one wire 25 feet below the terminal rod, I found it so irregular in thickness, that it had to be redrawn before the conductivity could be determined. On testing the earth terminal, I could get no deflection of the galvanometer needle, the conductor being buried in dry earth within a stone wall 8 feet above the fosse, or asphalted area. The conductor on the tower had "good earth." The conductivity of the copper was 80.5.

In my recently published work on "The History and Application of Lightning Conductors," the following cases, among others, are given:

On the 6th of August, 1878, lightning struck the powder magazine at the Victoria colliery, Burntcliff, Yorkshire. At the time of the explosion the magazine contained about 2,000 pounds of gunpowder. The magazine was an oblong building of brick, 9 feet long, 5 feet wide, and 6 feet high (internal dimensions), and it had a uniform thickness of three bricks. At the end was a heavy iron door, and at the other a lightning conductor, consisting of a copper wire rope seven-sixteenths of an inch in diameter. The point of the terminal rod was about 13 feet above the top of the building, and a similar length was carried into the ground, and terminated in clayey soil at a depth of 3 feet. The conductor was fixed to a pole distant about 2 inches from the end of the building opposite to that in which the iron door was fixed. *It was not connected with the iron door in any way.* On testing the conductivity of the copper rope it was found to be only 39.2 instead of 93 or 94 per cent. The conductor should not have been insulated, but brought down the pole, carried along the roof down the iron door-post, and so into the ground.

In August, 1879, lightning struck one of the pinnacles of the tower of Cromer Church, Norfolk, although on another pinnacle only 27 feet 6 inches distant, a good copper conductor, having a diameter of $\frac{5}{8}$ of an inch was placed. On testing the conductor by means of a galvanometer, I found it and the earth connection in thorough order. In this case, a point should have been placed on each of the pinnacles, and joined to the main conductor.

In May, 1879, the steeple of the church at Laughton-en-le-Morthen was struck by lightning and damaged. The spire, 175 feet in height, had attached to it a thin tube made of corrugated copper, about $\frac{7}{8}$ of an inch in external diameter, and $\frac{5}{8}$ internal; the copper being one thirty-second of an inch in thickness. It was made in short lengths joined together by screws and coupling-pieces, but there was no metallic contact whatever between the pieces, which were much corroded. The conductor was not in contact with the building, but was kept at a distance of $2\frac{1}{2}$ inches by twenty-one insulators. The earth contact was obtained by bending the tube and burying it in the ground at a depth of from 6 to 18 inches, the soil being dry, loose rubbish, the earth terminal being only 3 feet. It was placed in a corner formed by a double-stem buttress, which came between the conductor and a lead-covered roof attached to the spire; the distance between the conductor and the lead roofing being about 6 feet 6 inches. The lightning appears to have come down the conductor a certain distance, and finding the road to earth bad, it passed through the buttress, dislodging about two cart-loads of stone, and then down the cast-iron pipes leading from the lead-covered roof, and so to earth.

From the instances quoted, it is evident that it is not sufficient merely that rods of copper should be attached to a building, but it is necessary that once put up, they should be regularly inspected to see if they are in good order, so as to be really efficacious. That this is rarely done is one of the main reasons why accidents by lightning occur in places nominally protected by conductors. It is, perhaps, not too much to assert that at present not one in a thousand of our public buildings in England is regularly tested.

There can be no manner of doubt that in the matter of lightning conductors they manage things better on the other side of the Channel than with us. The French Government are in the constant habit of consulting the most eminent scientific men on the subject of protecting public buildings against the destructive influence of lightning. There is scarcely an instance in which a British Government ever did such a thing. It is true the Houses of Parliament had lightning conductors erected upon them at a very great cost and under scientific advice. But all who understand the subject practically agree in saying that it is very doubtful whether the magnificent pile of buildings in which our legislators assemble is really, that is efficiently, protected. At all events I understand the earths have never been tested since the conductors were erected in 1852. That the Victoria Tower should have been struck in June, 1868, and slightly damaged, tends to show that the conductors at that time were not in an efficient state.

From the examination I have made I am pretty correct in stating that one-half of our cathedrals and three-fourths of our churches have not even nominal protection. For all that science has done, the Queen may any day be killed in her apartments in Windsor Castle, the Prince of Wales in Marlborough House, and the Prime Minister in Downing Street. To see the difference between England and France in this respect, one has but to cross the Channel between Dover and Calais. At Dover, there are huge barracks of great length, on the top of high hills, exposed to the full fury of storms sweeping across the Channel, and the few conductors to be found upon them at long intervals are certainly not numerous enough for efficient protection against lightning, and their efficiency has never, so far as I can learn, been tested. The contrast in this respect on crossing the Channel is of the most striking. At Calais, the Hotel de Ville, in the Grand Place, literally bristles with lightning con-

[1] Read before Section A of the British Association at Swansea, Aug. 27, 1880. By Richard Anderson, F. C. S., F. G. S.

ductors, and so all the churches and chief buildings in the town. The same all over France, Germany, and Belgium. Without slavishly imitating our scientific neighbors, we might yet bestow some of the care they do upon the protection of our property as well as of our lives against the terrible effects of the electric force.

"HOW TO LEAVE PLUMBING FOR THE WINTER."

To the Editor of the American Architect:

Is it safe to leave metal traps filled for several months with such corrosive salts as chloride of sodium (common table-salt) and chloride of calcium? Will not copper pans, galvanized-iron and cast-iron traps, and even leaden traps be liable to be eaten into badly between September and January, thus treated. M. C. M.

[If common salt corrodes the metal of traps and pans, the action must be very slow. It has been used in this vicinity for protecting the traps of summer cottages, in the manner described in the article, for some years, without any injurious consequences, so far as I am aware.

The addition of chloride of calcium I have never seen tried, but if what little free acid it may contain is neutralized as Professor Babcock suggests, my chemical knowledge does not suggest any reason for fearing to use it. Perhaps M. C. M. has had some experience which leads him to doubt the propriety of such treatment; if so, I should be very glad to be set right. — The Writer of the Article.]

A WARNING TO ARCHITECTS.

To the Editor of the American Architect:

Sir, — W. L. Macauley, of 23 Day St., New York, advertised himself in your columns as authorized agent to receive subscriptions for the *London Building News*. I wrote him in June last, enclosing $6.60 as a year's subscription. That he received it was evidenced by the fact that I thereupon received three numbers of the *News* for May; since then I have received nothing, and repeated communications fail to elicit reply. I think it best, therefore, to warn your readers against any dealings with him. Respectfully,

Gordon W. Lloyd.

NOTES AND CLIPPINGS.

The Visitors to our Museums of Fine Arts. — The number of visitors at the Metropolitan Museum of Fine Arts during the second week of September shows a rapid increase as the autumn goes on. It foots up as follows:

September 13 (pay day)	192
September 14 (pay day)	187
September 15	12,936
September 16	9,190
September 17	6,217
September 18	10,243
Total for the week	38,965

The visitors to the Boston Museum of Fine Arts during the same week were:

September 13 (pay: half day)	68
" 14 (pay)	100
" 15 "	164
" 16 "	169
" 17 " half day	51
" 18 (free)	2,640

On Sunday September 19, which was a free day, the number of visitors far over-taxed the power of the turnstiles to record, as these can only record 4,500 entries, and the number of visitors is thought to have been at least, 10,000.

The National Museum. — The new building for the National Museum attached to the Smithsonian Institution is completed with the exception of the tiled floor, which cannot be laid owing to the failure of Congress to make the necessary appropriation. In consequence of this failure the collections will not be moved in, and the building will not be opened to the public until late next spring.

The Late Benjamin Ferrey. — Mr. Benjamin Ferrey who died in London on Sunday last, in his seventy-first year, was one of the most eminent agents in the early days of the Gothic revival. As a church architect he has not been excelled, and many of his buildings have the grace of ancient examples. Mr. Eastlake wrote in 1872: — "His architectural taste was for years in steady advance of his generation, and as an authority on church planning and general proportions he had scarcely a rival. His work possessed the rare charm of simplicity, without lacking interest. By the use of carefully studied mouldings, and a spare but judicious introduction of carved ornament, he managed to secure for his buildings a grace that was deficient in many contemporary designs, which had been executed with far more elaborate decoration and at greater cost. His country churches are especially notable for this reticent quality of art." — *The Architect.*

Elevators in Milan Cathedral. — After illuminating Vesuvius with the electric light (one of our correspondents at Rome writes to us), a company is now forming for establishing lifts to ascend to the roof of the Milan Cathedral. The company undertake, in addition, to illuminate the roof *a giorno* at all seasons, and to place a large clock with four faces at the foot of the Madonna on the summit; the clock will be lighted at night. Arm-chairs, telescopes, and probably light refreshments, are to be provided on the terraces of the roof for the benefit of those who have come up in the lifts, which are to work night and day; and perhaps when all this is done the company will add a band of music, and give masked balls during Carnival on the roof. The lifts are to be ready for the time of the National Exhibition, if permission for them is obtained; but that formality has yet to be gone through, and it is probable that the Chapter will not take the same view of their cathedral as the promoters of the company in question. — *St. James's Gazette.*

The Cologne Cathedral. — A Berlin dispatch to the London *Times* says: "By a Cabinet order the Emperor has appointed the 15th of October next as the date for the ceremonious consecration and opening of the lately finished Cologne Cathedral, when his Majesty and most of the members of his house, together with other distinguished persons, will honor the occasion by their presence. The date appropriately selected is the birthday of Frederick William IV, the Emperor's deceased brother, to whose piety and love of art was due the resumption of the architectural labors which were so auspiciously brought to an end about a fortnight ago. Curiosity, of course, is busy conjecturing whether the ejected Archbishop will reappear with all his clergy in their robes of office, but in any case, the ceremony will be solemn and imposing as recording the triumph of German perseverance and German art. Viewed from a financial point of view, the noble edifice represents an enormous amount of capital. It is calculated that the sums applied to its completion since 1821 from public and private sources must amount to about 18,000,000 marks, which, added to the previous outlay, will give a grand total of 40,000,000 marks, or over £2,000,000.

The Architect of the Sistine Chapel. — A note appeared in the course of last year in the *Chronique des Arts*, in which M. Müntz, the librarian of the Ecole des Beaux-Arts, communicated to its readers his discovery of the architect of the Sistine Chapel (attributed by Vasari to Pontelli) in the person of Giovannino dei Dolci. Further facts having been brought to light by M. Müntz in the Vatican archives concerning Dei Dolci, he has published a pamphlet in Italian, in which all the documents, hitherto unpublished, are printed *in extenso*. From these it appears that the Florentine carpenter-architect Dei Dolci, besides executing much joiner's-work and wood-carving for Sixtus IV, not only built the Sistine Chapel, but also various other parts of the Vatican, and, lastly, the fortress of Civita Vecchia. He died about 1486, and was buried in the church of S. Maria Nuova, now S. Francesca Romana.

An Unknown Vandyck. — It is said that the art gallery in the old Museum in Berlin is likely to be enriched with a valuable original of an old master. It appears that a certain Count, when looking over the effects of his deceased father, at his residence in East Prussia, discovered a "Christ" that had long hung in an unfavorable light in the workroom of the late Count. The painter was unknown, but an instinctive art feeling led the young Count to have the picture removed to his house in Berlin. Some time ago an Englishman appeared who offered £5,000 for the picture. In consequence, however, of his persistently pressing for an immediate decision, the Count became suspicious and declined the proposal. The Crown Prince, hearing of the incident, sent some connoisseurs to inspect the painting, who pronounced it a valuable Vandyck, though the minor details might possibly have been worked in by his pupils. The management of the Berlin Museum is now in treaty for the purchase.

The Oldest Church in the United States. — Just east of the Indian House, Santa Fé, stands San Miguel Church, one of the oldest churches in the United States. It is supposed to have been built about the year 1640. During the insurrection by the Pueblo Indians in 1680, it was destroyed by them. It was rebuilt as it now stands in the year 1610, by the Marquis de la Penuela, through his agent, Don Augustin Flores Vergara, as is shown by an inscription on a rudely carved old beam supporting a small gallery over the door to the church. It is built of *adobe* on a foundation of small stones laid in mortar. Its length is 100 feet, the width is 60 feet, and the height is 40 feet. It is in a pretty good state of preservation, considering its great age. The walls on the inside are high, whitewashed, and run to a sharp peak. There are a few little low benches, a dome-shaped altar containing the usual ornaments of a Catholic Church, and on each side a painting of great antiquity. The walls are lined with a number of paintings representing the various stages of the crucifixion of Christ.

Protection from Lightning. — A knight of the olden times in full armor was probably as safe from the effects of a thunder-storm as if he had a lightning-rod continually beside him; and one of the Roman Emperors devised a perfectly secure retreat in a thunder-storm in the form of a subterraneous vault of iron. He was probably led to this by thinking of a mode of keeping out missiles, having no notion that a thin shell of soft copper would have been quite as effective as massive iron. But those Emperors who, as Suetonius tells us, wore laurel crowns or seal-skin robes, or descended into underground caves or cellars on the appearance of a thunder-storm, were not protected at all. Even in France, where special attention is paid to the protection of buildings from lightning, dangerous accidents have occurred where all proper precautions seemed to have been taken. But on more careful examination it was usually found that some one essential element was wanting. The most common danger seems to lie in fancying that a lightning-rod is necessarily properly connected with the earth if it dips into a mass of water. Far from it. A well-constructed reservoir full of water is not a good "earth" for a lightning-rod. The better the stone-work and cement the less are they fitted for this special purpose, and great mischief has been done by forgetting this. — *Nature.*

The Bells of St. Botolph's. — The bells of the Parish church, of Boston, Lincolnshire, where John Cotton was for twenty years vicar, were rung September 17, in honor of the 250th anniversary of Boston, Mass.

I. H. S. — A Bostonian tells this story of one misreading of the ecclesiastical symbol I. H. S: — A Salem clergyman left his parish after some unpleasant passages at arms with it, and was settled over another parish in another city. When the church of which he was now the rector was being repaired, one slope of the slated roof was decorated with a large cross in colored slates, while the other slope bore the letters I. H. S. When this came to the knowledge of his former parishioners they quickly guessed the interpretation which the symbol must receive in the mind of their former pastor, "I have sinned, I have suffered. — I hate Salem!"

BUILDING INTELLIGENCE.

[Reported for The American Architect and Building News].

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

BUILDING PATENTS.

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

229,416. DWELLING-HOUSE. — Thos. Hurley, Brooklyn, N. Y. The object of this invention is to secure light and air in the sides between the adjoining houses built in continuous rows of several in a block. The invention consists of independent side-walls behind a continuous front-wall, separated by a space sufficient for a narrow passage at the ground, which widens upward by making the walls a little sloping, so that the buildings diminish a little in width, and thus the width of the well or space for light and air is increased upwardly, which practically furnishes more light within the rooms than would be had if the walls were vertical and the space equal to the greatest breadth.

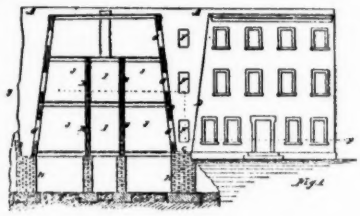


Fig. 1.

In connection with sloping side-walls, it is also proposed to provide substantial partition-walls between the entrance hall or passages and the rooms, capable of containing or forming part of the chimney-flues, and thus provide for shifting the said flues from the side-walls, where they are commonly located. It will be readily understood that the inclination of the windows G will enable more of both the direct and reflected rays of light to enter than vertical windows would, and it is believed that the same is true with reference to air.

229,627. BATH WASTE AND OVERFLOW. — Samuel G. McFarland, Newton, Mass. The object of this invention is to prevent the lodgment and accumulation in the standing waste of a bath-tub of greasy and

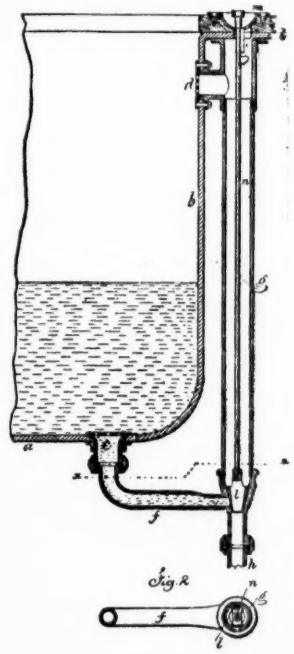


Fig. 2.

putrescent particles. The overflow takes place through the outlet *d*, placed, as usual, near the top of the tub. It then passes down through the tube *g*, and through the hollow conical valve *l*. This valve, which is attached to a rod *s*, by which it is raised and lowered, is ground to fit the valve-seat tightly, and by its side closes the outlet pipe *f*, where it connects with the vertical waste.

232,107. UNHITCHING DEVICE FOR STABLE STALLS. — Hannah H. Bowker, Boston, Mass.

233,114. WRENCH. — John H. Coes, Worcester, Mass.

233,128. LOCK-HINGE. — Adolph H. Huguet, Baton Rouge, La.

232,150. MACHINE FOR MIXING MORTAR. — Samuel L. Shellenberger, Denison City, Texas.

232,166. HOUSE VENTILATOR AND REGISTER. — Isaac Bales, Hicksville, O.

232,234. FIRE-ESCAPE. — Thomas Bickerton, Lawrence, Kan.

232,235. RADIATOR. — Jacob Brasiers, Belleville, Ill.

232,252. RIVET. — Edward P. Farnum, Concord, N. H.

232,263. HEATING STOVE AND GRATE. — Ross Hall, Millersburg, O.

232,270. SASH-HOLDER. — Edmund Haug, Whistler, Ala.

232,274. CONSTRUCTION OF POSTS AND COLUMNS. — James D. Kelley, Pittsburg, Pa.

232,282. VISE. — William S. Lord, Brownsville, Tenn.

232,290. FAUCET. — Patrick Motley, Girardville, Pa.

232,293. EAVES-TROUGH HANGER. — George J. Parks, Cuyhoga Falls, O.

232,304. ELECTRIC GAS-LIGHTING APPARATUS.

232,312. VENTILATING FAUCET. — Benjamin A. Stevens, Toledo, O.

232,313. APPARATUS FOR RAISING AND LOWERING SASHES. — Lewis G. Stocking, Burlington, Iowa.

SUMMARY OF THE WEEK.

Baltimore.

BUILDING PERMITS. — The following building permits only are of sufficient importance to be mentioned, out of 28 issued since the last report:

Jas. K. McGovern, three-st'y brick building, cor. John and Aisquith Sts., 17′ x 57′.

R. A. R. Woodward, 6 two-st'y brick buildings, on Chester St., near Monument St.

E. W. Gorman, 5 two-st'y brick buildings, on Canton Ave., between Burk St. and Port Alley.

Jerry Storm, three-st'y brick building, on High St., between Baltimore and Watson Sts., 30′ x 100′.

Maria Hoover, three-st'y brick building, cor. Columbia Ave. and Sterrett St.

M. M. C. Iroisine, 3 three-st'y brick buildings, on Mount St., between Harlem and Edmonson Ave., 14′ 8″ x 55′.

SANITARIUM. — The Thos. Wilson Sanitarium building committee have decided to go on with their building, and work will be commenced immediately. The drawings were prepared last June, but owing to some difficulty with the tenant of one of the buildings on the intended site, it was thought advisable to postpone the work until next spring; but the difficulty being overcome the building will be commenced immediately. The building will be 47′ 10″ x 87′, three stories high, of brick, with Cheat River stone finish and carved bricks. The first floor will be used as stores, and the other floors as offices. Mr. Chas. L. Carson is the architect. The contract has been awarded to Messrs. S. H. and J. F. Adams, at $28,000.

CHURCH. — The corner-stone of the new Catholic church, St. Leo, was laid Sept. 12. The church will be constructed in the eastern section of the city, for the use of the Italian portion of the population, and will be a structure of large proportions.

Boston.

BUILDING PERMITS. — *Brick. — Commonwealth Ave., No.* 144, for Wm. Atherton, 1 dwell., 26′ x 79′, three stories and mansard; Geo. W. Pope, builder.

Wood. — Jeffries St., opposite Everett St., for Geo. H. Plumber, 1 dwell., 14′ x 18′; Davis Damon, builder.

Cary St., near Riverside St., for Robert F. Paine, Jr., 5 dwells., 17′ x 26′; John Polton, builder.

THE MARKET. — The lumber market remains unchanged this week. Brick are firmer and will probably advance.

Brooklyn.

BUILDING PERMITS. — *Herkimer St., No.* 320, 1 four-st'y brick dwell., 40′ x 45′ 8″; owner, T. P. Wilkinson, 174 Herkimer St.; architect, J. C. Cady; builders, W. and T. Lamb, Jr.

Sixteenth St., three-st'y frame dwell., 20′ x 34′; owner, Jacob Gabel, Sixteenth St.; architect, E. C. Squance; builder, J. Beauchanon and W. Ovington.

Waverly Ave., 3 three-st'y brown-stone dwells., 16′ 8″ x 47′; owner, Henry Strybing, Washington Ave., near Fulton; builders, J. Lock and F. D. Norris.

Quincy St., 2 two-st'y brick dwells., 18′ 9″ x 42′; cost, about $3,500 each; owner, M. A. De Revere, 436 McDonough St.; architect and builder, G. De Revere.

Fourth Ave., three-st'y brick tenement, 20′ x 44′; cost, each, about $4,000; owner and builder, Wm. Taylor, 83 Third Place.

Grove St., two-st'y and attic brick dwell.; owner, Chas. Bush, 407 Hart St.; architect, D. T. Atwood; builders, J. P. E. Brittingham and James Hen.

Eighth Ave., three-st'y brick Home for Old, 180′ x 43′ and 93′; owners, Little Sisters of the Poor; architects, Parfitt Bros.; builders, W. & T. Lamb & J. Lee.

Halsey St., 3 three-st'y brown-stone dwells., 16′ 8″ x 45′; owner, W. Robertson, 529 Greene Ave.; builder, E. L. McGrath.

ALTERATIONS. — *Third Ave.*, cor. Bergen St., raised two stories, front and rear walls rebuilt and interior alterations; cost, $6,500; owner, Thomas Meager, Bergen, cor. Bond St.; builders, Owen Nolan and J. Waters & Son.

Bedford Ave., cor. Jefferson St., one-st'y brick extension, 21′ x 51′; cost, $2,500; owner, Hy Ahrens, 721 Bedford Ave.; architect and builder, E. Van Voorhis.

Chicago.

BUILDING PERMITS. — Adams & Spaulding, two-st'y brick store and dwell., 20′ x 62′, 521 State St.; cost, $4,500.

H. M. Hilmes, two-st'y brick store and dwell., 25′ x 54′, 749 Hinman St.; cost, $3,500.

C. G. Wetzler, two-st'y brick engine-house, 28′ x 26′; 42 West Madison St.; cost, $4,000.

Reitz & Voss, two-st'y brick store, 32′ x 80′, 69 Monroe St.; cost not stated.

F. Frish, two-st'y brick store and dwell., 23′ x 65′, 3725 Halsted St.; cost, $4,000.

Board of Education, three-st'y brick school-house, 106′ x 84′; Douglas Ave.; cost, $30,000.

P. W. Hinckley & Co., one-st'y brick planing mill, 60′ x 30′, Robey St.; cost, $4,000.

L. B. Schafer, three-st'y brick dwell., 25′ x 60′; Clark St., cor. Sophia; cost, $5,000.

John P. Hanson, three-st'y brick store and dwell., 25′ x 80′, 351 Milwaukee Ave.; cost, $10,000.

H. Hanson, two-st'y brick dwell., 22′ x 46′, Huron St., cor. Lincoln; cost, $2,000.

W. Borden, six-st'y brick and stone office-building, 80′ x 90′, Randolph St., cor. Dearborn St.; cost, $80,000.

H. M. Bass, 3 two-st'y brick dwells., 57′ x 38′, 403 to 407 Dayton St.; cost, $9,000.

R. Hofferbuth, two-st'y brick dwell., 20′ x 40′, 623 Union St.; cost, $2,500.

M. M. Knowlton, two-st'y brick dwell., Winthrop St.; cost, $2,000.

J. W. Agard, brick basement, 20′ x 30′; 77 Aberdeen St.; cost not stated.

George Arf, two-st'y brick store and dwell., 23′ x 49′, Thirty-Seventh St.; cost not named.

W. Clettusberg, two-st'y brick dwell., 23′ x 44′, 485 Sophia St.; cost, $7,000.

C. M. Homans, two-st'y brick dwell., 23′ x 68′, Melrose Place, cor. Cass St.; cost, $5,500.

H. Michaelson, two-st'y brick dwell., 50′ x 60′, Lawler St., cor. Robey St.; cost, $8,000.

Byron L. Smith, four-st'y brick stores and dwells., 115′ x 70′, Twelfth St., cor. State St.; cost, $20,000.

Jos. McMullen, two-st'y brick stores and dwells., 25′ x 70′, 3441 Halsted St.; cost, $4,000.

B. P. Hutchinson, two-st'y store and factory, 296 Wabash Ave.; cost, $15,000.

C. & W. I. R. R. Co., two-st'y brick engine-house, 24′ x 96′, Taylor St., near Third Ave.; cost, $8,500.

L. Pregler, three-st'y brick store and dwell., 25′ x 65′, Hoyne Ave. and LeMoyne St.; cost, $5,000.

Wm. Thompson, two-st'y brick milk-house, 50′ x 80′, between Adams and Jackson Sts.; cost, $3,000.

J. Enzenbacher, two-st'y brick dwell., 22′ x 46′, 482 West Twelfth St.; cost, $2,900.

O. Gehrke, three-st'y brick dwell., 23′ x 60′; Goethe St., near Wells; cost, $5,000.

J. M. Smyth, 2 four-st'y brick and stone stores, 40′ 8″ x 100′, 164 and 166 West Madison St.; cost, $12,000.

M. W. Ferguson, one-st'y brick skating-rink, 90′ x 203′, Michigan Ave., cor. Congress St.; cost, $8,500.

Martin McNulty, 2 three-st'y brick stores and dwells., 100′ x 42′, Michigan St., cor. State St.; cost, $20,000.

J. Daggert, three-st'y brick store and dwell., 30′ x 60′; Lake St., between Oakley Ave. and Western; cost, $5,000.

A. Grannis, six-st'y brick office-building, 90′ x 120′, Dearborn St., near Washington; cost, $65,000.

Mrs. M. Almindinger, three-st'y brick dwell., 22½′ x 50′, 298 Rush St.; cost, $4,000.

H. F. Waite, 3 three-st'y brick dwells., 61′ 6″ x 61′, Astor St., near Division St.; cost, $13,000.

Chicago Racquet Club, two-st'y brick building, 40′ x 89′, Michigan Ave.; cost, $5,000.

Wm. Schaffer, two-st'y brick dwell., 21′ x 64′, 11 Carl St.; cost, $4,000.

M. Bauer, two-st'y brick store and dwell., 22′ x 57′, Lincoln Pl., near Sophia St.; cost, $4,000.

Charles Koenker, two-st'y brick dwell., 22′ x 80′, 545 Clark St.; cost, $5,000.

Mr. Pasdelaup, two-st'y brick store and dwell., 25′ x 60′, 417 Halsted St.; cost, $3,000.

THE MARKET. — It will be noticed there has been an advance all along the line, particularly in brick. Building has been, and is at present, very brisk, so that, although yard capacities were greatly enlarged last spring, there is now no appreciable number on hand unsold for legitimate use. The end of the producing season being near at hand forces prices up, accordingly, from $6.50 three weeks ago to $8 and $8.50 now, and the prospect of reaching $10 per M. Of course this will stop some contemplated improvements. Wages have gone up from 25 to 50 cents per day, for both brick-layers and laborers.

Cincinnati.

BUILDING PERMITS. — William Voltz, two-st'y brick, Walker St., between Auburn Ave. and Prospect St.

W. M. Wicker, four-st'y brick, Third St., between Ludlow & Lawrence Sts.; cost, $4,000.

J. W. & T. G. Robinson, three-st'y brick, near Eighth St., between Mound and Cutter Sts.; cost, $4,000.

J. H. Lindeman is to build a one-and-a-half-st'y frame, on Jefferson St., between Boone and Hammond Sts.; cost, $1,100.

Blymyer Manufacturing Company, addition to two-and-a-half-st'y brick, on Ninth St., between Harriet St. and McLean Ave.; cost, $2,500.

Cleveland.

BLOCK. — A brick block is building on the old Heard estate, on Euclid Ave.; cost, $18,000; Jno. McMahon, contractor.

STORE. — A four-st'y brick block is being built at the corner of Ontario and St. Clair Sts., on the Worthington estate; cost, $24,000.

CHURCH. — The Plymouth Congregational church people are building a church, at the corner of Prospect and Perry Sts.; cost, about $38,000; Joseph Ireland, architect.

New York.

BUILDING PERMITS. — *One Hundred and Eighteenth St.*, 3 three-st'y brown-stone flats, 16′ 8″ x 50′; cost, $9,000 each; owner, M. A. McCormack, 2157 Third Ave.; architect, J. H. Valentine.

One Hundred and Twenty-Seventh St., 3 three-st'y brown-stone dwells., 16′ 8″ x 50′; cost, $10,000 each; owner, Isaac E. Wright, 155 East One Hundred and Twenty-Eighth St.; architect, J. H. Valentine.

One Hundred and Thirty-First St., 3 three-st'y brown-stone dwells., 16′ 8″ x 46′; cost, $10,000 each; owner, S. Hinman, 411 East One Hundred and Twenty-Second St.; architect, J. H. Valentine; builder, S. Hinman.

Seventy-Seventh St., 3 four-st'y brown-stone tenements, 25′ x 60′; cost, $14,000 each; owner, Francis McQuade, 345 East Seventy-Seventh St.; architect John C. Burne.

Second Ave., four-st'y brown-stone store and tenement, 25′ 6″ x 60′; cost, $11,000; owner, Charles A. Disbrow; architect, John C. Burne.

Eighty-Fourth St., 2 four-st'y brown-stone apartment-houses, 21′ x 64′; cost, $13,000 each; owner, Anthony McQuade, 345 East Seventy-Seventh St.; architect, John C. Burne.

Eighty-Sixth St., 5 three-st'y brick apartment-houses, 20′ x 56′; cost, $9,500 each; owner, Mrs. Emma J. Johnson, Astoria, L. I.; architect, John C. Burne.

West Fifty-First St., No. 409, four-st'y brown-stone apartment-house, 25′ x 63′ and 73′; cost, $14,500; owner, Rudolph Bergen, 407 West Fifty-Fifth St.; architects, Thom & Wilson.

Third Ave., five-st'y brick store and tenement, 25′ x 62′; cost, $14,000; owner, Edward Mulvaney, 170 East Seventieth St.; architects, D. & J. Jardine.

Eighteenth St., three-st'y brick pottery, 40′ x 94′; cost, $6,500; owner, Stewart & Co.; architect, B. J. Schweitzer; builders, A. A. Andruss & Son.

Eleventh Ave., cor. Thirty-Seventh St., four-st'y brick store and tenement, 25′ x 65′; cost, $8,000; owner, Ed. Joyce; architect, C. F. Ridder, Jr.

Thirty-Seventh St., three-and-a-half-st'y brick dwell., 19′ x 25′; cost, $5,000; owner, Ed. Joyce; architect, C. F. Ridder, Jr.

West Forty-Third St., No. 521, five-st'y brick tenement, 25′ x 72′; cost, $9,000; owner, John Totten; architect, C. F. Ridder, Jr.

Sixteenth St., 3 five-st'y brick tenements, 25′ x 72′; cost, $8,500 each; owner, J. Totten; architect, C. F. Ridder, Jr.

Seventy-Ninth St., 3 four-st'y brown-stone dwells., one 16′ 6″ x 60′, and two 17′ x 60′; cost, $12,000 each; owner, J. Bentley Squier, 55 East Seventy-Ninth St.

One Hundred and Sixteenth St., 3 four-st'y brown-stone apartment-houses, 16′ 8″ x 67′; cost, $9,000 each; owner, Martha White, One Hundred and Thirty-Eighth St. and Southern Boulevard; architect, Chas. Baxter; builders, Michael Daly and C. White.

Second Ave., 8 five-st'y brown-stone apartment-houses, 25′ x 65′; cost, each, $14,000; owner, I. Casper, 206 Broadway; architect, Chas. Baxter.

Mangin St., two-st'y brick saw mill, 103′ 6″ x 60′ x 119′ 6″ x 60′; cost, $15,000; owner, J. Rayner, 9 Cannon St.; architect, W. E. Waring.

Third Ave., 5 five-st'y brick stores and tenements, 200′ 10″ x 80′ x 73′ and 59′ 4″; cost, from $35,000 to $40,000 each; owners, McCafferty & Buckley; architect and builder, R. W. Buckley.

Seventy-Fifth St., three-st'y brick engine-house, 25′ x 102′; cost, $15,000; owner, city of New York; architects, N. Le Brun & Sons.

Seventy-Sixth St., 2 four-st'y brown-stone tenements, 25′ x 66′; cost, $12,500 each; owner, Charles Van Fleet, 181 Broadway; architect, C. M. Styles.

West Fifty-Ninth St., No. 212, 5 five-st'y brick tenements, 25′ x 65′; cost, $16,000 each; owner, Charles E. Appleby, 155 Broadway; architect, Wm. Howe; builder, M. McDermott.

Forty-Eighth St., 5 four-st'y brown-stone tenements, 20′ x 68′; cost, $10,000 each; owner, George G. Kip, 88 Nassau St.; architect, Edward E. Raht; builder, Marc Eidlitz.

One Hundred and Twenty-Seventh St., 3 three-st'y brown-stone dwells., 16′ 8″ x 50′; cost, $7,200 each; owner, James Gault, 210 West Fifty-Third St.; architect, Emil Schultze.

Fiftieth St., five-st'y brick school, 80′ x 93′ 7″; cost, $8,500; owner, St. Patrick's Cathedral; architect, L. J. O'Connor.

Alterations. — *Ninth Ave.*, cor. Forty-Sixth St., building moved and raised one story, also two-st'y extension, 21′ 4″ x 7′; cost, $5,000; owner, Robert J. Gray, 37 Dey St.; architects, D. & J. Jardine; builder, E. Burns.

Fulton St., No. 256, interior alteration; cost, $2,000; owner, J. H. Myer, 134 Liberty St.; builder, E. Otte.

East Eighty-Eighth St., No. 172, four-st'y brick extension, 12′ x 20′; cost, $2,000; owner, James Mc. Donald, 1225 Third Ave., architects, Thom & Wilson.

Fifty-Fourth St., No. 427, interior and front alterations; cost, $5,000; owner, Joseph Loehr, on premises; architect, A. H. Blankenstein; builder, not selected.

Fourth Ave., cor. Seventeenth St., one-st'y brick extension, 24′ x 5′; cost, $4,500; owner, Wm. McLittle, East Seventeenth St.; architects, McKim, Mead & White; builders, F. Lyons and Geo. F. Vogel.

East Sixty-Third St., No. 48, raised two stories; cost, $4,000; owner, R. T. Wilson, 845 Fifth Ave.; builders, A. G. Bogert & Bro.

Flats. — Mr. James Stroud is the architect for a double and single flat, to be built on One Hundred and Fifteenth St., near Lexington Ave., 50′ x 125′, of brick and stone, to cost $30,000; and for a flat 25′ x 52′, of same material, to be built on One Hundred and Fortieth St., at a cost of $10,000; also for one, 25′ x 82′, on Fifty-Sixth St., near Eighth Ave., brown-stone and terra-cotta front; cost, $25,000.

Apartment-House. — On Eighty-Third St., near Grand Boulevard, a brown-stone apartment-house, 31′ x 86′, is to be built at a cost of $25,000, from designs of Mr. Wm. Kuhles.

Stores. — No. 193 William St. is to be built on, from designs of Mr. William Kuhles. The building will be five-st'y store with basement, front, brick and Dorchester stone, size, 24′x 70′; cost, $25,000.

On Little Twelfth St., 3 two-st'y stores of Philadelphia brick and stone, 50′ x 55′, to cost $8,000, are to be built from designs of Mr. Jas. Stroud.

Metropolitan Opera-House. — The competing architects are very busy on plans, and the Board of Direction have requested that designs be in by October 1st.

Barnum's Museum and Opera-House. — The directors of Barnum's Museum Company have accepted the plans of Mr. George E. Harding, and it is expected that building will be shortly commenced.

Assembly Rooms. — Lots Nos. 139, 141, and 143 West Thirty-Fifth St., are being built on for assembly rooms. The building will be 50′ x 105′; Mr. Geo. E. Harding is the architect.

Church and Chapel. — Lebanon church and chapel are to be built on Rivington St., at a cost of about $30,000. The buildings will be of brick, terra-cotta, and stone, and are designed by Mr. J. C. Cady.

Produce Exchange. — It is now said that the plans for the Produce Exchange will not be open for public competition, and that not over ten architects will be allowed to submit designs.

Warehouse. — The N. Y. Central & Hudson River R. R. propose building another large warehouse.

Philadelphia.

Building Permits. — *Wistar St., No.* 42, two-st'y warehouse, 30′ x 60′; W. Mills, owner.

State St., near Baring St., 2 two-st'y dwells., 12′ x 28′; Wesley Sloan, owner.

Gray's Ferry Road, near Twenty-Ninth St., two-st'y still-house, 30′ x 30′; Henry Bower, owner.

North Fourth St., four-st'y store, 17′ x 48′; Thos. Leaming, contractor.

Filbert St., near Thirty-Third St., 3 two-st'y dwells., 13′ x 28′; Francis Miller, owner.

Wood St., between Twenty-Second and Twenty-Third Sts., addition to foundry, 20′ x 100′; John Mahony, contractor.

Shunk St., near Weccacoe Ave., two-st'y acid-chamber, 88′ x 228′; Pennsylvania Salt Manufacturing Co., owners.

Palethorp St., No. 1332, three-st'y dwell., 16′ x 30′; Frank Gilbert, contractor.

South Broad St., No. 1023, two-st'y saloon-building, 16′ x 60′; Jno. S. Benson, contractor.

Ridge St., No. 3331, two-st'y building, 18′ x 31′; Chas. K. Sorber, owner.

Eleventh St., near Mifflin St., 2 three-st'y dwells.; Jas. Frazier, owner.

Carlisle St., near Columbia Ave., 8 two-st'y dwells., 15′ x 30′; Jos. N. Pattison, contractor.

Thirty-First St., near Wharton St., 7 three-st'y dwells., 16′ x 46′; Harbert, Russell & Co., owners.

Dawson St., near Terrace St., two-st'y dwell., 18′ x 45′; Staley & Davis, contractors.

York St., cor. Orkley St., 2 two-st'y dwells., 15′ x 30′; Chas. Herrmann, owner.

Fletcher St., near Twenty-Ninth St., 2 two-st'y dwells., 16′ x 30′; Alexander Skilton, owner.

Ninth St., cor. Montgomery St., addition to factory, 42′ x 200′; Jno. Sullivan & Sons, owners.

Ninth St., cor. Montgomery St., five-st'y factory, 37′ x 54′; Jno. Sullivan & Sons, owners.

Snyder Ave., near Eighth St., three-st'y dwell., 15′ x 48′; Michael A. Clark, owner.

Snyder Ave., near Eighth St., two-st'y dwell., 16′ x 42′; Jas. Eltonhead, owner.

Forty-Third St., near Aspen St., school-room, 16′ x 20′; Jno. F. Meye, architect.

Elsworth St., near Twenty-Ninth St., 10 two-st'y dwells., 14′ x 28′; H. G. Harris, owner.

Gray's Ferry Road, near Elsworth St., 6 three-st'y stores and dwells., 16′ x 32′; H. G. Harris, owner.

Church. — Messrs. Hazelhurst & Huckel, of this city, are the architects of a new building for the Tioga M. E. church, 47′ x 68′. The walls are of stone and brick, with timber construction above.

School-House. — The foundations of a new parochial school-house, on Christian St., near Fourth St., are being laid. When finished, the building will be three stories high, 36′ x 60′.

Warehouse. — A large three-st'y warehouse, 80′ x 40′, is being built by A. M. Collins, Son & Co., of this city; C. Caphart, contractor.

The Market. — The prices of building materials continue about the same as last week.

St. Louis.

Building Permits. — Thirty-five permits have been issued since our last report, of which three are for frame structures of slight importance. Of the rest, those worth $2,500 or over are as follows: —

Owners' Name.	Use.	Str's.	R'ms.	Cost.
Dr. F. Wizlizens,	Dwell.	2	18	$7,000
Chas. F. Gauss,	Dwell.	2	16	15,000
Miss. Ice Co.,	Ice-house.	1	1	8,000
A. Nedderhut, [Co.	Warehouse.	3	3	8,000
St. Louis Cotton Compress	Storehouse.	1	2	40,000
" " " "	Warehouse.	1	3	50,000
" " " "	Warehouse.	1	3	10,000
Jos. Weil,	Dwell.	2	14	12,500
J. Stahl,	Stable.	2	4	5,000
M. Londerman,	Store.	4	4	9,000
Wm. G. Clark,	Store.	5	12	40,000

General Notes.

Brookline, Mass. — Messrs. Cabot & Chandler, of Boston, are the architects of a house for Mr. W. E. Stone; Mr. Samuel Beal is the contractor; cost, $8,000.

Cambridge, Mass. — $6,000 have been appropriated for building a school-house in Ward 3.

Germantown, Pa. — The corner-stone of the Wakefield Presbyterian church was laid September 11.

Louisville, Ky. — John Crisman is to build a two-story frame store and dwelling, on Lytle St.; cost, $1,200.

B. Shelta is to build a two-story brick store and dwelling, corner of Twentieth and Rowan Sts.; cost, $1,400.

J. W. E. Bayley is to build a three-story brick and stone dwelling on Fourth St., between Kentucky and St. Catherine Sts.; cost, $15,000.

Middle Bass Island, Lake Erie. — A cottage is being erected for Mr. Jno. Berdan; cost, about $3,000; E. O. Fallis, of Toledo, architect.

Mt. Washington, Md. — Mr. Chas. D. Fisher is about to build a country house (frame) in Baltimore County, near Mt. Washington, 42′ x 32′; cost, $4,600; Messrs. Wyatt & Sperry, of Baltimore, are the architects.

Morristown, N. J. — An extension and hall for the Young Ladies' Seminary is to be built, at a cost of about $10,000; Mr. J. C. Cady, of New York, architect.

Oxford, Pa. — A new edifice, 36′ x 70′, is being built for the Church of the Sacred Heart.

Providence, R. I. — On Monday last proposals were received for building the State Reform School for Girls at the State Farm.

Ringwood, N. J. — The Hon. A. S. Hewitt will have built, from the designs of Mr. Wm. B. Bigelow, of New York, an Episcopal church, to cost $8,000. The building will be of stone and moulded brick, and will have an open truss roof.

Rocky Hill, Conn. — Mr. Murphy, of Providence, is the architect of the new Roman Catholic Church now building here.

A house for H. C. Olds, of New York, is being erected from plans by Mr. Merritt, architect, of New York.

Salina, Kan. — The wooden school-house is building from the plans of Haskell & Wood, of Topeka, Kan.

San Francisco, Cal. — Messrs. Cabot & Chandler, architects, of Boston, are drawing plans of a house for Dr. Chas. Brigham. The first story is to be of brick, and the rest of red-wood. The main hall, 20′ x 50′, is of fire-proof construction, and is intended to contain a Japanese collection, owned by Mr. Brigham.

Santa Fe, N. M. — On September 16, Alex. G. Irvine received, at the Commercial Hotel, Chicago, proposals for building in this city a wooden hotel containing ninety rooms.

South Abington, Mass. — A house is being built for Marcus N. Reed, Esq., from plans of Mr. J. Wm. Beal, architect, of Boston; cost, $8,500.

St. Joseph, Mo. — In the competition for the Union depot to be erected here, the plans of Messrs. Eckel & Mann were chosen. The building is to be 55′ x 400′, and to cost $150,000. It will be heated by steam, lighted with the electric light, and will be first-class in every part; style, Domestic Gothic. Work will be commenced this fall.

Staten Island, N. Y. — At New Brighton a $15,000 brick house is to be built for Mr. A. Schowerling, from designs of Mr. Wm. Kuhles, of New York.

Tabernacle, Pa. — A new church, 28′ x 48′, is being built by the Methodist Episcopal denomination.

Toledo, O. — Mr. V. H. Ketcham's business building is under contract, and the work rapidly progressing. This will be one of the most prominent business structures of the season. The building will be three stories, with high basement, and contain 7 stores. It has a frontage of 34′ on Summit St., 221′ 6″ on Oak, and 100′ on St. Clair; the cost will be about $35,000; N. B. Bacon, architect; Dawson & Anderson, contractors.

Washington, D. C. — The annual report of the Inspector of Buildings for the fiscal year ending June 30th last makes the following showing. Permits were issued for new buildings of the total value of $2,129,978 — an increase of one-half a million of dollars over the previous year; expenses for repairing school buildings, $17,885.

Washington, Kan. — The architects of the new school-house are Messrs. Haskell & Wood, of Topeka; cost, $6,000.

Wilkesbarre, Pa. — Mr. Frank Lee is having important alterations made in the house he has recently purchased. Very elaborate parquet floors have been ordered from Mr. A. H. Lindsley, of New York, and stained glass from Mr. W. J. McPherson, of Boston. The cost of the interior decorations will be about $5,000. A stable of stone, to cost about $3,000, has also been designed by Mr. B. Price, of New York, who is the architect for the entire improvements.

Bids and Contracts.

Toledo, O. — The contract for a block of two dwellings, in brick, for Messrs. Dodge & Pearce, has just been awarded; ground plan, 43′ x 61′; cost, about $6,000; N. B. Bacon, architect.

Industrial.

Cleveland, O. — Lake Erie Iron Company's Nut Works, destroyed by fire last week, are being rebuilt, at a cost of $7,000; Jno. T. Watterson, contractor.

Dubuque, Io. — A stock company is preparing to build a linseed oil mill, corner of Ninth and Jackson Sts. The press-room, storehouse for seed, oil cake, etc., will be in a building, 50′ x 120′, three stories and basement, with an engine-house, 20′ x 50′, one story high. The foundation is under way. F. D. Hyde is preparing the plans.

Lowell, Mass. — The Lawrence Manufacturing Company have begun the work of raising the roof of No. 10 mill so as to add another story to the building. Similar operations will take place on mill No. 4.

Morgan City, La. — There is talk of building an oyster canning establishment the coming winter.

Northampton, Mass. — The new paper mill is to be of brick, two stories in front and three in the rear; the engine-room will be 77 by 86 feet, the machine-room 30 by 100 feet, and the finishing-room 30 by 70 feet, all on the first floor.

Philadelphia, Pa. — Corner of Twelfth St. and Washington Ave., a new factory building, 41′ x 95′, has been begun for Messrs. Allison, Patton & Jones. The new building is expected to be completed in two months.

John Yewdall is building a large mill at Twenty-Fifth and Callowhill Sts. It will be known as the Keystone Mill. It will be 53′ x 103′, and four stories high.

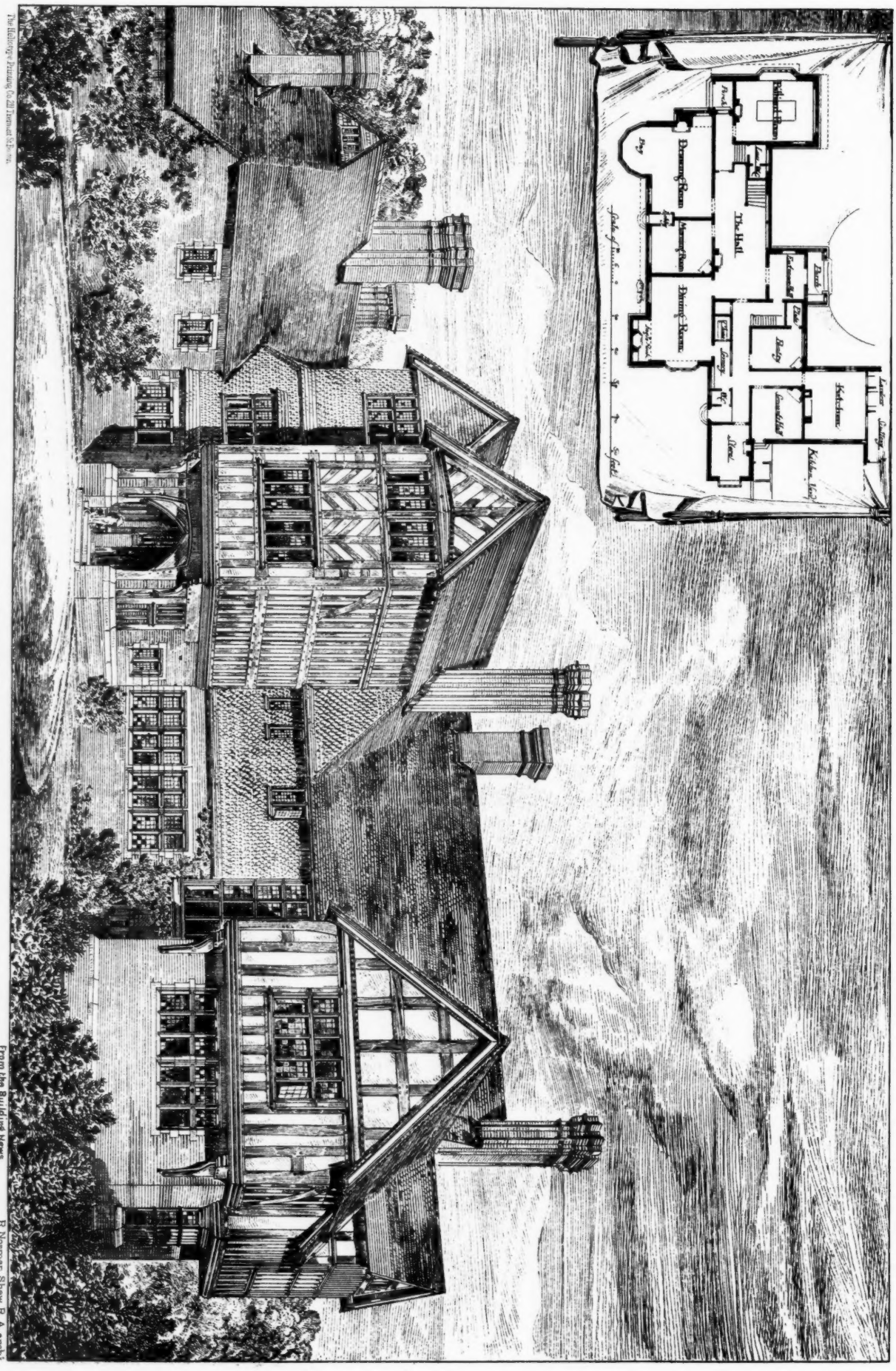
Mr. Phillip J. Lauber is building a large brewery on Broad St., near Columbia Ave. The new building has a total frontage on Broad St. of 70 feet, and is in three sections, the centre sections standing 47 feet back of the wings; the wings are each 22′ x 75′; cost, $50,000.

Pittsfield, Mass. — Robbins & Kellogg are to put up another brick building 80 by 36 feet, and four stories high, which will be ready for occupancy by November 1.

Pittsburg, Pa. — Lead pipe works are to be built in connection with Price's foundry.

Richmond, Me. — It is rumored that there is a strong prospect of a new factory being built on the site of the old shoe factory.

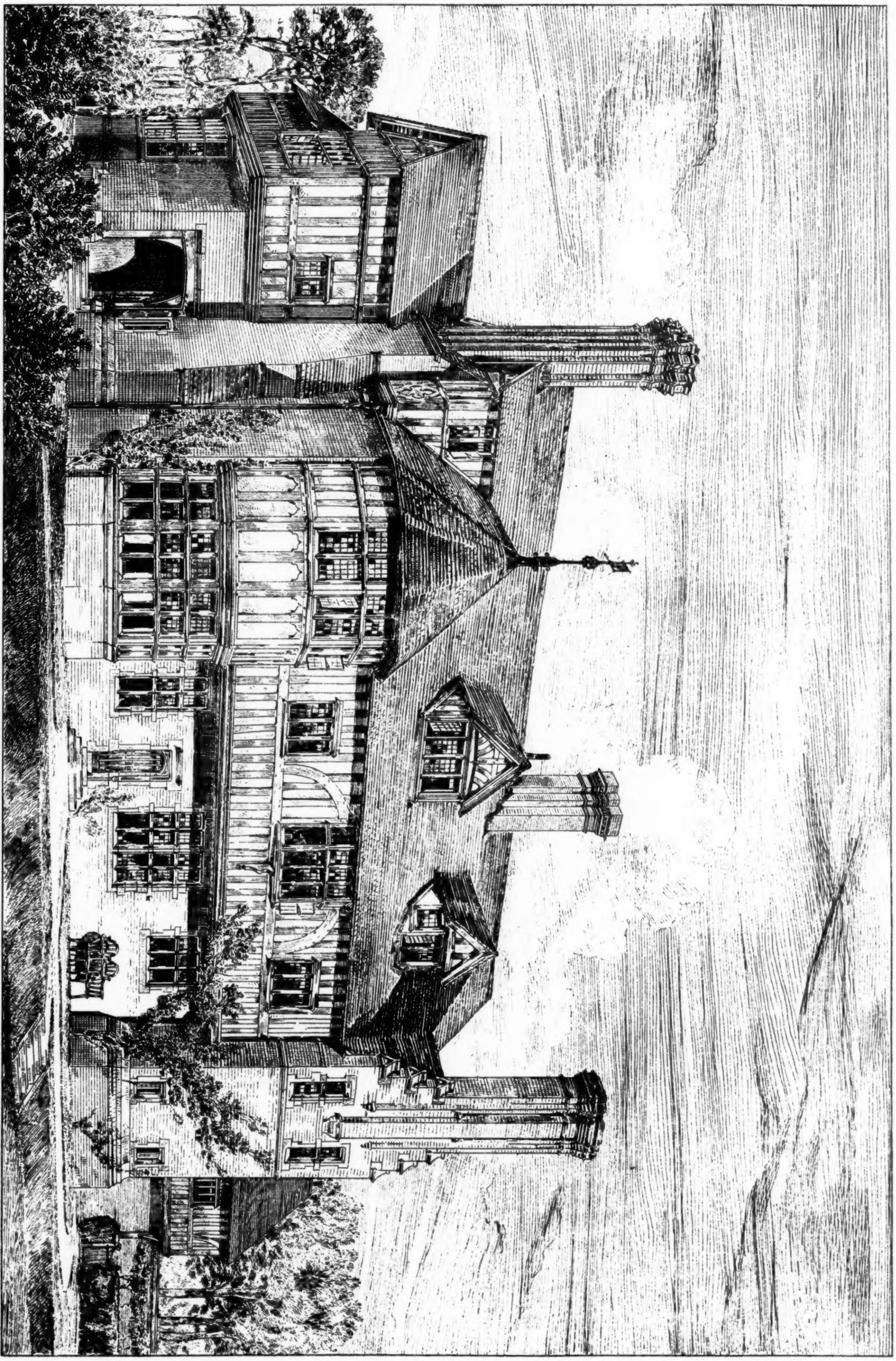
Toledo, O. — A three-story brick warehouse, 66′ x 90′, is being built for the Toledo Bending Works, on Summit St.; cost, about $7,000; A. S. Young, architect.



House at Sunninghill.

From the Building News

R. Norman Shaw R. A. arch.



House at Sunninghill.

From the Building News

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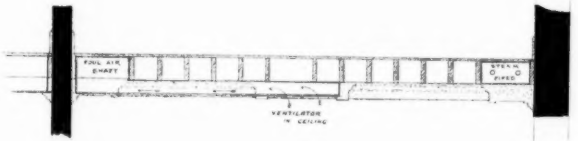
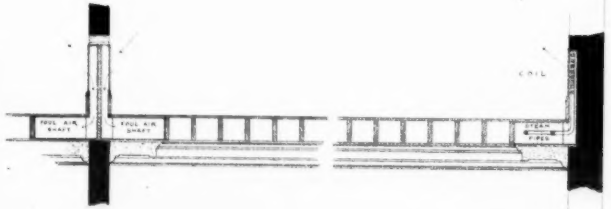
No. 245 American Architect and Building News Sept. 25, 1880.



TRANSVERSE SECTION THROUGH FLOORS.
SCALE HALF INCH TO A FOOT



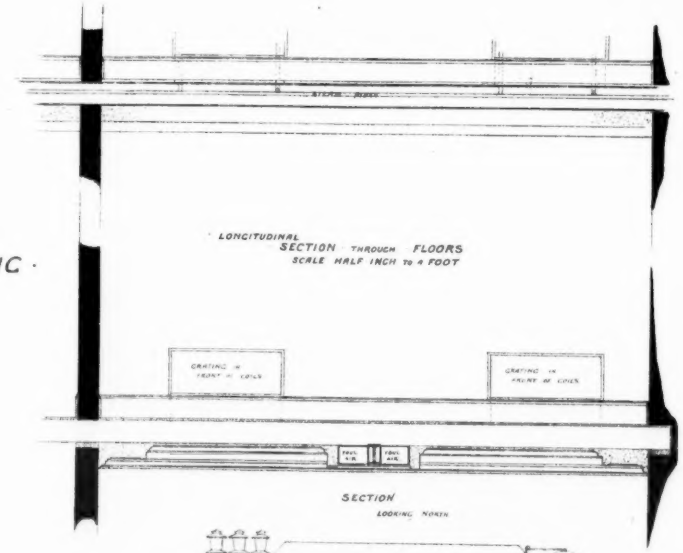
DESIGN FOR A MODEL PUBLIC SCHOOL BUILDING

SCALE EIGHT FEET TO AN INCH

by

"Philadelphia"

Robert Brown,
Archit.



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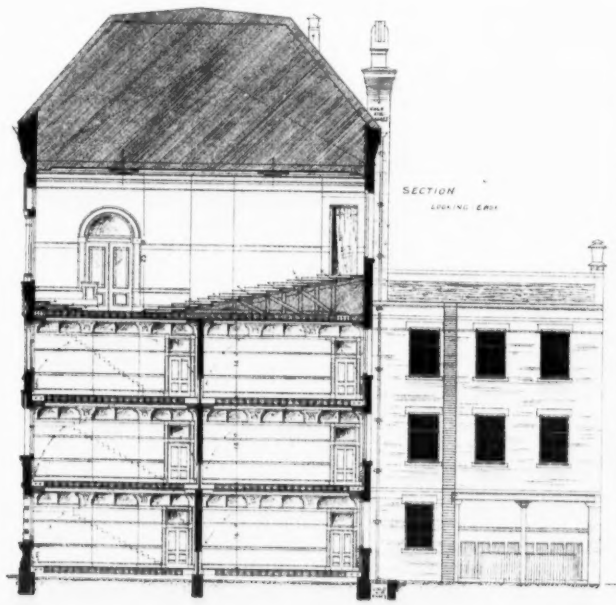
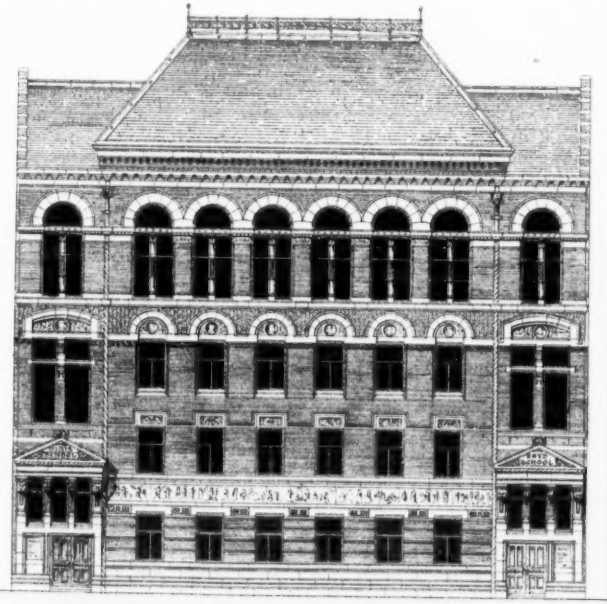
SCALE HALF INCH TO A FOOT

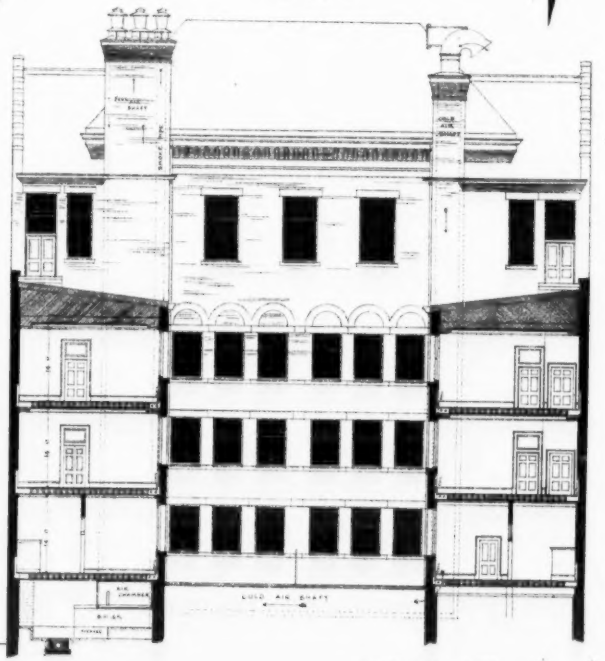
SECTION
LOOKING NORTH

FRONT ELEVATION



SECTION
LOOKING EAST





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American Architect and Building News Sept. 25, 1880. No. 245

DESIGN FOR

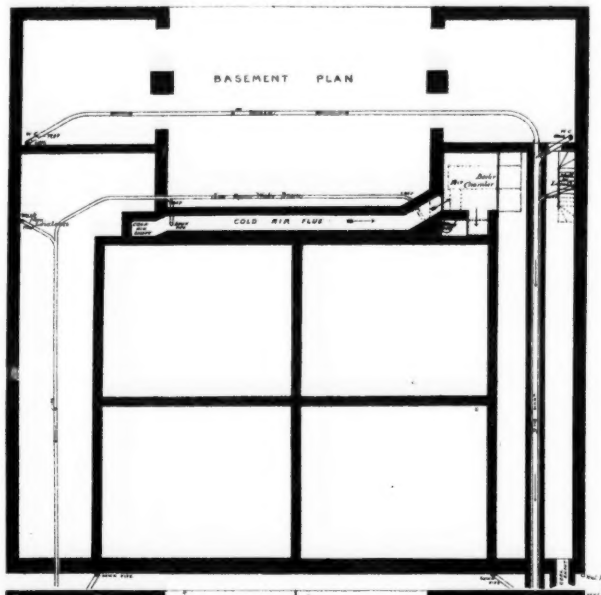
MODEL PUBLIC SCHOOL BUILDING

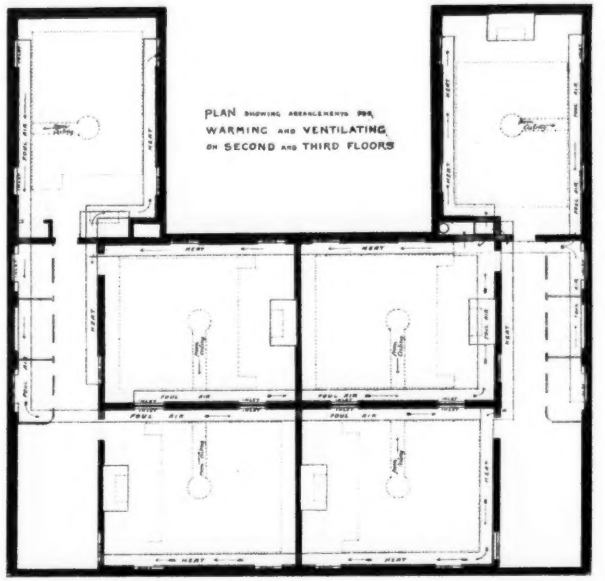
SCALE EIGHT FEET TO AN INCH

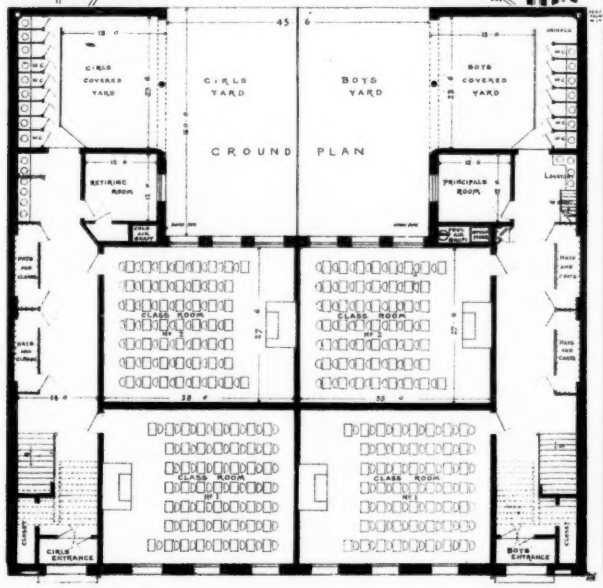
by

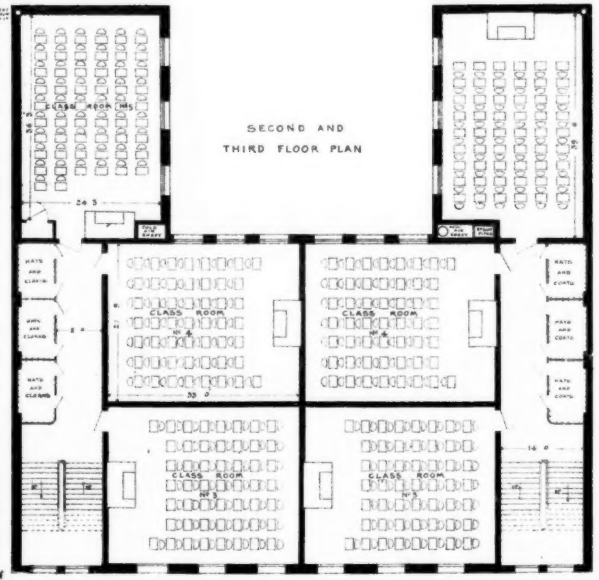
"Philadelphia"

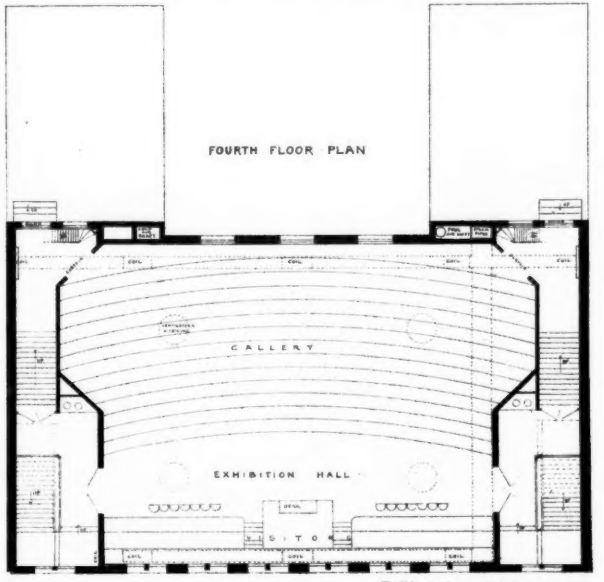
Robert Brown,
Archt.











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