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MEMBERS of the American Institute of Architects should not fail to give notice of their intention to attend the Convention at Buffalo, next month, if they have not already done so. Comfortable quarters have been secured close to the Exposition grounds, and a pleasant programme has been arranged. Those members who have not recently visited Buffalo will find much to interest them in the modern part of the city, independent of the attractions of the Exposition. As the names of those who have already signified their intention of being present have been given to the Committee of Arrangements, those who have only recently made up their minds should send their names directly, and as soon as possible, to Mr. William H. Boughton, Secretary of the Buffalo Chapter, Prudential Building, Buffalo.

THE *Kansas City Architect and Builder* gives an account of a case of great importance to contractors. The city of Minneapolis, some months ago, advertised for bids for paving, requiring a certified check for one thousand dollars to be furnished with each bid. The lowest bid received was one from the Galesburg Brick Paving Company, and was accompanied by a certified check, as required. The bids were referred to a committee of the City Council, which took no action on them for nearly two months. At the end of that time, it reported to the Council in favor of contracting with the Galesburg Company, and notice was sent the Company of the acceptance of its proposal. Meanwhile, however, the price of bricks had risen, and the Galesburg Company found that it could no longer do the work at the specified price without loss. It therefore asked for a release from its proposition, but the city refused to grant the release; and, in view of the probability that the Galesburg Company might refuse to accept the contract, the City Treasurer proceeded to confiscate the amount of the thousand-dollar check, by depositing it in a Minneapolis bank. The Minneapolis bank sent the check to Galesburg for collection, but the Paving Company had, in the meantime, stopped payment of the check, and, as soon as it arrived at the Galesburg bank, the check itself was replevined by the Paving Company. In order to get the Paving Company's thousand dollars, it will, therefore, be necessary for the city of Minneapolis to sue the Galesburg bank. Such a suit would be subject to a defence on the merits, and if the Paving Company could show to the satisfaction of a jury that the Minneapolis City Council unreasonably delayed acceptance of its bid, both it and the Galesburg bank would be released from payment of the thousand dollars. That the City Government of Minneapolis regards such a result as likely to follow a suit is indicated by its failure, until now, to make any attempt to enforce its claim in the courts; but it appears that the City Attorney advises that, in future, bids from contractors for city work should be accompanied by cash instead of certified checks. Obviously, if this is done, the city, in case a bid is withdrawn or a contract declined, either on account of unreasonable delay in awarding it or for any other reason, can simply pocket the other party's cash, and the owner of the cash must bring suit to recover it. Under such circumstances, particularly, possession is nine points of the law, and the cost of recovering the money from a city treasury would often amount to more than the sum in controversy; so that contractors who are willing to live up to their own obligations, but who do not wish to suffer from the failure of other people to keep theirs, will do well to refuse, under any conditions, to risk their money, in cash, in the hands of their opponents, and to insist on the usual rule, of making deposits only of certified checks, the payment of which is, to a certain extent, under the control of impartial courts.

THE Report of the Massachusetts State Board of Health contains an extraordinary theory in regard to the dissemination of malaria in this country. As quoted in the newspapers, the Report asserts that "during the past ten years every case of malaria investigated in Massachusetts has been traced to the presence in the neighborhood of Italian laborers." It accounts for this remarkable circumstance by explaining that these laborers "come from malaria-infested districts in Italy, and their systems are, to a great extent, soaked with the infection, their blood being full of the malarial germs. Consequently, when they are bitten by the noxious species of mosquito, the insect is likely to transmit the disease to other persons in the neighborhood, and so the disease is spread." The Boston *Herald*, commenting on this discovery, is kind enough to say that "the humble dago is a very useful individual with his pick and shovel," and it would therefore be undesirable to exterminate him, to prevent him from infecting any more mosquitoes; but it thinks that "stringent regulations" of Boards of Health are required, by which the camps of such laborers shall be "kept away from swampy and wooded localities where mosquitoes breed or swarm, and established only in dry and open fields." If this precaution should prove insufficient, we venture to suggest that it might be a good plan to have all the Italians in Massachusetts seized on some given day, perhaps next Fourth of July, and relieved of their malarious blood. In this way the health of the Massachusetts mosquito would, it seems, be preserved, and malarial fevers would cease, as we are told they gradually do when the Italians depart from the locality in which they have been employed.

THE difficulty which our limited apprehension encounters in endeavoring to assimilate this theory is that, according to history, malaria was quite as prevalent in Massachusetts fifty years ago, when there were no Italian laborers in the State, as it is now. It is hardly to be supposed that mosquitoes crossed the ocean to bring malaria-germs to our guileless forefathers; yet, if the Massachusetts insects were able to find microbes in people of other races half a century ago, why should they find them now only in Italians? Moreover, why is it that malaria should originate in Massachusetts only from Italians, while it prevails extensively in many other parts of the country where there are no Italians? It is dangerous to mention the existence of malaria in any particular town in the neighborhood of New York in the presence of a citizen of that town, but it may be observed in general that, in the light of the new theory, it is at least singular that a large part of the territory around the metropolis where no Italians live should have been for at least half a century almost desolated by malaria, while the city itself, inhabited by thousands of Italians and, at certain seasons, by millions of mosquitoes, should be practically free from it. The Report of the Board of Health says that malaria has, in Massachusetts, almost invariably followed the laying of sewers and water-pipes by Italian laborers. It was supposed by some that this result was due to the opening of the ground incident to laying the pipes and the consequent setting free of malaria germs; but "this was before the discoveries concerning the mosquito's agency in the disease," and the Board of Health, unable to see how "these sewerage and water-works openings in the ground could have any effect upon the breeding of the pernicious insects," was apparently forced to the conclusion that the Italians were the real source of the trouble. If it had ascertained with certainty that malaria only attended works of

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excavation carried out by Italians, its reasoning would be more convincing; but elderly people, especially in New York, will remember that sewerage-works there, carried out by Irishmen and Germans twenty-five years ago, were attended with malarial epidemics similar to that which has followed the unfortunate Italians in Massachusetts. We should be very sorry to say anything in criticism of the work of the Massachusetts State Board of Health, which has earned the gratitude of the civilized world by its researches; but its haste to apply a hypothesis of the transmission of disease which has by no means received the unqualified assent of scientific men to certain phenomena under its observation seems to have led it into a position which it is likely to find difficulty in maintaining.

A SINGULAR accident, which awaits explanation, occurred in Paterson, N. J., last week. A new court-house is being erected in the city, and the ceiling over one of the court-rooms was nearly finished when, according to the newspapers, the whole ceiling fell, injuring four men. The newspaper accounts indicate that the ceiling was a construction of iron and concrete, as we are told that "the workmen were just filling-up the last spaces with concrete"; and the information that they were employed by the "Columbian Roofing Company" indicates that the Columbian Fireproofing Company is meant. The construction employed by the Columbian Fireproofing Company is familiar to architects, and a more detailed account of the affair will be of great interest.

MR. JOHN R. THOMAS, a well-known architect of New York, died recently at a summer-resort in the Thousand Islands, at the age of fifty-five. Mr. Thomas came, in 1882, from Rochester, N. Y., where he had practised successfully, to find a larger field of labor in the metropolis, and was very successful. His first important commission after establishing himself in New York was the New Jersey State Reformatory at Rahway. Later, he designed two large armories in the city for the State militia, besides being extensively employed in church and private work. In 1896, his design for the proposed New York City-hall was placed first by the Commission; and, on the abandonment of this project, he received, as partial compensation, the commission for the new Hall of Records, now in process of construction.

AS architects, particularly when travelling abroad, are generally enthusiastic photographers, it may be well to warn them of a new ruling of the United States Post-office, requiring letter postage to be paid on exposed photographic films and their wrappings, unless the films are so packed that they can be unrolled by the postmaster, to see whether there is any writing on them. To secure the film with the ordinary gummed strip, packed with each film, to prevent them from unrolling, converts them, according to this theory, from merchandise into letters, and renders them liable to letter postage. As every amateur photographer knows, films, secured with their gummed strips, have always, until now, circulated throughout the Postal Union at merchandise rates, when marked as films on the outside of the package, and many thousands of exposed films are annually sent from one country to another in this way, to be developed at home, or by some known and trusted professional photographer. Under the new regulation, while such films can be sent for development from any part of Europe to any other for a few centimes each, if they are sent from any foreign country to the United States, prepaying at the point of departure the rates determined by the post office at that point, the person to whom they are sent will be unable to get them from the post-office until he has paid double letter-postage, at foreign-letter rates, less the value of the stamp put on at the place from which the film was sent. This charge for "postage due" may be much greater than the original cost of the film, and is generally two or three times as much as the price asked by foreign photographers for development. It is not often that official rulings in the United States are intended to take employment from its citizens, and bestow it upon foreigners; but, by making it impracticable for any but the richest tourists to follow the common and convenient practice of sending their exposed films home for development, the new regulation renders it necessary for Americans travelling abroad, unless they are willing to double the cost of what is, in any case, a rather expensive amusement, either to stay long enough in the larger cities to have their films developed, which may be a matter of a week or more, or to select, from Eastman's or some other list, a good photographer or dealer in London, Paris, Berlin, Geneva or elsewhere, who will receive the films, develop them and return to their owners. In the United States itself, while domestic-letter rates are only one-fifth of those imposed on foreign letters, the cost of sending exposed films by mail, unless the sender is willing to have the postmaster unroll them in search of writing, is, under the new regulation, doubled, and the effect of the change on what is now a great industry in this country is likely to be very appreciable.

WHILE the discussion about fine-art federations is going on, it may not be improper to enquire whether the proposed American *Salon*, or united exhibition of all the artistic societies, which is put forward as one of the things to be accomplished by such a federation, is sure to be an unmixed blessing to American art. It is quite possible that such an exhibition might be held annually for many years, without causing the disruption of the federation through jealousies and complaints of unfair treatment, by hanging-committees or otherwise, but it is not so certain that it would be for the advantage of artists generally to have the public interest concentrated on a single grand annual exhibition, unless the exhibition could be accompanied, as it is in Paris, by medals and prizes, awarded by juries of greater authority and influence than would be accorded by the American public to any juries. Even in Paris, although practically all the picture-buyers in France visit the May *Salon*, the actual sales of paintings are made through dealers. Among the endless rows of pictures in the Salon itself, the average amateur is bewildered. He sees, probably, many pictures that he likes, but every new one that he discovers obscures his recollection of the others, and, unless he is an experienced buyer, with definite ideas of the style that he prefers, he is likely to go away with a confused recollection of everything except the particular stars of the exhibition, which are already marked for purchase by the Government, or have been awarded prizes which would inhance their value to a point beyond his reach. He, therefore, unless he is very rich, or very sure of what he wants, waits before he buys anything until he can see it in the quiet gallery of some dealer, or, if he has been thoughtful enough to note what he likes in the catalogue, he applies directly to the artist, who will probably be glad to sell his works for considerably less than the price asked for them at the office of the exhibition. It is reasonable to suppose that matters would go on in much the same way in this country. People within easy reach of New York would go to see the annual Federation Salon, as one of the sights of the year, and the richest visitors would buy the pictures that they liked best, or that some one, perhaps a competent critic, or, perhaps, a small newspaper reporter, with an interest in "writing up" some of his friends, told them that they ought to like best; but the average citizen, while his interest in works of art and his appreciation of them would undoubtedly be promoted by his visit, would be quite as likely to do his actual buying in Fifth Avenue, or in Philadelphia, Cincinnati, Chicago or Boston, on his return home. It is, however, not at this time only that the average citizen wishes to buy pictures. In fact, a trip to New York with his family may leave him without a superfluity of money to invest in such luxuries, and both the visitors to the *Salon* and the people who stayed at home are likely to purchase works of art when they want them and have money for the purpose, rather than when the federated art societies wish them to. In order to supply the demand, there will, probably, always be dealers in the large cities all over the country, and, while great exhibitions in New York will assist in developing the public taste for art, the pecuniary advantage of artists seems to us to lie rather in the cultivation of local interest by local exhibitions, in which, perhaps, works which have won reputation in the Paris or New York *Salon* may be compared with those of local artists. The annual sales of pictures from the Paris *Salon* in the department-stores of New York and Boston have done much to lessen the awe with which Americans regarded that exhibition, while they have probably been useful to our artists in showing them examples of the wonderful technical skill of even inferior French painters; and a New York *Salon*, while it should do much for the fame of the best artists, might really be most useful to American art by showing the incapacity of the inferior ones, and encouraging in this way the modest painters who do not belong to any professional society, and are never interviewed by reporters, but who suffer appreciably from the competition of those who owe their prominence to the newspapers and to "hustling."

THE AMERICAN VIGNOLA.[1]—III.

PART I.—THE FIVE ORDERS.

THE DORIC ORDER.

THE distinguishing characteristics of the Doric Order are features in the Frieze and in the Bed-mould above it called *Triglyphs* (55) and *Mutules*, which are supposed to be derived from the ends of beams and rafters in a primitive wooden construction with large beams. Under each Triglyph, and beneath the Tænia which crowns the Architrave, is a little Fillet called the *Regula*. Under the Regula are six long drops, called *Guttæ*, which are sometimes conical, sometimes pyramidal. There are also either eighteen or thirty-six short cylindrical Guttæ under the soffit of each Mutule. The Guttæ are supposed to represent the heads of wooden pins, or treenails.

The Doric Base and Capital (56) are divided, like the Tuscan, into halves and thirds, but with additional mouldings, a bead being added above the Torus of the Base, and another below the Echinus of the Capital. The Abacus is crowned by a cymatium consisting of a Fillet and Cyma Reversa. If the height of the Capital is divided into thirds, the two upper thirds again into thirds, and the upper and lower of these still again into three equal parts, all the horizontal lines of the Capital will be determined, as shown in Plate IV.

The Column is eight Diameters in height, the Base, Capital and Architrave each half a Diameter, the Frieze and Cornice each three-quarters. The total projection of the Cornice, including the Cymatium (57), is one Diameter. The Architrave is divided into two Bands, or Fascias. The lower one occupies the lower third of the Architrave, and the Tænia, Regula and Guttæ the upper third. Half of this third goes to the Tænia, the projection of which equals its height.

The Triglyphs are three-quarters of a Diameter high and half a Diameter wide. This width is divided into three parts, called *Shanks*. Each Shank, or *Femur*, is bevelled on the edge nearly up to the top of the Triglyph, making in all two channels and two half channels. Each Shank is one-sixth of a Diameter wide and each bevelled face a quarter of a sixth. The plain face of the Shank is, accordingly, one-twelfth, and just as wide as the channel. These are almost the only bevelled faces to be found in the whole range of Classical Architecture, though bevelled fillets are not uncommon. The two full channels are generally cut in at an angle of 45 degrees, but the two half channels on either side are shallower, and do not reach the face of the Metope.

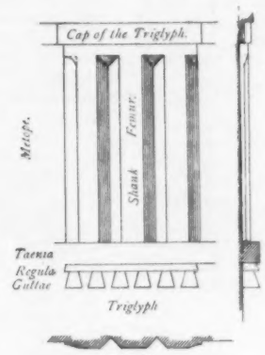


Fig. 55.

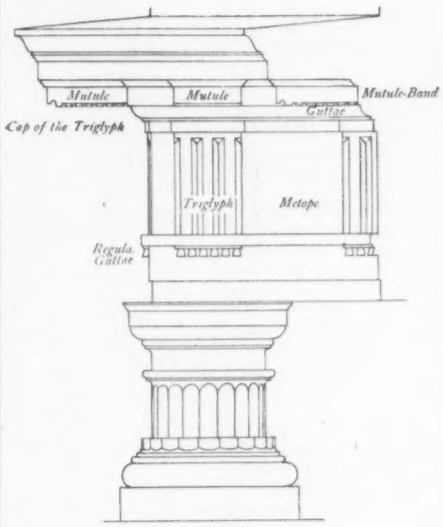


Fig. 56.

Fig. 57.

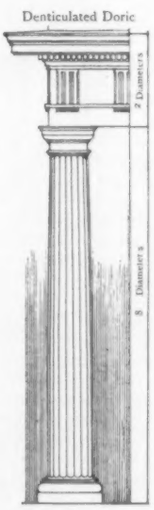


Fig. 60.

The Triglyphs come just over the Columns. The portion of the Frieze between the Triglyphs is called a *Metope*. It is exactly square, being three-quarters of a Diameter wide. The fragment of a Metope between the last Triglyph and the corner of the Frieze is one-sixth of a Diameter wide. The face of the Metopes comes over the lower band of the Architrave, and that of the Triglyph projects slightly beyond the face of the upper Band.

Two different Doric Cornices are in use, the *Mutulary* (58) and the *Denticulated* (59). In both of them the height, of three-quarters of a Diameter, is divided into four equal parts, the upper one embracing the gutter, or Cymatium, and the Fillet below, the next the Corona and the small Cyma Reversa, or Cymatium, above it. But the Bed-moulds differ. In both of them, the lower member of the Bed-mould is a broad fillet, a sort of Upper Tænia, called the *Cap of the Triglyph*. This, unlike the Tænia below, breaks around the angles of the Triglyph, serving as a sort of crowning member, or cymatium, to both the Triglyph and the Metope. Above the Cap of the Triglyph is a narrow fillet which does not break round the angles and accordingly shows a broad soffit over the Mutules and at the corner of the building. These two fillets occupy the lower half of the lower quarter of the cornice.

In the Mutulary Doric, the upper half of the lower quarter, above this little fillet, is an Ovolo, and above this, the second quarter of the Cornice is occupied by a broad Fascia, called the *Mutule-band*, upon which are planted the *Mutules*, one over each Triglyph, which are half a Diameter wide, like the Triglyphs below them. They are broad, low, oblong brackets, crowned with a Fillet and Cyma Reversa, which also crown the Mutule-band between the brackets. On the soffit of each Mutule are thirty-six Guttæ and a drip moulding.

[1] Continued from No. 1340, page 69.

In the Denticulated Doric, the place of the Fillet and Ovolo (60) above the Cap of the Triglyph is taken by a large Cyma Reversa, the soffit of which is wider over the Metopes than over the Triglyphs, as is that of the small Fillet in the Mutulary. Above this moulding is a band like the Mutule-band, but instead of brackets, extending out under the Corona, it bears a row of small blocks, like teeth, called *Dentils*. These are one eighth of a Diameter high, and are set one-eighth of a Diameter from centre to centre, or edge to edge. If this last dimension is divided into thirds, two of these go to the Dentil, and one to the space between it and the next one. This is called an *Interdentil*, which is accordingly one-twenty-fourth of a Diameter wide. The Dentil is thus one-eighth of a Diameter long and one-twelfth wide, or half a sixth, or of the proportions of two to three, like the Triglyph. The face of the last Dentil (61) on the corner and the side of the first one around the corner come together in elevation without any Interdentil, giving the appearance of a *Double Dentil*, for the Dentils are square in plan and the side is just as wide as the face.

The last Dentil, or first half of the Double Dentil, is centred over the outer face of the bottom of the shaft.

As the Triglyphs are a Diameter and a quarter on centres, or ten-eighths, there are ten Dentils to each Triglyph and Metope.

A Dentil comes just over the axis of each Column and there are three Dentils between the one over the corner Column and the Double Dentil on the corner, the farther edge of the third one being just over the face of the Frieze, or five-twelfths of a Diameter from the axis of the Column.

The Dentils constitute the upper member of the Bed-mould. They leave the chief part of the Corona unsupported, but the soffit of the Corona, which is slightly inclined, recalling the slope of the rafters, is not so wide as the soffit of the Mutulary Doric, owing to this encroachment of the Dentils. The Mutules, which are very shallow, have, accordingly, only eighteen Guttæ in place of thirty-six; that is, three rows, instead of six. There is a Mutule over each Metope, as well as one over each Triglyph.

Vignola gives his Denticulated Doric a large Cavetto or a Cymatium, or gutter, instead of a Cyma Recta, and supports the Echinus of the Capital by three fillets, instead of by a Fillet and Bead.

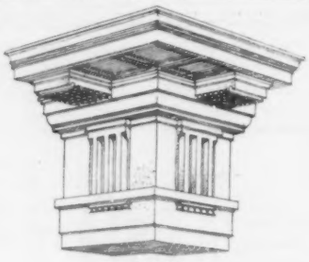


Fig. 58.

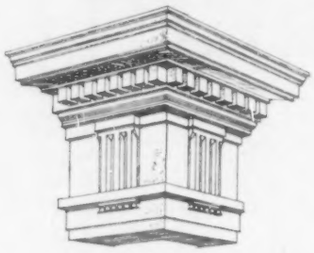


Fig. 59.

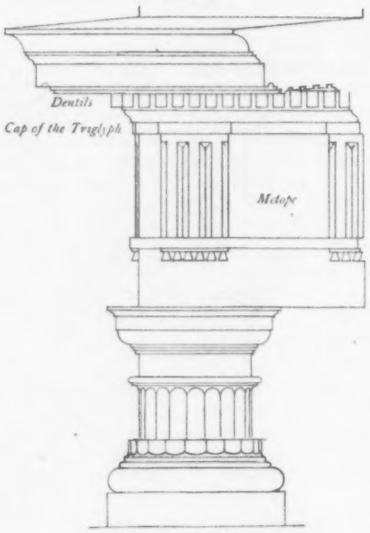


Fig. 61.

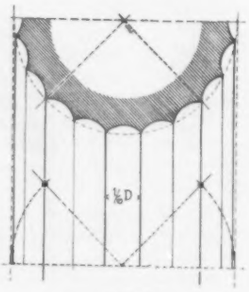
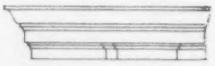


Fig. 62.



Cornice of the Basilica Julia.

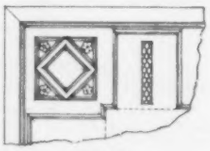


Fig. 63.

The Doric Column has twenty *Channels*, each about one-sixth of a Diameter wide, which show in section (62) an arc of 60 degrees. The solid edge which separates them, called the *Arris*, makes an angle of something over 90 degrees. (102 degrees.) The ten Arrises shown in elevation are easy to draw, as two come on the outline of the Shaft, two come on its "corners," and the two middle ones are almost exactly one-sixth of a Diameter apart. The channels are .157 degrees wide, so that making the middle one one-sixth, or .166 degrees, involves an error of only .009 degrees, or about one-eighteenth of its width. The four other Arrises can then be put in without much difficulty.

Vignola's Denticulated Doric is imitated closely from the Doric Order of the Theatre Marcellus, and the Mutulary, which he has been thought to have invented, seems to have been derived from the Doric (63) Order of the Basilica Julia. There are no Roman Doric temples.

TABLE OF THE DORIC ORDER.

$\frac{3}{4}$ *D*	equals	height of Frieze.
	"	height of Cornice.
	"	projection of Corona (Denticulated).
	"	projection of Mutule (Mutulary).
	"	width of Metope.
$\frac{1}{4}$ *D*	"	height of Plinth.
$\frac{1}{6}$ *D*	"	projection of Plinth.
	"	height of Necking.
	"	height of Echinus and Bead.
	"	height of Abacus.
	"	projection of Abacus.
	"	height of Lower Band.
	"	height of Guttæ, Regulæ and Tænia.
	"	width of Shank.
	"	width of Corner Metope.
$\frac{1}{2}$ *D* = $\frac{3}{8}$ *D*	"	height of Base, including the Cincture.
	"	height of Capital.
	"	height of Architrave.
	"	width of Triglyph.
$\frac{1}{8}$ *D*	"	height of Dentils.
$\frac{1}{12}$ *D*	"	width of Dentils.
	"	height of Tænia.
	"	projection of Tænia.
$\frac{1}{16}$ *D*	"	height of Astragal.
	"	projection of Astragal.
$\frac{1}{24}$ *D*	"	width of Interdentils.

W. R. WARE.

[To be continued.]

VENTILATION BY ASPIRATION.[1] — IV.

THE genius of modern progress is intolerant of things that merely promise. Men want things now that achieve and fulfil. If there are several ways of reaching a goal, which is the best and most certain? Perhaps one is a turnpike, and tolls have to be paid; or the path is infrequently travelled, and an expert pilot and guide must be engaged. These experiences are immaterial. The question is, What is, after all, the course most certain to accomplish the end desired? Look at the business of marine transportation, for example. Here the greater certainty and reliability of steam over wind power has driven sailing-vessels from the seas for all except the least valuable kinds of merchandise. Wind-mills, too, are never in these times depended upon for any service demanding regular or emergency results; they will do "fairly well" if it is no matter when the work is done, but men who are determined to secure positive results and are satisfied with no power that is not instantly responsive and obedient have no use for them. If ventilation is a serious business, and practical and attainable as a process, it is good sense to employ such means as will accomplish it with certainty; to do otherwise is foolishness. The whole question resolves itself into this: Is it worth doing, can it be done, and what will do it? The wise man leaves nothing to chance when certainty is within his reach. Such men are the true practical men. They are the men who "can," of whom Carlyle speaks as the leaders, the strong men, the doers and accomplishers. In all tongues allied to the English there is the same word as in the old English "ken," to know how, which signifies in one little word, knowledge and skill and power. But men often style themselves practical when they are nothing but hide-bound bigots and antiquated ignoramuses, whose whole equipment to maintain a position is obsolete, and from which they would be ousted in short order in a fair contest. These misfits and bygones have done the greatest harm to ventilation as a practical art, but they have not lacked abundant aid from amateurs and impostors. Both classes suffer from the same mental disease; they imagine they know it all when they really only know enough to get themselves into trouble. If aspiration as a system is to retain an assured position, even if greatly restricted, as I think it should be, it will come about only through its development into a thoroughly efficient and practical process of moving air with regularity and under control of the operator rather than the weather. It certainly does not occupy that position to-day.

The belief that ventilation costs more in cold than in mild weather is founded on the mischievous conception "natural" ventilation, upon the fact that in cold weather under that system there is a more powerful aspiration, more air used, when the very opposite ought to be the case; not upon the use of fuel in the chimney at such times, which is understood to be less. Yet it is perfectly clear that it is in mild weather that ventilation is expensive, because it is then that there is no recovery of heat in warming fresh air for comfort as a by-product of the operation. Herein lies the great obstacle to overcome; it is how to reconcile the uninstructed to the apparent waste of good fuel in warm weather; how to induce the diligent and overworked janitor to heave in coal and clear out ashes just because some lunatic thinks it sense to burn coal for no object, throwing away quantities of valuable heat without any tangible or visible result. It is, however, best in the end to admit the fact that ventilation cannot be had for nothing; to make the claim that it is indispensable, should be made positive and regular, and is worth its cost.

The enormous fuel-cost of aspiration, which becomes evident when the "natural" ventilation ceases, compared with that of plenum systems, which may be little or nothing, is enough of itself to condemn the chimney for all extensive and complex structures. In the simplest and most favorable examples, the fuel-cost of aspiration compared with the fan and steam-engine where the exhaust-steam is thrown away is at least as ten to one; I think the average case may safely be estimated at twenty or more to one, while by utilizing the exhaust, the power-cost of the fan is nothing whatever. Yet there will always be examples where the disproportion of cost of fuel must have less weight than that of the trouble and care of an engine. But since this objection is largely due to the difference between the wages of a man who will pass for a janitor and one who must besides be qualified as an engineman and fireman, it may be estimated, and thus the economic boundary-line between the two systems be approximately indicated. This question is of such importance that it merits a careful investigation.

We may assume the following data: —

The wages of a janitor at $50 a month.

The wages of a janitor qualified as engineman at $67.50.

The price of a long ton of best coal, delivered, at $4.50.

The average elevation of temperature of the air in the aspirating-chimney at 35° F.

Thermal units developed and utilized by combustion of one pound of coal, 6,000.

Air-supply to each school class-room of fifty-six pupils, 1,680 cubic feet per minute.

Air-supply to each patient in a hospital, 100 cubic feet per minute.

The scheme assumes the use of boilers and hot-water or steam radiators at the base of the aspirating-shaft. Double the economy would be obtained by burning the fuel in an open grate at the base of the shaft, but this plan ought not to be followed for several practical reasons. One or two may be stated. An extra fire is required, and since it is not needed in cold weather, and the exact moment when it should be started may not be observed, it may be neglected altogether; there is danger of a back-draught in case of a windstorm. Furthermore, the heat of the boiler or furnace flue, although sometimes made use of, is not strictly available for the main aspirating-chimney, since this is now, as a rule, wholly devoted to a special shaft which is limited to the ventilation of the boiler and engine rooms, of laboratories and dressing-rooms, or if it is not so limited, it ought to be.

The actual extra cost of the qualified engineman over the uninstructed janitor should be fixed by considering only the hours when ventilation is demanded. In the case of a school-house, ventilation is required only 5 days a week and only 6 hours a day. Putting the whole cost of service upon these hours, we have 21.4 working-days per month and a difference in wages per day of 82 cents. With coal at the assumed price, this sum will pay for 406 pounds; and the amount per hour, distributing it over 6 hours, is 67.7 pounds.

The volume of air which this quantity of coal will heat 35 degrees Fahr. is sufficient for a six-room school-house, or for a hospital with 24 patients, where the ventilation must be continuous. It will be noticed that the average daily cost of the ventilation in these cases is 82 cents. Here are the details of the calculation for those who are curious in such matters: —

The formula for calculating the number of cubic feet per minute is

$$Q = \frac{w \times U}{t \times sh \times g \times 60};$$

in which Q is the number of cubic feet per minute, w is the weight of coal in pounds, U is the number of thermal units realized by the combustion of 1 pound of coal in 1 hour, t is the elevation of temperature to be imparted to the air, sh is its specific heat, and g the weight of 1 cubic foot, respectively .24 and .08. The divisor 60 is introduced to give the result for 1 minute. The value of U is put at only about one-half of the theoretical; in careful firing 8,000 or more units may be utilized, but the average fireman will not extract more than 6,000 units, and I find practice sustains this opinion. Substituting these values, the formula becomes

$$Q = \frac{67.7 \times 6{,}000}{35 \times .24 \times .08 \times 60} = 10{,}074; \text{ and } \frac{10{,}074}{1{,}680} = 6 \text{ class-rooms.}$$

In the case of a hospital the conditions are different in that the ventilation must be continuous night and day. Consequently more attendance will be required, but of this there would be chargeable to the fan only the extra sum paid to one of the attendants serving as engineer, and this would be distributed over the whole 24 hours of each day. This extra expense stated in terms of fuel would be only 17 pounds of coal per hour.

Hence,

$$\frac{17 \times 6{,}000}{35 \times .24 \times .08 \times 60} = 2{,}529; \text{ and } \frac{2{,}529}{100} = 25 \text{ (24 patients, 1 nurse).}$$

Besides the above it may be necessary to weigh the effect of some other considerations.

Among them are: —

(*a*) In case of the chimney, the space taken by the flues and ducts, which must be more than twice as large as where a fan is employed.

(*b*) Cheap fuel is favorable to the chimney.

(*c*) Depreciation of machinery; repairs, cost of oil and waste for cleaning.

(*d*) The cost of fuel for running the fan is practically nothing when the exhaust-steam is utilized, as it may always be either for heating air in winter or water in summer. When the exhaust can not be saved, there will be some loss, but not one-twentieth of what the chimney would devour.

(*e*) Noise of machinery in motion. In certain cases the noise of the fan or engine, or both, is more objectionable than bad ventilation. This can only be avoided by making the fan very large and demanding the very best quality of engine, and by providing a suitably remote engine-room. In competitive bids for materials there is no way to exclude those which are undesirable except by specifically naming what alone will be accepted. This may seem an invidious distinction; so it is, but there is no other way to secure the best, and this is a case where nothing but the best will serve.

(*f*) The availability of electric-power to drive the fan. In the absence of more exact information, I am inclined to assume the watt as having sufficient power to move 3.33 cubic feet per minute against a resistance measured by one-half inch of water-column. One watt-hour would then be sufficient to move 200 cubic feet in that time, and the hourly cost of the power to produce ventilation amounting to 10,000 cubic feet per minute (the volume for a six-room school-house) will be $\frac{10{,}000 \times 60}{200} = 3{,}000$ watts.

At present prices of electric-power derived through steam-power from coal, the hourly cost of this would be not less than 20 to 46 cents, or in the most favorable case, nearly double the cost of the fuel which would do the same work by means of the chimney. It is therefore clear that the use of electric-power for ventilating is not economical except in those cases where there is no attendant. A good example of such a case would be a building receiving its heat by pipes in a conduit from a remote central boiler-plant, visited occasionally by an attendant having other duties.

FREDERICK TUDOR.

[To be continued.]

[1] Continued from No. 1338, page 53.

FIREPROOF-CONSTRUCTION IN PHILADELPHIA.[1] — I.

A GENTLEMAN prominently connected with the Insurance Patrol of Philadelphia, in conversation with me a few days since, said: "There is but one fireproof building in Philadelphia; that is the powder-magazine, and it is empty." As I walk Broad Street I see emblazoned against the night sky the words "Fireproof" in a blaze of electric fire, but this is not the powder-magazine over which the title stands. These two apparently conflicting opinions form basis for serious thought and research. It will be the aim of this paper, to an extent, to direct attention to the developments of the past and present in the matter of rendering our structures invulnerable to fire and flame. To discuss, in detail, the chemistry of combustion, its peculiar effect upon all classes of material used in building operations, and the mathematics of various forms of construction will require greater length of time than we have at command for a brief paper of this character. Each in itself forms an interesting chapter. Neither shall I attempt to discuss what is termed slow-burning construction or the devices and methods for the retarding of fires in otherwise combustible buildings. I shall endeavor to consider only that class of construction which makes for absolute indestructibility, though I can not but feel that the present condition of the science of fireproof-construction is an aim at or a striving for, with a manifest consciousness of the almost impossible attainment of, the ultimate; and since we are to review the interesting past developments of the art of fireproof-construction through the medium of present practices and intervening experiences, I think it will be profitable to consider at the outset some phases of the present status of practical fire-resisting and fireproofing work, and thus clear the environments of the past and early attempts of much that has proved highly illusive and, in some things, wholly erratic. Progress has surely been made, though many sacrifices are made to commercial expediencies; there is much that is still experimental in the present practices in fireproofing work. The past thirty years have served, by many costly and humiliating lessons, to impress the essential character of much that was formerly regarded only as superfluous; other things that have been deemed highly important have been eliminated. It has been proved that "non-combustible" and "non-inflammable" are qualities by no means the synonym of "fireproof"; that the same processes which save, under certain favorable and fixed conditions, sometimes destroy under slightly modified or varied conditions. The destruction by fire is a question of intensity only, and as the floor and supporting loads vary in classifications of buildings, and a building designed to carry a load of 100 pounds per square foot of floor should not be required to carry 200 pounds per square foot, so a building designed to be fireproof for one class or purpose can not be expected to be fireproof when occupied with much more highly inflammable materials, and the application is just as direct, practical and reasonable in one case as in the other. Time and experiences have served to prove that metals can not, even in incipient fires, be regarded as safe, when exposed to its action, and that almost the entire line of building-stone in common use has proved a very temporary barrier to flame and heat, while at this time serious consideration is given that paradox of modern material, fireproof wood.

The conditions referred to have complicated the work of the architect and engineer, not only with the obligation of providing for supporting and staying the structure, but with covering the structural features with defensive armor of fire and heat resisting materials of such form and character as will render the same acceptable to the taste and comfort of the occupant. And this obligation has assumed most dominating importance; it has puzzled inventive genius and interested capital; it has built high hopes, fostered great expectations, and overturned the logic of philosophers; and to-day it remains largely a question of degree. We require, without doubt, many inconsistencies. As a rule, side-wall supports are much better protected than interior columns and girders, simply because it is convenient so to do; outside walls are protected, according to city regulations, with 8 inches of brickwork or 6 inches of terra-cotta against the more remote consequences of a fire across the street, and yet many interior supports are deemed amply protected with a mere fraction of this thickness; severe and exacting law requires that each and every small property be divided from its neighbor by an ample fire-wall without communication therein, and yet a third party may fill a whole city block with story upon story of the most inflammable of buildings and tier upon tier of merchandise, sufficient in itself to destroy a city ward, provided he is satisfied with his share of the risk; the most defensive walls are left with the most vulnerable openings, for commercial reasons; and these things are done in the light of our knowledge of materials and their properties, in the face of admonition and experience, and with apparent disregard of the consequences; consolation is taken in the confession that the fireproof building is an ideality, not a reality; that no one has yet been able to produce, or at least has not had the courage to produce, the absolutely fireproof structure; that is, one in which the combustible contents of a room or an apartment may be damaged or consumed by fire without affecting those of an adjoining apartment, floor or building. The term fireproof, therefore, must be considered, like the morals of men, a relative term; each building must continue to bear a certain relation to those adjoining; the standard of immunity from destruction by fire is raised by the fire-resisting qualities of its neighbors, and every fireproof floor, roof and other detail introduced counts for just that much of an advance, and while the days of test and examination of materials are upon us, and while we have been gradually emerging from the experimental stage, still hesitating between correct methods and commercial expediencies, vast quantities of detail fireproofing work offer the broadest field for most careful consideration. Light-wells, elevator-shafts, corridor partition-lights, doors, trim and floors are all subjects, so far as Philadelphia is concerned, still receiving comparatively primitive treatment in the finest and largest office and apartment and hotel structures; and, though heralded as fireproof, contain much unnecessary and superfluous woodwork, and the most combustible furnishings, the absence of which would not only reduce the fire-risk, but add much to the sanitary condition of the structure. The furnishings have an important bearing upon the fire-resisting qualities. The contents of house or store, hotel or warehouse, can not be fireproofed, but much can be done to lessen the rapid spread of fire in any building; much inflammable matter is exposed in our offices that should be placed in the fireproof vaults and receptacles. Simplicity of furnishings will improve our homes, hotels, and apartments. In our stores and shops less inflammable tables and shelves bearing non-inflammable goods should alternate with the more inflammable goods, and in warehouses areas should be reduced and divided in minimum dimensions for the purposes by means of suitable and approved fire walls, doors, and partitions, which may in many instances be made part of the structural design, and not a mere adjunct or extra.

The absolutely fireproof house or building will have no wood in its construction unless it be fireproofed; it will have its doors and windows of incombustible materials, and the more vulnerable parts of these will be protected against the direct contact with flame and heat. Its floors will be cement or tile finished as well as cement or tile constructed, the light will be admitted through fire-resisting glass, and direct communication between stories will be through stairs or elevators placed in special fireproof shafts, with which communication will be had by fireproof doors only. Partition lights or sashes and communicating openings will be reduced to a minimum, all corridors being directly lighted from the exterior; all heating, lighting, and other communicating features common to all parts of the structure will be placed in separate and special fireproof ducts or shafts, closed at each floor with metal or fire-resisting doors. In short, each apartment, and therefore each building, will be at once convertible, in emergency, into a furnace or crematory, in which, without injury to any other apartment or building, the contents thereof may be utterly destroyed, for the conditions under which all the *contents* of our stores, our homes, our shops and our offices will in themselves resist fire can not at this age be anticipated.

Prior to the production of the rolled-iron I-beams in the year 1854, the only form of fireproof-construction of floor-system that we find in our city and suburbs, and of which some good examples are still to be seen intact, was, or is, the brick groined arch, which with all its oppressive stolidity, its obtrusive monotony of interior effect, its extravagant occupancy of space and head room, and voluminous masses of dead materials, as a fireproof form of construction pure and simple is one for which no apologies need be, and no unfavorable comparisons with more modern methods can be, made. This form of construction was in universal use by the Government at that period for record rooms and offices; it is now to be seen in many State capitols and numerous court-houses, and in Philadelphia is notable in the front part of the Franklin Institute Building, and was the form of construction used in the court-houses which formerly flanked Independence Hall, since removed during restorations. As usually constructed, it is faultless of iron ties or supports, the intersecting arches are usually of such full segment form as to confine the lateral thrust within the safe overturning moments of the abutting walls and corner piers, the back spandrels being usually filled to or above the crown of the arches with a solid mass of bricks or stone and cement or mortar, and the plastering being placed directly on the soffit of the brick arches; the very homogeneity of the entire construction was a sufficient guarantee of the strength and fireproof qualities of the entire mass, and the interior effect is not unpleasing, but, in contrast with the usual flat ceiling, possesses an interest, a dignity, and a uniqueness of its own.

Floor-systems of this character are enormously heavy. The arches at Court-house Row have been estimated to weigh 217 pounds per square foot by Mr. Merritt. Those at the West Chester court-house are even heavier than this. The strength of the groined-brick arch-construction is measured entirely by the crushing strength of the brick and mortar used in the vaulting and the stability of the abutment walls. It is a system, of course, wholly inapplicable to our modern needs, and even then was confined to lower stories of structures of very moderate height.

The next signal advance, if it may be called such, in the matter of construction of fireproof-floor system in Philadelphia building-work was coincident with the introduction of the manufacture of I-beams in this country. There are a few instances of the use of cast beams for floor-construction prior to the use of the rolled wrought-iron I-beam, but they are at this time only of interest as an historical fact, as illustrating the total lack of knowledge upon the subject of the effect of fire upon cast-iron, rather than one showing any advance in the structural arts or being of any scientific value whatever. I am not advised that such cast-iron floor-systems were used in any important Philadelphia work outside of a few of the older brewery warehouses, where the purpose was not so much to

[1] A paper by Edwin F. Bertolett read before the Engineers' Club of Philadelphia, May 18, 1901, and printed in the *Journal* of the Society.

provide against fire as to avoid the weakening and rotting out of warehouse floors that were subject to frequent inundations from overflowing and washing of the large vessels used for storage of the liquors.

The manufacturing of rolled I-beams, having been begun successfully at Trenton, N. J., in 1854, one year after their first production in France, gave the first essential element of the modern fireproof floor, and although it is claimed they were first used in a neighboring city, Philadelphia architects and builders were quick to avail themselves of the opportunity to improve the durability of their work, and several buildings using I-beams of the first, or early, production remain to bear witness to that important period. Evidently, under the misapprehension that iron, like brick, was a fireproofing material, in all cases for a number of years no effort was made to protect the iron posts, beams and girders in any part that could be conveniently left exposed; in rare instances a flat ceiling extended below the flanges of the floor-beams, but no effort was made in this to afford the ironwork what was then regarded as useless protection. In a majority of the structures of this period, the concave soffits of the arches between the beams were developed into a concave panel by means of a plaster mould run on the lower flange of the supporting beams, and the same mould continued along the wall at the ends of the beams, immediately under the flanges of the same. This form of construction has been used in a large number of public and private buildings in and throughout the city, amongst the oldest of which, if not the oldest, is the Lehigh Valley R. R. Co.'s buildings at Third Street and Willing's Alley.

It is the form of floor-system used in many banks, and the City Hall is thus floored throughout. The best form of I-beam and brick arch-construction was always laid with hard bricks in cement-mortar, starting on the lower flanges with a moulded-brick skewback brick against the web of the beam, and with the arches laid with broken joint over a wooden centre supported also on wrought-iron hooks from the same lower flanges, the arch having a rise at centre of from 5 to 8 inches, in spans of from 4 feet to 5 feet 6 inches, filled in the back to and above the beams with concrete, in which nailing-strips to receive the floors were always embedded. This form of floor, for many purposes, was, and even now is, sufficiently near fireproof to serve the purposes of its origin; but its weight when backed out with concrete is much greater than is necessary; it can never be used in any connection without the rigid cross-tying of the iron beams against the lateral thrust of the segmental arches of brick. The average weight of a floor-system of this character, including the supporting beams, backing concrete, and brick arch in spans of 5 feet, is about 100 pounds. Its ultimate strength in cement-mortar for uniform loading (?) is measured, if hard bricks are used, by the strength of beams and ties, rather than by the brick arches and concrete backing.

The early attempts at fireproofing were almost entirely confined to the floor-system and iron columns, and in connection therewith wood stud and lath-and-plaster partitions are only too common.

Hollow burned-clay tiles, for floor support, were used in this country, I am advised, in the Cooper Institute in New York almost as soon as I-beams were available for the purpose of supporting them, but their use was not general; the brick arch of one and two bricks on edge between iron-beams continued for years to be the acceptable means and the ultimate measure of fireproofing buildings, and, strange as it may seem to us now, beyond an iron or stone stairway and a floor-system of I-beams and brick arches, but little advance in the matter of fireproof-construction can be noted in the building-work of Philadelphia from 1860 to 1885.

During this period a Philadelphian named Gilbert devised a corrugated sheet-iron centring with a skewback engaging the ends of the same, fitted to the angle of lower flange of I-beams. This found but limited use, however, and while, in itself, in light of more recent investigation, far from fireproof, yet, with the great depth of concrete necessary to fill the space to or above the supporting I-beams, considering the thin metal used, it was at least but a very slight retrogression, if any, from the brick arch, in use of both of which lateral tie-rods were necessary between the beams; the lower flanges were protected in neither. The sole advantage of the Gilbert method of construction would seem to be that it formed or provided its own centring, in which feature we shall find its counterpart in more recent practice in other materials.

This form of so-called fireproof-construction would seem to be little more than a concrete arching, with the metal centring remaining in place, in many locations doomed, by reason of its exposure, to early destruction, and at any time of comparatively small independent strength, since an eccentric loading will cause the naked centring to yield sufficiently to disengage its support on the lower flange of the beams.

This form of floor presents nothing novel to our present view of the matter, and is chiefly interesting as being a Philadelphia product.

[To be continued.]

ILLUSTRATIONS.

[*Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.*]

BUILDINGS FOR THE PARISH OF ST. JOHN THE BAPTIST, PITTSBURGH, PA. MESSRS. BEEZER BROS., ARCHITECTS, PITTSBURGH, PA.

SCHOOL-HOUSE, NORTH BILLERICA, MASS. MESSRS. COOPER & BAILEY, ARCHITECTS, BOSTON, MASS.

THE HORNIMAN FREE MUSEUM, LONDON, ENG. MR. G. HARRISON TOWNSEND, ARCHITECT.

THIS plate is copied from the *Architect*.

THE DORIC ORDER: TWO PLATES.

SEE article "The American Vignola" elsewhere in this issue.

[The following named illustration may be found by reference to our advertising pages.]

CHURCH OF ST. JACQUES, LUNÉVILLE, MEURTHE-ET-MOSELLE, FRANCE.

THIS plate is copied from *l'Architecture*.

[Additional illustrations in the International Edition.]

TOMB NO. XVI, ASSOS: TWO PLATES.

TOMB NO. XVI, ASSOS, AS UNCOVERED AND AS RESTORED.

PLAN OF TOMB NO. XVI AND OF THE STREET OF TOMBS, ASSOS.

IT seems incredible that it is nearly twenty years since the older architects in Boston were pleased while the younger ones were electrified by the high grade of artistic workmanship shown in the drawings exhibited at the Boston Museum of Fine Arts by Mr. Francis H. Bacon, then recently returned from sharing in the important discoveries made at Assos by the first exploring expedition sent out under the auspices of what is now the Archæological Institute of America.

No such drawings had ever before been shown in Boston, and with all the great skill which the draughtsmen of to-day have acquired through skilled teachers in the schools and the stimulus of the clubs and periodicals, we question whether there are many draughtsmen who could to-day exhibit work of the same grade.

It was understood that these drawings were to form part of the illustrated record of the explorations which Mr. Joseph Thacher Clarke undertook to prepare; but until now no use has been made of them, for Mr. Clarke proved an uncertain reliance, and it is only half a dozen years ago that the Institute secured from him enough matter to warrant publishing the first volume of the report, in which was distinctly a disappointment to find how little use had been made of Mr. Bacon's work. It was understood, however, that when the second volume appeared the face of things would be changed. But, though the issue of this second volume has often been debated, it could never, for lack of funds, be undertaken. At length, the idea of securing subscription in advance of publication was conceived, and, as this scheme proved satisfactory, it is a pleasure to announce that the volume will very shortly be sent to press.

Meanwhile we are allowed to publish reduced copies of the drawings and photographs which illustrate one of the tombs, and to publish the following notes descriptive of it and them. It is to be noted that these reproductions give but an imperfect idea of the larger plates in the forthcoming volume, and also that the text will be mainly descriptive, and not as learnedly disputatious as that prepared by Mr. Clarke, the leader of the expedition, for the first volume.

"THE large ornamented sarcophagus and base at western Street of Tombs was a well-built monument of acropolis stone. The earth and stones had washed down from the hill above, to a depth of about 2 metres. The sides of sarcophagus had been broken in at an early date, as fragments were found lying on the pavements beneath the débris, while the lid was found on the top of the soil. The sarcophagus was hollowed out of a monolith, 3.45 metres long by 1.40 metres wide, by 1.42 metres high; and set on a base which formed a seat, the whole placed on a rectangular platform, or stylobate, 5.38 metres by 3.36, with an enclosure at the rear for buried sarcophagi, surrounded by a retaining-wall. The carving on the sarcophagus is in high relief, with interstices between fruit in garlands, deeply cut, casting black shadows. The ribbons binding the garlands are in very low relief. The corner bulls'-heads are slightly higher than those in the centre.

"The rear of the sarcophagus is only roughly blocked-out, and the mouldings of the base are only finished in front, and on part of return, the rest being blocked-out in planes. The centre shield had been purposely defaced.

"The dedicatory inscription was probably here. The stylobate was of large squared blocks, with finely tooled borders of .07 centimetre to .09 centimetre at right angles to joints. The centre surfaces bush-hammered, and the principal joints slightly bevelled to prevent chipping. The interior of the stylobate was filled with a rubble of stones and mortar, with a floor of squared-blocks, on which the sarcophagus was placed. The monument was carefully clamped

and dowelled together, and in later times holes had been cut to extract the metal. (See elevation, showing present condition.)

"In front, lying on the pavement was found the rough altar, shown in restored elevations. (Fig. 87.)

"Two dowel-holes in steps fitted the holes in bottom of altar.

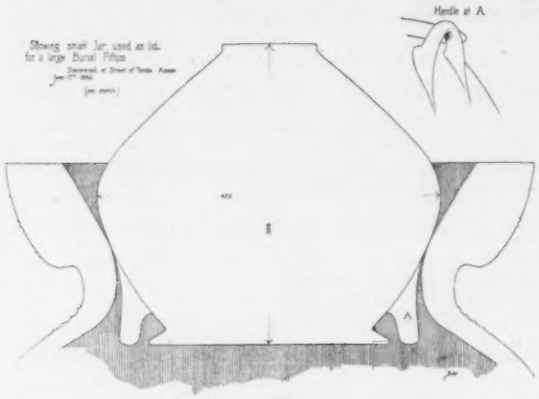
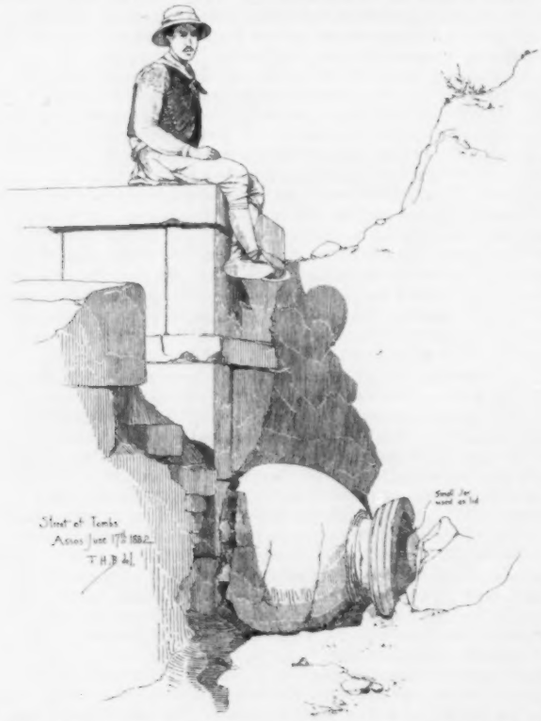


Fig. 89.

This was of very rude workmanship, and evidently a much later addition. The back was cut away to fit against mouldings of stylobate. On the altar is carved in relief a smaller altar with two serpents feeding from a sacrifice. Most of the altars found at the Street of Tombs had a similar device upon them. On the stylobate at the south end of sarcophagus was a large block with a socket for a column, evidently a later addition. The column, broken in two pieces, and its marble cap were found lying on the pavement below, showing that it must have been overthrown at an early date, while the street was still used and before the débris had accumulated. The cap being of white marble and the column of dark acropolis stone seems to indicate that the column had once been coated with stucco, but no trace of this was found. There were no dowels to show that a statue or other object had been placed on top of the capital. Below the column were the remains of a flight of steps, that formerly led up to the terrace at rear. In digging beneath the steps a large burial-jar, or Pithos No. 1, was found, of dark-red pottery, 1.10 metres diameter, 1.50 metres long. It was broken in by the weight of the earth and stones above, and filled with débris, amongst which were found fragments of human bones, and one small earthen vessel. Farther in, at the base of retaining-wall, was found



Pithos No. 2 (see Detail Plan No. 4). It contained half a human skeleton, and was closed by a smaller jar, used as a lid. This pithos measured .96 metre in diameter (Fig. 89).

"This manner of burial was of very early date, as the jars were evidently in the ground long before the foundations of Tomb No. XVI were laid. The builders, in excavating for their wall, evidently had some scruples about removing the pithos entirely, but did not hestitate to slice it in two, body and all, carefully leaving the upper portion untouched. The fragments of many sarcophagi were found

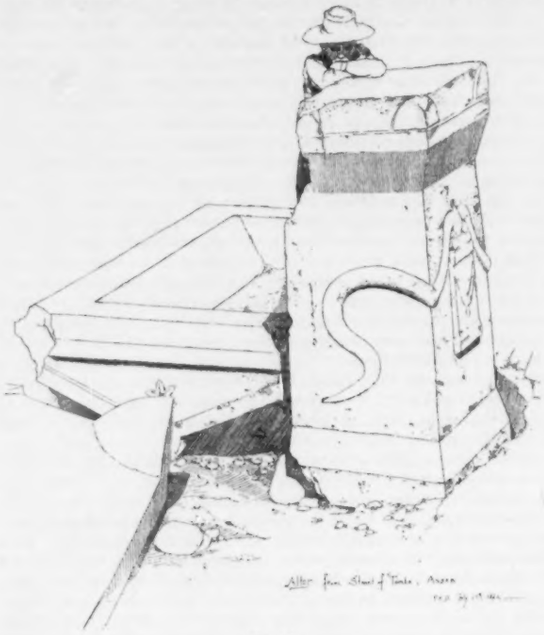


Fig. 87.

at the Assos Street of Tombs. They are generally of one type: the wreaths struck with a circle, a conventional block at the corners representing the 'Caput Bovis;' the mouldings of base and cover generally simple planes. In this sarcophagus the sausage-like wreaths were carved into fruit and flowers. The flat circular projections became Medusa heads, and the planes were softened into mouldings of cymas, fillets, etc. The road in front was paved with large polygonal blocks of acropolis stone, worn smooth by ancient traffic."

NOTES AND CLIPPINGS.

THE COLONNADE. — Colonnades are of various forms and dimensions, and assume different names according to their application and uses. When in front of a building or in the interior of a quadrangle they are called porticos; when surrounding a building of any shape, peristyles; when double or more, as in some of the ancient temples, and the circular peristyle in front of St. Peter's at Rome, they are polystyle. No people have made more use of colonnades, or with greater effect, than the ancient Egyptians, many of their temples being literally thickset, both in the interior and exterior, with colonnades of every description. The Greeks were more simple in their arrangement, and their colonnades were mostly distributed into porticos and peristyles, both monostyle and polystyle. Their most magnificent example is perhaps the Temple of Jupiter Olympus at Athens. Baalbec and Palmyra present also various examples of splendid colonnades. Of modern works, the magnificent colonnade of the Piazza di San Pietro at Rome, the work of Bernini, is at once the grandest and most beautiful. It consists of 280 columns, and 48 pilasters of 40 feet high, raised on three lofty steps. It is surmounted by a balustrade, on which are 88 colossal statues of saints 15 feet in stature. Colonnades are among the most beautiful and splendid works of architecture, and in the hands of a man of taste and science are capable of the grandest and most imposing effects. — *The Architect.*

ATTEMPT TO ENFORCE ORDINANCE BY INJUNCTION. — The town of Rochester, Ind., has an ordinance prohibiting the erection of wooden buildings within certain designated limits, and prescribing a penalty for a violation. When John Walters and others began the erection of a wooden structure within the fixed limits the city applied for an injunction on the sole ground that the erection of the building would be a violation of the ordinance. A judgment by the Circuit Court sustaining the defendants' demurrer to the complaint has been affirmed by the Appellate Court of Indiana. "It is perhaps true," says Justice Robinson, for the Court, "that a municipality might restrain the erection or maintenance of anything within the corporate limits that was in and of itself a nuisance, or if the erection of the building would work special and irreparable injury to the municipality or its property. But in the case at bar the erection of the prohibited building within the fire-limits was not a nuisance *per se*, and the injunction was asked simply because the contemplated act was a violation of the ordinance. A city ordinance has to the people within its reach all the force and effect of a legislative enactment. The ordinance in question provides a penalty for its violation, and neither the municipality nor a private citizen can ask a court of equity simply to enforce the ordinance by injunction. The reasoning that would permit such a proceeding would authorize a court of equity to restrain by injunction the violation of a criminal statute." — *N. Y. Times.*

S. J. PARKHILL & CO., Printers, Boston, U. S. A.

THE AMERICAN ARCHITECT AND BUILDING NEWS

ADVERTISERS' TRADE SUPPLEMENT

No. 232 SATURDAY, SEPTEMBER 7, 1901 VOLUME LXXIII No. 1341

PAVEMENTS.

THE Vulcanite Paving Company is the successor of the New York Mastic Works, and is well known for the extensive work it has performed in Asphalt and Cement throughout the country. The Company will, henceforth, be known under that name.

We are fully equipped and now ready to attend to all kinds of Mastic and Cement work, and shall be very glad at any time to furnish estimates for any work in our line.

We are also having printed some new pamphlets devoted especially to Mastic and its different uses, from which we make the following extract: —

"Since time out of mind, man has been busy trying to produce a pavement, or paving, which should meet all the requirements of traffic, both pedestrian and wheeled, and at the same time one which would prove enduring, comparatively inexpensive, noiseless, and easy upon man, beast and vehicle, and impervious to moisture.

"It was soon shown that if such could be produced its field of usefulness must be very large, and comprise not only the providing of roads, streets, etc., but roofs and floors for dissecting-rooms, stables, slaughter-houses, breweries, hospitals and office-buildings; in fact, wherever it was desirable to have a surface which would be at once an absolute preventive of damp, easy to keep clean, and in itself a sanitary factor by reason of its non-absorbing qualities.

"Such a material was not lightly to be found, yet it was produced, and with its production Asphalt leaped into favor, but it was not yet perfect, for, although used largely, it had the fault of rapidly deteriorating or rotting, particularly where exposed to a climate showing extremes of temperature. Now, however, it is possible to produce a perfect Asphalt, and that it has long been sought for and needed is proven by the fact that in addition to our Cement business we also operate largely and successfully in the Asphaltic Mastic Process, which branch is devoted to the laying of floors for breweries, laundries, stables, greenhouses, bath-rooms, toilet-rooms, and waterproofing of reservoirs and lily-ponds, and to the providing of sanitary floors for hospitals, dissecting-rooms, laboratories, etc. We also do a large business in laying Asphaltic Mastic roofs.

"It has been almost impossible to produce an Asphaltic Mastic which would stand, owing to the varying climate, equally well, expansion and contraction, and, also, an Asphaltic Mastic which would not in time deteriorate, disintegrate or rot, and hence lose its essential purpose of remaining water-tight.

"After long years of experimenting, with the assistance of chemists of high attainment, we have solved this problem. We are importing the best rock-asphalt in the world, refining it in our refinery, and combining it with suitable ingredients so that rotting cannot occur, or any change of temperature from extreme heat to severe cold affect it.

"This Mastic thus prepared we are using in our Mastic work and can recommend it and guarantee it for any work of the above-mentioned description.

"We manufacture the following Mastics: Seyssel Mastic, Sicilian Mastic, Brunswick Mastic, Imported London Mastic, Vitale Mastic, the 'V' Brand, Ready Fluxed Mastic (exclusively used in all our Mastic work), and Acid Proof 'V' Brand Ready Fluxed Mastic, and are prepared to place them upon the market in quantities as desired, and also to supply them to any contractors or firms in the Mastic business.

"We are at all times ready and glad to furnish estimates for contemplated work in all our branches of business, and ask for our new office your valued consideration and patronage.

"Catalogue and price-list regarding 'V' and other brands of Asphalt will be furnished gladly upon application at our office.

"In conclusion, we wish to impress upon you the fact of our ability and desire to take contracts for doing all the foundation, waterproofing and flooring-work of any building-operations of whatever size, and to estimate upon such work in its entirety."

VULCANITE PAVING COMPANY,
NEW YORK, N. Y.

STEAM-BOILERS.

THE name "Gurney" is so closely associated with ideas of hot-water heating that it is well to remind architects that the Gurney Heater Manufacturing Company, of Boston, also have some excellent lines of steam-heating apparatus, for instance, their "400-series" Steam-boilers for hard or soft coal of which their new catalogue speaks thus: —

"We commend this as a first-class construction in every particular; and, being conservatively rated and reasonable in price, it will, we believe, be appreciated by our many friends and the trade generally. We direct attention to its principal features, which the following illustrations will make perfectly clear.

"*Sections.* — The water and steam sections above the fire-pot have in them a number of flues of sufficient area to economically allow the products of combustion to find their way to the chimney. These flues, however, are so arranged that the fire and heated gases come in direct contact with the heating-surfaces of each section of the boiler before their final exit to a smoke-chamber, on which is a connection for the smoke-pipe. It will be seen by this arrangement that the water in the sections readily absorbs the heat from the products of combustion, the greatest amount of heat being thereby utilized from the fuel consumed.

"The sections and steam-dome are easily accessible for the purpose of cleaning by means of clean-out doors provided for that purpose.

"*Grate.* — We have furnished the '400-series' Steam-boiler with a triangular revolving-grate, which is easily operated and very efficient, the ashes and clinkers being evenly removed from the bottom of the fire. Any grate-bar can also be easily and quickly replaced at any time without disturbing the boiler or piping.

"It will also be noted that this boiler is fitted with a large circulating and equalizing pipe, which ensures a steady water-line and the delivery of dry steam to the mains and radiators.

"*Efficiency.* — A large number of the '400-series' Steam-boilers are now in use. They have been thoroughly tested under all conditions, and proved entirely satisfactory. They generate steam quickly, and carry with ease their rated capacities. They maintain a perfectly steady water-line, and are also exceedingly economical of fuel.

"*Automatic Regulation.* — It is absolutely necessary, when erecting a steam-boiler, to see that there is a good draught to the chimney, also that the automatic damper-regulator is properly connected and adjusted, so that it will control the draughts in an economical manner. It is also important to use the proper size coal when firing the boiler.

"*Construction.* — These boilers are made of best grade of cast-iron, and carefully inspected and tested before leaving our works, each boiler carrying with it our guarantee of perfection of construction, durability and efficiency.

"*Note.* — Every steam-boiler, after being installed and tested, should be 'blown off,' and fresh water supplied. It is of the utmost importance that the boiler and the water be perfectly clean to generate steam satisfactorily."

THE VINDICATION OF VANDERGRIFT.

THE present crisis has splendidly vindicated the work which George G. McMurtry

(Continued on page 3.)

"The Georgian Period"

This publication, which now consists of eight Parts, contains more than a hundred pages of text, illustrated by over three hundred text-cuts, and two hundred and ninety-seven full-page plates, of which one-third are gelatine or half-tone prints. It is in truth a work of superior excellence and great usefulness.

The matter already illustrated may in small part be classified thus:

PUBLIC BUILDINGS

City Hall, New York, N. Y.	Date 1803-12
Old State House, Boston, Mass.	" 1748
Pennsylvania Hospital, Philadelphia, Pa.	" 1755
Carpenters' Hall, Philadelphia, Pa.	" 1770
Independence Hall, Philadelphia, Pa.	" 1729
Faneuil Hall, Boston, Mass.	" 1741

and others.

CHURCHES

King's Chapel, Boston, Mass.	Date 1749
Seventh-day Baptist Church, Newport, R. I.	" 1729
Christ Church, Alexandria, Va.	" 1767
Christ Church, Philadelphia, Pa.	" 1727
St. Paul's Chapel, New York, N. Y.	" 1764
Old South Church, Boston, Mass.	" 1729
First Church, Hingham, Mass.	" 1681
St. John's Chapel, New York, N. Y.	" 1803
First Congregational Church, Canandaigua, N. Y.	" 1812
St. Peter's P. E. Church, Philadelphia, Pa.	" 1758
Gloria Dei Church, Philadelphia, Pa.	" 1700

and others.

IMPORTANT HOUSES

Fairbanks House, Dedham, Mass.	Date 1636
Royall Mansion, Dedham, Mass.	" 1737
Philipse Manor House, Yonkers, N. Y.	" 1745
Tudor Place, Georgetown, D. C.	" 179-
Mappa House, Trenton, N. Y.	" 1809
Woodlawn, Va.	" 1799
Mount Vernon, Va.	" 1743

and others.

Incidentally there are shown special measured drawings or large views of the following features and details:

Porches and Doorways	67 Subjects
Staircases	21 "
Mantelpieces	81 "
Pulpits	6 "
Fanlights	60 "

In addition to the subjects enumerated above there is a large quantity of measured and detailed drawings of Cornices, Ironwork, Gateposts, Windows, Interior Finish, Ceiling Decoration, Capitals, etc., together with elevational and sectional views of entire buildings.

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has done at Vandergrift, Pa., since the days when the Apollo strike first led him into it. Mr. McMurty, now the President of the American Sheet Steel Company, undismayed by the experience at Pullman and at other places in this country, determined to establish an industrial town at Vandergrift, in connection with the great sheet-mill built there by what was then the Apollo Iron & Steel Company. He determined that not alone should close and direct relations be established between the men and the management, based on mutual esteem and a reciprocal recognition of rights, but that the surroundings of the town be absolutely healthy and attractive in other respects. At the old plant at Apollo the Amalgamated Association had been completely defeated. At the new Vandergrift works a non-union mill was established. The management strove for absolute fair dealing and for the principle of promoting individual men on their merits. Mr. McMurtry studied industrial towns abroad, and, we understand, obtained many valuable hints at Essen. He was exceedingly careful, however, to eliminate even the slightest suspicion of paternalism. The model community which he has established has prospered exceedingly. It is composed almost entirely of native-born Americans, 95 per cent of the men having been taken from the adjoining farming-section. It is not a surprise that Mr. McMurty has been proud of his achievement, particularly since the enterprise as such has been quite remunerative. His creation of a model industrial town, peopled by men untrammeled by affiliations with labor unions, has, however, now brought to him the crowning vindication. His men have stood by him, and by the principle of frank and cordial relations between employer and employed. The men of Vandergrift have practically unanimously continued to work. The influence of the example in the valley of which it is the fairest gem has been such that it harbors a group of non-union works which have proved of the greatest importance to the large organization, and have to some extent been the nursery of skilled men for other plants. With such a splendid proof of the value of an industrial town laid out on modern lines, and of a management fostering close relations with the men based on absolutely fair dealing, it is to be hoped that in the future Vandergrift will have the distinction of being only the oldest of a series of similar communities.—*Metal Worker.*

LIGHTS FOR STATUE OF OUR LADY OF LOURDES.

BEAUTIFUL ELECTRICAL EFFECT IN THE CATHEDRAL.

MR. C. F. GRAY, a local electrician, has just completed what is probably the most beautiful electrical display ever seen in a church in the city. It is the illumination of the statue of Our Lady of Lourdes at the Cathedral. As is well known, especially among Catholics, Our Lady of Lourdes was an apparition which appeared before the child, Bernardette Soubirons, about February,

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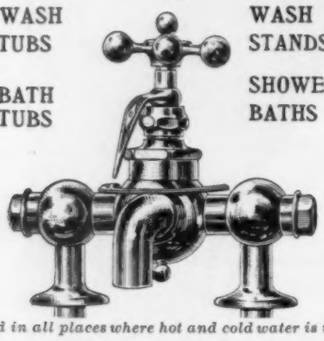

And in all places where hot and cold water is used

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1858, on a rock at Lourdes. Since then Lourdes has become famous the world over for a fountain, the water of which is said to possess most wonderful healing qualities, and which spring was revealed after the child had dug into the sand at her feet at the command of the apparition. Two magnificent churches have since been built near the fountain, which is visited by many thousands annually to receive the benefit of the water. Many miraculous cures are attributed to the properties of the water.

The apparition appeared to the child on eighteen different occasions, and a statue of Our Lady of Lourdes stands on the left side of the altar at the Cathedral. The statue is of Italian marble. On its head is a magnificently designed brass crown studded with tiny incandescent bulbs. The roses about the feet of the apparition, so the story of Bernardette goes, grew out of the rocks in a day to convince the Bishop of Lourdes of the truth of the child's statement. These roses on the statue are made of Austrian porcelain, while the leaves are of brass and remarkably natural in appearance. Inside each rose is a small bulb, the soft rays of which contrast most beautifully with the brilliant illumination of the circle about the head of the statue, upon which is inscribed the words: "I am the Immaculate Conception." The lettering is of gilt, and lends additional splendor to the brilliancy of the lights.

Each group of lights about the statue can be used separately.

The display was designed and executed by Mr. I. P. Frink, New York. — *Baltimore American.*

THE FRENCH MINISTER OF PUBLIC WORKS

in a recent circular letter says, regarding inquiries made of the Consulting Committee of Public Health and the leading engineers:

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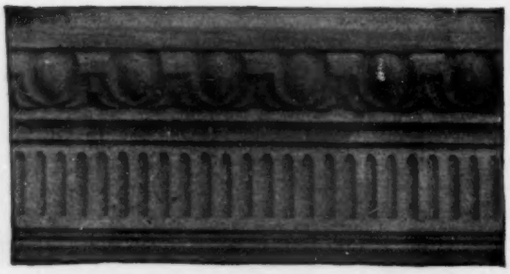

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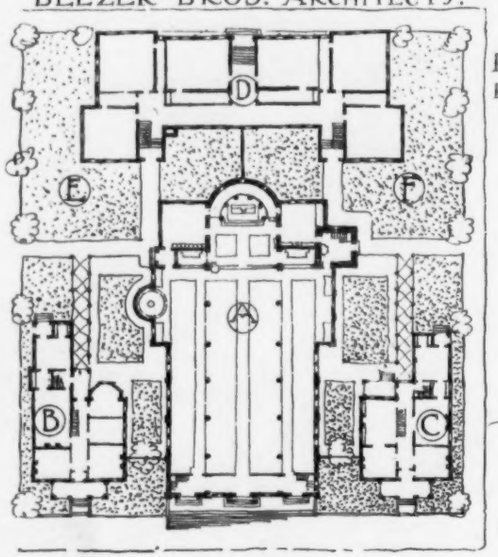

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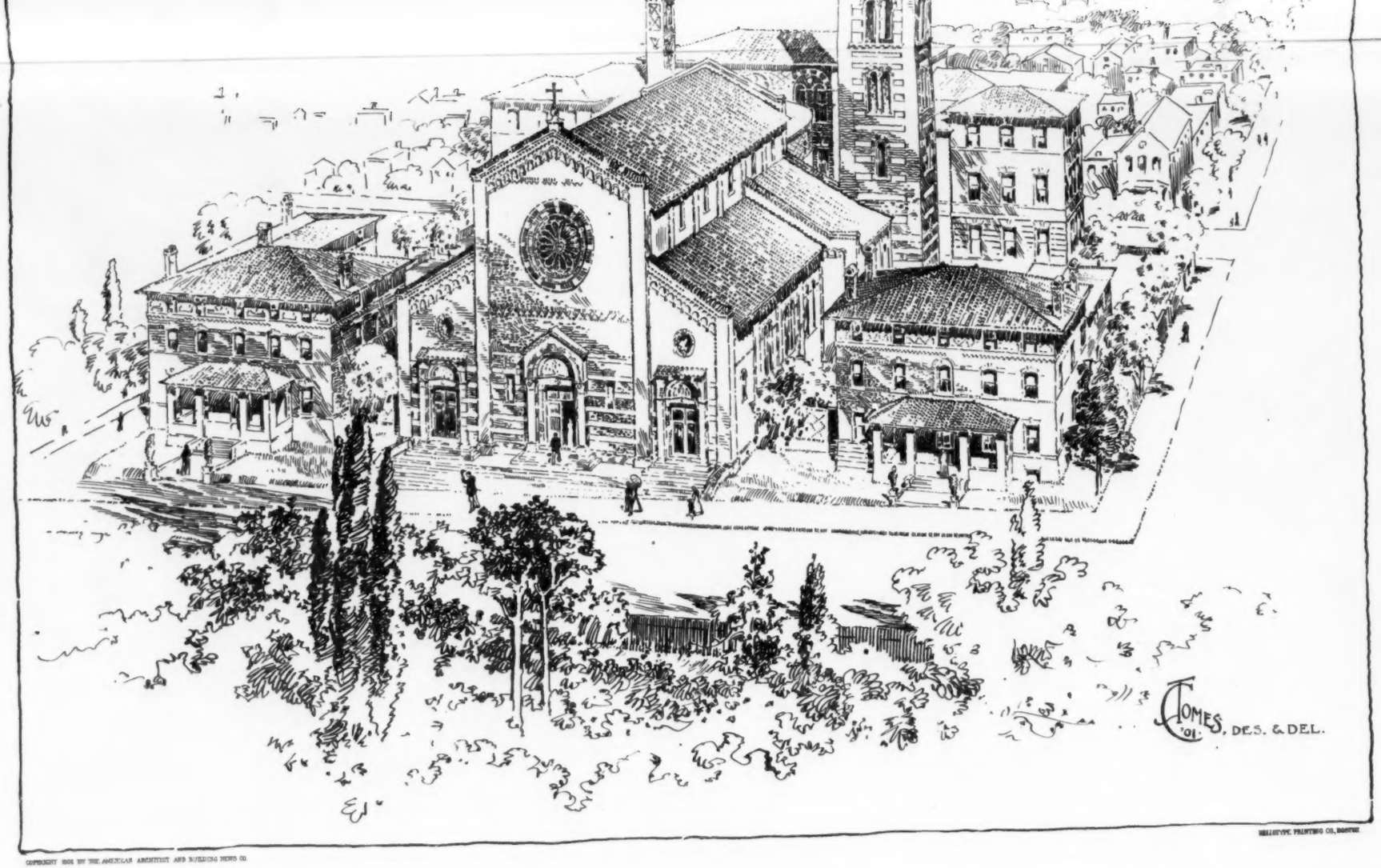

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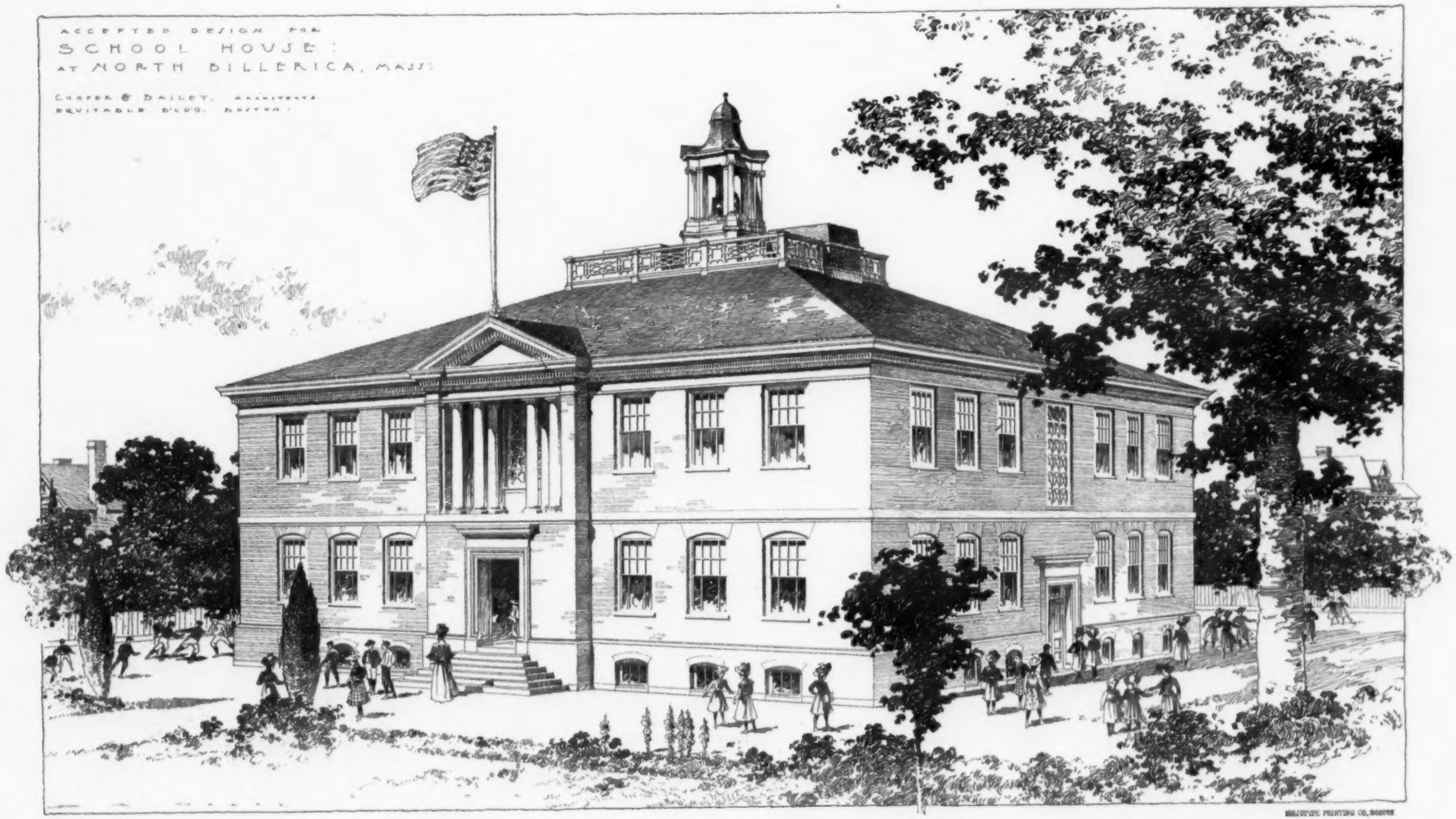

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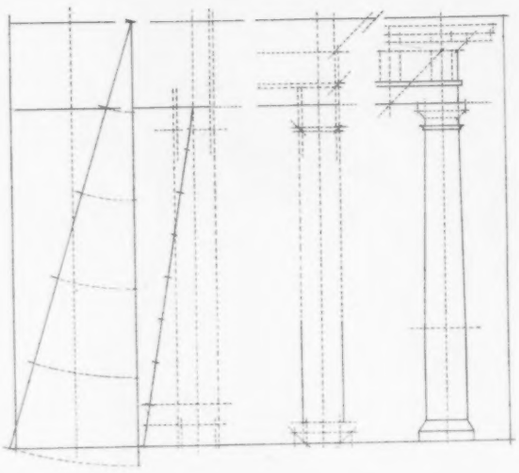
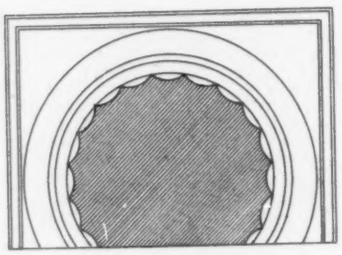
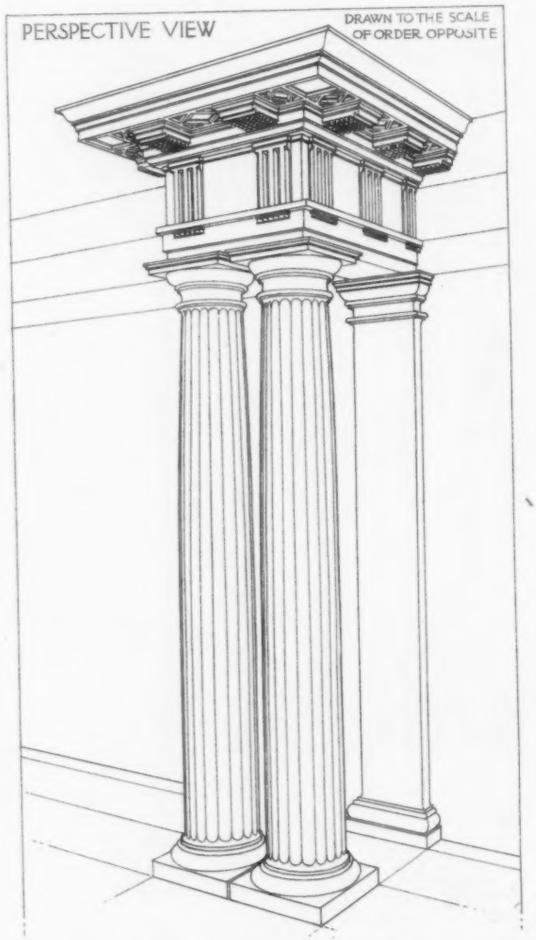
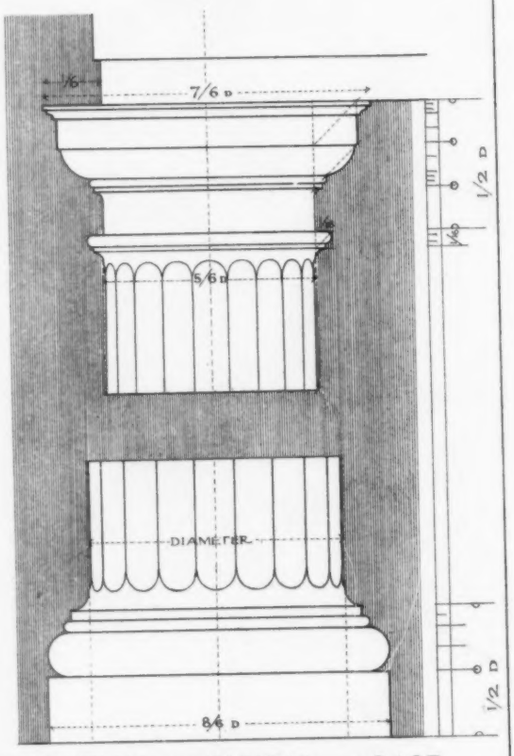


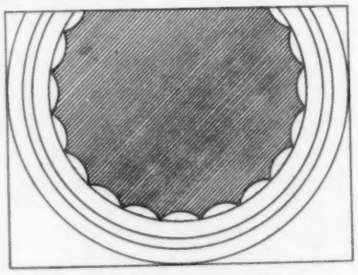


PLAN OF CAPITAL





ELEVATION OF CAPITAL AND BASE



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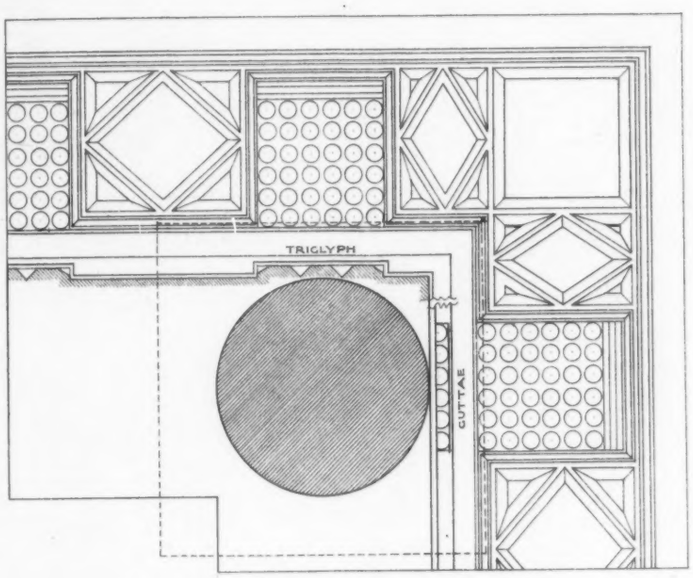
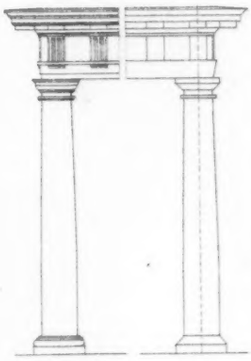


PLAN OF ENTABLATURE LOOKING UP



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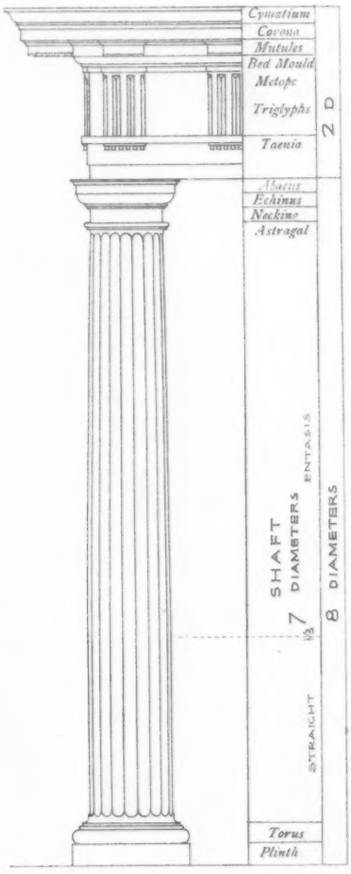

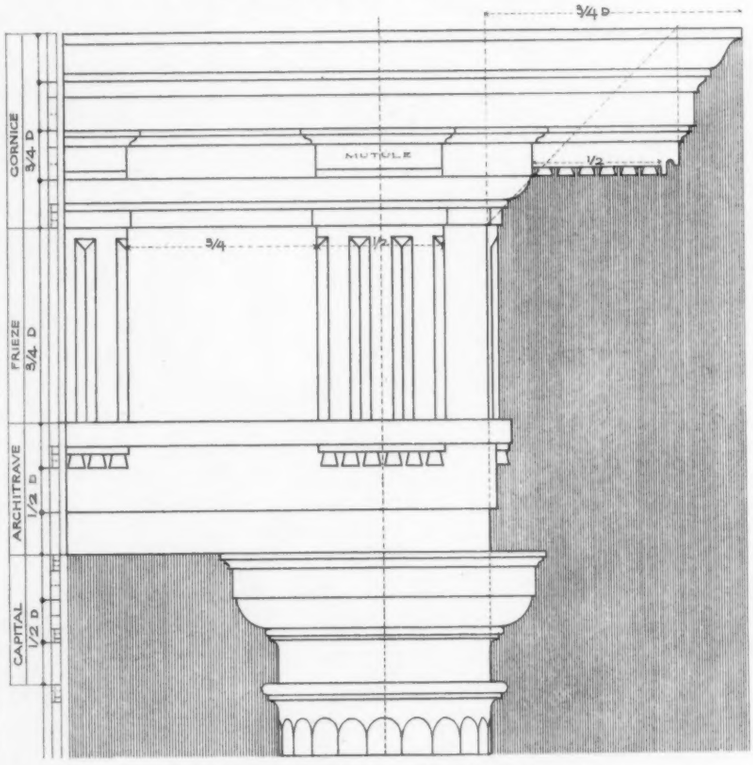

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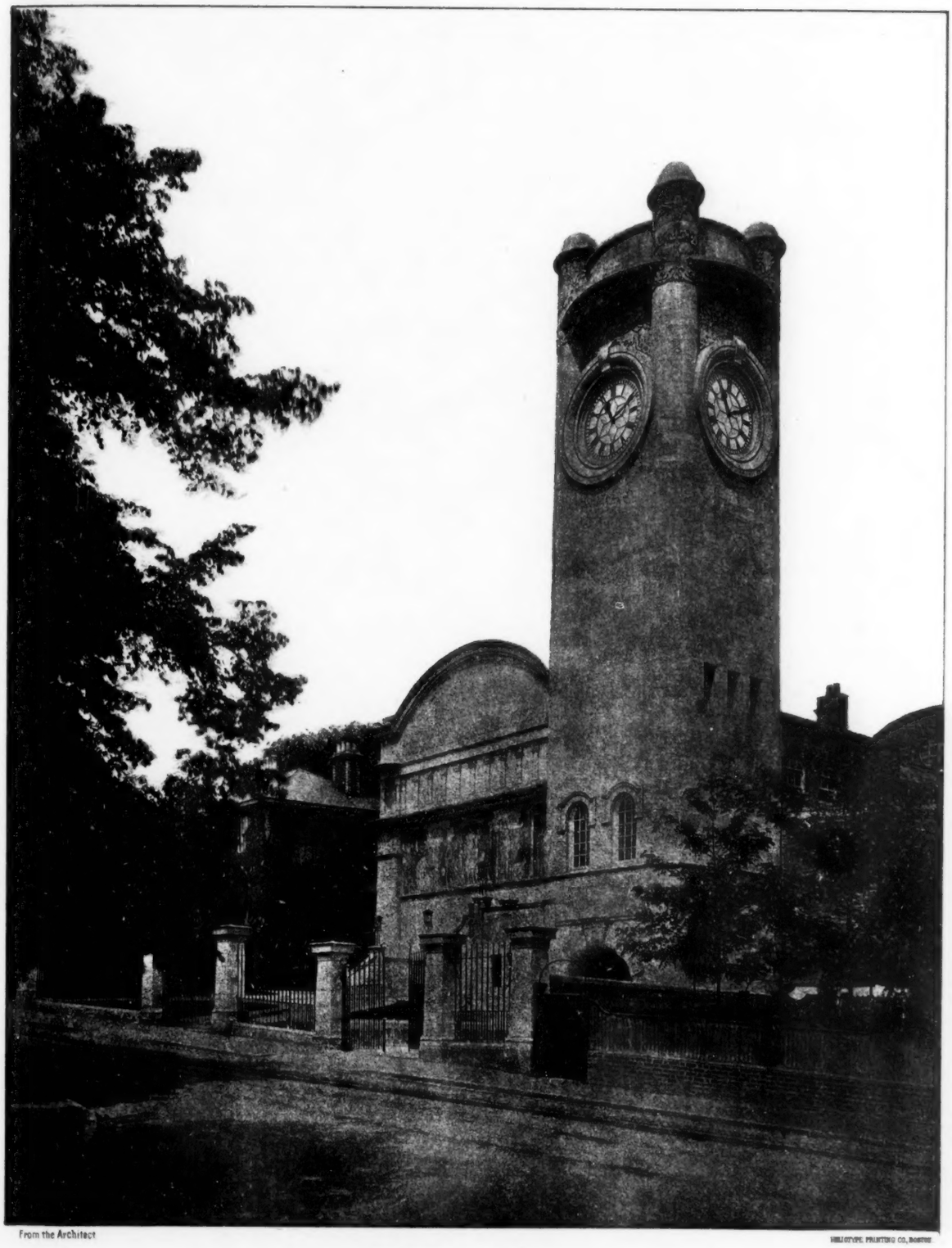

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THE AMERICAN ARCHITECT AND BUILDING NEWS

A WEEKLY JOURNAL OF CONSTRUCTIVE AND DECORATIVE ART

VOL. LXXIII. — No. 1341.] SATURDAY, SEPTEMBER 7, 1901. PRICE, { INTERNATIONAL ISSUE, 50 CTS / REGULAR " 15 "

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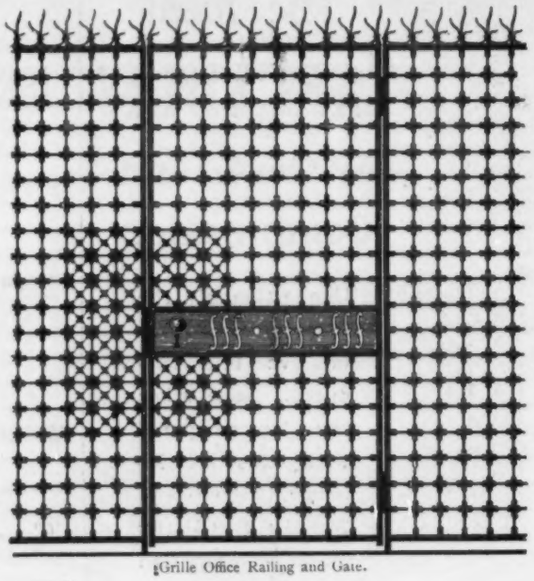

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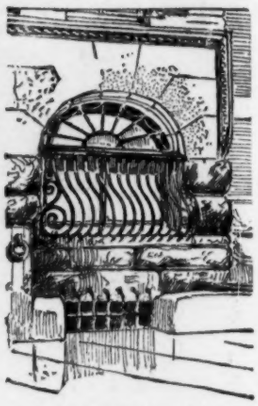

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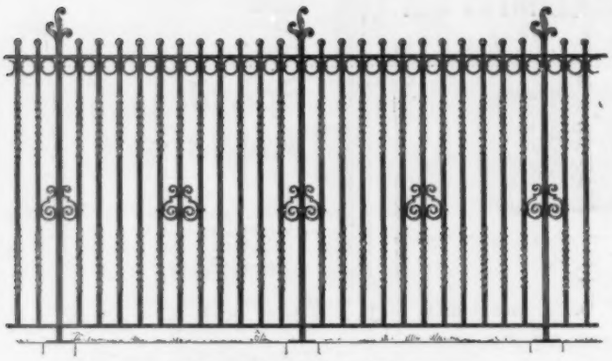

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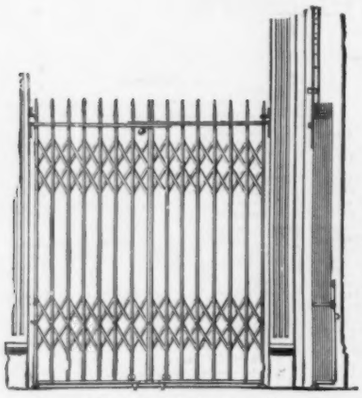

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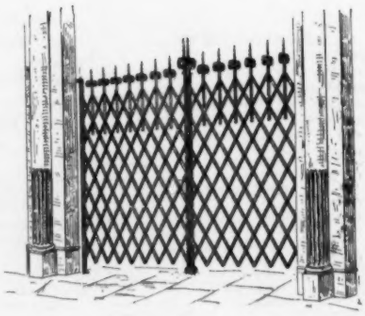

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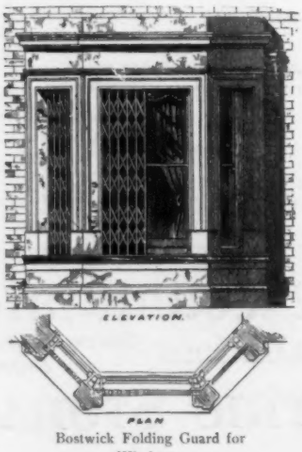

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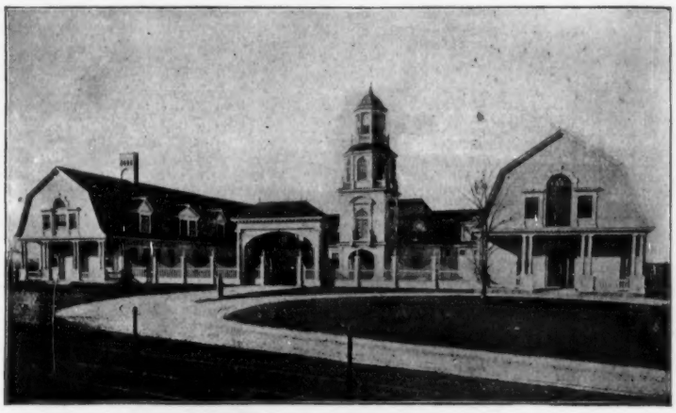

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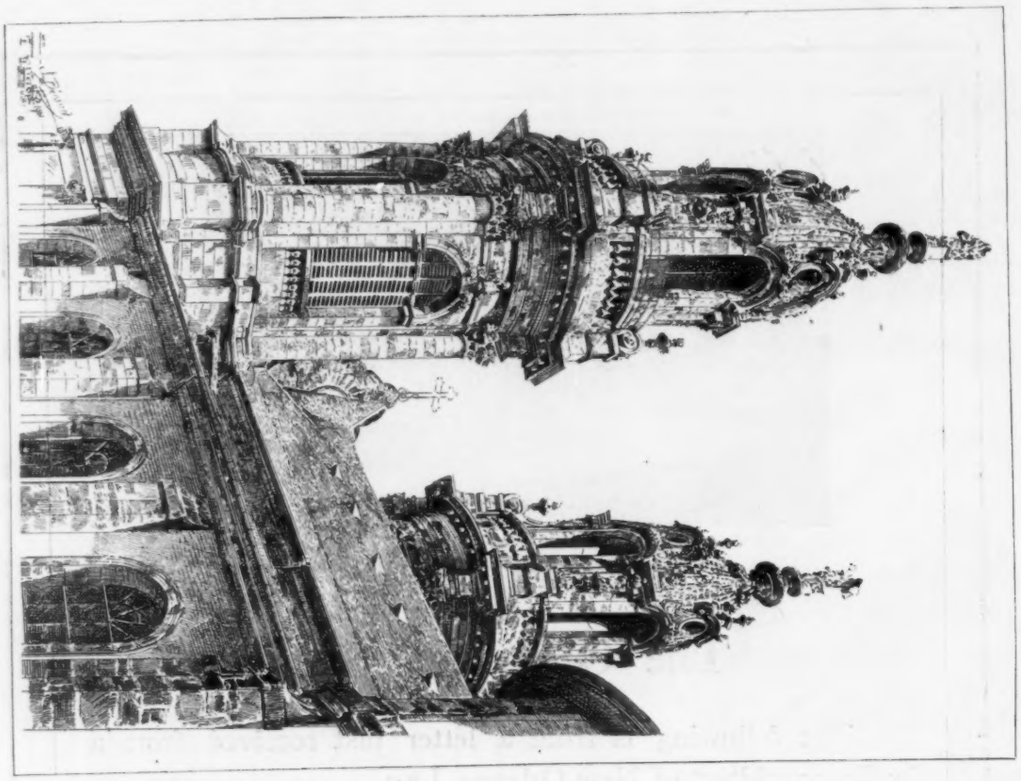

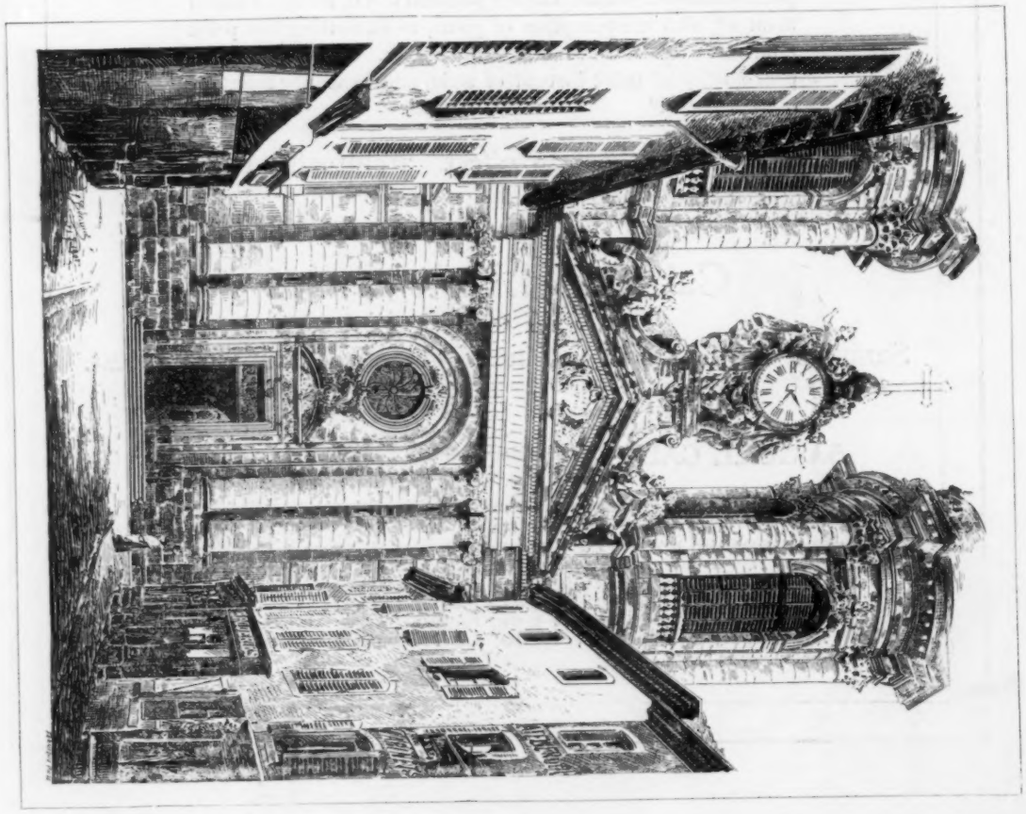

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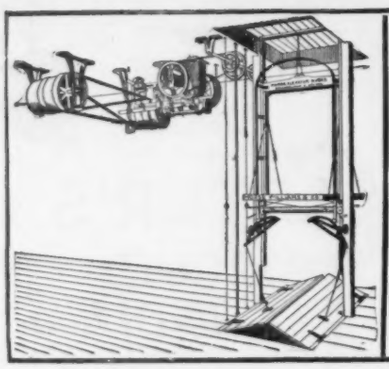

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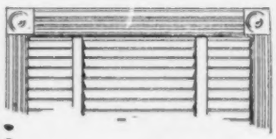

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The Bill prays for a preliminary writ of injunction, to be continued during the pendency of the suit, and upon the final determination thereof to be made perpetual, and also demands an accounting and damages.

☞ All persons are respectfully requested to refrain from purchasing covering infringing these patents, as such purchasing must of necessity lead to suit. ☜

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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.*]

ADVANCE RUMORS.

Abbeville, La. — It is stated that a $10,000 school-house will be built here.

Anderson, Ind. — Report states that Barnes & Moore, Indianapolis, have been awarded the contract for erecting the M. E. Church, at $16,692.

Arlington, O. — The contract for the country house of Mr. Eugene Gray, to be built here, a suburb of Columbus, has been awarded to James Fullerton, of Columbus. Mr. Fullerton will sublet various branches of the work called for, such as hot-water heating, plumbing, tile floors, roofing tile work, etc. The house is to be of the English country type and will have a frontage of over 100 feet.

Bar Harbor, Me. — Mr. George W. Vanderbilt is having plans made for a villa he intends to build on a part of his estate, to be finished by another season.

Beloit, Wis. — Andrew Carnegie offers $25,000 to the town for a public library, the town to provide a site and apply $2,500 per year for maintaining the same.

Birmingham, Ala. — It is stated that plans have been completed by Walter & Ullman for the Hillman Hospital, and bids will be let at once. The plans call for a four-story and basement building, constructed of brick, stone and terra-cotta, and to cost $45,000.

Cairo, Ill. — The Ancient Order of Hibernians have purchased a lot on Washington Ave., on which they propose erecting a $10,000 lodge building.

Carrollton, Mo. — Plans by R. J. Kirsch, architect, of Mason, have been adopted for the $60,000 fire-proof court-house.

Cincinnati, O. — Louis Lehle, Chicago, Ill., has prepared plans for a $300,000 brewery for Windisch Molhuser Brewing Co.

Columbus, O. — Work on the Madison Avenue church has been started. The contract was awarded to Ebright Bros. F. L. Packard, architect.

The contract for the Donaldson Street M. E. Church has been awarded to H. A. Houpt. Architect, F. L. Packard.

David City, Neb. — J. C. and W. Woodward, Council Bluffs, Ia., have designed a $20,000 two-story brick and frame temple, 40′ x 120′, for the I. O. O. F. Temple Association.

Dayton, O. — The contract for the First Presbyterian Church has been awarded to Wm. Whyte. Architect, F. L. Packard, Columbus.

Des Moines, Ia. — Westminster Presbyterian Society have voted to erect a $20,000 building at 12th St. and Forest Ave. Work will be started early next spring.

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(*Advance Rumors Continued.*)

Dubuque, Ia. — The faculty of St. Joseph's College contemplate building a $50,000 annex to the present building, so it is stated.

Eau Claire, Wis. — Plans have been made by Geo. Bergmann for the $15,000 lodge building, for the Knights of Pythias. Pressed-brick construction.

Fairmont, O. — The contract for the W. Va. Grocery & Candy Co.'s warehouse has been awarded to Rob't H. Evans, of Zanesville, at a cost a little under $50,000. This building is 62′ x 130′, six stories, of slow-burning construction. F. L. Packard, Columbus.

Fort Worth, Tex. — Report states that the plans by Howard Messer were accepted for the addition to the Baylor Science Hall, to cost $65,000.

Glenmont, O. — The contract for erecting the school-house at this place has been awarded to Andrew Jackson. Plans by F. L. Packard, Columbus.

Greenville, Miss. — The First Presbyterian congregation has awarded the contract for erecting the new edifice to Charles Peane, Indianapolis, Ind., at $15,000.

Huntington, W. Va. — Harrison Albright, Charleston, has made plans and will receive bids until October 2 for the $50,000 building for epileptics and the $30,000 building for feeble minded at the West Virginia Asylum for Incurables.

Jacksonville, Fla. — The Baltimore Construction Co., of Baltimore, Md., have been awarded the contract for the erection of the $315,000 Windsor Hotel. Dodge & Cullens, owners. Frank V. Newell, 78 La Salle St., Chicago, Ill., architect.

Lawrenceville, Pa. — Reports state that a new brick and stone church is to be erected by the Baptist congregation from plans by J. N. Campbell, 814 Penn Building, Pittsburgh; cost, $25,000.

Mexico, Mo. — J. B. Legg and C. N. Friz, 715 Locust St., St. Louis, are preparing plans for a pressed brick and stone church, 71′ x 106′, for the Methodist Episcopal congregation. Slate roof, hot-air furnace and will cost $16,000.

Morgantown, W. Va. — It is rumored that the congregation of the Methodist Episcopal Church will erect a $30,000 edifice.

Napoleon, O. — It is stated that Wachter, Hudson & Co., The Nasby, Toledo, have prepared plans for a stone church, 60′ x 100′, for the Presbyterian congregation. Furnace heat and tile roof.

Nashville, Tenn. — The Third Baptist Church will probably build a new edifice on the corner of Monroe and Polk Sts.

Newark, N. J. — Out of 57 plans submitted by architects for a new City-hall the three commissioners appointed to erect the building designated five as the best among the lot, but none of the plans were accepted. The five architects were awarded prizes, and they were asked to submit new or amended plans. Prof. F. W. Chandler, of the Massachusetts Institute of Technology, is the consulting architect of the commission. One objection was to the estimate of costs by nearly all the competitors. They were too low. In the opinion of the commissioners, none of the designs could be carried out at the estimates given. Among the plans submitted are specimens from architects in New York, Boston, St. Louis, Washington, D. C. Norfolk, Va., Fall River, Fort Wayne, Chicago and Newark. Of

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(Advance Rumors Continued.)

the architects that were awarded prizes three are in New York, and two New York architects collaborated with Newark architects.

New York, N. Y.—Report states that the Central Railroad of New Jersey has had plans prepared by Louis Hoerune, for a three-story addition to the brick building at 143 Liberty St., to cost $150,000.

The old stables of the Metropolitan Railway Co., at 6th Ave. and 42d St., as well as the Madison Square Garden, have been suggested as sites for a new uptown post-office building, which is greatly needed, and the matter will be brought before the next congress by Postmaster Vancott to have a sub-station above 37th St. probably. An appropriation of $20,000,000, or more, is desired.

Omaha, Neb.—Plans submitted by Thomas R. Kimball have been accepted for the Methodist Hospital. The structure will be three stories high, constructed of brick and stone, costing about $80,000.

L. A. Davis, 2415 N St., South Omaha, has completed plans for a new high school to cost approximately $30,000.

Park Hill, N. Y.—Rumored that Bruce Price, 1133 Broadway, New York City, has prepared plans for a $500,000 hotel, to be built here, near Yonkers, for the American Real Estate Co.

Philadelphia, Pa.—It is stated that James H. Windrim, 1107 Walnut St., is preparing plans for a twelve-story brick and stone department-store, to be erected by John Wanamaker, at a cost of $5,000,000.

The members of the Overbrook Presbyterian Church are considering the advisability of building an entirely new edifice. Plans have been prepared and work is likely to be begun in the near future.

The Convent of the Holy Angels at Glen Riddle has purchased a large tract of ground adjoining the grounds. Extensive improvements are being made to the buildings, and it is said that a large new structure is to be added. For that reason the managers of the institution have desired the ground adjoining the place. Plans have been made by Architect Edwin F. Durang.

Pine Bluff, Ark.—W. S. Helton was awarded the contract for erecting the two-story brick and stone Annunciation Academy building; cost, $15,800.

Pittsburgh, Pa.—William Bauersmith, 466 Rebecca St., has been awarded contract for the $20,000 brick stable for Allan W. Wood, Vandegrift Building. Plans by H. D. Gilchrist, 4th Ave.

Portsmouth, N. H.—The contract for the construction of the machine-shops has been awarded to R. A. Griefen, of Chicago, Ill., at $97,880.

Schenectady, N. Y.—Austin Simkins has been awarded the contract at $110,937, for erecting the almshouse for Schenectady County. Contract for heating and ventilating plant not included.

Springfield, O.—Plans have been completed by F. L. Packard, Columbus, for the Ohio Pythian Home to be built in this city. This will be a large building constructed of stone, flash brick, tile roof, oak

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

finish, marble and tile floors, heating, plumbing, etc., and will be one of the finest of the Homes in the State.

St. Paul, Minn.—Plans have been prepared by Reed & Stem, Endicott Building, for the $45,000, two-story fireproof detention hospital, 50' x 100', for the City and County Hospital.

Herman Kretz & Co. are preparing plans for a $50,000 armory, of which Major Lambert has charge.

Sturgis, S. D.—Mullen & Munn, Deadwood, have been awarded contract at $21,500, for the three-story building for the Sisters' Convent, after plans by O. O. Jewett, architect, Deadwood.

Tiffin, O.—Plans and specifications are being prepared by F. L. Packard, Columbus, for the Superintendent of the Junior Order of United American Mechanics' residence, and will be ready for bids upon by September 15th.

Toledo, O.—J. W. Matz has prepared plans for a K. of P. Hall to cost $13,000. Construction of brick and stone, four stories, 48' x 100', with composition roof and hot-water heating.

Trinway, O.—Contract for the Union Passenger Station at this place has been awarded to Adams Bros., of Zanesville, according to plans and specifications prepared by F. L. Packard, Columbus. This will be a thoroughly first-class, modern structure in every particular and will be for the C. & M. V., P. C. C. & St. L. and the C. A. & C. roads.

Walpole, Mass.—The gift of Andrew Carnegie of $15,000 for a town library has been accepted at a special town meeting. Like action was taken on the offer of a library site at the corner of Common St. and Lewis Ave. by Charles S. Bird, of East Walpole.

Washington, D. C.—The contract for constructing a stable at the Government Hospital for the Insane has been awarded to Meads & Reynolds, at $24,796.

Watertown, N. Y.—The plans of Orchard & Joralemon, Niagara Falls, have been accepted for the Flower Library building to be erected in memory of Roswell P. Flower by his daughter; estimated cost, $50,000.

Weatherby, Pa.—Charles M. Schwab, President of the United States Steel Corporation, has approved of the plans for a school-building at this place, for which he will provide the funds. The contract has been awarded. The building will represent an outlay of about $100,000.

West Baden, Ind.—The West Baden Springs Co. has been incorporated with a capital of $1,000,000 by Lee W. Sinclair and others, for the purpose of rebuilding the hotel recently burned.

Whitewater, Wis.—It is stated that the citizens will erect a new library building, at a cost of $15,000.

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Williamsburg, Pa.—It is stated that plans are being prepared by F. J. Shollar, Altoona, for a two-story industrial school, to be built here, at a cost of $20,000.

Wilmington, Ill.—F. M. Garthwait, Chamber of Commerce, Chicago, has been awarded contract for constructing the $30,000 three-story brick addition, 40' x 100' and 36' x 40', for the Soldiers' Widows' Home. Plans by John R. Stone, Hartford Building, Chicago.

Windom, Minn.—The contract for erecting the Methodist Church was awarded to F. C. Nordlander, 1025 Bradley St., St. Paul, at $10,890. Omeyer & Thori, Chamber of Commerce, St. Paul, architects.

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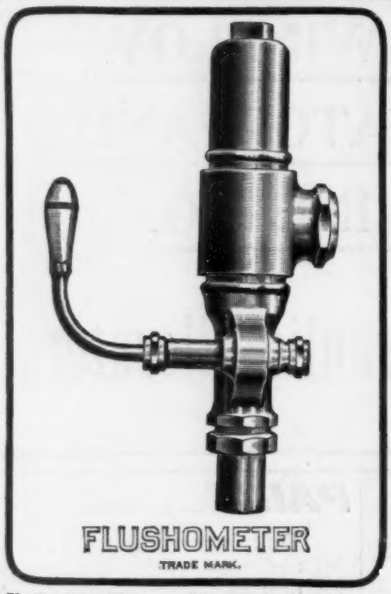

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(*Advance Rumors Continued.*)

Worcester, Mass. — Barker & Nourse have completed plans for a six-room brick school-house to be built on Sever St. Chas. H. Peck, supt. of public buildings, in charge.

Xenia, O. — Plans for a high school, costing $40,000, are being prepared by W. Chamberlin & Co., Birmingham, Ala.

APARTMENT-HOUSES.

Newark, N. J. — *Clinton Ave.*, eight-st'y bk. & st. fireproof apart., 50′ x 100′; $100,000; o., S. Leschziner; a., W. E. Lehman, 142 Market St.

New York, N. Y. — *W. Twenty-fifth St., Nos.* 18-20, eleven-st'y bk. & st. flat, 50′ x 83′; $300,000; o., Frank P. Bloodgood, 65 E. 87th St.; a., Israels & Harder, 194 Broadway.

W. One Hundred and Twentieth St., Nos. 42-44, six-st'y st. & bk. flat, 50′ x 86′ 5″; $50,000; o., Jas. Everard, 12 E. 133d St.; a., Jas. W. Cole, 403 W. 51st St.

Sixty-fourth St., nr. 1st Ave., 5 six-st'y bk. flats, 52′ 6″ x 87′ 5″, asphalt roof; $250,000; o., City and Suburban Homes Co., 281 Fourth Ave.; a., Jas. E. Ware & Son, 3 W. 29th St.

Worcester, Mass. — *Trumbull St.*, bk. & st. apart., 42′ x 80′; $25,000; o., Dr. Henry Cronin; a., Geo. H. Clemence; b., J. J. Higgins.

CHURCHES.

Chicago, Ill. — *Grand Boulevard, Nos.* 4900 4916, two-st'y chapel & hall, 50′ x 95′; $35,000; o., Catholic Bishop of Chicago; a., W. J. Brinkman; b., D. H. Hayes & Co., 1134 Marquette Building.

CLUB-HOUSES.

Boston, Mass. — *Centre St.*, nr. Corey St., Ward 23, two-st'y fr. club-house, 63′ x 108′, pitch roof, steam; $19,000; o., Highland Club; b., J. M. and C. J. Buckley, Worcester; a., Brainerd, Leeds & Russell.

Worcester, Mass. — *Pitt St.*, club-house, 36′ x 58′, $4,800; o., Catholic Y. M. Lyceum; b., W. A. Beaudette.

EDUCATIONAL.

Sanford, Me. — Three-st'y bk. & st. school, 71′ x 83′, slate roof, steam heat; o., Town; a., McFarland, Libby & Smith, 1 Somerset St., Boston, Mass.

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FACTORIES.

Detroit, Mich. — *E. Fort St., No.* 45, eight-st'y bk. factory; $60,000; o., Boydell Bros., 16 Congress St., E.; a., A. C. Varney & Co.

Philadelphia, Pa. — *Howard St. and Allegheny Ave.*, one & two-st'y bk. factory & stable, 87′ x 237′; $25,000; o., Philadelphia Tapestry Mills Co.; b., Wm. Steele & Sons.

Worcester, Mass. — *Mill St.*, bk. & st. factory building, 50′ x 200′; $25,000; o., Loring Coes & Co.; a., W. H. Harvey; b., J. E. Fuller, Jr.

HOTELS.

Chicago, Ill. — *Michigan Ave., Nos.* 225-227, twelve-st'y bk. & st. hotel, 61½′ x 171½′; $750,000; o., Congress Hotel Co.; a., Holabird & Roche; b., W. A. & A. E. Wells, 1014 Monadnock Block.

HOUSES.

Boston, Mass. — *Belvidere St.*, nr. Dalton St., Ward 10, four-st'y bk. dwell., 26′ x 55′, flat roof, steam; $10,000; o., Simon Green; b., Jos. Green, 53 State St.

Arcadia St., nr. Adams St., Ward 20, 2 three-st'y bk dwells., 24′ x 60′, flat roofs, hot water; $8,000; o. & b., Charles E. Sunberg, 190 Adams St., Dorchester.

Waumbeck St., nr. Humboldt Ave., Ward 21, 2½-st'y fr. dwell., 32′ x 52′, pitch roof, hot water; $6,000; o., Hugh H. McInness; b., M. McPherson, 10 Buckman St.

Hastings St., nr. Centre St., Ward 23, 2 two-st'y fr. dwells., 22′ x 46′, pitch roofs, furnaces; $7,000; o., Ellen Dennis; b., Chas. Duran; a., J. P. Campbell.

Bellflower St., nr. Boston St., Ward 16, three-st'y fr. dwell., 27′ x 62′, flat roof, furnace; $6,000; o., May A. McLaughlin; b., James F. Flaherty; a., P. A. Tracy, 923 Dorchester Ave.

School St., nr. Amory St., Ward 22, three-st'y fr. dwell., 23′ x 60′, flat roof, furnace; $6,000; o., Mrs. M. E. McDonald; a., James Murray, 104 Poplar St., Somerville.

Brooklyn, N. Y. — *Avenue C*, cor. E. 23d St., 2½-st'y fr. dwell., 24′ x 47′, shingle roof; $6,500; o., Joseph L. Halstead, 62 Kenilworth Pl.; a., Jesse T. Halstead, 281 Rutland Road.

Park Pl., cor. Brooklyn Ave., three-st'y & base. bk. dwell., 22′ x 48′, tar & gravel roof, steam heat; $15,000; o., Emma Hagedorn, 227 Thirteenth St.; a., H. G. Douglas, 649 Vanderbilt Ave.

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E. Fifteenth St., nr. Avenue T, two-st'y & attic fr. dwell., 23′ x 42′, shingle roof; $4,000; o., F. H. Dressel, 3722 Park Ave., N. Y.; a., H. E. Haugaard, Richmond Hill, L. I., N. Y.

Avenue G, nr. E. 23d St., two 2½-st'y & attic fr. dwells., 22′ x 36′, shingle roof; $9,000; o., D. Lauer, 1626 New York Ave.; a., B. Driesler, 1432 Flatbush Ave.

Forty-second St., nr. New Utrecht Ave., three 2½-st'y fr. dwells., 22′ x 38′, shingle roofs; $12,000; o., J. H. Wythe, 49th St. & 12th Ave.; a., B. Driesler, 1432 Flatbush Ave.; b., G. A. Widener, West St., nr. 16th Ave.

Fifth St., nr. 7th Ave., three-st'y bk. dwell., 20′ x 47′; $5,500; o., Mariette F. Adams, 484 Fifth St.; a., G. F. Roosen, 189 Montague St.

Chicago, Ill. — *Michigan Ave., No.* 5046, three-st'y bk. & st. dwell., 22′ x 60′; $12,500; o., P. J. Lynch; a., E. A. Biondin; b., F. W. Prendergast, 5615 Wentworth Ave.

Detroit, Mich. — *Warren Ave., Nos.* 138-140, two-st'y bk. double dwell.; $8,000; o., F. E. Matthews, 331 Frederick St.; a., Williams Bros.

Pingree Ave., No. 236, 2½-st'y fr. dwell.; $4,500; o., J. H. Norgaard, 638 Sixth St.; a., Speir & Rohns.

Louisville, Ky. — *New Broadway*, two-st'y bk. dwell.; $5,000; o. & b., R. M. Cunningham, 1697 Everett Ave.

Milwaukee, Wis. — *Thirty-sixth St.*, nr. Grand Ave., two-st'y & base. fr. dwell., 36′ x 42′, pitch roof, hot water; $7,500; o., Philip C. Bossert; a., N. J. Esser.

Prospect Ave. and Albion St., three-st'y & base. bk. & st. dwell.; $25,000; o., Miss E. M. Black; b., P. Dunn, masonry, J. Debbink, carpenter work; a., Alex. C. Eschweiler.

Minneapolis, Minn. — *Girard Ave., No.* 2436, 2½-st'y fr. dwell., pitch roof; $8,000; o., E. B. Hayford; b., J. & W. A. Elliott; a., L. A. Lamoreaux.

Newport, R. I. — *Newport Ave.*, two 2½-st'y fr. dwells., 24′ x 37′, pitch roofs, hot water; $10,000; o., H. Peckham.

New York, N. Y. — *E. Sixty-third St., No.* 15, five-st'y st. & bk. dwell., 25′ x 73′, slag roof; $50,000; o.,

BUILDING INTELLIGENCE.

(*Houses Continued.*)

E. Asiel, 15 Exchange Pl.; a., John H. Duncan, Highland Beach, N. J.

Lind Ave., nr. 165th St., two-st'y fr. dwell., 22′ 6″ x 61′ 6″; $6,000; o., Louis Olins, 247 W. 135th St.; a., William A. Gorman, 1059 Ogden Ave.

Nathalie Ave., nr. Nindham Pl., 2 two-st'y fr. dwells., 24′ x 44′, shingle roofs; $12,000; o., Jennie Ericson, Edenwood Ave.; a., Alfred Ericson, Edenwood Ave.

Philadelphia, Pa. — *N. Eighteenth St., No.* 554, four-st'y bk. & st. dwell., 18′ x 70′; o., Geo. Allen; a., Frank R. Watson.

Sixty-third St., nr. Malvern Ave., 2 three-st'y st. dwells., 21′ 6″ x 60′; $14,000; o., Lewis Jones; a., Walter Smedley, 21 S. 12th St.

Portsmouth, N. H. — *South Road*, 2½-st'y fr. dwell., 26′ x 33′, pitch roof, hot water; $3,000; o., C. J. Wood; a., Wm. A. Ashe; not let.

Middle Road, 2½-st'y fr. dwell., 31′ x 42′, pitch roof, furnace; $5,000; o., J. W. Hayes; b., Anderson & Junkins; a., Wm. A. Ashe.

West Newton, Mass. — *Montvale Road*, two-st'y fr. dwell.; $6,500; o., Howard Emerson; b., W. N. Hawkins; a., Louis C. Newhall, 112 Water St., Boston.

Worcester, Mass. — *Trumbull St.*, 2 three-st'y fr. dwells., 28′ x 60′, flat roofs; $4,600 & $5,200; o. & b., J. J. Higgins.

Nixon Ave., three-st'y fr. dwell., 27′ x 62′, flat roof; $4,500; o., M. J. Canane; a., A. J. Harrington; b., Dorais & Dupuis.

Everard St., three-st'y fr. dwell., 28′ x 55′, flat roof; $4,600; o., John P. Carlson; b., Erik Erikzen.

Paine St., three st'y fr. dwell., 28′ x 60′, flat roof; $5,500; o., William Banaghan; a., Earle & Fisher; day-work.

Institute Road, fr. dwell., 23′ x 40′, pitch roof, furnace; $3,700; o., Carl G. Beede; a., Chapin & Topanelian; b., W. A. Beaudette.

Seymour St., three-st'y fr. dwell., 28′ x 52′, flat roof; $4,300; o., Michael Buckley; b., McDermott Bros.

Henderson Ave., 2½-st'y fr. dwell., 28′ x 52′, pitch roof; $4,000; o., B. N. Pearson; a., William Tebo; b., James Clancy.

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STABLES.

Brooklyn, N. Y. — *Bay Thirty-first St.*, cor. Bath Ave., 1½-st'y fr. stable, 25′ 2″ x 39′ 8″, shingle roof; $2,500; o., C. P. Roseinar, 22d & Bath Aves.; a., J. J. Petit, 186 Remsen St.

Newkirk Ave., cor. Bedford Ave., 1½-st'y fr stable, 18′ x 27′, shingle roof; $600; o., P. Remsen, 325 Newkirk Ave.; a., R. Magaw, 1429 Ocean Ave.; b., P. Huseman, 838 E. 34th St.

Cropsey Ave., cor. 21st Ave., fr. stable, 21′ x 24′, shingle roof; $1,200; o., Eliz. Kimpton, on premises.

COMPETITIONS.

STATE CAPITOL.

[At Harrisburg, Pa.]

OFFICE OF THE CAPITOL BUILDING COMMISSION, HARRISBURG, August 23, 1901.

The Commission created under the Act of Assembly approved the 18th day of July, A. D. 1901, for the construction and completion of the Capitol Building and for other purposes, invite the architects of Pennsylvania to submit plans and specifications for the construction, building and completion of the State Capitol at Harrisburg, including a power, light and heat plant of sufficient capacity to satisfactorily supply the needs of said building, as provided by the said Act of Assembly. The building must be of sufficient size to provide ample accommodations for the executive and departmental branches of the State Government as well as the General Assembly, its officers and employés and to anticipate the future needs of the State. A certain amount of work having already been done, competitors are restricted in a measure to certain outlines of exterior and interior, of all of which facts they will hereby take notice.

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occupied by the Secretary of Internal Affairs and the Secretary of Agriculture, as provided by the said Act of Assembly, architect's fees and the expenses of the Commission shall not exceed the sum of $4,000,000 as under no circumstances will extras be considered, nor will the Commission ask for any additional appropriation. The building is to be completed in all its parts, ready for occupancy on or before the first day of January, 1906, unless the condition of the Treasury justifies its earlier completion. No plans and specifications from architects resident outside of the State will be received, as the law provides that the architect selected must be a resident of Pennsylvania. The exterior or outer walls of the building are to be of granite of the best quality, and in so far as practicable the interior decoration, finish and style of the Congressional Library at Washington will be taken as a type, scheme or model by the Commission in passing upon the plans and specifications submitted.

All plans and specifications must be sealed and filed with the Secretary in the office of the Commission at Harrisburg on or before the 30th day of November, 1901, at 12 o'clock noon, at which hour they will be opened by the Commission.

The architect, who shall be the author of the plans and specifications adopted by the Commission, will be selected as architect to supervise the construction and completion of the building, the removal of the departmental buildings referred to and the installation of the power, light and heat plant, and shall receive in full compensation for his services a commission in accordance with the schedules of commissions adopted and recommended by the American Institute of Architects for full professional services.

The five architects presenting plans and specifications considered next best in the opinion of the Commission will each receive the sum of $1,000.

All drawings shall be one-sixteenth scale. No limit is placed upon the number of designs to be submitted by any competitor. All unsuccessful plans and specifications will be returned to their respective authors within a reasonable time.

Copies of the Act of July 18, 1901, under which this building is to be constructed, can be obtained by application to Edgar C. Gerwig, Secretary, Building Commission, Harrisburg.

The present buildings are open to the inspection of competing architects. Information as to space for the different departments can be obtained upon inquiry of the heads thereof. The right to reject any and all plans and specifications is reserved. By order of the Commission. EDGAR C. GERWIG, secretary. 1341

PROPOSALS.

DECORATION, ETC. [At Massillon, O.]

Bids are being received for the decoration and stage fittings for the Massillon State Hospital work. Address ARCHITECT F. L. PACKARD, Columbus, O. 1341.

PROPOSALS.

BARRACK. [At Boston, Mass.]

Depot Quartermaster's office, 170 Summer St., Boston, Mass. Sealed proposals, in triplicate, will be received at this office **until 11 o'clock A. M. September 20, 1901**, and then opened in the presence of attending bidders, for constructing at Fort Standish, Boston Harbor, Mass., one frame barrack. Blank forms and information furnished on application. Plans and specifications on file in this office. Envelopes containing proposals to be marked "Proposals for Construction of Public Building, Fort Standish, Mass.," and addressed to A. M. PALMER, depôt quartermaster. 1342

CONSTRUCTION. [At Boston, Mass.]

Sealed proposals, indorsed "Proposals for Extension of Building 40," will be received at the bureau of yards and docks, Navy Department, Washington, **until 1 o'clock September 28, 1901**, and then and there publicly opened for constructing an extension of a rolling mill, including new roof for old building at the navy yard, Boston, Mass. Appropriation, $98,000. Plans and specifications can be seen at the navy yard or at the bureau. MORDECAI T. ENDICOTT, chief of bureau. 1342

PUMPS, ETC. [At Washington, D. C.]

U. S. Engineer Office, 735 N. Capitol St., Washington, D. C. Sealed proposals will be received here **until noon September 23, 1901**, and then publicly opened, for furnishing electrically driven pumps, cold drinking water plant, fire hose and racks and pipe covering for new building for government printing office. Information furnished on application. JOHN STEPHEN SEWELL, captain, engineers. 1342

Treasury Department, Office of the Supervising Architect, Washington, D. C., August 29, 1901. Sealed proposals will be received at this office until 2 o'clock P. M. on the 3d day of October, 1901, and then opened, for the construction (except heating apparatus, electric wiring and conduits) of the U. S. Post-office at Creston, Iowa, in accordance with drawings and specification, copies of which may be had at this office, or at the office of the Postmaster at Creston, Iowa, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1342

BUILDINGS. [At Santa Fe, N. M.]

Bids will be received **until September 24** by W. A. Jones, commissioner of Indian affairs, Washington, D. C., for erecting one brick industrial building and one brick employés quarters at the Indian school near Santa Fé, in accordance with plans on file at the following offices: 235 Johnson St., Chicago, Ill., and 77 Wooster St., New York, N. Y. For further information address CLINTON J. CRANDALL, superintendent, Indian school, Santa Fé, N. M. 1342

PROPOSALS.

BUILDING. [At Kings Park, N. Y.]

State of New York. State Commission in Lunacy. Sealed proposals for the construction of a nurses' home building, at the Long Island State Hospital, Kings Park, N. Y., may be sent by mail, or delivered in person, **up to 4 o'clock P. M. on Wednesday, the 18th day of September, 1901**, to Alexander E. Orr, President of the Board of Managers, Franklin Trust Company Building, corner of Clinton and Montague Sts., Brooklyn, N. Y. Drawings and specifications may be consulted and blank forms of proposal obtained at the office of the Board of Managers, or at the office of G. L. Heins, State Architect, in the Capitol, Albany, N. Y. 1342

SEWAGE PLANT. [At Kings Park, N. Y.]

State of New York. State Commission in Lunacy. Sealed proposals for constructing a sewage disposal plant at the Long Island State Hospital, Kings Park, N. Y., may be sent by mail or delivered in person **up to 4 o'clock P. M. on Wednesday, the 18th day of September, 1901**, to Alexander E. Orr, President of the Board of Managers, Franklin Trust Company Building, corner Clinton and Montague Sts., Brooklyn, N. Y. Drawings and specifications may be consulted and blank forms of proposals obtained at the office of the Board of Managers, or at the office of G. L. Heins, State Architect, in the Capitol, Albany, N. Y. This notice cancels all prior advertisements for proposals for sewage disposal plant. 1342

HOSPITAL. [At West Point, N. Y.]

Sealed proposals, in triplicate, will be received here **until 12 M., September 23, 1901**, for the construction of south wing to Cadet Hospital, West Point, N. Y., as per plans in this office. U. S. reserves right to reject any or all proposals, or any part thereof. Address Q. M., U. S. M. A. 1341

ASYLUMS. [At Huntington, W. Va.]

It is stated that **until October 2** bids for construction are desired for two buildings costing approximately $50,000 and $30,000 to be erected on grounds of West Virginia Asylum for Incurables. Address HARRISON ALBRIGHT, architect, Charleston, W. Va. 1341

HOSPITAL. [At Cripple Creek, Col.]

The commissioners of Teller County will receive bids **until September 10** for the construction of a $20,000 brick and stone hospital, in accordance with plans by C. E. Troutman, 26 Nolan Block. It will have metal roof, skylights, tile floors, hot-water heat, etc. 1341

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SECTION 1. No Member should enter into partnership, in any form or degree, with any builder, contractor, or manufacturer.

*

SECTION 2. A Member having any ownership in any building material, device or invention, proposed to be used on work for which he is architect, should inform his employer of the fact of such ownership.

*

SECTION 3. No Member should be a party to a building contract except as "owner."

*

SECTION 4. No Member should guarantee an estimate or contract by personal bond.

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SECTION 5. It is unprofessional to offer drawings or other services "on approval" and without adequate pecuniary compensation.

*

SECTION 6. It is unprofessional to advertise in any other way than by a notice giving name, address, profession, and office hours, and special branch (if such) of practice.

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SECTION 7. It is unprofessional to make alterations of a building designed by another architect, within ten years of its completion, without ascertaining that the owner refuses to employ the original designer, or, in event of the property having changed hands, without due notice to the said designer.

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SECTION 8. It is unprofessional to attempt to supplant an architect after definite steps have been taken toward his employment.

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SECTION 9. It is unprofessional for a Member to criticise in the public prints the professional conduct or work of another architect except over his own name or under the authority of a professional journal.

*

SECTION 10. It is unprofessional to furnish designs in competition for private work or for public work, unless for proper compensation, and unless a competent professional adviser is employed to draw up the "conditions" and assist in the award.

*

SECTION 11. No Member should submit drawings except as an original contributor in any duly instituted competition, or attempt to secure any work for which such a competition remains undecided.

*

SECTION 12. The American Institute of Architects' "schedule of charges" represents minimum rates for full, faithful and competent service. It is the duty of every architect to charge higher rates whenever the demand for his services will justify the increase, rather than to accept work to which he cannot give proper personal attention.

*

SECTION 13. No Member shall compete in amount of commission, or offer to work for less than another, in order to secure the work.

*

SECTION 14. It is unprofessional to enter into competition with or to consult with an architect who has been dishonorably expelled from the "Institute" or "Society."

*

SECTION 15. The assumption of the title of "Architect" should be held to mean that the bearer has the professional knowledge and natural ability needed for the proper invention, illustration and supervision of all building operations which he may undertake.

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SECTION 16. A Member should so conduct his practice as to forward the cause of professional education and render all possible help to juniors, draughtsmen and students.

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L. Haberstroh & Son, Boston
DOORS.
Kinnear Mfg. Co., The, Columbus, O.
DOORS (Interior Finish).
Carlisle, Pope & Co., E. A., New York.
DRAUGHTSMAN.
E. Eldon Deane, New York.
ELEVATORS, ETC.
Morse, Williams & Co., Philadelphia.
Whittier Machine Co., Boston
ENGINES (Hot-Air).
Rider-Ericsson Engine Co., New York.
FAUCETS.
Union Brass Works, Boston, Mass.
FILING DEVICES.
Art Metal Construction Co., Jamestown, N. Y.
FILTER.
Loomis-Manning Filter Co., Phila., Pa.
Scaife & Sons, Wm. B., Pittsb'g, Pa.
FIREPROOF DOORS.
Kinnear Mfg. Co., The, Columbus, O.
FIREPROOFING.
Johnson Co., E. V., Chicago, Ill.
FIREPROOF LATHING.
Hayes, Geo., New York
FIREPROOF SHUTTERS.
Kinnear Mfg. Co., The, Columbus, O.
FLOOR POLISH.
Butcher Polish Co., Boston
FLUSHOMETER.
Kenney Co., The, New York
FLUSH-VALVE.
Peck Brothers Co., Chicago, Ill.
GALVANIZED IRON.
American Sheet Steel Co., New York
GATES.
Wm. R. Pitt, New York (mon)
GRATES, ETC.
Wm. H. Jackson & Co., New York
GREASE (Graphite).
Wisconsin Graphite Co., Pittsb'g, Pa.