

JULY 10, 1880.

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

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AN offer has been made to the Metropolitan Museum of Art which its friends cannot be too prompt in enabling it to accept. It is proposed to furnish the Museum, not only with a complete set of casts from all the principal collections of sculpture in the world, but with moulds for casting duplicates, provided sufficient money shall be contributed to pay for the work and material. A little reflection is necessary to enable non-professional persons to comprehend the value of this offer, and the importance of seizing at once an opportunity which can never occur again in so favorable a form. It is well known that the marble antiques which fill the great galleries of Europe are steadily deteriorating under the combined influences of the acid vapors which load the atmosphere of modern cities, and the dusting which is necessary to keep them clean, so that within a year or two the authorities of the British Museum have been compelled to shut up some of their bas-reliefs in glass cases, and to varnish others with silicates, in order to prevent their total ruin. As it is, the casts now made are inferior to the ones taken twenty years ago, and those of twenty years hence will be still worse, so that not a moment should be lost in securing a collection of moulds before the exquisite texture and surface of the original has been further attacked. The completeness of the collection which is now within our reach gives it also immense value. It must not be forgotten that works of sculpture are not only examples of art, but historical documents, and that an incomplete collection of casts, however well selected from the artistic point of view, is as useless to history, compared with a more comprehensive one, as would be a selection of manuscripts of the Augustan age alone, compared with the riches of the Vatican Library.

THE city government of Chicago has taken seriously in hand the subject of the smoke nuisance, which though less noxious in Chicago than in many other cities, seems to meet with less toleration there than elsewhere. An ordinance is under consideration, providing that the owner or engineer of any locomotive or steamboat, or any chimney not connected with a private residence, who shall be found guilty of causing or maintaining a nuisance by discharging unconsumed smoke into the atmosphere, shall be fined not less than five or more than fifty dollars for each offence. It seems almost too much to hope for the actual passage and enforcement of such a law, and yet nothing would do more for the appearance of the city and the comfort of its inhabitants, with less inconvenience to private interests. There is no excuse for the wanton ejection of valuable fuel into the air, to the injury and annoyance of the public. In most cases, even with ordinary boilers, the dense masses of soot and cinders which are at intervals thrown out of the chimney, indicate, not the imperfect combustion due to the construction of the furnace, but the stupid laziness of the fireman, who, instead of supplying the grate at short intervals with small quantities of fuel, which can enter at once into perfect incandescence, devotes his attention to his pipe, or beer, or newspaper, waiting until the fire is as low as possible, and then piling on a charge of coal so excessive that much of it must be decomposed and vaporized before the remainder is raised to the point of ignition.

At last, work has begun on the superstructure of the Washington Monument, the strengthening of the foundation being completed, and before long the shaft will have increased sensibly in height. It is only fair to warn those who propose to send valuable or remarkable blocks of stone, as was once the fashion, that there will be no place to display them in the new structure, the colonnade, which was to furnish them with so noble a setting, having been left out, so that the only mode of rendering them visible will be to insert them in the interior of the wall, each with a lantern hung in front of it. Some who have had misgivings as to the appearance of the naked stump which is to take the place of the imposing original design, will be gratified to learn that the Hon. Geo. P. Marsh, United States Minister at Rome, has determined that "the relative dimensions of the new obelisk are in exact accordance with the classic proportions of this style of architecture." The substance of this seems to be that some antique obelisks are ten diameters high, or nearly, for they vary considerably. Trifles, such as diminution and entasis, the difference in size, and consequently in the effect of perspective, the distinction in the manner of presentation, the small shafts always resting on a plinth, while the great one sticks up out of the mud, all these count for nothing in the comparison. If it may be permitted us to venture a suggestion, we would like to refer those interested in the subject to a very noble example of a design for an obelisk surpassing in dimensions those which it is proposed to give to the one on the bank of the Potomac; one in which due allowance is made in the height and proportions for the shortening effect of perspective; in which majesty and repose are given to the structure by a base as original in conception as it is imposing in effect; in which classic elegance and dignity are as well united as in any structure which we possess. This design may be found depicted in millions of guide-books, geographies and histories as representing the Washington Monument. How utterly different from the future structure, we need not say.

THERE seems to be as yet no important change in the state of affairs relative to the New York Department of Buildings. The transfer of the Department into the hands of the Fire Commissioners has been postponed until the legal question of the constitutionality of the Public Burdens Act, under which it is to be made, is decided. The trial of Mr. Dudley will probably be a long affair, unless abruptly terminated by some compromise, but there is no doubt of the final result of the proceedings in one respect: that Mr. Dudley will sooner or later cease to be the head of the Building Department, and that his successor will be appointed, and it is not too early to urge, in behalf of the people of the city, the necessity for choosing that successor with all possible care. Nothing more strikes the stranger in the New York of to-day, than its rapidly increasing number of gigantic buildings, each one of which is a daring essay in theoretical construction, whose complex organism of balanced forces requires the intelligence and training of a master either to conceive or understand, and the appointment of a man of unscientific mind or second-rate training to a position in which he must examine, pass upon, modify and correct the plans for such buildings, will sooner or later bring him, and those who appointed him, into merited shame and disgrace. The New York statute, unless it has been modified, provides that candidates for the position shall be examined by a specified committee of architects. It is for the people of the city to see that this condition is complied with, and that the examination is made effective by inviting as many as possible of the best attainable candidates to compete for a position which should be, as it was intended to be, in the highest degree honorable, responsible and useful.

A DETAILED copy of the concession made by the State of Nicaragua to the Inter-Oceanic Canal Company has been received at Washington, and published. Under its terms the proposed company secures the exclusive right to construct and operate a ship-canal across that State, the canal and locks to be of sufficient dimensions to accommodate steamships of the largest class. The company will hold the canal for ninety-nine years after its first opening, the whole to become the property of the Nicaraguan Government at the expiration of that period. The line is to be neutral ground, together with the adjacent land on each side, but vessels of war belonging to nations engaged in hostilities with Nicaragua or any other Central American State

will be excluded, and the company is not to transfer any part of its concession to any foreign power or government; this clause cutting off speculations like that of Lord Baconfield in regard to the Suez Canal. No criminals or fugitives from justice in Nicaragua are to be received or harbored on the territory of the company, nor is the latter to countenance any interference with Nicaraguan politics. All this sounds business-like, and it is said that the president of the provisional company is now making arrangements in Europe for the commencement of the work. At the same moment, M. de Lesseps announces the opening of his scheme to subscription, half the shares being allotted to the United States, so that outsiders may be entertained with a lively race for precedence between the canals during the next few months. Meanwhile no one will put much money into either enterprise so long as the other shows signs of vitality.

PERHAPS the most startling innovation of the nineteenth century is likely to be witnessed in 1885-6, in the shape of an international exhibition in Rome. One could conceive of such an enterprise taking place at Cairo or Timbuctoo more easily than in the Eternal City, but to such base uses even that must, it seems, come at last. The suburban region outside the Porta Pia is proposed as the site of the exhibition buildings, a region which contains the Villa Borghese, among others hardly less renowned, and it is hoped that the princely proprietors of these estates will be willing to allow the temporary use of their land. Perhaps it would do no harm to ask them also to throw open their houses and galleries. A struggle and crush like that in the Philadelphia Art Building in 1876, repeated every day for six months in the rooms of the Villa Torlonia would, no doubt, be gratifying to patriotic Italians, however the noble proprietor might like it. The projectors of the undertaking wisely reflect that their patrons will not wish to run the risk of dying of the *perniziosa* by going out on the Campagna in August, so it is intended to open the fair in December, closing it again at the end of the following May. We can answer for it that the exhibition will be well worth visiting. Perhaps the "industrial products" will not be altogether new to those who have seen other shows of the kind, but in antiquities, curiosities and bric-à-brac of all kinds, Italy is richer than all the world beside, and these things will serve to attract those for whom the "subgenera of textiles" have lost their charm.

THE eighth Annual Architectural Congress opened in Paris June 14, in the hall of the Ecole des Beaux-Arts, with an attendance of fifty or sixty members of the profession. The subject for discussion on the opening day was the present system of awarding diplomas in architecture by the French Government, in which there are asserted to be many objectionable features. After debate, it was resolved that the question should be submitted to the various architectural societies of the metropolis and the provinces, and that their action should be considered at the next meeting of the Congress. The subject assigned for the second day was the important one of public competitions, and the third day was to be devoted to the question of copyright in architectural designs. We shall look forward with interest for reports of the later meetings, especially for that of the discussion on competitions, a subject which now agitates the professional mind in two hemispheres. The Royal Institute of British Architects having suspended its meetings for the summer, no action is to be expected on the question in that country until they are again resumed, but we trust that it will not be allowed to pass out of mind meanwhile, and that by the time any portion of the profession is ready to act, the rest may be prepared to coöperate with it. It would be difficult to overestimate the evils,—the disappointments, discreditable practices and waste of time and money,—which now attend architectural competitions, solely through the fault of the architects, who have only to pluck up a little loyalty to each other, and a little respect for themselves, to place the profession by a united effort once for all in a proper and recognized position as regards these contests.

It is not very unusual now to hear of enterprises carried on by American capital, as well as under American direction, in foreign countries. The last great scheme of the kind has Southern Russia for its field of operations, and consists of a project for opening and working coal and iron mines near the Sea of Azof, the construction of a railway two hundred miles northerly from the same place, the construction of works for manufacturing the iron obtained from the mines, the building

of grain elevators, and the establishment of a line of steamers to some American port. About eight millions of dollars have been subscribed in Philadelphia and New York, and operations are expected soon to begin. No doubt the increased production of coal and iron will be a benefit to this portion of Russia, and the proposed railroad will do much to open up a country to which considerable attention has been of late directed. Whatever may be the return to those who have ventured their money in the enterprise, the creation of new industries in any country, and the opening of facilities for communication and transportation are great blessings to the people. The Russians, perhaps on account of their military habits as well as the extent of their territory, are much given to travelling, and it may be profitable to provide them with the means of gratifying this inclination, even in a country so sparsely settled as much of that in which the work is to be carried on.

EVERY one will rejoice to hear that the great statue of Liberty, presented by the efforts of kind friends of America in France to the city of New York, is at last to be furnished with a pedestal. After the enthusiasm with which the original gift was made and received, it was a little humiliating to witness the difficulty with which funds were collected for building the plinth on which to set it; but satisfactory arrangements have now been made, and the huge arm which now grotesquely adorns Madison Square will in a year or two be joined to the remainder of the figure which is to stand guard, with its flaming torch, over New York Harbor. The originators of the undertaking were entertained at a banquet in Paris by the Franco-American Union, on Wednesday, Messrs. Bartholdi, the designer of the monument, Laboulaye, Oscar de Lafayette, de Lesseps and many others being present. Mutual congratulations and compliments concluded the entertainment, and assurances were given that the structure, which is intended as a memorial of the services of France to America in her struggle for independence, will be finished and inaugurated in 1883, the year of the Exposition in New York. Simply as a work of art, the gigantic statue is well worthy of the city which it is to adorn. M. Bartholdi has won a distinguished reputation by his colossal designs, the Lion of Belfort and the huge figure of Vercingetorix at Alesia among others.

PROFESSOR C. S. Sargent has undertaken an enterprise in which he ought to have the coöperation and support of all thoughtful men,—the collection and dissemination of knowledge concerning forest trees, and the promotion of their systematic cultivation. The dwellers in our Eastern States, remembering the vast wooded tracts which yet lie at their doors, are apt to smile incredulously at the notion that the cultivation of trees can be a source of much gain to them, but they may be reminded that certain valuable kinds of timber, as black walnut, beech, butternut and bird's-eye maple, are nearly extinct on the Atlantic slope, while their value has greatly increased, a single log of figured black walnut from the Ohio valley having recently been sold for five thousand dollars, and even then returning a handsome profit in the sale of veneers; and many new species might be successfully introduced. But for the far West, from the Mississippi to the Rocky mountains, it may be said that forests are the one great and crying need. Not only as settlements increase is the want of timber severely felt, but the terrible droughts which now rob the fertile lands of Western Kansas, New Mexico and Colorado of half their value might be controlled by the simplest kind of tree-planting, systematically pursued, and a vast addition made to the wealth of the continent. How much may be effected even in a short time, by such work thoughtfully carried out, is shown by the example of a desolate and sterile valley in the wild region of Barcelonnette in the Lower Alps, which until 1868 was almost annually devastated by the inundations of the mountain torrent which flowed through it. Its reclamation was begun by building dams of stone across the torrent, which, thus checked, expanded in time of flood into a series of lakes, depositing a fine alluvium, in which grass was sown as the waters receded, followed by bushes, which soon gained a hold sufficient to prevent their being swept away by the now gentle current. The growth of these itself moderated the violence of floods, by retarding the melting of snow, and the descent of water from the slopes; and trees began to flourish, these multiplying in geometrical ratio as their own good effect increased, until now the once bare valley is clothed with vegetation, the fitful torrent has become a steady and quiet brook, and inundations have ceased.

HOUSE ARCHITECTURE.¹

PERHAPS there has been no period in the history of modern architecture when a conscientious review of the subject by an experienced and thoughtful mind could be made more interesting and could be more fruitful than the present. In the English field, more especially, the great experimental revivals of the past twenty years have encouraged the study of past styles, and have produced relations between archaeology and architecture more intimate than have ever before been exhibited. The profession therefore has become versed in the spirit of the past, and has become peculiarly sensitive to impressions of sentiment as conveyed by form. This attitude of mind has apparently placed architects at the mercy of fashion, or, more properly, has made fashion in architecture possible, and has subjected it to moods which apparently are indefensible by any logical process and which at first sight would seem to be merely capricious. Thus, since the erection of the New Zealand Chambers by Mr. J. Norman Shaw, some four or five years ago, the whole profession in England has, so far as secular and civil architecture is concerned, devoted itself to the imitation of features of the Queen Anne, Jacobean and early Georgian phases, and the serious Gothic work of the preceding years seems to have been quite forgotten except in religious buildings. This new fashion as yet has not had the advantage for such a literary exposition as kept alive, if it did not actually create, the Gothic revival; the modern practitioner has not at his tongue's end the moral formulas by which a few years ago the disciples of Ruskin and Pugin justified the works of their hands and were enabled to introduce the element of conscience into architecture. Many of the characteristic features of the "Queen Anne Revival" do not seem to admit of logical excuse and cannot be deduced from any methods of reasoning; at all events they have not as yet been furnished with their excuses ready-made. The architect rescues his design from the commonplace by making his window-panes small and his muntins large, by multiplying mouldings and tormenting the outlines of his gables with steps, cartouches and finials; but why the result pleases his eye he cannot tell.

Mr. Stevenson, a well-known member of the Royal Institute of British Architects, who lately distinguished himself by a manly and gallant attack upon the methods of the restorationists, and brought even Sir Gilbert to bay, has given to the world, in two volumes of excellent common-sense, his thoughts upon house architecture, and, from a practical point of view, has set forth certain reasons for the present attitude of the profession in England, which we heartily commend to those who would fain explain to their clients why they consider six-inch by nine-inch lights of glass better than eighteen-inch by twenty-four-inch. The bulk of Mr. Stevenson's work, he informs us, was written several years ago, and although the ideas which it advocates are now current and fashionable, he should have due credit for having found his way to them by reasonable methods before they had been made common by practice. The *rationale* of these ideas is the most notable contribution which Mr. Stevenson makes to professional literature in these excellent volumes. They are addressed to the house-building public, and relate to the designing of homes. They take no high flights of fancy, and do not pretend to be oracles; but his work is just what should be produced at this moment by a Fellow of the British Institute. It is not a collection of designs. This would be easy work for a Fellow; *noblesse oblige*. He must enter upon a far more difficult task. His first volume is mainly a review of domestic architecture, historical and practical—a survey of a wide field of precedent in this department, and a deliberate statement of the proper relations of such precedent to our own use. His method of reasoning, starting from the discussion of the question, "What constitutes good architecture?" and from a careful consideration of the "conditions of producing good architecture," leads him to a brief, but very comprehensive and practical, review of Gothic and Greek architecture, and of the various characteristic developments of classical or Renaissance architecture in Florence and Genoa, in Rome, Venice, France, Germany and the Low Countries, and finally in England and Scotland. His object is to prove that the Renaissance styles, instead of being offences against purity and good grammar, as charged by the eloquent advocates of mediæval principles, are natural growths, and, as such, full of instruction and interest. He maintains that the state of architecture at the present day in England is similar to that which produced the phases of national Renaissance in the various countries, save that we "accept with knowledge and consciousness the freedom from classic restraint which the Renaissance builders took unconsciously." This is certainly a neat statement of the significant and essential difference between ancient and modern methods of thought in design. The summing up of his first volume is worth quoting:

"No style of architecture now-a-days can continue and gradually develop like the old national styles; for in architecture, as in ladies' dress, we have emancipated ourselves from tradition, and, to keep up our interest in either, we must have perpetual variety. Instead of a development so slow that it was inappreciable to those who lived in it, and could only be measured over centuries, we must have obvious change every year or two. We may expect, therefore, in architecture, as in dress, a recurrence at intervals to fashions lately discarded: each, as it is taken up again, receiving some new form of treatment. The present fashion of 'Queen Anne' may become so associated in

our mind with bulbous curves and ugly forms as to cause a revulsion to the dignity of Italian Renaissance or to the purity and refinement of Greek art. When we get tired of these, when we find that an Italian style is unsuited to our climate, that Greek architecture becomes in our hands cold and insipid, and gets misunderstood and vulgarized, when we find from experience that Englishmen are not Italians or Greeks in their tastes or their artistic powers, we may turn again with new pleasure to the cheery comfort of an English red-brick house.

"But any such changes of fashion, if their authority is to be acknowledged as binding, if they are anything more than the whims of a small knot of enthusiasts, must be like the fashions in dress: changes within certain limits—the limits of our domestic habits and the traditions of the building trades; and these traditions are classic. We cannot renounce, if we would, the inheritance of Roman forms which the Renaissance has bequeathed to us and to modern civilization. Unwillingly or not, we must bow to

"Those dread unseated sovereigns who still rule
Our spirits from their urns."

In the course of his argument Mr. Stevenson necessarily encounters Mr. Fergusson's specious theory that the hope of modern architecture must rest upon the artisan and not upon the architect, that true and healthy development is to be obtained only by the successive application of such discoveries and inventions as naturally occur in the practical arts of civilization; that these, in the hands of the workman, would be embodied in building with the innocence and *naïveté* which we so much admire in mediæval work, but, in the hands of the architect, if they are used at all, are subordinated and overlaid by artificial conventions, and that all progress is thus handicapped by professional sophistications. Mr. Stevenson's defence of the architect is temperate but effective, and his explanation of the position of the modern architect is full of the hard common-sense of a man familiar with details of building.

"We have no directions," he says, "either from Mr. Fergusson or his supporters, as to the practical steps which the public should take to introduce the 'true' system of architecture. On one point I would desire information; namely, which of the numerous trades connected with house-building—brick-layer, plasterer, carpenter, plumber, bell-hanger, decorator, etc.—is to have the direction of the work? Old buildings were not so complicated; the other trades were subordinate to the mason; but a mason now-a-days would find himself very helpless in adjusting the requirements of a modern house. Our London builders' houses, though each merely a repetition of what has been done a thousand times, do not give hope for the system of leaving workmen to their own devices. It is, indeed, a curious theory that knowledge, education and refinement should be hurtful to an art, to the proper practice of which, in the present day especially, they are essential. Because architecture, in a wholly different era, when good art was traditional, was practised successfully by men who could neither read nor write, there is no reason to infer that the right way to advance it now is to leave it in the hands of ignorant men. If our architecture be in the deplorable state which is asserted, it needs to raise it, not ignorant men, but men who unite the faculty of original design to education, refinement, and special training for the work."

But Mr. Stevenson recognizes the opportunity for individual errors in the present practice of architecture, and for the multiplication of personal caprices, and deplores the fact that a necessary concomitant of our own freedom from restraint is the ineradicable publication of such errors and caprices in poor or affected buildings. There is as much bad literature and bad painting as bad architecture; but the bad books and pictures speedily disappear, leaving only the survival of the fittest to represent our standard in literature and art; but a work of illiterate architecture is apt to have as many elements of permanence as a good work, and it remains to mortify us with its impertinent suggestions and to degrade the public taste. The remedies proposed by our author are for the most part difficult of application; though no one can doubt their good sense. He would have all architects advise their incompetent pupils to give up the profession; he would have architects trained less at the desk and more at the building to the end that they should not be betrayed into error by the facility of their own drawing; he would have them appreciate the value of art for its own sake, and lose no opportunity to inculcate a better general knowledge of it; he would have them preserve the local building traditions so that new vigor, refinement, and interest may be conferred upon styles still living, though now vulgar, commonplace and degraded by reason of the absence of intellectual guidance.

The second volume is devoted to the practical consideration of the large question of house-planning—its history, and its modern development. Some of his practical advice is not suited to our climate, and to our conditions of living, and in general our author leaves upon the mind the impression that in respect to the lesser conveniences of dwelling-houses,—the plumbing, the cooking and heating appliances the arrangement of rooms, closets, wardrobes and servant's offices,—we have at least little to learn from our English cousins. Both volumes are profusely illustrated with woodcuts, the range of which is for the most part confined to dwelling-houses, and though not of such a high order of merit in execution as recent publications have given us reason to expect in such works, they serve their purpose well, and have the merit of presenting even to the professional reader an unusually large proportion of unfamiliar

¹ *House Architecture*. By J. J. Stevenson, F. R. I. B. A. In two volumes. London: MacMillan & Co., 1880.

examples. A number of these points are given twice in different parts of the work for facility of reference, and both volumes are furnished with a very complete index.

APPARATUS USED FOR HOUSE DRAINAGE.¹—II.

NEXT to traps, there is no fixture used in connection with modern house drainage of so much importance as the water-closet. A great deal of inventive talent has been expended upon these contrivances, and though they have been a good deal improved of late, there is still room for further improvement. Several quite distinct classes are now in use and sold by the dealers, having each certain merits and faults of their own, which may render each class more suitable to certain places than to others. Let us then examine these several types in detail.

The forms in most common use, and therefore best known in our community are the "pan-closet" and the "hopper."

The pan-closet is shown in section by Figure 22. It consists, beginning at the bottom, of a trap just below the floor, generally four inches in diameter, and constructed of iron or preferably of lead, unless the iron be enamelled on the interior, to avoid the rough surface of cast-iron. Above the floor is the cast-iron receiver, to which on its top the crockery bowl is attached by putty. A copper pan of one or two quarts' capacity is hung under the bowl, upon a pivot, so that when level and full of water, this water stands two or three inches deep in the bowl, and forms there a second trap so long as the closet is at rest and supplied with water. When the closet is used, the handle is raised and the pan is tilted on its pivot, emptying its contents into the iron receiver and thence into the trap below.

To the superficial observer, this seems to be a perfectly safe device. The circulation between the soil-pipe and the room is ordinarily guarded by two traps, and as the pan is supposed to be kept full of water, the fecal matter is dropped directly into this water and becomes thereby to an extent deodorized. But though so popular and almost universally used in our country, this closet is a very defective one, and often becomes a great nuisance in a house from the following causes. The cast-iron receiver is soon smeared and spattered with filth all over its interior, which goes on accumulating by successive splatterings, till the decomposition of this lining, kept moist and warm, keeps the interior filled with foul odors. In fact, it violates the cardinal principle of house drainage, by affording a harbor for the continual and certain accumulation of filth within the house. We are told that the water in the pan above prevents its free access to the room; but the pivot hole, by which the pan is tilted, is subject to constant wear, and is seldom air-tight. Moreover, the putty in which the bowl is bedded on the top of the receiver, is often found cracked, or gnawed away by rats, and however perfect these joints may be, there is a quart or two of the foul gas of the receiver always displaced by the tilting and emptying of the pan. The trap below the floor prevents it from escaping below, and it necessarily comes upward into the room. Attempts have been made to avoid this by providing vent-pipes to keep the air sweet in the receiver, but this is so foul that such attempts can at best be only palliative, while the separate vent-pipes extending from each water-closet receiver, all the way to the open air, if large enough to be of any use, would add so much to the cost of the device as to remove the chief argument for its use—cheapness. The only good reason for using the pan-closet anywhere, is this, that it can, if kept tight and in good repair, be made to answer a tolerable purpose with a more moderate supply of water than almost any other kind. Hence, it may often be used, if well cared for, by small families who have but a limited water supply, raised by hand-pumping, or where no sewers exist, and where the filling of the cesspool at frequent intervals by a more copious discharge of water might prove a serious inconvenience. In such cases, and wherever used, the inside of the cast-iron receiver should always be coated with porcelain enamel, so that its surface may not so readily accumulate filth as the ordinary rough castings. But wherever water can be obtained in sufficient quantity, and afterwards properly disposed of, we should remember that an adequate supply is absolutely essential to the success of the water-carriage system, and that we can never economize the use of water in such apparatus below a certain point without incurring serious risks. We must see to it that water enough is applied to quickly remove all the filth, or we are not justified in using the apparatus in our houses.

It is desirable to have water-closets located on the exterior walls of houses, so that outer air can be readily obtained by opening a

window. But as this is often found difficult to accomplish on account of exposure to frost in the country, or the supposed greater value of light and air for other apartments in city houses, some substitute for the open window is desirable wherever water-closets are located in the interior of houses. The best arrangement is to apply a small tin pipe, say two or three inches diameter, to draw air from under the seat, using the kitchen chimney draught, as has been before explained, for aspiration. Some forms of closets have a vent-hole in the bowl, above the trap, to which this tin pipe can be applied. The form of hopper made at Worcester, Mass., and Henderson's bowl, have this attachment. Where no such device exists, it is best to apply the mouth of the draught-pipe directly under the seat. An annular flat tube is made for this purpose at Charlestown, Mass., of galvanized-iron, with slots around the inner edge, to be placed directly over the bowl and under the seat, as shown in Figure 23. This leads to the consideration of this form of closet, known as the "hopper," many patterns of which have been in the market for years, but which has been generally considered an inferior article, owing to defects in its details and the inadequate supply of water generally given to it. These defects can easily be remedied, and are as follows:

Rough interior, leading to accumulation of filth, remedied by using crockery ware, or enamelled iron.

Improper application of the flushing water, which is often applied in the direction of a tangent to the circle,

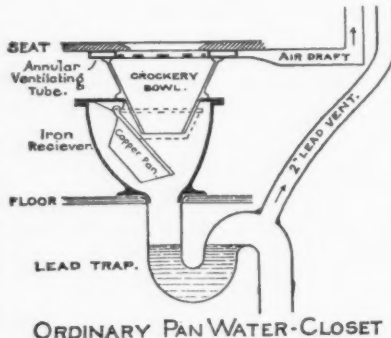


Fig. 22.

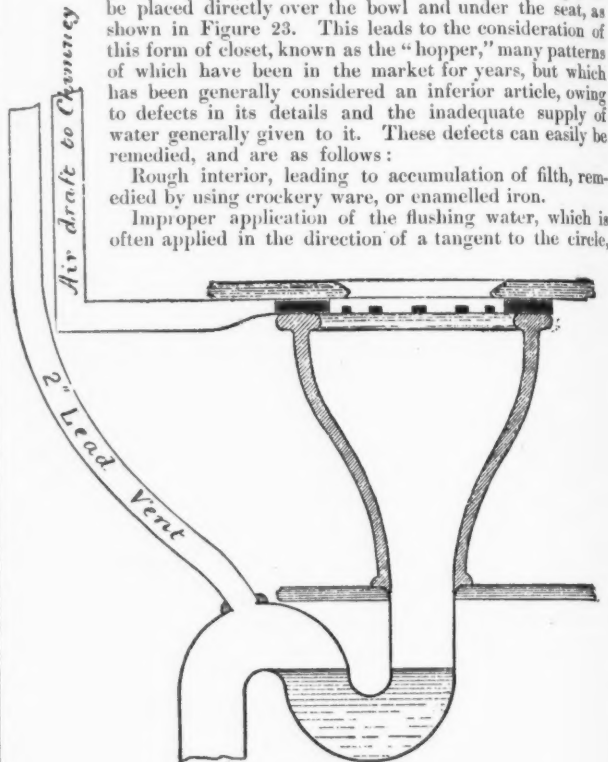


Fig. 23.

causing the water to spin about the inside of the bowl and fall by degrees, instead of dropping at once into the trap to expel its contents.

Lastly, insufficient supply of water, or the admission of water by dribblets through an open faucet, depending on the uncertain memory or attention of the person using it, and wasting large quantities when left running, without giving that sudden dash required to clean the trap. The best form of water-supply to all closets is that from a special tank immediately over them, actuated by large valves and conducted thence to the closets by large pipes, never of less than one-and-a-quarter inches calibre. With these precautions, the hopper-closet can be made one of the most desirable forms for general use, its simplicity being a strong point in its favor. In order to ensure proper flushing, the quantity of water should be metred by a waste-preventing cistern, such as have been used for many years in England, and now manufactured here. (See Figure 24.) The automatic apparatus illustrated in this figure where the water-supply is operated by the weight on the seat, when properly adjusted, with strong and well-fitted apparatus, has many advantages, rendering the flushing independent of the

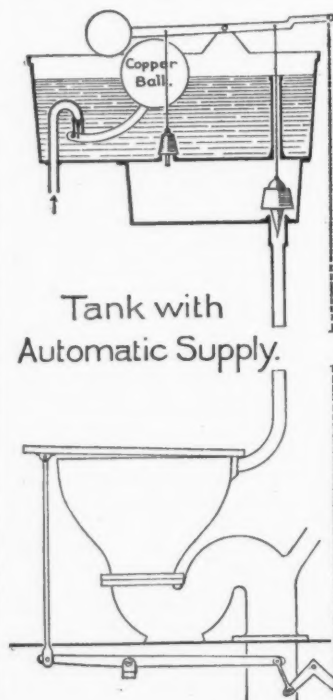


Fig. 24.

¹ A lecture by Mr. Edward S. Philbrick, C. E., delivered before the students of the Massachusetts Institute of Technology, Boston.

uncertain memory of the person using it, and definite in its quantity.

All forms of hopper-closets should have the water-supply so adjusted as to be delivered with a dash, and not by dribblets, the object being to completely expel the contents of the trap, which would soon become offensive if allowed to remain there.

The short hopper with the trap above the floor, shown in Figure 24, has the advantage, when properly proportioned, of holding the water higher than the long hopper (shown in Figure 23), and thereby exposing less surface above the water for contamination. If the trap, when located above the floor, would be exposed to frost, it is better to use the long hopper and put it below the floor.

The wood-casing around water-closets is liable to become soaked with splatterings of urine, and even if washed carefully every day, as it always should be, is often offensive, especially if much used by children or careless persons. This has led to the invention shown in Figure 25. This form dispenses with all wood-work, a most desirable feature for hospitals and other public institutions, if the floor is made of tiles, which are smooth and non-absorbent. This is a very cleanly piece of apparatus, and well adapted to warm climates or heated apartments.

Another form of water-closet has been used to some extent within a few years, being first introduced here by Mr. Jennings's patent; viz., the plunger-closet, several styles of which are now in the market; viz.: Jennings's, Zane's, Demorest's, and Pearson's. They are used either with or without traps, as shown in Figures 26 and 27. The

water is retained in bowls up to a certain level by a plunger or large plug, to be lifted by hand when discharged. The plunger is in an upright cylinder alongside the bowl, with which it communicates on the side. In this cylinder, or attached to it, is a float, which governs the water-supply, maintaining it at a definite level by opening or closing a valve on the supply-pipe. The advantages of this sort of closet are in its definite and adequate supply of water, which is maintained at

such a height as to be sure of receiving all the fecal matter, and avoid the soiling of the bowl by having it drop upon its dry surface, as sometimes happens in hopper-closets. The disadvantages are in

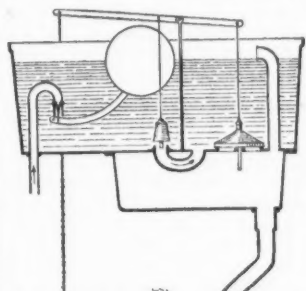
the liability of the float-chamber to become foul by degrees, by filth adhering to its sides. Those patterns which have the smallest float-chambers are therefore the better ones. Since the float apparatus is not always certain in its action, such closets must always have an overflow, and in order to prevent the circulation of air from below, this must be trapped, which involves another risk, viz.: the loss of the trap-water by evaporation, if the overflow occurs but seldom. To guard against this, a

dribblet of water is sometimes thrown into the overflow trap every time the closet is used, by a small pipe branching from the supply-pipe. These closets deliver suddenly such a large body of water when discharged, that they flush the drain below very well; but they also, for this very reason, occasion the risk of siphoning their own traps and others in connection with the same soil-pipe, if not guarded by good air-vents to supply the vacuum. These are applied directly under the plunger, to admit air to follow the water as it descends.

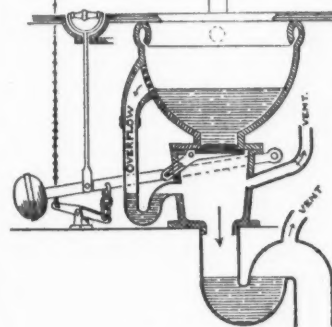
It will be seen that all these plunger-closets take their water-supply through a valve attached to the apparatus, governed by the float, and governing in turn the supply of flushing water. The construction of these valves is various, and their action is not always reliable, which has at times caused considerable annoyance. If these valves can be made more certain in their action, and the float-chamber made more accessible for frequent cleaning, the apparatus can be made a very satisfactory one; but it needs careful treatment and good care.

Still another variety of water-closets remains to be described; viz., those in which the base of the bowl is closed by a valve or flap, retaining the water and hinged on a pivot, which is rotated by lifting a

handle, thereby discharging the contents of the bowl into a small chamber directly above the trap. (See Fig. 28.) As the flap needs



Hellyer's Water Cl. and Supply Tank.



Rhoad's W.C.
Fig. 25.

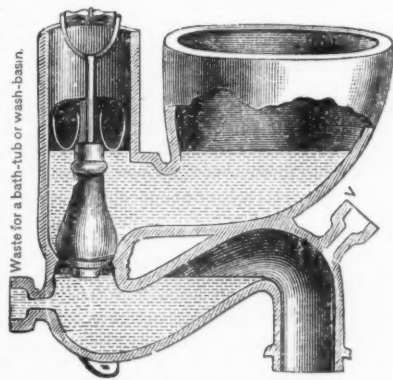
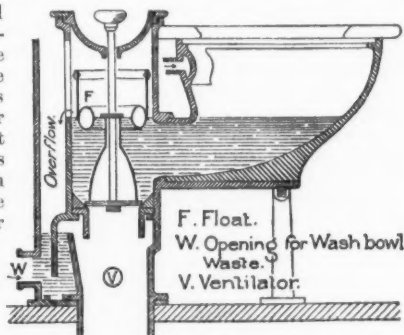


Fig. 26.



Jennings's Trapless Water Cl.

Fig. 27.

Fig. 28.

must always accompany and follow their discharge. When these valve-closets are well constructed, so that they are not likely to break down or get leaky at the flap, they form a very good piece of apparatus. The one here illustrated is the best of its kind in the market, and appears to be thoroughly well made. This kind of closet should never be used without a special tank and waste-preventing service-box, by which an adequate and sudden supply of water can be depended upon for flushing.

PERGAMON. — I.

THE far more advantageous conditions of undertaking excavations in Asia Minor and other Turkish provinces, rather than in Greece proper and the Greek islands of the *Ægean*, upon sites which have once been ennobled by Hellenic civilization and art, are admirably illustrated by a comparison of the simultaneous work at Olympia and at Pergamon, — on the one hand, the utter renunciation of all discovered in the valley of the *Alpheios*, on the other, the easily gained possession of all thought worth transportation to Berlin from the present village of Bergama. If it were the intention of the Prussians to repay themselves for their part of the German empire's unselfish labors at Olympia by a rich booty of antiquities rapidly and silently brought into security from another site, they could not well have better succeeded, in as far as quantity is concerned, than they have at Pergamon. It is only unfortunate that the quality of the marbles they have carried away cannot be compared with the works of *Paionios* and *Praxiteles*, and the gable-groups recovered at Olympia.

Pergamon, the name of which is in every-day usage in our word parchment, *charta Pergamena*, (*Pergamena*, Ital., *Pergament*, Ger.) — here best prepared and a staple during all antiquity, — a city familiar to physicians as the home of *Galen*, to biblical students as one of the seven churches of Asia, was one of the most flourishing capitals of the East during the last three centuries before the Christian era. Though reputed by ancient writers to be 120 stadia, (20 kilometres) from the sea, a distance scaling fully half as far again on modern maps, it still maintained a considerable marine commerce by means of the navigable *Caicus*, swollen at this point by the waters of two other rivers. The beauty and fertility of the country round about is extolled by *Strabo*. The foundation of a settlement in this situation, at the foot of the steep conical acropolis, dates far back; but the town does not seem to have been of great importance, even under the *Lydians* and *Persians*, until the advent of the third century, when *Philetairos*, revolting from the authority of *Lysimachus* who had stored there a treasure of nine thousand talents, (as many million dollars) seized the citadel, and founded, upon the ruins of the Macedonian power, the monarchy which is known by the name of its capital. Under the rulers *Eumenes I.*, *Attalos I.*, and *Eumenes II.*, Pergamon increased rapidly. *Attalos* effected a treaty which greatly furthered the material well-being of his state. It was during this first half of the second century B. C., that this city reached its greatest extent, the second *Eumenes* founding the celebrated library and probably being responsible for the pretentious works of sculpture recently discovered. The last ruler of the dynasty, the weak

and tyrannical Attalos III, bequeathed the sovereignty to the Romans in a will, the authenticity of which has been doubted. The city Pergamon continued to flourish for some time afterwards as the capital of the province Asia. Under the Byzantine emperors the importance of the town was in every respect transferred to the neighboring Ephesus. From these few historical facts it is easy to judge what class of antiquities could be expected from the ruins. The acme of the city's greatness was attained at a time when the art of Greece enjoyed a certain revival. The dynasty of Pergamon decidedly encouraged the development of sciences and art; the city became the seat of a school of sculpture notable for its power of physical characterization and of an almost unequalled reproduction of outer forms, based upon the most careful and realistic study of nature. Many of the works of the school are known by fragments preserved in the museums of Venice, Naples, Paris, Rome and Provençal Aix. Chief among the compositions, to be recognised from these, was a colossal offering of Attalos to the Athenian acropolis, — figures in the full round which represented the gigantomachia, the combat of the Athenians against the Amazons, the battle of Marathon and the victory of the army of Pergamon over the barbarians.¹ The so-called Dying Gladiator is perhaps the best known of these waifs, — the most important, certainly, the group of barbarians in the Villa Ludovisi, known as Arria and Petus.

The ruins of the city and its acropolis are still considerable, but all is of a late period and not important in architectural respects. Prominent among them are the remains of a theatre and of great masses of masonry attributed to a palace of the Roman period. The best descriptions may be found in Leake's Asia Minor; von Richter's Wallfahrten im Morgenlande; Arundell's Seven Churches of Asia; Prokesh von Osten's Erinnerungen, III vol., and Denkwürdigkeiten, III, and Fellows's Asia Minor. Such was the general condition of Pergamon and extent of our knowledge of its art up to the time when the site was visited by Dr. Curtius and Baurath Adler.² The Berlin scholars found a most competent guide at the ruins, in Mr. Karl Humann, a Westphalian engineer resident at Smyrna, who for six years had been employed by the Turkish Government in constructing a highroad between Bergama and the distant port Dikeli. Humann had observed that all the marble which the inhabitants of Bergama needed for their buildings, gravestones, and for several neighboring lime-kilns, was procured from the acropolis, a little to the north of the present village. The only traces of masonry upon the summit of the acropolis consist of foundation and enclosure walls, principally built at a time when the more extensive and elaborate structures of antiquity had already been overthrown in ruin, so that their carved blocks here served as rubble material. The retaining-wall of the upper plateau was the most attractive of these masses — six metres thick, and evidently of Byzantine date, it promised to contain many fragments of earlier Hellenic workmanship. From this, Humann had easily extracted three fragments of sculptures in relief, having in all a surface of about five square metres. On the occasion of the visit of Curtius, they were presented, through him, to the Museum of Berlin, whither they were shipped in the next year. They stand now in the Göttersaal, under the number 224. The blocks are of an unclean, bluish-gray marble of very coarse grain, worked in such bold relief that some parts of the bodies were entirely disengaged from the background. They were easily recognized as belonging to a gigantomachia, but from their mediocre artistic value, no further attention was paid to them. For years the endeavors of Humann to persuade the Government to undertake systematic investigations at Pergamon were in vain; but at last, the director of the Berlin galleries of sculpture, Dr. Conze, took the necessary steps with the ministry, and, as the project was favored by the Crown Prince of Germany, Protector of the Royal Museums, the necessary funds were allowed and preparations were made for excavating. It is said that Conze was moved to take part in the matter by his attention having been called to a passage in the *Liber memorialis* of Lucius Ampelius, which, though cited by Overbeck,³ had not before been brought into connection with the fragments discovered at Pergamon by Humann. Ampelius was the obscure compiler of a dry little book, which contains the most remarkable facts known in his day concerning astronomy, geography and history. He did not write his meagre encyclopædia for exacting minds, extracting his information chiefly from Roman writers (Nepos, Nigidius, Florus Hyginus and others). The book was dedicated to a certain Macrinus, identified by some scholars with the emperor of that name, though the literary style has led it to be dated as late as the fourth and fifth Christian centuries. In the eighth (VIII. 14) of his fifty chapters there is a long account of the "wonders of the world" — curiosities, relics, and imposing architectural monuments, many of which are evidently fabulous. Among the rest, it is mentioned that "in Pergamon there is a great altar of marble, forty feet high, with very large sculptures; it represents a gigantomachia." It was recognized as probable that the fragments discovered by Humann belonged to this composition, and on the probability of the blocks belonging to the extensive monument mentioned by Ampelius, further investigations were concluded upon. It was certain that a large altar did exist in

Pergamon from a reference made by Pausanias⁴ when describing that dedicated to Zeus in Olympia. In August 1878, permission to undertake excavations was obtained from the Sultan, extremely favorable terms being gained by the diplomacy of the German ambassador to Constantinople. In the next month, Humann commenced with the demolition of the great wall before mentioned. It was clear that such great blocks of marble as were found here could not have been brought from a great distance, and that the ruins of the structure which they had originally decorated might be looked for near at hand. At the foot of the highest plateau of the acropolis there was a mound which appeared rather formed by the rubbish of some overthrown monument than a natural upheaval. After three days excavation at this point, Humann was enabled to telegraph to Berlin, announcing that eleven great reliefs and thirty fragments of sculpture of the same coarse marble as his first blocks, as well as the substructure of the altar, had been discovered. The explorations were methodically continued, and the wall and mound thoroughly examined. The most valuable reliefs, the centre of the great composition of the frieze were found in May and July of last year, at the eastern side of the foundations. The surface of the earth which is covered extended 37.6 m. from north to south, and 34.4 m. from east to west. The substructure bore a colonnade of Ionic shafts, which enclosed a platform apparently destined for the altar itself. Access was had to this upper half of the building by a staircase, not wholly placed before the enclosure, but cut from the mass of the foundation, as is testified by one of the reliefs which was stepped by the treads and rises of the ascent. Under the broadly projecting cornice of the substructure, calculated from the notice of Ampelius to have been about six metres above the ground, the frieze with the representation of the gigantomachia, extended around the free sides in a total length of 130 m. and a height of 2.30 m. The surface of the whole would consequently have been about 300 sq. m. Of this, ninety-six great blocks have been secured for Berlin, in width varying from 0.61 to 1.10 m.; besides these there are some fifteen hundred smaller fragments, the exact relation of which to the composition it will hardly be possible to ever surely determine. In all, the sculptured remains represent a surface of about 150 sq. m., two-thirds of which are blocks. The other half of the frieze seems mostly to have been burnt to lime for the mortar so lavishly used for the great wall, and for other buildings of the Byzantine period. It has been calculated that more than twelve thousand kilogrammes of marble belonging to the frieze alone were thus consumed. The mortar has, however, in many cases, secured the excellent preservation of blocks built into the wall, firmly coating and protecting the carved surfaces. It often is not entirely removed until the marble is safely lodged in the Museum of Berlin. The condition of the figures varies greatly. When the altar was demolished by the Byzantines, the blocks of the frieze were flung down from their position and much shattered; the heads of the gods appear generally to have been maliciously mutilated by the early Christians. The stone shows traces of a fire, and some of the reliefs have been entirely destroyed by it. Notwithstanding all this, enough remains to exhibit the general character of the work, and fully illustrate the great technical power and the bold imagination of the designer. It is fortunate that the principal groups, those apparently in the centre of the scene, containing the figures of Zeus and Athene are among those preserved in good condition. The names of the deities represented were carved in the scotia of the cornice over the frieze. Eleven have been here read: Poseidon, Athene, Aphrodite, Ares, Heracles, Amphitrite, Triton, Leto, Dione Enyo, and Themis. Besides these there have been recognized in the groups: Zeus, Apollo, Nike, Eos, Dionysos with a satyr, and Helios with a quadriga. And according to the analogy of similar works of art Hera, Hermes, Artemis, Hephaistos, and perhaps Hecate, must also have been represented. As these divinities must have been matched by an equal number of giant opponents the total cannot be estimated at much less than fifty figures. The names of the giants were engraved upon an architectural member below the frieze. Here also were the signatures of the artists who executed the design; these latter have unfortunately become so defaced that it is not possible to decipher them and ascertain whether the remains discovered are original works of the Pergamonian sculptors Isigonos, Phryomachos, Antigonos or Stratonikos, mentioned by Pliny as having represented the battles of Attalos and Eumenes against the barbarians. — J. T. C.

THE ILLUSTRATIONS.

UNITED STATES COURT-HOUSE, HARRISBURG, PA. MR. J. G. HILL, SUPERVISING ARCHITECT OF THE TREASURY DEPARTMENT.

COMPETITIVE DESIGNS FOR CITY HOUSES. MESSRS. ROSSITER AND WRIGHT, NEW YORK, AND MR. ROBERT BROWN, BOSTON, ARCHITECTS.

We publish this week two of the designs which received prizes in the competition advertised in this journal some weeks ago.

SKETCH FOR A CLUB-HOUSE. MR. THOMAS BOYD, ARCHITECT, PITTSBURGH, PA.

VENTILATING FIRE-PLACE.⁵—V.

In order to prevent the loss of heat by absorption in the brick-work, and also to direct the fresh air upon the pipes, the distributor

¹ Compare: Benndorf in the Mittheilungen des deutschen Instituts in Athen. Band I. — Ihraemer, Die Siege der Pergamener ueber die Galater und ihre Verherrlichung durch die pergamenische Kunstschule. Fellin, 1877. Brunn, in the Annals dell' Institut archeologico, 1870, p. 292.

² E. Curtius. Beiträge zur Geschichte und Topographie Kleinasiens Berlin: 1872, pp. 56-62.

³ Overbeck, Griechische Kunst mythologie. Leipzig: 1871. Vol. I, p. 361.

⁴ Paus. V. 13. 8.

⁵ This paper, by the writer of the Open Fire-Place articles, will be incorporated with them in their separate form.

should be encased by the manufacturer in a tin box, blackened on the inside with lamp or ivory black, and with an opening below for the admission of the cold air, and another above for the emission of the warm, otherwise the most careful supervision will hardly suffice to ensure correct setting by an ordinary mason. As before said, if a furnace be used, it need only be a small one, say a portable furnace of the smallest size, with a large cold-air box, to heat the hall or temper the fresh-air supply on festal occasions, when open fires are inadmissible. A much more convenient heater in this case would be steam-pipes connecting with a central boiler, under the control of a special company or of the public, like gas, and water-pipes, because the amount of heat required would be comparatively small, only that actually used would have to be paid for, and a great first cost, and the care of running a basement furnace at irregular intervals, would be dispensed with.

Where one has the audacity to diverge so far from the beaten track as to omit the panelled or plastered front of the chimney-breast altogether, the convector may be enjoyed also as a radiator, and, in the attempt to treat it decoratively, a new field is opened for the pencil of the artist. Its surface may be legitimately ornamented at the junctions of the pipes by brass bands, and fillets, and the

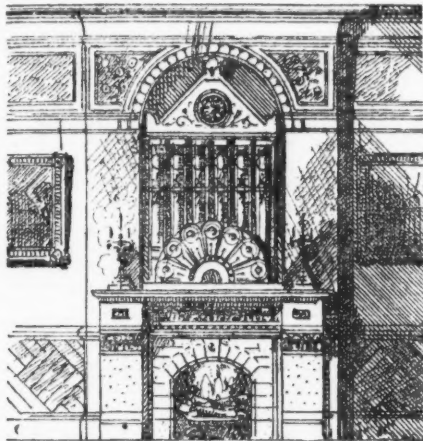


Fig. 212.

clean-out caps, may be treated as bosses and rosettes. By placing strips of sheet-iron between the upright pipes, and bending the strips on the front edges to the right and left, the fresh air may be made to circulate completely around the pipes before it enters the room. These strips, when heated through, become themselves radiators, and greatly add to the heating power of the device. This form of radiator was tried in the room referred to in the first chapter as ineffectually warmed by an ordinary open fire-place. As there described, three kilograms of wood burned therein were able to raise its temperature but a single degree Centigrade. After the introduction of the radiator, the room, standing at 40° (F.) at the start, was heated in sixty minutes to 105° (F.), or about a degree for every minute during which the wood was burned. It might have been raised still higher, by burning more wood. Contrary to what might be expected, the direct radiation of the elevated pipes upon the heads of the occupants causes no discomfort. Nevertheless, ornamental screens rising above the mantel shelf may be used to deflect the rays from the heads of those standing nearest the fire and from the clock or delicate mantel ornaments. Figs. 212 and 213 are intended to suggest methods of decorating the open radiator. In the former the

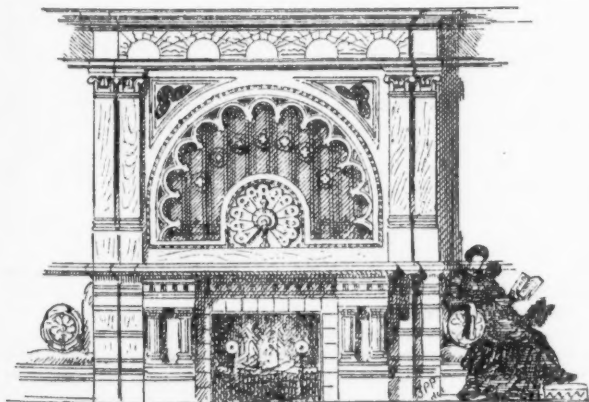


Fig. 213.

triangular form of the upper horizontal pipe by which the smoke of the various upright pipes is collected and directed into the single flue above, is exposed as part of the design. The lower end of the flue above is also shown at the top of the triangle. The slip-joint for the removal of the radiator is formed at this point. In the latter design the perforated panel containing the large arch and the cen-

tral screen must be unscrewed before the radiator can be removed. Fig. 214 gives a section through this fire-place in order to show the manner in which the rays of heat from the fire and the radiator above distribute themselves throughout the room. The head of a

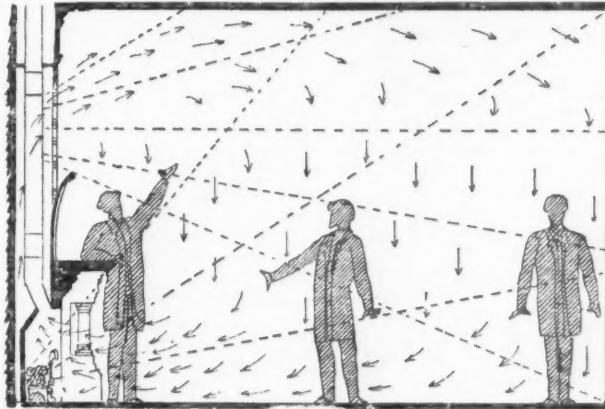


Fig. 214.

person standing near the mantel is protected by the screen from the hottest rays of the radiator, which can only be felt at this point by raising the hand above the head. Persons standing at the middle and further end of the room are warmed all over equally by the rays from the fire and radiator both, and experience no greater warmth at the head than at the feet. Moreover, the rays are reflected from the opposite walls back again so as to strike the backs of all three when looking toward the fire.

The arrows show the actual movement of the fresh air coming from the distributor chamber, giving the occupants in every part of the room a continual supply of pure, and only pure, air. The breath from the nostrils follows the general movement, so that no portion of

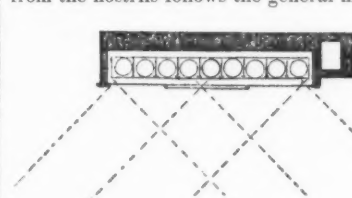


Fig. 215.

the air is ever twice inhaled. Fig. 215 gives a plan of this radiator showing the horizontal pipes and the intervening strips of sheet-iron in section. The bent ends of the strips for deflecting the currents of air upon the front surfaces of the pipes are also shown. The clean-

out caps in both these designs are ornamented with carving and gold. In 213, they follow the curve of the large arch. The screens in both are circular in form and rise from the centre of the back-board of the mantel. In 213 it echoes the large arch above, and the outer edge bends slightly forward, as shown in section in 214, to allow more room for the heat rays to pass from the pipes. Solar radiation is represented symbolically in the painting of the frieze

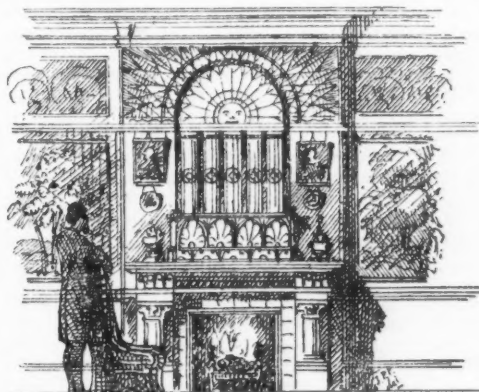


Fig. 216.

above the radiator. In Fig. 216, a screen of a different form, extending across the entire front of the radiator is given. Here again the genial rays of the sun are conventionally represented extending over the entire upper part of the chimney-breast, the sun himself rising at the centre of the arch. A still greater heating effect is obtained by throwing the radiator entirely out into the room as in Fig. 217. But the difficulty of the artistic handling is proportionally increased and the rough sketch is presented merely as a suggestion for development under more careful study or a more skilful hand. The screen here surrounds the entire base of the radiator, and the upright flues unite at the top in a single flue which may enter a second radiator with or without a second fire-place directly above it in the next story. The plan of this radiator is given in Fig. 218, and the movement of the fresh air and of the heat-rays is clearly indicated by arrows and dotted lines. In all but one of the above designs, though

the majority of the chimney-breast is taken up by the radiator, a certain amount of space is still left for picture hanging.

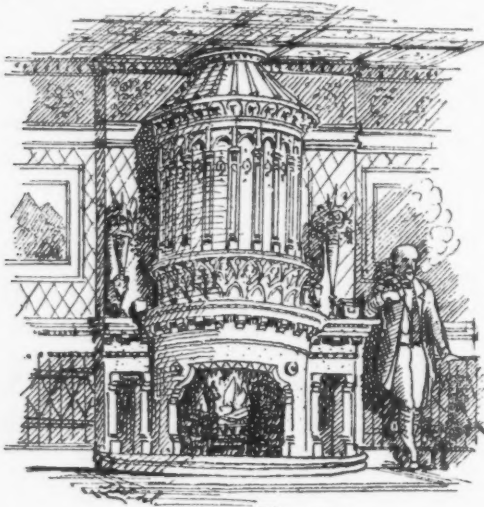


Fig. 217

It remains to determine the practical value of the distributor as far as it is dependent upon its cost, for if the cost of manufacture,

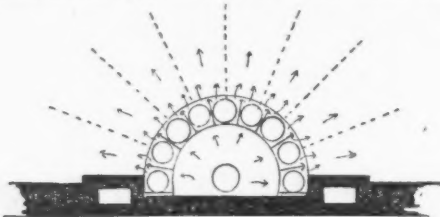


Fig. 218.

installment and management does not compare favorably with that of the ordinary furnace and fire-place, the instrument for practical purposes is valueless.

The cost includes, first, that of manufacture and setting, and second, that of management, and involves, of course, the consideration of the exact amount of its heating and ventilating power.

MEDIEVAL ROOFS.¹

I WILL conclude this part of the paper by giving the heights and widths of some of the finest roofs: Westminster Abbey, nave and choir, is 103 feet high, and is the highest of English churches. The vaulting of Amiens is 130 feet high and 23 feet wide, and the choir and transepts of Beauvais 153 feet high and 35 feet wide. The timber roofs of the middle ages are to be arranged in two classes, those which are above vaulted groins and are framed for the work they have to do, without regard to appearance; and the open-timber roof, where there is no vaulting, but the roof timbers are wrought, arranged, and decorated with the full intention of deriving from them the internal architectural effect. The simplest form of roof for small spans is either A-shaped or with two diagonal ties set half-way across the height; these were adopted for small churches, and were composed wholly of rafters similarly framed. Sometimes in rather larger roofs principal-rafters with collar-beams were introduced at intervals; they were still rafters only, and not roof principals—for they were of the same internal elevation as the ordinary rafters, and did not carry purlins. Two wall-plates were laid along the wall on the outer and inner sides, and to these, short blocks or sills were dovetailed or halfened on. To these sills the rafters and struts were mortised and secured by oak pins. Sometimes the rafters and struts were mortised directly to the wall-plates. There is a timber roof over the hall of the Bishop's Palace, at Auxerre, which is an excellent example of roof construction. It is about an equilateral triangle in elevation. It has a main tie-beam and two collar-beams, a king-post, and a system of curved braces, and while it looks light and elegant, is framed so as to get the greatest strength in the materials used. To prevent the tendency of the tie-beam to deflect, it was sometimes framed with a decided camber; this also prevented the tie-beam from having the appearance of deflection. Then came the gradual departure from the tie-beam plan of roof-framing, and the builders of the Middle Ages have left us many examples of how large timber roofs may be framed and kept from spreading by properly-arranged systems of collar-bracing. A very simple specimen consists of one collar-beam, short struts, and long collar-braces or knees securing each of the angles. The backs of these braces were formed into a series of tenons, which fit into corresponding mortices sunk in the soffit of the principal rafter and collar-beam. The purlins are often moulded,

and supported by collar-braces or struts, moulded and cusped on the soffit. This system of bracing also gives great lateral stiffness to a roof of any great length. One peculiarity of the framing of rafters is the absence of the ridge-piece, for instead of the framed ridge now in common use, in old roofs the rafters are simply halved to each other and secured by an oak pin. The last great feature in open-timber roof construction is the hammer-beam, and of this we have not far to go for a splendid example, for as the culminating point of elaborate stone groining is to be found in Henry VII's Chapel, so in the roof of Westminster Hall we have about all that can be done in the way of highly-decorated timber construction. M. Viollet-le-Duc, in speaking of it as a specimen of carpentry, says as far as one can judge without taking down the timber-work, the framing and tenons are cut with a rare precision. It is to the grace and purity of execution, and again the quality of the wood employed, and also the goodness of the system, that the carpentry of Westminster Hall is preserved to this day. The hammer-beam is really a cantilever, or bracket, on which the roof principal rests. The span of Westminster Hall is little under 70 feet, and the height from the stone corbel to the ridge coincides almost exactly with the span. The principals are about 18 feet apart. The hall of Hampton Court is covered with a roof of somewhat similar construction; it is 40 feet span, and rises nearly 34 feet from the corbel. This room is seven bays in length, and the principals are connected by three tiers of arches, or, constructionally speaking, "trussed purlins." Another good example of similar construction, but of a somewhat smaller span, is the roof of Knapton Church, Norfolk. This roof remains perfect to this day, without sign of settlement. It is just 32 feet span. In regard to general principles of construction, it will be seen that the principal trusses of timber-roofs correspond to the main ribs of stone groining, both conveying the pressure to points where the thrust or pressure could be met by abutments of sufficient strength; but there can be no doubt that in many cases the Gothic carpenters relied too much on the sizes of the timbers, and strength of the timber used, rather than on strictly scientific construction, with the result that the beams have, more or less, sagged.

DECORATIVE ART IN A LONDON HOUSE.

WHAT bedrooms! The guest-chamber is made of fire and flowers. That is to say, the bed, toilet-table, wash-stand, cabinets are all plain gold. The shutters are plain gold. The windows glow with colors such as the Alhambra has. Through Moorish trellis-work these colors shine, the subjects being only visible by scrutiny. What is not pure gold is crystal; the knobs on the bed-posts, the shelves of the tables, scintillate with facets. The whole room is like an ancient shrine or reliquary.

The walls are painted with a deep frieze of flowers, growing *au naturel*, which relieves the mass of gold by myriad tints. When we have breath our eye is caught by one of the cupboards, whereon Socrates is seen teaching an eager boy; above, Xantippe, leaning out of a window, is just cooling their enthusiasm for science with her ewer. Below, rabbits and foxes sport, and flowers grow everywhere. A book-shelf of gold holds the books the fair inhabitant is to read.

The kind of furniture loved by Mr. Burges may be best understood by the exact description of one piece—say the wash-stand. Up to now a wash-stand has seemed an impertinent sort of affair to be kept out of sight, but here we have a gem fit to splash at all day in poetic enjoyment. It is of gold, with fragments of bright stones and shells inlaid; those called "Venus' ears" have been largely used. Every blank space is carved minutely in flowers, beautifully tinted, and we discern a lizard or two and some butterflies among them. Thick crystals inclose small shelves, where a scent bottle, some hundreds of years old, and a tooth-powder receptacle, some thousands, nestle and shine. Marble plates receive the soap. A fine bronze, which most of us would place on some table for ornament, here makes itself useful—a bull, from whose throat ajar the water pours into a Brescia basin, inlaid with silver fishes. How do you get the water in? See you that other bronze, a tortoise, which seems to creep beyond the bull's fell reach—it is a plug; twist him round and the bull fills the basin. Such is the use which Aladdin makes of bronzes, and I beg to add that the lapis and amber and crystal and marble are not papier-mache and glazed chalk—they are the real thing. On one wash-stand we read the quaint inscription from Chaucer: "This is the mirrour perillous on which the proude Narcissus sey his faire face bright." In unexpected places little taps and handles shine forth, made of coral or silver, with uncut stones enfixed therein.

Aladdin's own room and his bed are quite unlike the Golden Chamber. The room is almost wholly scarlet. Around the wall runs a cornice of conventional waves full of fishes, which in some places are almost deceptive in glitter; these are life size. I fell quite in love with one mackerel; but I gave him up for a syren, who combs her yellow hair over the fireplace. More cupboards and dressing-tables, crowded with precious flasks of gold and cloisonné, detached us from the syren; and the scarlet bed with its tall headpiece, painted by Henry Holiday, with the "Sleeping Beauty," a very charming production, rooted us to the spot.—*London Queen.*

AN ARTESIAN WELL AT GALVESTON, TEX.—Galveston has contracted for an artesian well, 2,000 feet deep and eight inches in diameter, at a total cost of \$23,000.

¹ A portion of a paper read by C. H. Rew, architect, at a late meeting of the Civil and Mechanical Engineers' Society.

COMMUNICATION.

THE LOW-COST COUNTRY HOUSES.

TO THE EDITOR OF THE AMERICAN ARCHITECT:

Sir,—Notwithstanding the caution with which you call attention to the cost of the low-cost country houses illustrated in your issue of July 3, is there not some mistake about the "House at Mt. Desert, Me., built in 1879-80. Cost \$1,750"?

If the house, — measuring 38 feet by 44 feet — exclusive of piazzas, and 37 feet high from the top of the cellar wall, (apparently built of natural-face stone) to the top of the highest ridge, was built for that sum of money, a more extended description of the house and the manner of its construction would be of great interest to the profession.

D. E.

To the foregoing inquiry the architects make the following reply:

"The contract price for the house at Mt. Desert, was \$1,750. The lowness of the figure may be accounted for mainly, by the fact that it was built in the winter, and at the low wages which prevail at that time, especially in that region. The contract was made "at the bottom of the market." The house itself is not very lightly timbered, but the framing is very simple, and the brickwork of the chimneys is naked throughout. The ceiling of hall and dining-room are open-timbered, showing under side of flooring above. Other ceilings and walls are plastered with one coat finish. The house has had additions since, which will bring its cost nearly to \$2,000. But the original contract covered a complete house, with pasture-stone underpinning. It is built on a sloping ledge of rock, thus affording a cellar storage space under the rear. We shall be glad to exhibit to D. E. drawings and specifications, but the latter are not at this moment in our possession.

"Suffice it to say that the figure is a genuine one; but neither D. E. nor indeed ourselves can hope to do as well again in the present condition of the market. We believe, however, we could easily contract to construct such a sea-side house in Mt. Desert now for less than \$2,200."

NOTES AND CLIPPINGS.

CALCULATING MACHINES.—About one hundred calculating machines, says a foreign journal, are now sold annually from the French manufactory, the popularization of the instrument being only quite gradual. Of the number above mentioned about three-tenths are described as the six-figure machine, six-tenths are the eight-figure, and only one-tenth is the ten-figure. Sixty of the machines were sold to go abroad and forty remained in France. Among other establishments which use the machines in the country of its manufacture, are the Magazines du Louvre, the Campagne des Petites Voitures, the offices of the artillery service, assurance and railway companies, the Observatory, the Ecole Polytechnique and the Creusot. It is estimated that a machine will work daily for ten years without requiring repairs, and, from the nature of the component parts, repair is easy. In construction of tables of multiplication, ready reckoners, etc., the machine gives results that are truly marvelous. The price of a six-figure apparatus is \$100.

COMPRESSED AIR AS A LOCOMOTIVE POWER.—According to the *London Times*, Col. Beaumont, R. E., has succeeded, after four years experimenting, in solving the problem of using compressed air as the moving power of a locomotive. The result of these experiments is an air-driven locomotive whose practical success has been demonstrated in the Royal Arsenal, Woolwich, where it has been running for some time. The machine is described as resembling a large tank on wheels, with sundry levers and handles on top, where the driver is placed. It is said to be noiseless, and of course, sends forth no smoke or steam. The air is first compressed by a stationary engine and machinery into the reservoir or receiver of the locomotive, where it is stored under a pressure of 1,000 pounds per square inch. From this reservoir it is admitted into successive cylinders of increasing sizes so that the air expands from the smaller and high-pressure cylinders into the larger and low-pressure cylinders. There are three of these cylinders. Into the first and smallest the air is delivered at the pressure of the reservoir, namely: 1,000 pounds per square inch. After use there, it is successively expanded in the second and third cylinders, when, having spent its force it is ejected noiselessly into the atmosphere. The air can also be admitted at first into the second cylinder, thus, when necessary, securing greater power at the start than is afforded by the small capacity of the first cylinder. The difficulties usually resulting from the extreme cold caused by the expansion of highly-compressed air are overcome by means of a diminutive steam generator, which is carried on the engine, and by which heat may be applied externally to the compressed air. So successful is this device that the expanded air is quite warm when it issues from the exhaust ports. At a recent trial, the engine weighing 10½ tons, and drawing a truck and several passengers, aggregating 1½ tons or about 12 tons in all, ran a little over three miles on about 180 pounds of pressure per square inch. That is, the pressure in the air reservoir was 1,000 pounds per square inch at starting and 820 pounds at stopping. It is computed that the engine will draw three tons one mile with the expenditure of one cubic foot of compressed air. It will easily run 20 miles with one charge of compressed air. With one charge of air it has drawn 22 tons a distance of 11 miles, and 12 tons more than 20 miles. So far the experiments have proved most satisfactory. In making his experiments, Col. Beaumont has had the tramway service chiefly in view, but his engine will doubtless be found as well adapted for service on the underground railways. Col. Beaumont's system of applying compressed air is said to be different from any hitherto used.

THE BYRON MONUMENT.—The statue of Lord Byron, recently unveiled in London, is the result of two attempts to raise a monument to his memory in that city. The first was made soon after he died, and Thorwaldsen's well-known work, intended for Westminster Abbey, but refused admission there by the Dean, and now in Trinity College, Cambridge, was the outcome of it. Three of the subscribers to the expenses of that work were John Murray, Isaac Disraeli and Sir Robert Peel, and the sons of all three were among those who contributed to the expenses of the present.

A COTTON MILL IN A COTTON FIELD.—The Augusta (Ga.) *Chronicle* states that work on the new Sibley mills is now going vigorously on, with 333 hands, a large force working day and night. The labor at the rock quarry near the mills continues all the time, and three locomotive head-lights illuminate the work. The mills have also valuable sand beds near by, of great assistance in making mortar, and the massive structure stands in the centre of a large cotton field, with the growing plant at its very doors. Hundreds of citizens visit the spot every day, and the railroad will soon be finished to that point. The new mill is to cost nearly \$1,000,000, and a large portion of the stock was taken by Northern capitalists.

THE CHANNEL TUNNEL.—The preliminary workings for the tunnel uniting England and France have had the most satisfactory results. The promoters have sunk their shaft to the stratum in which they propose to bore the tunnel, and are now going to sink another shaft and lower all the machinery for the bore. In eighteen months they expect to have a tunnel two kilometres long (about two and a quarter miles), under the channel, and in three or four years to have completed the task.

ARCHAEOLOGY IN ROME.—The *Archaeological Bulletin*, published quarterly by a committee appointed by the City Council, has appeared, for January-March. Six new members have been added to this committee, which for eight years has been composed of four archaeologists. New life has been infused into this interesting periodical, which is read by the students of archaeology in England and the United States as well as here. The results of the labors of this committee since 1870 are summed up by the distinguished archaeologist, Signor Lanciani, in this number, and prove that the money expended by the city for this purpose has been amply repaid. The value of the objects found in excavations and cared for by this committee amounts to several millions of francs. There are 145 statues, some entire and others more or less defective; 210 heads or busts, 85 bas-reliefs, 39 cinerary urns, sarcophagi, fountains and candelabra, more than 100 pictures or fragments of pictures on walls, about 100 square metres of pictured mosaic pavement and the same amount of colored marble pavement, 60 bronze figures of various sizes, and as many valuable bronze fragments, an immense number of figured terra-cotta vases, of statuettes and lamps, 48 marble columns and 400 capitals or bases of columns, beside jewels of gold and silver, plain and graven gems, gold, silver and bronze coins, blocks of marble, leaden tubes and inscribed marbles. — *New York Evening Post*.

EFFECT OF WEATHER ON TOMB-STONES.—Prof. Geikie has been examining the tomb-stones in the Edinburgh grave-yards with the view of determining the effect of time and the weather on different kinds of stone. His researches were necessarily limited to the few varieties employed for monumental purposes, namely, marbles, lime-stones, sand-stones, flag-stones, and granite. He found the ordinary white saccharoid Italian the most common marble. Three different effects were produced on this by the weather, namely, superficial solution, internal disintegration, and curvature with fracture. Superficial solution is caused by the carbonic acid and partly by the sulphuric acid of town rain. When the marble is first erected, its highly-polished surface is like that of a mirror; but after exposure for a year or two to the prevalent westerly rains of that locality, its surface becomes rough and granular, so much so that it might sometimes be taken for a sand-stone. The grains are so loosely held together that they may easily be rubbed off with the finger. Of course in such case the inscription becomes illegible in a number of years, varying with the position of the stone. Many of the marble monuments in the older church-yards have undergone the process of internal disintegration. They are found to be covered with a dirty crust, beneath which the stone proves to be merely loose, crumbling sand. While the outer crust lasts, the surface of the marble remains with apparently little change, the inscription being perfectly legible. But as soon as the crust is broken, the stone in many cases crumbles to powder. The remarkable phase of rock-weathering shown by curvature and fracture was observed only in those slabs of marble which had been firmly inserted in a solid frame-work of sand-stone. The weather produced a bulging out of the marble and a series of fractures. In some instances the marble slab, securely fastened at the ends and sides, bulged out in the middle like a full sail. Prof. Geikie gives as the results of his observations that slabs of marble exposed to the weather, the climate, and atmosphere of Edinburgh are, save in exceptionally sheltered situations, entirely destroyed in less than a century. He thinks white marble wholly unsuited for out-door use in that region, and that its employment for open-air works of art intended to be lasting should be strenuously resisted. Sand-stones and flag-stones, when properly selected, he finds are remarkably durable. The best are those which consist of a nearly pure, fine siliceous sand, with little or no iron or lime, and without trace of bedding structure. He observed one tomb-stone—a solid square block of free-stone—that had successfully resisted the action of the weather for 200 years. But there are varieties of sand and freestones whose structure and constituents are such as to make them poorly fitted for out-door service. Prof. Geikie's studies of granite are not conclusive, for the reason that this material has been used so short a time in cemeteries. He found, however, that in time the polish will disappear, the surface roughen, and decay set in. He expresses the opinion that even the most durable granite will probably be far surpassed in permanence by the best of the Scotch siliceous sandstones. — *New York Times*.

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.]

- 229,228. REVOLVING GLASS-CUTTER. — Benjamin F. Adams, Springfield, Mass.
 229,234. COMBINED BORING, SAWING, GRINDING AND RABBETING MACHINE. — Harry Boerstler, Hamburg, Ohio.
 229,244. ARTIST'S BOARD. — Evelyn F. French, New York, N. Y.
 229,247. BRICK-MACHINE. — Wm. L. Gregg, Philadelphia, Penn.
 229,259. UNDERGROUND CONDUIT FOR TELEGRAPH CONDUCTORS. — Restore B. Lamb, Camden, N. J.
 229,283. TRY-SQUARE. — Laroy S. Starrett, Athol, Mass.
 229,323. PENCIL-SHARPENER. — Francis M. Livingston, Newark, N. J.
 229,326. FLUSHING DEVICE FOR WATER-CLOSET-BOWLS. — Thomas Maddock, Trenton, N. J.
 229,347. LATCH. — Shephard H. Wheeler, Peru, Ind.
 229,359. WRENCH. — Jas. C. Beeks, Fort Wayne, Ind.
 229,382. LIGHTNING-ROD. — John J. Cole, St. Louis, Mo.
 229,384. REVERSIBLE FILTER. — Jas. A. Crocker, Boston, Mass.
 229,399. SHINGLE-SAWING-MACHINE. — Edwin D. Greer, Greers, Va.
 229,404. PERSPECTIVE DIAGRAM-SHEET. — Emery M. Hamilton, New York, N. Y.
 229,416. DWELLING-HOUSE. — Thomas Hurley, Brooklyn, N. Y.
 229,436. URINAL-MAT. — Edward J. Mallett, Jr., New York, N. Y.
 229,451. FASTENING FOR MEETING-RAILS FOR SASHES. — Charles H. Nye, New York, N. Y.
 229,461. PILE-DRIVER. — Joseph W. Putnam, New Orleans, La.
 229,462. THE SAME.
 229,472. EXTENSION-LADDER. — Charles P. Rood, La Fargeville, N. Y.
 229,473. PAINT-COMPOSITION. — Gennaro Rossi, New York, N. Y.
 229,485. ROCK-DRILL. — Lawson B. Stone, Boston, Mass.
 229,486. AUTOMATIC HATCH-CLOSER. — Samuel E. Stokes, Philadelphia, Penn.
 229,502. TILTING-DOOR. — George Wagner, Swanville, Penn.
 229,503. AUTOMATIC FAUCET. — Thomas H. Walker, Kansas City, Mo.

SUMMARY OF THE WEEK.

Albany, N. Y.

THE CAPITOL. — The Capitol contracts for the south pavilion are nearly, if not all awarded, and the iron roof is being raised. It is said that this portion of the building (interior) is greatly to excel that already finished; the material to be used to be of natural woods and marble brought to an enduring polish, with all of the richness of simplicity.

NEW CITY HALL. — Plans are to be submitted on or before September 1st, 1880, for a new City Hall in place of the present one injured by fire last February. Messrs. Richardson of Brookline, Robertson of New York, Woollett, Ogden & Wright, Nichols & Brown, and Walter Dickson, all of Albany, are to compete for the same. It is to cost \$200,000, and doubtless will be of brick. The old building, on the present site, is of marble, and is to be sold at auction.

GOVERNMENT BUILDING. — Work at the government building has been commenced. The firm of Wiedman & McMurray, of Albany, N. Y., furnish the stone. The Phoenix Iron Company, of Philadelphia, furnish the iron beams, and Messrs. Robert Davidson & Co., of Philadelphia, have the contract for constructing — furnish brick and other material, setting stone and laying the brick.

There is a healthy activity about business, and labor is in fair demand.

Baltimore.

BUILDING PERMITS. — The following building permits have been issued since the last report:
 David Horn, 5 two-st'y brick buildings, on Devison St., near Barker St.
 Hutzler & Bro., addition to store and dwell., North Howard St.
 Eliza Watkins, three-st'y brick building, on Central Ave., near Hoffman.
 T. J. Myer & Co., addition to warehouse, on West Falls Ave., near Eastern Ave.
 J. Royston Lee, three-st'y brick building, cor. Charles and John Sts., 22' x 64'.
 Jas. Rieman, 4 three-st'y brick buildings, cor. Lexington and Pearl Sts., 19'6" x 55'.
OFFICE BUILDING. — The vacant lot on the west side of Holliday St., adjoining the Equitable Fire Insurance Co.'s building, has been purchased by Mr. Wm. W. McClellan, who will build handsome buildings for office purposes on it.
 Mr. Geo. Small will also erect a building on the vacant lot on the corner of Fayette and Holliday Sts., to be used as a store and dwelling.

Boston.

BUILDING PERMITS. — Owing to the absence of the Clerk at the Inspector's Office, City Hall, the permits have not been recorded since June 15. We hope to have them in our next issue.

HARDWARE MARKET. — The prices of hardware have greatly receded since January 1, and though not so low as before the rise, are generally believed to be as low as they will be for some time. Some contractors are now buying ahead of wants, believing in some enhancement of prices. The volume of trade is satisfactory for the season, and much ahead of last year at same time.

WAREHOUSE. — A mercantile building is soon to be erected on the Whiting Estate, on Lincoln St.; Mr. Geo. H. Young, of Boston, architect.

Brooklyn.

BUILDING PERMITS. — Hart St., 2 three-st'y brown stone dwells., 18' x 42'; cost, each, \$4,000; owner, R. S. Baker, 270 Yates Ave.; builder, M. C. Baker.
 Spencer Pl., 8 three and four-st'y brown stone dwells., 18' x 22' and 20' x 50'; owner and builder, A. Whitehead, 717 Lafayette Ave.; architects, D. T. Atwood and M. C. Merritt.
 College Pl., 2 two-st'y brick stables and dwells., 19'6" x 69'; cost, each, \$4,000; owner, D. Kimberly; architects, etc., M. Freeman & Son; masons, Burns & McCann.
 Myrtle St., 1 three-st'y brick ice-house, 30' x 80'; cost, \$12,000; owners, Meltzer Bros.; architect, John Platte; builders, B. Rauth & Bro. and John Rueger.
 Meserole Ave., cor. Leonard St., 1 three-st'y brick store and tenement, 30' x 55'; cost, \$8,600; owner, John P. Wierk, 154 Eagle St.; architect, Frederick Weber; builders, Martin Vogel and John D. Eggers.
 Centre St., No. 205, 1 three-st'y brick store, 20' x 45'; cost, about \$3,500; owner, Mrs. M. O'Hair, 203 Centre St.; architect, Geo. Damen; mason, M. Daley; carpenter, not selected.
 Irving Pl., No. 52, 2 two-and-a-half-st'y brick dwells., 16' x 40'; cost, each, \$4,000; owner, O. G. Walbridge; builders, Jas. B. Smith, Producers & Co.

Chicago.

BUILDING PERMITS. — W. C. Seipp, three-st'y brick dwell., 35' x 74', North State St.; cost, \$6,500.
 P. Schuttler, three-st'y brick addition to dwell., 38' x 38', 301 West Adams St.; cost, \$4,000.
 J. Jewett, three-st'y brick addition to dwell., 19' x 48', 412 Dearborn Ave.; cost, \$7,000.
 J. Hoffe, two-st'y brick dwell., 20' x 30', —, Brigham St.
 Aug. Schroeder, two-st'y brick dwell., 21' x 53', 647 Chicago Ave.
 A. C. Berg, three-st'y brick store and dwell., 25' x 65', 179 Halsted St.; cost, \$8,000.
 B. Carver, two-st'y brick store and dwell., 25' x 54', Division St., cor. Cleaver; cost, \$3,700.
 D. W. Irwin, four-st'y brick stores and dwells., 96' x 103', 263 to 269 Wabash Ave.; cost, \$40,000.
 W. Hoffman, three-st'y brick stores and dwells., 47' x 45', 479 and 481 Dearborn Ave.; cost, \$10,000.
 J. Volkel, two-st'y brick dwell., 23'6" x 64', 448 South Morgan St.; cost, \$4,000.
 Sidney Sawyer, three-st'y brick stores and flats, 40' x 73', Wabash Ave., cor. Harrison St.; cost, \$14,000.
 Chicago City Railway Co., brick barn, 152' x 236', Twenty-First St., cor. Dearborn; cost, \$15,000.
 M. Johnson, three-st'y brick store, 51' x 63', —, Chicago Ave.; cost, \$18,000.
 W. Haase, two-st'y brick dwell., 21' x 60', Augusta St., cor. Ashland Ave.; cost, \$3,500.
 J. W. Webb, two-st'y brick dwell., 21' x 42', Leavitt St.; cost, \$2,000.
 John Kris, two-st'y brick dwell., 20'6" x 54', —, Nineteenth St.; cost, \$2,200.
 Mrs. — Pasel, two-st'y brick dwell., 20' x 56', 738 South May St.; cost, \$2,000.

Cincinnati.

BUILDING PERMITS. — Mrs. John Britting, four-st'y brick, Walnut St., between Twelfth and Canal; cost, \$10,000.
 A. Denning, three-st'y brick, No. 21 Oliver St.; cost, \$3,000.
 Fred. Otte, three-st'y brick, cor. Longworth and Central Ave.; cost, \$3,167.

New York.

ALTERATIONS. — West Fifty-Sixth St., No. 17, two-st'y brick extension, 18'6" x 34'; cost, \$3,000; owner, L. Ranger; architects, H. J. Schwarzmann & Co.; mason, Alexander Brown, Jr.
 West Fifty-First St., No. 522, a fourth story to be added; a four-st'y brick extension, 25' x 14', and interior alterations; cost, \$4,000; owner, Alice G. Sears; carpenter, J. Lawson; mason, Andrew Ewald.
 East Thirty-Sixth St., No. 115, two-st'y brick extension, 18' x 25'; cost, \$4,000; owner, Col. Fitzgerald; architect, Theodore Weston; mason, J. F. Reilly; carpenter, L. M. Kenny.
 Fifth Ave., No. 153, "Glenman Hotel," an additional story to be built on front; cost, \$2,500; owner, Executor W. L. Cutting; architects, D. & J. Jardine.
 West St., cor. Hubert St., two-st'y and basement brick extension, 53' x 148'; cost, \$50,000; owner, Executor Paul M. Spofford; builder, J. H. Masterton.
 West Twenty-Third St., Nos. 32, 34, and 36, five-st'y brick extension, 75' x 104'6"; cost, not estimated; owners, Stern Bros.; architect, Henry Fernbach.
 East Thirty-Seventh St., No. 17, front wall to be rebuilt, also two-st'y brick extension, 10' x 14'; cost, \$8,650; owner, Marcellus Hartley; builder, John M. Dodd, Jr.
 Sixth Ave., No. 805, two-st'y brick extension, 20' x 26', new store front; cost, \$4,000; owner, G. M. Hoffmann; architect, A. H. Blankenstein.
 Thirty-Fifth St., No. 64, a fifth story to be added; cost, \$3,000; owner, Charles E. Whitehead; architect, John Sexton; builder, James H. Studley.
 Varick St., No. 59, three-st'y extension, 38' x 24' x 53'; cost, not given; owner, Trinity Corporation; architect, Charles C. Haight; builder, Richard Deeves.

Broadway, cor. Prince St., roof to be raised; cost, \$20,000; owner, estate of A. T. Stewart; architect, E. D. Harris; builder, Richard Deeves.

BUILDING PERMITS. — Washington St., cor. Little Twelfth St., 1 three-st'y brick store, 68' x 23'; cost, \$10,000; owner, M. Lawless, 86 Gansevoort St.; architect, W. G. Buckley; builders, Cutley & Co.
 One Hundred and Twenty-Seventh St., 7 three-st'y brick (brown stone front) dwells., 15' and 14' x 60' (tin roofs); owner, L. S. Teets, One Hundred and Twenty-Fifth St., near Seventh Ave.; architect, W. W. Gardiner; builder, Philip Teets.
 Mott Ave., 1 two-st'y brick dwell., 19'6" x 37'; cost, \$3,500; owner and builder, L. S. Dunham; architect, W. W. Gardiner.
 Forty-Sixth St., one-st'y brick factory, 25' x 100'; owners, Schwarzhild & Sulzberger, Forty-Fifth St. and East River; architect, John McIntyre.
 West Fourteenth St., No. 22, 1 five-st'y brick store, 25' x 96'; cost, \$15,000; owners, Estate of M. M. Van Beuren; architect, Frederic S. Copley.
 West Fifty-Fourth St., Nos. 36 and 38, 2 four-st'y brick (brown stone front) dwells., each 25' x 65'; cost, each, \$25,000; owners, Wm. A. Cauldwell, 129 Lexington Ave., and John Hall Deane, 120 Broadway; architects, D. & J. Jardine.
 Mott Ave., cor. One Hundred and Forty-Ninth St., 1 three-st'y frame dwell., 43' x 60' x 32'; cost, \$8,000; owner, H. L. Morris; architect, James Kenwick.
 Seventh Ave., Nos. 86, 88, and 97, 1 two-st'y brick store, 74' x 25'; cost, \$5,500; owners, Trustees of "Old Ladies' Home"; architect, Wm. Jose; builder, H. Huson.
 Seventh St., No. 96, 1 five-st'y brick tenement, 25' x 70'; cost, \$13,000; owner and builder, Peter Schaeffer, 96 Second Ave.
 First Ave., cor. One Hundred and Twentieth St., 2 four-st'y brick stores; cost, each, \$12,000; owner, Henry Muhlikar; architect, Fr. S. Barus.
 Washington St., No. 339, 1 six-st'y brick store and tenement, 25' x 47'; cost, \$12,000; owner, J. Connolly, 30 Beach St.; architects, O. F. & R. F. Hatfield; mason, Wm. McGrath.
 One Hundred and Thirty-Second St., 1 four-st'y brick (brown stone front) apartment-house, 25' x 59'; cost, \$9,500; owner and builder, A. A. Whitney, One Hundred and Fiftieth St. and Walton Ave.; architect, J. H. Valentine.
 East Seventy-Second St., Nos. 247, 249, and 251, 3 three-st'y brick (brown stone front) dwells., each 16'8" x 50'; cost, each, \$8,000; owner, C. H. Bliss, Sixty-First St. and East River; architect, Wm. Grau; builder, John Baumer.
 Seventy-Ninth St., 8 three-st'y and basement brick (brown stone front) dwells., each 15'6" x 50'; cost, each, \$7,500; owners, W. H. & R. Johnston, Eighty-Fourth St. and Ave. A; architect, A. B. Ogden; builders, Cook & Higgins.
 Eighty-Fourth St., 4 three-st'y brick (brown stone front) apartment-houses, each 19'6" x 54'; cost, each, \$8,000; agents, Wm. H. & R. Johnston; architect, A. B. Ogden; builders, Cook & Higgins.
 One Hundred and Sixteenth St., 3 three-st'y brick (brown stone front) dwells., each 16'8" x 50'; cost, each, \$6,000; owner and builder, John P. Hunt, 159 East One Hundred and Fifteenth St.
 Tenth Ave., cor. One Hundred and Seventh St., 1 four-st'y brick tenement, 25'5" x 60'; cost, \$10,000; owner, Fred. Kruse, Eighty-Third St. and Boulevard; architect, R. Townsend; builder, J. H. Hooper.
 Madison Ave., cor. One Hundred and Fiftieth St., 1 four-st'y brick (white marble front) dwell., 54'8" x 64'8"; cost, \$70,000; owner, Cardinal McCloskey, No. 32 West Fifty-Sixth St.; architect, James Kenwick; builders, E. D. Connolly & Son and James Elgar.
 One Hundred and Twenty-First St., 2 three-st'y brick (brown stone front) apartment-houses, 16'8" x 50'; cost, \$9,000 each; owner and builder, Joseph Murray, 315 East One Hundred and Sixteenth St.; architect, J. H. Valentine.
 One Hundred and Thirty-Third St., 1 four-st'y brick (brown stone front) apartment-house, 25' x 50'; cost, \$9,500; owner and builder, A. A. Whitney, One Hundred and Fiftieth St. and Walton Ave.; architect, J. H. Valentine.
 Lexington Ave., 1 four-st'y brick building, 150' x 100'; cost, \$125,000; owners, Association for the Improved Instruction of Deaf Mutes, 1511 Broadway; architect, Henry Fernbach; builders, Terrence Kieran and Grissler & Fauser.
 Broadway, cor. Fifth St., 1 two-st'y brick building, 150'5" front on Broadway, 144'8" on Seventh Ave., 152' deep; cost, \$60,000; owners, American Horse Exchange (limited), 132 Nassau St.; architects, D. & J. Jardine.
 Eighty-Fifth St., 1 three-st'y brick dwell., 22' x 25'; cost, \$4,500; owner, H. W. Meyer, cor. Eighty-Fourth St. and Third Ave.; architect, John Brandt; mason, M. Braender; carpenter, E. A. Lent.
 Forty-Second St., cor. of Forty-Second St. and Ninth Ave., an addition is to be made to the store, for Mr. Jno. Inale; Wm. Cauvet, architect; Richard Deeves, builder; cost about \$4,000.
 Ninth Ave., No. 610, a story is to be added and alterations made at a cost of about \$2,000. Owner, Jas. Keenan, Richard Deeves, builder.

Philadelphia.

ARMORY. — The fund for the erection of an armory for the First Regiment now aggregates nearly \$70,000, a large proportion of which has been subscribed by the members of the command.

BUILDING PERMITS. — No. 1205 North Fifth St., one-st'y store, 16' x 27'; owner and builder, Alexander Boyd.
 Cor. Thirtieth and Market, 1 boiler house, 18' x 32'; owners and builders, Alexander Kendall & Co.
 Cor. Dean and Lombard Sts., three-st'y building, 14' x 22'; contractor, M. McConnell.
 Shuss Lane, near R. R., one-st'y kitchen, 12' x 30'; owner and builder, Mr. Shuss.
 Otter St., near Frankford road, two-st'y factory, 50' x 100'; Jacob Rush, contractor.
 Shoemakers Lane, east of Germantown R. R., Hospital building, 48' x 116'; Kinnean & Son, contractors.
 Martha St., near Tucker St., 6 two-st'y dwells., 14' x 33'; Kinnean & Sons, contractors, I. L. Kelly, owner.

Washington St., near Twelfth, four-st'y factory, 41' x 95'; owner and builder, T. J. Martin.
 Northwest cor. Ann and Thompson Sts., 5 two-st'y dwells, 15' x 30'; Charles Judge, contractor.
 Nos. 920 and M, York St., two-st'y stable, 16' x 30'; owner, Phillip Luger.
 No. 135 North Twenty-Second St., three-st'y store, 20' x 57'; contractor, John Porter.
 Fortieth St., near Hutton, addition to building, 30' x 32'; C. G. Beal, owner.
 No. 2258, Frankford Road, two-st'y alteration, 12' x 36'; Peter Pollgan, owner.
 No. 1316 Elsworth St., two-st'y building, 16' x 36'; George P. Walker, builder and owner.
 Filbert St., near Fortieth St., one-st'y stable, 25' x 40'; owner and builder, Jacob Snell.
 No. 465 Newmarket St., 1 two-st'y dwell, 20' x 28'; E. Schmidt, owner and builder.
 Nos. 1112 and 1114, Nevada St. 2 two-st'y dwells, 16' x 40'; contractor, John Klebe.
 Fifteenth to sixteenth, Market and Filbert St., two-st'y depot, 306' x 396'; owners, Penn. R. R. Co.
 Marshall St., near Dauphin, 6 two-st'y dwells, 12' x 28'; H. Hockelhurst, contractor.
 No. 1815, Hope St., 1 three-st'y dwell, 15' x 30'; W. H. Greenfield, contractor.

St. Louis.

BUILDING PERMITS.—Thirty-nine permits have been issued since our last report, 14 of which are for frame structures of slight importance. Of the remainder, those worth \$2,500 or over are as follows:—

Owners Name.	Use.	Stories.	Rooms.	Cost.
W. B. Farr.	Dwell.	2	12	15,000
Margaret Hitchcock.	Hotel.	4	15	3,500
A. B. Cole.	Dwell.	2	7	6,000

General Notes.

ALLEGHENY, PA.—Gen. J. K. Moorhead, one of the trustees of the Western University, says that a proposition has been under consideration for some time past of erecting a college building on the ten acre lot in which the Observatory stands.
 ATLANTA, GA.—The corner-stone of the Young Men's Library Association Building was laid June 29, with Masonic honors; cost of building, \$20,000; Messrs. Parkins & Bruce are the architects.
 AUGUSTA, ME.—Extensive alterations have been begun on the Universalist church; T. W. Silloway, of Boston, is the architect, and expects to finish the work early in September next.
 BEVERLY, MASS.—A house is being built for Mr. E. A. Lawrence, from plans of J. P. Putnam, architect, of Boston; cost, \$10,000.
 BOWLING GREEN, O.—E. V. Fallis, architect of Toledo, O., is preparing plans for the Baptist church, which is to cost \$4,000.
 Mr. Fallis will also build a frame house for Mr. Martin; cost, \$4,000.
 BRIDGEPORT, CONN.—Messrs. Levery and Sturdevant are building a pair of brick houses on Lafayette St.; cost, \$7,500; Lambert & Bunnell, architects.
 BROCKTON, MASS.—The First Congregationalist church is remodelling, under the supervision of T. W. Silloway, of Boston.
 CHARLESTON, MASS.—Alterations are being made in Chas. R. Thorne's residence, at an expense of \$4,000; Mr. Alden Frink, of Boston, architect; Mr. Rich, contractor.
 GREELEY, COL.—The First Congregationalist Society are building a church, to cost \$8,500, from drawings by T. W. Silloway, of Boston.
 HILLSDALE, MICH.—The Presbyterian Church is to be remodelled at a cost of \$2,000 by Mr. N. B. Bacon, architect, of Toledo, O.
 HYDE PARK, MASS.—The corner stone of the new Catholic Church was laid July 4. The building will be of brick and stone, and will measure 78' x 130', with a tower 168 feet high. C. J. Bateman, of Boston, is the architect.
 INDIANAPOLIS, IND.—Announcement is made that designs for the Morton Monument in this city, must be presented before Sept. 1, when the selection will be made and the contract awarded.
 LONG BRANCH, N. J.—President H. Victor Newcomb, of the Louisville and Nashville R. R., is building a handsome cottage at a cost of \$30,000, opposite the Episcopal Chapel at Long Branch.
 LOUISVILLE, KY.—The Citizens' Market Co. is to build a three-story brick store on Market St., between Second and Third; cost, \$5,000.
 Mrs. M. J. Masey is to alter a three-story brick store on Third St., between Main and the river; cost, \$2,500.
 The Pietet Artificial Ice Company is to build a one-story brick ice factory, on Floyd St., between Caldwell and Kentucky; cost, \$2,770.
 Sarah J. Gambel is to build a three-story brick store on Market St., between Second and Third; cost, \$7,200.
 E. D. Standford is to alter a two-story brick dwelling, cor. Hancock and Main Sts.; cost, \$4,000.
 H. J. Thomas & Co. is to alter a one-story brick warehouse and bakery, cor. of Fourteenth and Grayson Sts.; cost, \$5,000.
 MADISONVILLE, O.—The Town Council has accepted the plans of H. Price for a Town-Hall.
 MALDEN, MASS.—Ground has been broken for a parochial school for five hundred children, boys and girls, 87' x 82'; cost, \$32,000; C. J. Bateman, architect, Boston.
 The large building erected some two years since for a pipe manufactory, and owned by B. F. Hahan, Esq., is being transformed into a model house, to contain some twelve tenements. T. W. Silloway, of Boston, is the architect.
 MANCHESTER, IO.—The contract has been let to build a new Presbyterian church, to cost \$4,500, not including seats and furniture.
 MARLBOROUGH, N. H.—Rev. S. H. McCollister, D. D.,

is building a large house in the Queen Anne style; T. W. Silloway, of Boston, is architect.
 MERIDEN, CONN.—The German Catholic Society are building a brick church and brown-stone trimmings; cost, \$10,000; Brown & Stilson, of New Haven, architects.

MILFORD, MASS.—Mr. Swasey is the architect of the new house on Congress St., which has just been begun for G. W. Johnson.

NAHANT, MASS.—A cottage for Mr. Wm. Lawrence is nearly completed; cost, \$10,000. Plans by J. P. Putnam, architect, of Boston.

NAUGATUCK, CONN.—A brick two-st'y town-hall is to be built here at once, at a cost of \$26,000.

NORTH ADAMS, MASS.—It has been decided to build two dams at the Greylock mill, the upper one having an overflow of 116 feet and the lower one 120 feet, and it will require 150,000 feet of lumber for spilling, etc., for the mason work.

OMAHA, NEB.—Mr. C. F. Driscoll, architect, has the following work in hand at present:—

A house for Samuel Shears; cost, \$5,000.

The Fifth Ward school-house; cost, \$12,000.

A house for J. P. Roe; cost, \$2,400.

A house for George Thrall; cost, \$6,200.

PEMBERVILLE, O.—Plans for a brick and stone school-house, to cost \$12,000, are preparing in the office of E. V. Fallis, of Toledo.

PIQUA, O.—Councilmen Abbey and McWilliams, Committee on the Third Ward Engine House, are getting estimates of what the building would cost.

PLATTSBURGH, N. Y.—A store for Frank Carruth, which will cost \$10,000, is being built by Mr. C. F. Driscoll, architect, of Omaha.

PORTSMOUTH, N. H.—A granite monument elaborately carved, of Round Pond Granite, is to be erected in the church-yard to the memory of Admiral E. G. Parrott. Mr. F. C. Withers, of New York, is the designer.

PROVIDENCE, R. I.—Work on Darling's new hall is progressing very favorably. It will be built in the rear of the new building on Main St., the foundation-walls of which are about completed, and will be 100' x 70'.

MEMPHIS, TENN.—The site for the new marine hospital is to be at Fort Pickering.

RICHMOND HILL, CAN.—Mr. Charles Chamberlin, who has the contract for the stone and brick work on the new C. M. Church has the foundation of the church nearly completed.

RIDER, MD.—The Northern Central Railway Company are building a new station.

ROCHESTER, N. Y.—Old Trinity Protestant Episcopal Church is to be taken down and rebuilt.

ROCHESTER, PA.—Plans for the depot for the Pittsburgh, Fort Wayne and Chicago Railroad have been begun at Chief Engineers Slataper's office, this city. Those for the big depot at Chicago are about completed.

ROME, GA.—T. W. Silloway, of Boston, has been employed as architect for a brick and stone church for the Baptist Society, to be commenced September 1st.

RUTLAND, VT.—Chas. P. Harris, Esq., is having a two-story Queen Anne Cottage erected, 36' x 40', cost \$4,000. Palliser, Palliser & Co., architects, Bridgeport, Conn.

SOUTH TOLEDO, O.—A wooden house for Dr. Taylor is to be built by E. V. Fallis, architect, of Toledo; cost, \$4,000.

STAMFORD, CONN.—Mr. W. R. Briggs, architect, of Bridgeport, is building a house for Dr. C. E. Francis; cost, \$6,500, and a double house for Mrs. James T. Leeds, cost, \$7,000.

STATEN ISLAND, N. Y.—Foundations have been started for a fine brick and frame dwelling, for Mr. A. Hegewisch. Architects, Messrs. Wilson Bros. & Co., of New York; contractor, Mr. J. Donnelly.

ST. PAUL, MINN.—Commodore Davidson is having plans prepared for a four-story store on the corner of Fourth and Cedar Sts., and Captain Berkey is getting ready to put up a similar block on the corner immediately across the street.

TOLEDO, O.—Mr. N. B. Bacon, of this city, is the architect of a block of stores, 100' x 200', for V. H. Ketcham.

VALLEY FALLS, R. I.—The new building of Messrs. Myron Fish & Co. is to be 44' x 88', two and one-half stories. The contract has been awarded to Messrs. Wilmarth & MacKillopp, of Pawtucket.

WESTFIELD, MASS.—Work has begun upon the new Episcopal church on King street. The building will be of Gothic architecture. It is to be finished by October, and will cost, furnished, \$3,500; size, 45' x 68'.

WORCESTER, MASS.—A block of 3 stores, 6 apartment dwellings, and a building for manufacturing purposes are being built from designs by Mr. S. C. Earle, architect, of Boston; Mr. Stephen Salisbury, owner; M. W. Eddy, builder; cost, about \$60,000.

Industrial.

MARSHALLTOWN, IO.—The new glucose factory will be 274 ft. long, 224 ft. wide, and 70 ft. high, containing seven stories. It will be of either brick or stone, and of sufficient capacity to use up 3,000 bushels of corn every 24 hours.

SANDWICH, MASS.—Work will begin immediately on the new tack factory of Howland & Burgess.

ST. JOHN, N. B.—Extensive alterations and improvements are being made in the New Brunswick cotton mills, J. H. Parks, proprietor, from plans of Geo. H. Young, architect, of Boston, Mass. A large mill and extension and other buildings are being built, and the old mills remodelled. The total cost will be about \$50,000.

WINDSOR LOCKS, CONN.—The Medlicott Co. is building a large frame dye house. John C. Mead, of Hartford, architect and builder.

Bids and Contracts.

BALTIMORE, MD.—The contract for the construction of abutments and pier for a bridge across Jones' Falls at Chase St., was awarded to Messrs. Haugh & Lyons.

The contract for 500 bbls. Portland Cement for the U. S. Lighthouse, Norfolk, Va., has been awarded

by Gen'l Babcock to Mr. S. L. Merchant, of New York.

The contract for the construction of Harford Run sewer from intersection of Ann and Middle Sts. to intersection of Monument and Patapasco Sts., was awarded to Holland Knappman & Co., at \$104,808.50.
 BRIDGEPORT, CONN.—The contract for the Wolfram Building is let to John Rutherford; total cost, \$12,000; pressed brick, three stories, and brick and marble trimmings.

CHICAGO, ILL.—Bids have been received for building two new engine-houses, one on Ogden Ave., near Winchester Ave., and the other on the corner of Ashland Ave. and Jane St. E. F. Goble offered to build the Ogden Ave. house for \$11,119, and J. G. Lobstein offered to do the same work for \$10,550. For the building of the Ashland Ave. house, Mr. Goble was the only bidder, offering to do the work for \$11,875. No award.

WORCESTER, MASS.—The Committee on Public Buildings have awarded the contract for the new City Hospital to Messrs. A. Palmer & Vaughn, of this city, for the sum of \$37,575. There were eight bidders, as follows:—

Jeremiah Murphy, \$35,575.
 A. Palmer & Vaughn, \$37,575.
 J. W. Bishop, \$38,000.
 Geo. S. Clough, \$38,850.
 Henry Miller, \$38,875.
 A. T. Burgess, \$39,345.
 J. C. French, \$39,650.
 O. M. Ball, \$40,350.

ST. LOUIS, MO.—Daniel Shine has obtained the contract for the brickwork of the fourth story of the Custom-House, for \$4,975 for the walls, and 12 cents per square foot for floor arches.

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BERRY BROTHERS' VARNISHES.

Among American industries which during the past two decades have grown from small beginnings to occupy a leading position, may be mentioned the manufacture of varnishes by Berry Brothers of Detroit, Mich. A little over thirty years ago, the varnishes used in this country were almost exclusively of foreign manufacture, while now so excellent and satisfactory is the quality of the articles manufactured here, that foreign competition is almost an impossibility. While the value of American varnishes used at home reaches a total of several millions of dollars, that of foreign manufacture consumed here does not reach a value of two hundred thousand dollars. The firm of Berry Brothers is by far the largest manufacturing concern connected with this industry, not only in the West, but in the country. Established twenty-two years ago—in 1858—this firm from a humble beginning, has grown to a size and a trade that necessitates the establishment of branches throughout the Union, and these have accordingly been located at St. Louis, Chicago, Cincinnati, New York, Baltimore, Philadelphia, Rochester, and Boston. These varnishes are not claimed to be the only varnishes in the market, but they are claimed by the makers to be of a quality unexcelled by any other makes. They have steadily gained in favor until the high ground they at present occupy has been reached, and have taken an active part in driving the foreign varnishes out of the market.

Many architects will remember that the "Hard Oil Finishes" of the Messrs. Berry Brothers, were first introduced to their attention about eight years ago, since which time they have become so popular as to largely revolutionize the system of inside finish of houses all over the country; and they are now regularly named by hundreds in the profession in their specifications. Perhaps a good example of the estimation in which they are held, can be afforded by mentioning some of the notable public edifices in this country, whose interiors have been beautified by their use. Among these are the Chamber of Commerce Building, Barr Building, St. Louis Insane Asylum, St. Louis, Mo.; University of Pennsylvania, Philadelphia; New Columbia Hotel, Winsor Hotel, Congress Hall, Cape May City, N. J.; Ellmwood Block, Rochester, N. Y.; Our Home, Dansville, N. Y.; Livingston Co. Insane Asylum, Genesee, N. Y.; Johns Hopkins University Building, Baltimore; State Capitol Building, Annapolis, Md.; U. S. Court House, Post Office, New York; City Hall, Providence, R. I.; New State Department, War and Navy Departments, Washington, D. C.; Custom House, New Orleans, La.; Post Office and Public Buildings (now building), Chicago; U. S. Court House and Post Office, Raleigh, N. C.; Purcell House, Norfolk, Va.; City Hall, Providence, R. I.; Chamber of Commerce Building, Chicago; City Hall, Norwich Conn. This list is of itself sufficient to cause architects as yet unacquainted with the merits of these varnishes to examine into them. With this view their attention is specially directed to the house and manufactures of the Messrs. Berry, the one as deserving the highest credit for their industry, perseverance and success, against great odds, and to the other as meeting the demands of all honest architects for an article which shall be fully up to their requirements for any use to which they may desire to put them.

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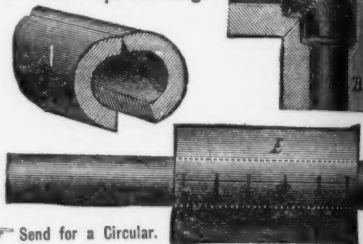
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AT LOW PRICES!

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and Steam-Pipe Covering.**

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It is cheap, durable and the best non-conductor of heat of any covering made. It can be taken off and replaced on the pipes any number of times without injury to the covering; any person can put it on the pipes.

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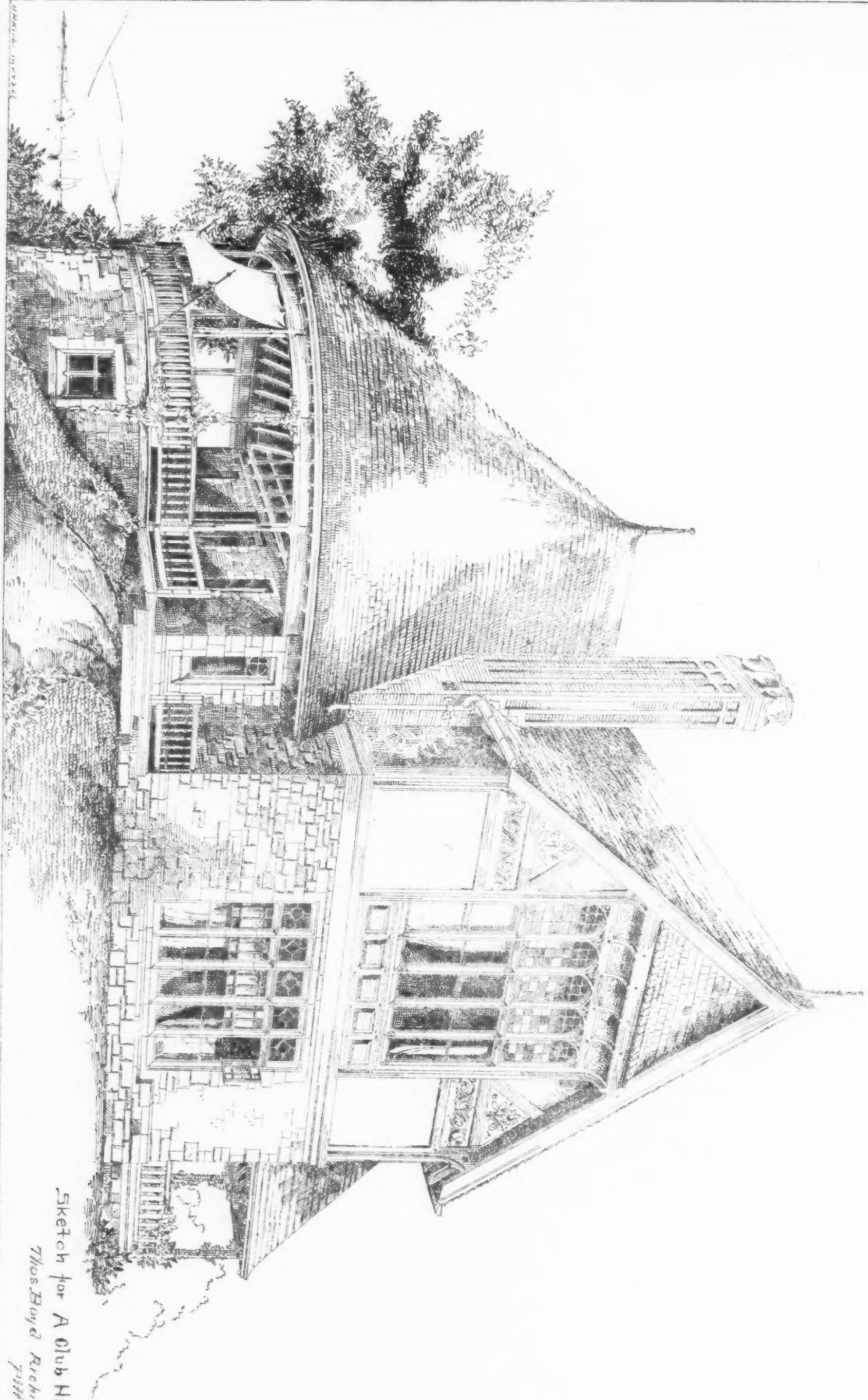
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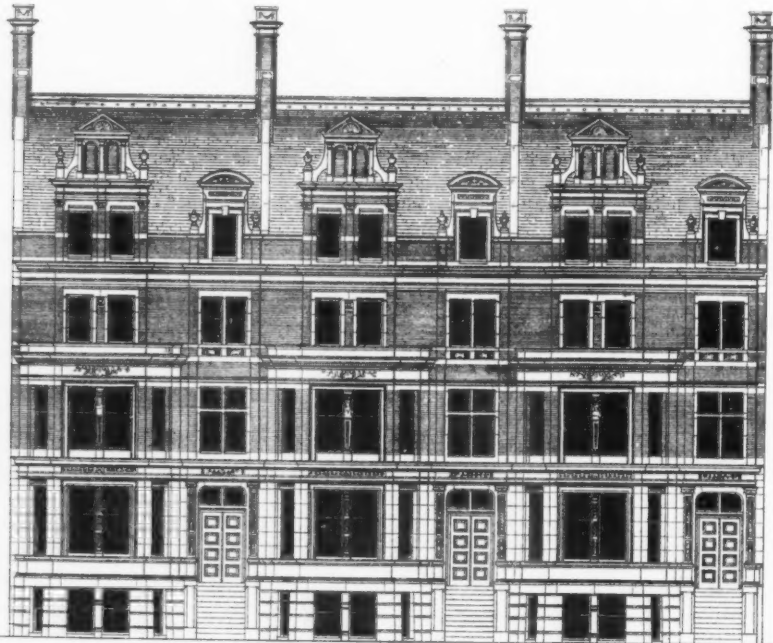
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Sketch for A Club House
 Thos. Boyd Architect
 Pittsburgh Pa.

DESIGN FOR THREE
CITY HOUSES.



FRONT ELEVATION.



SCALE 3 FEET TO AN INCH

GROUND OR 1st FLOOR PLAN

2nd FLOOR PLAN

3rd FLOOR PLAN

Deming

Explanation =

The 2nd Story Bay Window is supported for a reference on north side of front elevation by a column on the west side of the steps. Also by a small bracket (see section) column and bracket support large stone which is from heavy timber from which masonry of bay window walls. The walls are of brick and small of 1st story Bay W.

2nd story should perhaps be made higher Bay with a little more of arch as shown. Ornamental work over projecting sill of 2nd story Bay W. small.

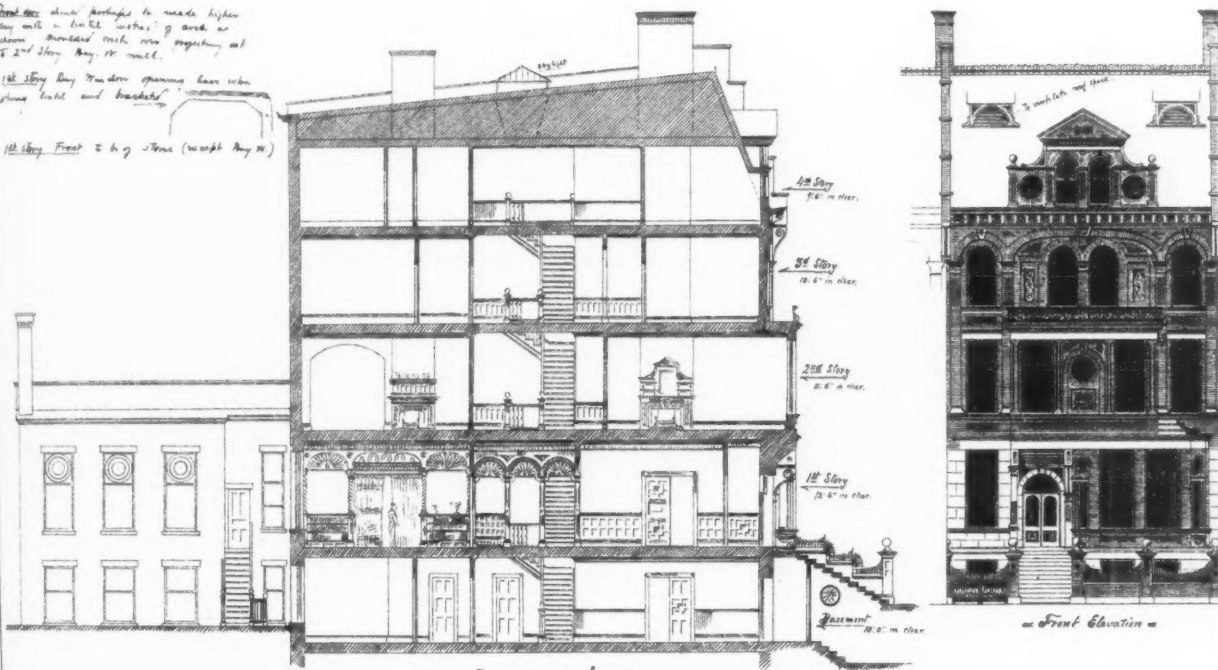
1st story Bay Window opening has iron stone lintel and brackets.

1st story Front to Bay Window (north Bay W.)

Sketch plans: City House Competition:

by "Fredk."

by Rosette and Wright Architects.
160 Fulton St. N.Y.C.



Section on line A.B.

Explanation =

1st story
The 1st story is shown with the bay window on the north side of the front elevation. The bay window is supported by a column on the west side of the steps. Also by a small bracket (see section) column and bracket support large stone which is from heavy timber from which masonry of bay window walls. The walls are of brick and small of 1st story Bay W.

2nd story
The 2nd story is shown with the bay window on the north side of the front elevation. The bay window is supported by a column on the west side of the steps. Also by a small bracket (see section) column and bracket support large stone which is from heavy timber from which masonry of bay window walls. The walls are of brick and small of 1st story Bay W.

3rd story
The 3rd story is shown with the bay window on the north side of the front elevation. The bay window is supported by a column on the west side of the steps. Also by a small bracket (see section) column and bracket support large stone which is from heavy timber from which masonry of bay window walls. The walls are of brick and small of 1st story Bay W.

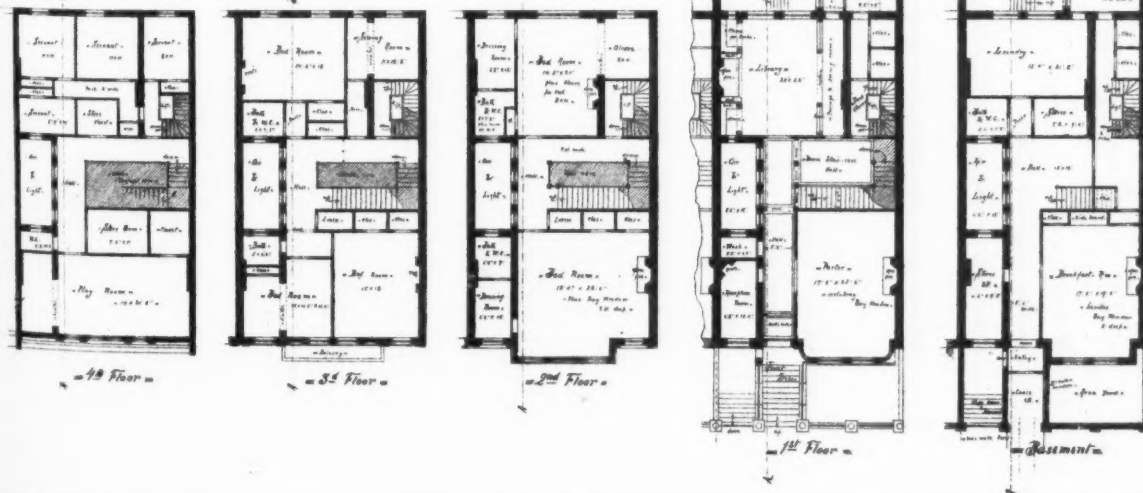
4th story
The 4th story is shown with the bay window on the north side of the front elevation. The bay window is supported by a column on the west side of the steps. Also by a small bracket (see section) column and bracket support large stone which is from heavy timber from which masonry of bay window walls. The walls are of brick and small of 1st story Bay W.

5th story
The 5th story is shown with the bay window on the north side of the front elevation. The bay window is supported by a column on the west side of the steps. Also by a small bracket (see section) column and bracket support large stone which is from heavy timber from which masonry of bay window walls. The walls are of brick and small of 1st story Bay W.

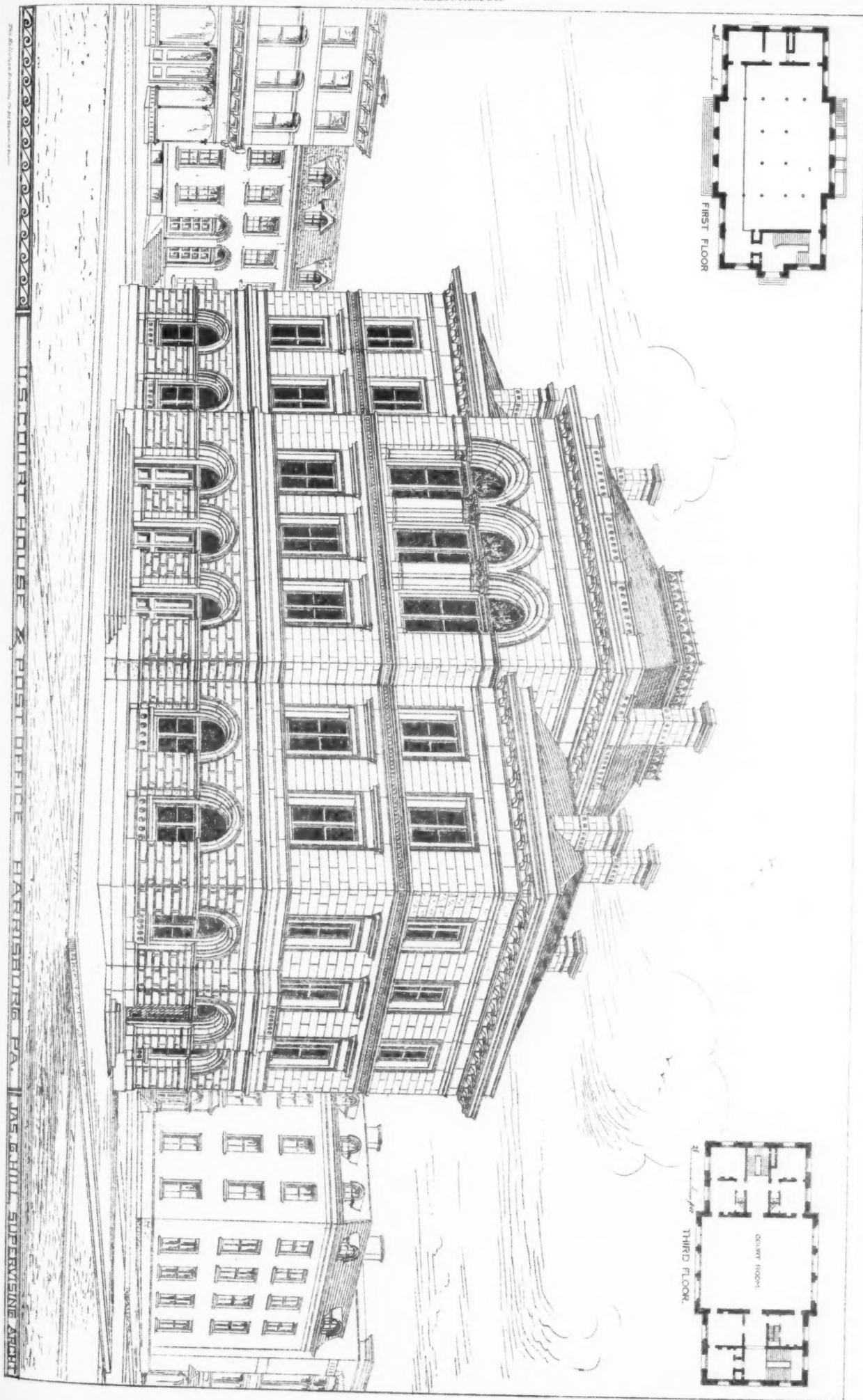
Sketch plans: City House Competition:

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