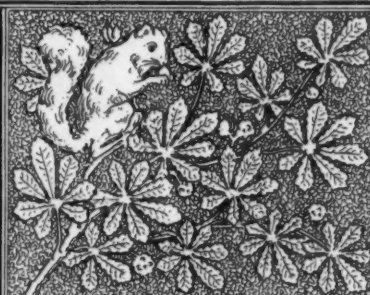
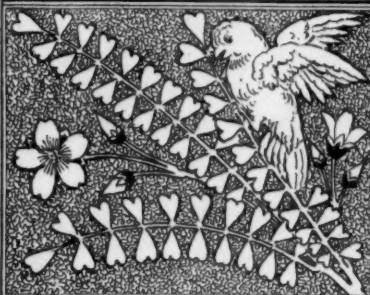


THE
AMERICAN ARCHITECT
and architectural review
AND
BUILDING NEWS



JANUARY-MARCH



* 1903 *

BOSTON

AMERICAN ARCHITECT COMPANY

211 TREMONT STREET

NAI
A3

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

By Transfer
D. C. Public Library
JUN 4 - 1934

3

THE AMERICAN ARCHITECT AND BUILDING NEWS

VOL. LXXIX

SATURDAY, JANUARY 3, 1902

JAN 8 - 1902 1410



SUMMARY:—

The Mistake of seeking the President's Aid in abolishing the Tariff on Works of Art.—The Eternal Conflict between the Legislative and Executive Branches of Our Government.—A New Jersey "Iron Girder."—The Massachusetts Institute of Technology considering Removal.—The Landmarks of New York.—Some Facts about the late Herr Krupp.—An Exhibition of the Feminine Arts.—The Manufacture of Artificial Rubies.—Competition for a Universal Postal Union Monument.	1
THE RELATION OF THE ARCHITECT AND ENGINEER TO THE DESIGN AND ERECTION OF GOVERNMENT BUILDINGS.	3
ROMAN AND ROMANESQUE FRANCE.—V.	4
THE DEVELOPMENT OF WASHINGTON.	4
LIQUID-AIR'S LIMITATIONS.	6
SOCIETIES.	6
ILLUSTRATIONS:—	
Details of Entrance-hall: New York Public Library, New York, N. Y.—A Suggested Scheme for the Improvement of Washington, D. C.—Roman and Romanesque Remains in France.	
Additional: House of Ogden Goelet, Esq., Newport, R. I.—Side and Rear Elevations: New York Public Library, New York, N. Y.—Details of the Rotunda: New York Public Library, New York, N. Y.	7
NOTES AND CLIPPINGS.	7

THE advocates of the bill for the repeal of the present tariff on works of art have, we regret to be obliged to say, taken the surest means for the defeat of their measures by "making a personal appeal to President Roosevelt, to interest him in the passage of the bill." No doubt President Roosevelt, like every other educated man, regards the duty on works of art as barbarous, but his advocacy of its repeal, or even the thought that he might be persuaded to advocate the measure, would be sufficient to unite Congress against repeal. Messrs. Weir, Beckwith, Blashfield, Cox and the others who have labored so earnestly and unselfishly in favor of the abolition of this absurd and discreditable imposition do not need to look back very far to remember that every request or recommendation that President Roosevelt has ever submitted to Congress has been contemptuously ignored; and if Cuban reciprocity, the relaxation of tariff burdens, and the regulation of trust monopoly, all of them believed by an enormous majority of the people of the United States to be necessary to the honor and prosperity of the country, are refused consideration by Congress, for no other reason than that the President advocates them, it may be imagined what is likely to be done with a question which interests only a small body of voters, but which can, perhaps, be utilized to show how small the President's influence is in Congress.

WE are not of those who think that the apparent discourtesy with which every popular President is treated by Congress is due to envy or intentional impertinence on the part of the Senators and Representatives. On the contrary, there is no doubt that our frank and manly President is regarded by a very large part of Congress with sincere friendship, if not affection; and the studied disregard of his wishes is a manifestation, perhaps almost an unconscious one, of the unceasing conflict which our system of government provides between the executive and the legislative branches, and the jealousy with which each watches any symptom of encroachment on the part of the other. Strictly, the regulation of tariff matters, as well as of trusts, is solely within the province of Congress, the President and his advisers having nothing to do with them except to carry out the laws made by Congress in regard to them, and to report the results of administering them, so that Congress may change them if it sees fit to do so; but, in practice, the President frequently goes farther than this, and recommends legislation in accordance with his views of the condition of the country. Congressional courtesy usually receives these recommendations with respect, but it never forgets that it is Congress, not the President, which makes the laws; and anything like dictation from a President, particularly from one personally so popular as President Roosevelt, excites, and should excite, alarm and resentment. There have been several instan-

ces of late years in which Administration officials have taken upon themselves, undoubtedly with the best intentions, to give to Acts of Congress an interpretation which they were evidently not intended to bear. It is not a very long step from giving Acts of Congress a forced interpretation to dispensing with them altogether, especially when popular sentiment is in favor of dispensing with them; and while Congress, for its own safety, should consult the wishes of the people, it is for the interest of the Republic that it should jealously defend its prerogative as the law-making branch of the Government.

THE New Jersey State House has made its appearance again in the newspapers as a warning to those who trust in contractors with political influence. If we are not mistaken, it was some work contracted and paid for as marble which was, a year or two ago, discovered to be of plaster; and now it appears that the "iron girders" supposed to sustain the floor of the Chancery Court-room are of wood, and so slender that a crowd in the court-room would at any time probably have brought the floor down. The present architect of the building has promptly secured the floor by putting posts in the room below; but it would be interesting to learn how many other samples of political construction there are in the building.

THE Massachusetts Institute of Technology finds every year more pressing the necessity for concentration of its activities, now scattered over a wide space. Admirably equipped as its laboratories and workrooms are, the distances by which they are separated constitute not only a tax upon students and instructors, but deprive the Institute of much of that common interest among the various departments which does so much to encourage and develop students of science. Although the project of removing the Institute to a group of buildings in Brookline or Jamaica Plain has been abandoned for the present, on account of the inconveniences of a situation so far from the city, it is not impossible that space enough may be acquired, perhaps in the neighborhood of the new Harvard Medical School, for uniting the laboratories, libraries and lecture-rooms of the Institute in a single group, with dormitories for students at least not far off. The present property of the Institute has increased greatly in value, and, if permission could be obtained from the Legislature to sell that part of it originally granted by the State, the proceeds would go far toward the acquisition of a suitable tract elsewhere. As the State of Massachusetts is justly proud of the Institute, it is possible that this permission, which will, it is said, be asked for this winter, may be granted; and, in this case, preparations will undoubtedly be made for removal.

MR. ALBERT ULLMANN has made a contribution to an important branch of history in collecting information about the "Landmarks of New York," and the *Evening Post* regrets, with reason, that so few evidences are left of the early history of the second city of the world. It is, however, a considerable compensation for the disappearance of landmarks that the development of the city is so recent that innumerable records exist of nearly every stage in its history. There are, for example, still in existence authentic representations of New York, or, rather, of New Amsterdam, as it appeared before the English conquest, when a wall, built across the island, at the place still known as Wall Street, defended the little settlement against the Indians; Whitehall Street apparently commemorates the affection of the Duke of York for the palace in which his father lived, and from which he was led out to execution; just as William Street and Nassau Street presumably received their names as a compliment to the Prince of Orange. The American Revolution evidently found Washington Street and Franklin Street just laid out and ready for names; but Philadelphia seems to have taken something from the prosperity of New York for some time afterwards, for we ourselves knew a man, not so very many years ago, who in his youth was accustomed to fish in the canal which still flows under Canal Street across the island, but was then an open stream, crossed at Broadway by a stone bridge. It was not until the canal was covered, and made into a wide street, that the city began to extend rapidly northward; but, the movement once begun, Washington Square, Union Square and

Madison Square succeeded each other at short intervals as the centres of "up-town fashion." During the Civil War, Forty-second Street was practically the limit of the urban territory, beyond this extending a wilderness of rocks, pastures and "squatters' huts. Every one will remember the burning of the negro orphan asylum, on Fifth Avenue, just above Forty-second Street, during the draft riots of 1863, when the savage mob seized the little negro children who escaped from the blazing building, and hurled them back into the flames. The laying out of the Central Park, however, immediately attracted settlement still farther northward, and it was not long before Manhattan Island, south of Fifty-ninth Street, assumed, in general, much the appearance that it wears to-day.

OUR German exchanges give some interesting particulars in regard to the late Friedrich Krupp, by whose sudden death from apoplexy the poor of all nations lost a wise and devoted friend. The industrial fame of the great Krupp establishment was won mainly, perhaps, through the skill and ingenuity of the father and grandfather of Friedrich Krupp, who, with characteristic German thoroughness, applied the resources of science to the perfecting of the manufacture of steel, bringing it to a point never reached before. It was in the Krupp foundry, we believe, that cannon were first hardened internally by pouring liquid carbonic acid upon the white-hot metal; and every detail of metallurgical science was carried there to the highest perfection. Alfred Krupp, the second of the line, left to his son an industrial establishment renowned throughout the world, together with a community of working-people whose physical and moral welfare was better provided for than any similar community in Europe; and Friedrich Krupp set himself to perfect the work of his father. Although, by the absorption of the great Gruson ironworks near Magdeburg, and the Germania ship and engine building establishments at Kiel and Berlin, the Krupp industry was greatly extended under his management, the welfare of the forty-four thousand workmen and clerks in his employment seems to have been always his first care, and it is said that he was even rather troubled that the firm should be known through the world principally through its manufacture of artillery, often assuring visitors that the production of cannon occupied less than half the resources of the establishment. Naturally, all the workmen in the consolidated manufactories shared in the benefits which the enlightened views of their chief conferred upon them; but the original colony at Essen continued to be the model upon which all others, not only under the Krupp management, but, it might be said, in all Europe, were shaped, and in which the generous experiments of its proprietor were principally made. The German Emperor, who is second to no one in his empire in the comprehension of the needs of German working-men, thoroughly appreciated the character of Friedrich Krupp, and, some years ago, made him a Privy Councillor, an honor which no manufacturer had ever before received, and, at his funeral, walked bareheaded in the procession which followed the body of his friend to the grave.

AN interesting exhibition has just taken place in Paris, devoted to "the feminine arts," including all sorts of embroideries, laces, paintings and other works, produced exclusively by women. The exhibition was managed by the great Paris newspaper, *Le Gaulois*, and attracted great interest, more than four thousand works being contributed. It is usual now, in such affairs, to encourage contributors by awarding a large number of prizes, and twenty-eight hundred "recompenses" of various degrees were distributed. All ranks seem to have been represented among the contributors, ladies of the highest aristocracy showing their works side by side with those of modest apprentices in the lace-factories, or pupils in the evening schools, and the high-born ladies were by no means last in the race, some of the principal recompenses having been awarded to them.

EVERY one who has occasion to buy jewelry will be interested in the experiments of M. A. Verneuil in making artificial rubies. Some years ago, jewellers were perplexed by finding among their purchase of precious stones some specimens of ruby, which, although precisely similar to the Oriental ruby in color, hardness and chemical composition, showed, under the microscope, minute bubbles, as if they had been melted. These bubbles did not affect the color or brilliancy of the stone, but, as they are never found in the natural ruby, they indicated an artificial origin for the new stones,

which were said to have been traced to Geneva dealers. So many of them found their way into commerce that an international jewellers' convention discussed the question whether, being rubies in every respect, chemical and physical, they could be refused by purchasers as not genuine stones. We do not remember how the question was decided, and the jewellers' convention did not pretend to explain how the objects were made, except that the theory seemed to find favor that they were composed of chips of real rubies, melted together. Now, however, through the skill and perseverance of M. Verneuil, the mystery is solved, and he has shown how enormous rubies can be artificially formed, having all the properties of the most beautiful Oriental stones. For this purpose an oxyhydrogen blow-pipe, with a vertical flame, or even a blow pipe using oxygen and ordinary illuminating gas, is set in a fire-clay casing, which protects it from currents of air, a small hole in the casing permitting the operation to be watched. A small cylinder of alumina, mixed with a few hundredths of carbonate of potassa, and baked at a red heat, is fixed exactly in the axis of the blow-pipe flame, at such a point that its summit, when the flame is properly regulated, will be at a point where the temperature of the flame is slightly below the melting point of alumina. As the temperature of the long, needle-like flame of the oxyhydrogen blow-pipe increases quite regularly from the base to the tip, the proper place of the alumina cylinder is easily found, and the arm that holds it is provided with a fine screw adjustment, by which it can be brought to the exact position required. Meanwhile, a mixture of precipitated alumina with two and one-half per cent of oxide of chromium, which is the composition of the genuine ruby, is prepared, calcined and pulverized, and the powder is placed in a little wire basket, in an enlargement of the oxygen tube of the blow-pipe. By means of a small hammer, automatically operated, the basket is shaken so as to throw repeated portions of the dust which it contains into the current of oxygen, by which it is carried into the flame. As the temperature of the flame increases toward the tip, the particles of ruby dust become heated as the current of oxygen carries them along, until they reach the tip of the alumina cylinder, precisely at the point where they are just sufficiently softened by the heat to stick to the obstruction. As the operation continues, the ruby dust collects on the end of the cylinder, forming a cone, the tip of which, extending farther than the base into the hot part of the flame, becomes completely melted, forming a little globule. In order to increase as much as possible the size of this globule, which is a pure ruby, the supply of oxygen is now increased, by opening the valve slowly, so as to bring a greater quantity of the dust, at the same time that the temperature of the flame is raised. This operation shifts the position of the hot part of the flame, so that it is necessary to move at the same time the alumina cylinder, in order to keep the incipient ruby at the proper point, where it will remain soft, without boiling; but if care is taken, a perfectly transparent spherical or oval mass can, in about two hours, be obtained a quarter of an inch or so in diameter. To conclude the process, both gas-valves must be suddenly closed, and if the melted mass has been well centred and uniformly heated, it will, in cooling, split through the centre into two perfect rubies, weighing from six to eight carats each, uniformly colored, and giving the splendid red fluorescence characteristic of the ruby. Where the operation has been carefully conducted, it is impossible to distinguish these rubies after cutting, either in color, hardness, or under the microscope, from the most beautiful Oriental stones; but if the heat has been too great, or the supply of dust too copious or irregular, groups of little bubbles can be distinguished in the mass under the microscope; and, if the supply of dust has been scanty, so that the operation has been too long continued, pale-colored streaks may appear in the stone, due to the volatilization of the chromium.

THE Swiss Government announces a competition, open to all the world, for designs for a monument to commemorate the foundation of the Universal Postal Union. The cost of the monument must not exceed one hundred and seventy thousand francs, or about thirty-three thousand dollars. Presumably, the monument is to be erected in the city of Berne, which affords some magnificent sites for such a construction. The designs will be judged by an international jury of eleven members. The competition closes September 15, 1903. Those interested in the matter can procure programmes of competition or any other necessary documents by addressing the Director of the Universal Postal Union, at Berne, Switzerland.

THE RELATION OF THE ARCHITECT AND ENGINEER TO THE DESIGN AND ERECTION OF GOVERNMENT BUILDINGS.¹

PROBABLY every one here present will accept it as axiomatic that the design and erection of Government buildings should proceed according to some well-studied and business-like system. This should be broad enough to cover the reasonable requirements of every individual case, yet sufficiently well defined to ensure always the maximum economy and efficiency; it should also ensure the placing of both responsibility and credit for all work where they properly belong.

That there is no existing system of general application is amply demonstrated by the history of Government buildings everywhere, both completed and building. Certain departments of the Government which have considerable building-work to do proceed in a more or less systematic manner; yet not one of them adheres always to its own general methods, and certainly no two of them handle the work in even approximately similar ways. Possibly one reason why the problem has not been definitely solved before this is that it is capable of more than one solution, and is, to that extent, indeterminate. However, there must be some one solution that is better than any other, and there seems to be abundant evidence that it is yet to be found. There is much complaint on the score of artistic merit, or structural excellence, or economical execution in many of the buildings erected under any of the existing systems; while most of those which escape adverse criticism have been handled in some special way, not susceptible of general application.

In what follows, it is not claimed that this best solution is necessarily to be found; it is only an indication of lines along which the writer believes a system could be developed, capable of handling all cases likely to arise in ordinary practice, with reasonable satisfaction to all concerned.

Inasmuch as both architects and engineers have much to do with the design and erection of modern buildings, and neither can do entirely without the other, it would seem to be a matter of prime importance that they be definitely settled in their proper relative positions, in the beginning. This is a matter of more importance in Government work than in private work, because of its greater extent under one ownership. The writer's plan, without elaboration of details, is simply this: The engineer should be a Government official, with authority to disburse funds and make contracts; the architect should be in private practice. The architect, selected in some proper way, should, in general, be responsible for the design of the building, and the Government, through its own engineers, should erect it. If the Government could develop a corps of salaried architects, with sufficient artistic ability, it would be manifest economy to do so; but the very nature of the case seems to make this impossible, and there is undoubtedly a very general sentiment that a "plan factory" is not conducive to the highest artistic excellence in building-design. With this sentiment, the writer is in thorough accord so far as artistic features are concerned, though he believes that a well-conducted "plan factory" is an excellent thing when it comes to structural and other engineering work; so that he would always advocate the retention of a good architect in private practice for the design of a Government building. He would, for all important work, limit the selection to architects of well-proven ability. But on less important works, the competitions, or methods of selection, should be so devised as to give the younger men a chance to win if they can. It is not necessary to go into details on this point, since this paper is merely an expression of opinion on the part of an individual, and not a probable basis for official action.

Now, coming to engineers, there is no doubt that, by a proper system of selection and tenure of office, the Government could get an abundance of competent engineers at moderate salaries, to look after the execution of its building-work. These men could easily be trained so as to do away entirely with the general contractor, and even with many of the sub-contractors, at a financial profit to the Government and with considerable improvement in the standard of work. They would also be in a position to standardize many of the features of building-design, which are now sadly in need of it. For instance, among the many so-called systems of fireproofing on the market, some leave little to be desired, some are very good, some fair and many are wholly bad. A corps of building-constructors employed by the Government would be in a position to definitely settle which were wheat and which were chaff, and draw the line between them. Certain column-sections are structurally good, others structurally bad; under present conditions, quite a percentage of the latter find their way into Government buildings. The same is true of other details in all lines of building-work, and this could be corrected by a construction-corps such as that herein suggested. Above all, such searching inspection could be provided, that the standard of workmanship would be materially raised. Contractors would be forced to learn that good work can be executed as cheaply as bad, and it is not too much to claim that the general elevation of the standard on Government buildings would exercise a similar and much needed influence on private work. A corps of building-constructors, all well-trained and competent engineers, could, therefore, determine the best types for the various structural features of differ-

ent classes of buildings; they could standardize specifications for both workmanship and materials; they could prepare the engineering-plans themselves, if that proved advisable, or if not, they would at least, by the results of their investigations with the resources at their command, greatly simplify the architect's work on all but the purely artistic parts of the design. They would make all the contracts, control the various contractors, and be responsible that the approved design was properly and economically executed. But the architect's duties should so far overlap those of the constructing-engineer that it should be his province to consult with the engineer on all points affecting the artistic value of the building, and on these points, his authority should be superior to that of the engineer, except in those cases that occasionally occur, where an effect is mistakenly sought at the expense of sound construction. In any event, the engineer, if he happens to take a narrow view of the artistic, should not be allowed to spoil the design, any more than a general contractor in a like position.

So far, the advantages of the proposed arrangement seem to be mainly on the side of the Government. It may be claimed that a competent architect and an honest contractor could take a Government building on the same terms as a private one, and execute it with economy and a high standard of workmanship. This is perfectly possible, but by no means certain, because the contractor is often a very uncertain quantity, and must, in any case, have a profit, most of which could be saved by the method herein outlined.

It is almost certain that the average engineer, if left entirely to himself in the design and execution of a building, would produce at least a few architectural absurdities; possibly, as an engineer, the writer may be so bold as to suggest that he has seen evidence that very good architects are sometimes a little weak on the purely engineering features of their work, as well as the relative economy of different details that are otherwise equivalent. He might possibly further suggest that here is where the engineer should come in; and if the architect has the benefit of the serious thought of many well-trained engineering minds instead of only one or two, the result is much more certain to be good. This is at least a fair argument for the architect and a regularly organized corps of constructing-engineers, as against the architect and a clerk-of-the-works or engineer in private practice employed by the architect to supervise a particular building.

In any event, in Government work, the money must be expended according to law and regulations, and every penny accounted for with a rigidity almost unknown in private work. Contracts must be made in accordance with a mass of statutes, rules and decisions that bewilder one not brought up among them. Any reasonable and necessary thing can be done, if one knows the established method of doing it, but, regardless of what the object may be, if the act is not in due form, payments will be stopped, and contracts declared illegal by the accounting officers of the Treasury; contractors will not get their money, and the architect will probably feel that the tangle is utterly hopeless. The money must be disbursed by some Government official; if the architect has the supervision of the work, and certifies the payments due the contractor, the disbursing-officer will probably be a man entirely without a technical knowledge of building, and it may be quite possible for him and the architect to disagree as to whether a given payment is actually due under the contract. Unless the architect were bonded and held financially responsible for the payment, he could not compel the disbursing-officer to make it in such a case, and it might result in tying up the work. The path of the uninitiated, in incurring liabilities and making disbursements on behalf of the Government, is beset with pitfalls such as those indicated above; travelling expenses, award of contracts under the law relative to the lowest bidder, employment of expert help, in fact every step, from start to finish, even the architect's commission, are liable to make him wish he had never heard of a Government building. Of course if the disbursing-bureau is always in a broad and friendly frame of mind, these difficulties will be smoothed out, and the architect may never dream of their existence; but such a system could be entirely upset by a very little personal or professional jealousy, and it seems to the writer that this possibility should be removed. He feels confident that the division of responsibilities suggested in this paper would remove it.

Naturally, a good many questions of detail will at once be raised in considering the probable workings of any proposed new system. Possibly it may be worth while to raise one or two now, and attempt to answer them.

It may be asked: If this building-bureau personnel is made up entirely of engineers, who will decide between the various architects in a competition? Who will pass upon the artistic merits of the designs? There should be a board of, probably, three eminent architects in private practice, retained to advise the constructing bureau in such matters, and their decision on artistic questions should be final. Of course no one directly or indirectly interested in the competition should be eligible for membership on this board. The building once awarded to an architect, or firm of architects, they should be left entirely untrammelled in their work; the writer thinks this is more certain to follow if the constructing-bureau is avowedly not composed of architectural experts. A little advice from the board of consulting-architects should be a sufficient check on the design, if any is needed.

Inasmuch as architects, like the rest of mankind, are dependent for their existence upon a certain amount of the things that only

¹ A paper by John Stephen Sewell, Captain, Corps of Engineers, U. S. Army, read at the Annual Convention of the American Institute of Architects, Washington, D. C., December 11-13, 1902.

money can buy, the question of compensation may also be raised. It is assumed that if the architect prepares all the plans and specifications, the usual percentage for such work would be a proper commission; it ought to be more liberal under the system herein outlined than any other, because so much of the engineering and structural design would be covered by the standard details and specifications of the constructing-bureau. Fewer drawings would be required, and the specifications would demand not more than one-fourth of the usual amount of attention.

In case the constructing-bureau did away entirely with general contractors, as the writer thinks it should, there would be a very decided economy in having the drawings for the steam, sanitary and electrical work, and also for foundations, structural features and fireproofing, made by its own draughtsmen; in this case, the drawings could be made to serve at once as a basis for contracts for materials, as well as to interpret the design. The writer thinks this might be arranged with justice to all concerned, by having the architect supervise the preparation of these drawings, and paying him the full commission, less only the usual cost of such drawings to the architect himself. If this is not satisfactory, some arrangement could be devised whereby the Government could secure this economy in the preparation of the drawings, and yet not be niggardly with the architect. Possibly, to make the nature of the proposed economy plain, the writer should explain that his idea of the best way to let Government contracts is to get unit prices on carefully classified and accurately scheduled bills of quantities. This puts the proposition before all bidders in the plainest and simplest form; encourages the lowest possible figures, and secures bids in many cases from responsible parties who have not the time to survey the drawings for themselves. It also provides automatically for extras, since they can always be paid for, under the contract, within the limit of variations allowed in the quantities. It requires that the quantities shall be accurately figured from the drawings, and this can be done while they are in course of preparation, practically without extra cost, if the work is organized from the start, with that end in view; whereas if done afterwards, it sometimes costs almost as much as the drawings themselves. In any event, if it were always accurately done by the Government, it would not have to be done many times over by all the bidders; this would reduce the cost of bids as well as the percentage of contingencies on the contract itself and, if generally understood, would reduce the cost of the work to the Government.

Probably other minor questions of detail would be raised, and would have to be met; but the writer has no doubt whatever that if he has succeeded, even partially, in answering those suggested above, all the others could be disposed of without any trouble at all.

Finally, he would like to say that he has not, in intimating that improvement is possible in the existing order of things, meant to criticize any man, or any class of men, engaged upon Government buildings; he believes that most of them are zealous and capable, which only confirms him in the belief that they could produce better results, if organized under a better system.

ROMAN AND ROMANESQUE FRANCE.¹ — V.

ST. REMY, MONTMAJOUR LES BAUX, ST. GILLES.

FROM Arles excursions may be made to all the above places by train or road.

At St. Remy, the ancient *Glanum*, are two most interesting relics of Roman architecture in excellent condition as regards preservation. The beautiful tomb or cenotaph erected by Sextus and Marcus, of the family of the Julii, and dedicated to the memory of their parents, is some 50 feet high. On its square base are bas-reliefs, the two photographs being those on the north and west sides: a battle of infantry and one of cavalry. Above there is an arched story supporting a circular colonnade. The inscription it bears leaves no doubt about its origin: *Sex. I. M. Julii. C. F. Parentibus. Suis.*

The triumphal arch is less perfect. It has a single-arched gateway decorated with bas-reliefs which are much mutilated, and the greater part of the upper story has been destroyed.

In the Roman period, Montmajour, the village of Castelet, Mont d'Argent, Pierre-feu, Trébousille and the Cordes Mountain were all islands forming a little archipelago, having no communication with Arles but by water. These lagoons were very shallow, so shallow that no boat could draw more than one metre of water, hence the use of a kind of raft similar to those to be seen on the Euphrates and the surrounding marshes. These rafts (*utriculariae naves*) were also used on the Durance, which was navigable in Roman times and up to the twelfth century. By some slabs now in the Arles Museum, we learn that there were corporations of sailors and boatmen in the first and second centuries; and what is still more interesting, on the *podium* of the Amphitheatre at Nîmes may be read an inscription which decrees that forty seats should be reserved for the boatmen of the Rhone and the Saone. The whole neighborhood of Arles was maritime under Imperial Rome: there were sea-going ships, barges for the Rhone and the Durance, and the flat-bottomed boats or rafts for use upon the shallow lagoons.

The ruined abbey of Montmajour is situated upon a rock which now rises from a marsh, formerly a lagoon. It was built in the tenth century. The church is Romanesque, twelfth century, and beneath it is a crypt of an earlier date. The cloisters are somewhat in

the character of those of S. Trophime at Arles, but not so fine. The sixteenth-century Italian buildings of the abbey are in ruins, but the Romanesque chapel of S. Trophime, hewn out of the rock, remains.

Lower down the hill is the chapel of the Ste. Croix, built by Abbot Rambert and dedicated by Pons de Marignan, Archbishop of Arles in 1019. At a later date, its foundation was attributed by the monks to Charlemagne, in commemoration of a victory over the Saracens. An inscription records the restoration of the abbey by the Emperor, but modern criticism has decided that this is a mediæval myth. Montmajour¹ was a great place for pilgrimages.

Another curious and interesting place is the ruined mediæval town of Les Baux. Owing to various causes it is now a completely dead city and in ruins; but a glance at the exquisite little Pavillon de la Reine Jeanne is enough to show the beauty of many of the Renaissance façades, etc. The Chapel is earlier, twelfth century, and contains an early font and a Roman sarcophagus. It was upon the plains around Les Baux that Marius defeated the barbarians, whose bodies, some 200,000, were left unburied upon the battlefield, called, in consequence, *campi putridi*, and in modern times La Pourrière.

It is difficult to realize that St. Gilles was formerly situated upon a navigable lagoon where ships from Venice, Genoa, Pisa, Tyre and Alexandria could find their moorings almost under the walls of the abbey. The canal from Beaucaire (Tarascon) to the sea passes St. Gilles, but, beyond a wharf, there is no evidence of its former importance as a port; and yet we know that Crusaders embarked there for the Holy Land, previously to the creation of a port at Aigues-mortes.

The vast extent of flat land now under cultivation is all that remains of the great lagoon; and of the famous abbey nothing survives but the church. Indeed, it is another example of a dead city, tumbled into squalor and decay. Even its magnificent church is but a wreck — dirty, unkempt, uncared for; and so little is it held in esteem by the nations that vagabond street-boys are permitted to scramble about among the magnificent sculptures of the superb façade. The history of the town goes back into the unknown past; but it is probable that it rests upon the site and the foundations of the ancient Heraclea, a Greek city 500 B. C., which had quite disappeared in the time of Pliny.

The church suffered fearfully during the religious wars. The eastern end is in ruins, but shows the magnificence of the plan. The perfection of the details is also very impressive. All the bases of the columns remain, and the apsidal termination can easily be traced. The grand portals of the west front, loaded as they are with grotesque sculpture of the style of the twelfth century, are unsurpassed; indeed, the entire west front is a masterpiece of Romanesque ornament, with details such as mouldings, cornices and capitals purely Classical. Sculptured lions support the pillars of the doorway; and as the abbots, as *grands seigneurs*, used to sit at the gate of the church to dispense justice, the old charters commence, "*Domino N. N. sedente inter leones.*" The upper church was commenced in 1116 by Alphonso, son of Raymond IV, Count of St. Gilles, called Jourdain from having been baptized in the Jordan. The Huguenots turned it into a fortress in 1562, but the Duc de Rohan destroyed it (as such) in 1622. It is 290 feet long by 88½ feet wide. The vault of the nave was 90 feet high. Here it was that the Comte de Provence, Raymond VI, was scourged on his bare back, in the presence of the papal legate and twelve French bishops, for sympathizing with the persecuted Albigenses (1209).

In the tower at the east end, a spiral staircase still remains among the ruins, called the Vis de St. Gilles. It survived the Revolution through the influence of a local lawyer. The central part of the lower church contains the tomb of S. Giles, which is, possibly, part of the earlier church consecrated in 1096 by Pope Urban II.

Near by is a specimen of domestic architecture of the twelfth century — a richly-decorated house, said to have been inhabited by Pope Clement IV. The old timbers of the roof remain, and in the upper story is a large hall retaining a curious dome-shaped fireplace. It is now used as the presbytery.

S. BEALE.

[To be continued.]

THE DEVELOPMENT OF WASHINGTON.

THE plans of the Commission for the development of Washington have been published far and wide until almost everybody who reads even only as he runs knows something about them. It is right that it should be so; for the subject is of such high and national importance that it should be ventilated and discussed through the length and breadth of the land before any decision is taken. Washington is the one city in which public works are the business and the duty of every other city and every citizen who regards the capital with the veneration due to the historic centre of government, the one neutral point at which the divergent interests, the joys and troubles, the jealousies and sympathies of distant and different States may meet. Besides, the designs of the Commission have the sanction of three of the most notable names in structural art in the country; and whether these designs are finally and formally adopted or not, they deserve the thorough consideration due to their source and purpose. It may be that they will be carried out

¹ An excellent illustration of the cloister at Montmajour was published in our issue for December 14, 1893, when, unfortunately, it was ascribed to S. Trophime, at Arles.

¹ Continued from No. 1406, page 71.

in full, or they may serve but as a starting-point for other and maturer schemes; but in either case, they will have served a most useful purpose, and their authors can hardly desire anything better than the ventilation and discussion of other schemes for comparison and consideration. Should the plans of the Commission prove the best practicable, their position will become impregnable; should they be improved or superseded, the country will be the gainer, and the authors will have the satisfaction of having shown the way to something within sight of human perfection, and worthy of the country it is intended to glorify. Perhaps no great work of architecture has been carried out without much previous hesitation and long discussion; for architecture is the most important of the arts, and, probably, most men feel instinctively that its great works are among the most powerful for good or evil. The development of Washington is one of the greatest architectural works ever undertaken; and it is the personal and private right of every one of 80,000,000 of people that this work should not be undertaken until it is felt that it is to be executed under the best scheme that can be devised.

As a suggestion of a plan whose construction is radically different from that of the Commission, the accompanying drawings are published. They were made before the Commission was appointed, and withheld until its designs appeared, in case the latter should be constructed along lines similar enough to render this one of no interest. They have turned out to be so different that this design is presented as a suggestion that something else, worthy and noble, is possible, and, it may be, as a starting-point for discussion.

Most people know by this time the conception of Major L'Enfant of the general outline of the treatment of the space between the Capitol and White House. They were set at right angles, and at the junction of their axes was to be the Washington Monument. The hypotenuse of this right-angled triangle was Pennsylvania Avenue. For some unaccountable reason, the Monument was set away from both axes; about 100 feet from that of the Capitol, and about 400 feet from that of the White House. The departure from the axis of the Capitol is of no serious importance, as the distance of the Monument from the Capitol is too great to allow it to be perceptible; but no device can make the Monument appear to coincide with the axis of the White House. Any scheme with the Monument as a central object will exclude the White House; any scheme that includes the White House will leave the Monument to one side. Again, the junction of the two axes is logically and sentimentally the most important point in the city, and should be marked by some great and imposing structure. Such a monument obviously cannot be dedicated to any man, however great, with Washington off to one side; it would best be the expression of some abstract idea. In conception and effect it should be as different from the tall and narrow shaft as possible; it cannot compete with it aesthetically or sentimentally; it may supplement it. The idea of the writer is a great basin of water in which is reflected the white marble and bronze of a structure comparatively low and rich with carving and sculpture.

Still there remains the awkwardness of the unbalanced obelisk. This would always be felt to be so serious that any frank and emphatic connection of it with the White House would be out of the question. That the Commission felt this is clear from their designs.

Any one who saw this huge and peculiar pile set clearly on one side of the axis of any central scheme would feel a restless and insatiable desire to put something else on the other side to balance it. But what could balance it? What could be put in the other scale to outweigh a thing so ponderous and unusual? Nothing but another like it, its counterpart in size and shape, the only mate for such a giant. And as the obelisk could find its only peer in such another structure, towering and stately as itself, so Washington can find his only peer in Lincoln. To him this second shaft should be dedicated; and the monument between them should be ascribed to the ideals of Liberty and Unity, the causes which they upheld so well. This luminous solution of a most awkward problem was first suggested by Mr. George Keller, of Hartford, Conn.

This use of a second obelisk seems to solve many problems at once. It is quite in line with the Egyptian practice of putting a pair of them in front of their temples. It provides a long-needed and fitting monument to Lincoln, great and simple, and individual as was his character. It at once brings the Executive Mansion into the general scheme, and makes possible a most imposing and ambitious arrangement about the monuments, the centre of the United States, the spot where Legislative and Executive unite to make a meeting-ground for the greatest national heroes. As a fitting frame for such a place, four groups of Government buildings are arranged in a circle 1,400 feet in diameter, a periphery of massive columns and arches 75 or 100 feet high, a thing for whose size and magnificence there is, perhaps, no precedent, but a fit enclosure for so remarkable a group whose unique dimensions require a great space around them. The circle is a common enough figure in public places, open and closed, but the opportunity for expressing the fascination of this most perfect of plane figures on such a scale, justified by the size and character and use of the circumscribing buildings, is unique: and the series of massive columns and arches forming the periphery would be unbroken save for the four openings on the main axis, defining and expressing the circle completely; a condition which would differentiate it hardly less than its scale from the other circular open spaces in Washington, whose shape is hardly perceptible except on the map because of the number of breaks into their limited circumference, their small area obstructed by so many trees and other objects, and the want of uniformity in their buildings.

The axis of the Executive Mansion is framed in two triumphal arches in the openings of the great circle, and emphasized in length and direction by monumental columns carrying the eye far over the river. The severe and entirely architectural simplicity of the great circle is contrasted with another great enclosure containing the Executive Mansion and surrounding buildings, almost as simple, but entirely different in resulting effect, which would depend largely on the undefined surfaces of massed foliage setting off the architecture. On the north, the circle opens into a large and gently concave lawn leading up to the Executive Mansion, all framed in massed foliage, generally not more than 10 or 12 feet high; this will allow the white marble of the balustrades along the terrace walls below the buildings to appear above the green, the best foil and setting that architecture has. Above the balustrades rise the Government buildings, set in alignment with the Treasury and State, War and Navy Department, whose situation, symmetrical on each side of the White House, is the main motive of the composition. This enclosure—for an enclosure it would practically be—would include Lafayette Square, and would group all the principal Government buildings within easy reach of the Executive Mansion. The buildings south of the Executive Mansion are set on terraces descending to the level of the circle and the obelisks, and the terraces are occupied by formal gardens giving unlimited opportunities for rows of busts and statues commemorating national heroes, a quarter of a mile of color and sculpture. The entire effect of the composition would vary greatly with the height from which it was seen, whether from the level of the lawn or the upper stories of the buildings; the conception is probably unique, and would depend for its complete effect as much on its landscape architecture as on its architecture proper; no really adequate idea of it can be given without a very large drawing.

On the south the circle opens into broad terraces supported by massive sea walls with balustrades and rows of statues. On the terraces are set buildings extending far beyond the outer boundaries of the circle, and enclosing on three sides the enlarged tidal reservoir, which is at present of an irregular shape, and communicates with the river by a narrow opening. The axis of the White House is thus made the connecting-rod of three distinct compositions; all different in effect yet harmonious, all separate yet united, all of unrelated conception yet each aiding the other.

The axis of the Capitol runs through triumphal arches in the east and west openings of the circle, admitting a complete view of the monuments and the river beyond. The axial treatment can obviously be continued to the river if desired. Outside of the circle the axis is occupied by a canal 150 feet wide with basins containing fountains or cascades of a monumental character at each end. Bridges cross it at Fourteenth, Twelfth, Seventh, and Four-and-a-half Streets, surrounded by squares with architectural treatment of balustrades, statuary, etc. At the sides of the canal are stone retaining-walls surmounted by the necessary wheel and foot ways and avenues of trees. For the treatment of this axis, the string that binds the Capitol and obelisks, an open vista of greensward and various boulevards have been proposed. The vista of greensward would undoubtedly be more beautiful than a boulevard, but the canal which makes an architectural link between these two ambitious and formal structures, which replaces the glare and dust and monotony of macadam by the gleam and coolness of water, various with pleasure-craft and aquatic birds, would be more fascinating than either.

The Mall with its unbroken flatness and monotonous extent has been a stumbling-block to all who have essayed to devise something to make out of it. It has been described, not without wit, by Mr. Olmsted as "a sort of miscellaneous meadow," and much impatience and ridicule have been lavished on its endless patches of turf or hay, its scattered trees and meandering walks, mostly leading nowhere in particular. But, before it is decided to cover it with buildings, which would separate it into parts and destroy its apparent extent, its most marked feature, the popular sympathy for green grass and trees should be remembered. This sympathy is not necessarily wrong because it is deep seated, ineradicable and popular. Could not something be made out of this very tameness of surface and monotony of extent?

The Mall is a tedious place because there is no design in it as a whole; because there is no consistent attempt to use the conditions to obtain a definite artistic result. The attempts to mitigate by haphazard planting its size and flatness have really exaggerated them. The solution of a problem like this, containing factors difficult or impossible to eliminate or disguise, is usually found in the acceptance of the difficult factors as a motive of treatment, in using them as an advantage instead of concealing them, in regarding them as an opportunity instead of a hindrance.

If the planting should be modified, cut out and increased so as to make long openings in many directions, the façades of the buildings would appear framed in foliage at the ends of long irregular vistas. Nothing could give a greater charm to architecture seen from a distance than this, and nothing could make the architecture so valuable a part of scenic effects on a large scale. The open spaces of lawn would be few and dignified and quiet, arranged to produce an impression of simple extent and repose instead of pettiness and repetition. The bold and resolute masses of planting could be endlessly varied in detail with all the modern wealth of foliage and blossom in trees and shrubs and even herbaceous plants; and variety would be given to the stretches of greensward and greenery by occasional glimpses of the statuary and architecture through the foliage, and even by raising the levels of the ground in suitable places. Lines of

informal vista are shown on the ground-plan. The present network of roads would be greatly simplified so as to lead in no directions except the necessary ones.

It is proposed to put no buildings on the south side of Pennsylvania Avenue; partly because of the universal popular prejudice against obstructive boundaries about a park, partly because it is believed that this would solve the difficulty of the unseemly buildings now on the street. If the south side were unencumbered the north side would practically front on the park, and would become the most important residence district, so that the present squalid structures would, in course of time, give way to handsome houses and hotels at no cost to the Government. The tendency to this kind of building-reform can be observed wherever a public park is made.

No attempt is made in this design to elaborate architectural details, except in the broadest way, as the rows of arches and columns in the circle, and the balustrades and piers on the sea-wall; such details as these are part of the general conception. The free use of water is in harmony with the ideas of L'Enfant, whose plan shows a canal where now runs B Street, North. The buildings are not assigned to any particular purposes, but it is assumed that buildings of this number and extent will ultimately be needed for the purposes of the Government. The entire scheme is not more or less than a general one, and is submitted to the impartial criticism of those who care to study it.

H. A. CAPARN.

LIQUID-AIR'S LIMITATIONS.

A GOOD deal of nonsense has been written about liquid-air, principally in America. It was to be the power of the future. By its means power was to be obtained for nothing, and so on. In the lecture which he gave before the Cold Storage Association recently, Dr. Carle Linde, of Berlin, did good service in clearing away a good many misconceptions. It would not be economical to employ it in cold-storage work, he explained, because when you only require a temperature a few degrees below the freezing-point of water, it is not economical to produce a temperature 280 degrees Fahr. below. Power has to be expended in producing cold, and the power is roughly proportional to the degree of cold produced. Liquid-air in small quantities, the lecturer observed, would be very useful, say, for cooling dining or ball rooms. In these cases the quantity of liquid-air would be so small that the high price at which it was produced would not matter. Drawings were shown of apparatus by which rooms could be cooled in this way.

Liquid-air is produced from ordinary atmospheric-air by a continuous process of compression and cooling. Every substance, it is supposed, may exist in one of three states, the solid, the liquid, or the gaseous, according to the surrounding conditions. Each state presupposes the presence of a certain quantity of heat in the substance. Thus, in the solid form, a smaller quantity of heat is present actually in the substance itself than in the liquid form, and again a smaller quantity of heat is present in the liquid form than in the gaseous. The addition or the subtraction of heat from any substance in sufficient quantities will cause the substance to change its state. In addition, the three forms in which substances may exist mean that the molecules, the very minute parts of the substances, are very much closer together in the solid form than in the liquid form, and in the liquid form they are much closer together than in the gaseous form. So that in order to liquefy a gas, two things are necessary, the closing up, as it were, of its molecules, and the extraction of a certain quantity of heat from it. When air is compressed, as in those cases where compressed-air is used for mechanical purposes, heat is generated in the air in the act of compression.

It represents a portion of the work done upon the air by the compressor. And this heat has to be extracted, as well as the heat possessed by the air, in virtue of its condition as a gaseous mixture, before it can be liquefied. And so in the process of making liquid-air the air is continually compressed by successive stages, and continuously cooled, a very pretty device being made use of in the cooling, by which the air which has been cooled to a certain degree is made to cool air that has not reached that point, so that the effect is cumulative. When liquefaction is finally reached, the air in its liquid form looks exactly like water, and may be poured out just as water is, with certain precautions. The fact that the liquid-air is at the extremely low temperature named makes it dangerous to handle without precautions similar to those which are taken in handling hot bodies. With very cold bodies heat passes from the hand, say, to the object at a very rapid rate, just as heat passes from a hot body to the hand at a rapid rate. It is the rate at which the heat is transferred, either to or from the human body, which causes the pain and other troubles. When poured out on a table the liquid-air runs about in small globules, just as mercury does, and disappears in a very short time. It has returned to its gaseous form.

When allowed to escape into the atmosphere, its presence is shown by clouds of mist, producing the impression that the liquid-air is converted into fog. This is not so, however. What really happens is, the aqueous vapor which is always present in the atmosphere, particularly that of rooms in which a number of people are assembled, condenses and then freezes, or forms a sort of hoar frost, and it is that we see, not the liquid-air itself. Liquid-air seizes every opportunity of returning to the gaseous condition, but it can only do so by extracting heat from surrounding bodies. When it is allowed to escape into the atmosphere, it extracts the heat from the air into which it passes, the

atmospheric-air of the room, in the immediate neighborhood of the orifice from which it is escaping. This lowers the temperature of the air at that point, and with lowered temperature it is no longer able to maintain so much aqueous vapor in suspension. The vapor is deposited as water, and then freezes. The same action, in a minor form, may be seen in any cold-storage engine-house, where the cold pipe is covered with snow.

The method adopted for storing liquid-air, devised by Professor Dewar, is one of the most novel arrangements that has been seen in the domain of physics for a long time. The air is stored in glass bottles, each bottle consisting of two distinct bottles, separated by a vacuum, maintained at as high a figure as it is possible to obtain. In addition, the outside of the outer bottle is silvered all over with mercury. The object of the arrangement is to prevent the access of heat to the liquid-air inside the inner bottle. The vacuum-space offers a very high resistance to the passage of heat-waves through or across it, and the mirror formed by the mercury on the outside of the outer bottle reflects the heat-waves away from the bottle. The mouth of the bottle is left open to the atmosphere, and it was stated by Dr. Linde that a charge of liquid-air would last for about fourteen days. During this time the charge is slowly disappearing by evaporation, by reversion to the gaseous form, from the passage of heat to the liquid. Closed bottles cannot be used, as, it being impossible to exclude completely heat from the liquid-air, the latter would be slowly changing into the gaseous state, and in so doing create a pressure within the bottle which no vessel could withstand, which would also resist the passage of heat through its walls. The final pressure was given by Dr. Linde as 12,000 pounds per square inch, when all the liquid has returned to the gaseous form. This is the reason why steel bottles cannot be employed, as they are for carbonic-acid gas, ordinary compressed-air, and so on. — *London Globe*.



THE JOHN STEWARDSON MEMORIAL SCHOLARSHIP IN ARCHITECTURE. — SEVENTH COMPETITION. — 1903.

THE Managing Committee of the John Stewardson Memorial Scholarship in Architecture announces by authority of the Trustees of the University of Pennsylvania, who act as Trustees of the Memorial Fund, a competition for a scholarship of the value of \$1,000, the holder of which is to spend one year in travel and in the study of architecture in Europe under the direction of the Committee.

Candidates must be under thirty years of age, and must have studied or practised architecture in the State of Pennsylvania for the period of at least one year immediately preceding the 23d day of May, 1903.

Candidates are required to pass the following: —

PRELIMINARY EXAMINATIONS.

Freehand Drawing. — A five hours' study of an architectural subject from the cast will be required at the time of the examination, either in pencil, charcoal or crayon, as the candidate may elect.

In addition each candidate will be required to show the examiners six examples of his work in pencil, color and pen-and-ink: all these mediums to be represented.

History of Architecture. — Written Examination. A knowledge of the subjects treated in Hamlin's "*History of Architecture*."

Construction. — Written Examination. A general knowledge of the subject, and familiarity with the use of Kidder's and Trautwine's Handbooks.

Language. — Ability to translate at sight any passage in Laloux's "*Architecture Grecque*," or an equivalent work in French, Italian or German as the candidate may elect.

The preliminary examination will take place at the School of Architecture of the University of Pennsylvania, on Wednesday, Thursday and Friday, April 1, 2, and 3, 1903.

No candidate will be admitted to the final examination who receives less than sixty per cent of the marks in Construction, History and Language, and less than seventy-five in Drawing.

Graduates of any of the recognized Schools of Architecture (as approved by the Committee) will be exempt from the Preliminary Examination. Any candidate who, in a previous year, has passed any preliminary examination of the John Stewardson Memorial Scholarship in Architecture or of the Travelling-scholarship in Architecture of the University of Pennsylvania, or who in an approved school has completed the equivalent of any preliminary examination, will also be exempt from such examination in this competition. Students in the course in Architecture at the Pennsylvania Academy of the Fine-Arts will be exempt from all examinations except that in Language.

FINAL EXAMINATIONS.

There will be required in the final examination a design for

AN OFFICIAL BUILDING FOR A COUNTY.

This building, facing the main street of the county seat, will afford

accommodations for courts of law, for the county officers and for a jail.

The specific requirements of the problem, the number, kind and scale of drawings, and other conditions will be made known on Saturday, April 4, when each candidate will make a preliminary sketch at the School of Architecture, in the twelve hours between 10 A. M. and 10 P. M.

The final drawings may be made either at the School of Architecture, which will be open to the competitors every week-day from 8 A. M. to 11 P. M., or at the Pennsylvania Academy of the Fine Arts, which will be open from 4 P. M. to 10 P. M. They are to be handed in on or before 10 P. M. on Saturday, May 23.

Preliminary and final examinations will also be held at other points in the State, upon the above dates, as far as practicable. Requests for such examinations should be forwarded not later than March 1, 1903, to the Managing Committee, which will duly advise applicants with regard to the holding of examinations in their respective localities. Such examinations, including the preparation of final drawings, will be held under the supervision of examiners appointed by the Managing Committee.

The award will be made by a jury of architects, none of whom will be members of the Managing Committee.

The successful competitor will be required to sail for Europe not later than August 30, 1903.

Inquiries may be addressed to Prof. Warren P. Laird, School of Architecture, University of Pennsylvania, Philadelphia.

WARREN P. LAIRD,
FRANK MILES DAY,
EDGAR V. SEELER,
J. G. ROSENGARTEN,
GEORGE B. PAGE,
Managing Committee.

Philadelphia, December 15, 1902.

A RECORD OF THE TRAVELLING-SCHOLARSHIP OF THE UNIVERSITY OF PENNSYLVANIA.

1893. — JAMES F. JAMIESON.

First Mention, Percy Ash; Second Mention, William Charles Hays. *Jury*: Thomas Hastings, Wm. R. Ware, C. Howard Walker. Subject of Competition, "A Building for a Numismatic Society."

1894. — GEORGE BISPHAM PAGE.

First Mention, Percy Ash; Second Mention, Edward T. Boggs; Third Mention, William Charles Hays. *Jury*: Robert D. Andrews, Wm. R. Ware, Thos. Hastings, C. Howard Walker, C. F. McKim, Edw. H. Kendall. Subject of Competition, "A Railroad Station."

1895. — PERCY ASH.

First Mention, H. L. Duhring; Second Mention, Wm. Charles Hays. *Jury*: Pierre LeJuste LeBrun, Stanford White, C. Howard Walker, John Galen Howard, Thos. Hastings, Edw. H. Kendall. Subject of Competition, "A Savings Bank."

1896. — ALBERT KELSEY.

First Mention, Harker W. Jackson. *Jury*: A. D. F. Hamlin, A. W. Longfellow, Jr.; Edmund M. Wheelwright, Bruce Price, Thos. Hastings. Subject of Competition, "A Post-office and a Custom house."

A RECORD OF THE JOHN STEWARDSON MEMORIAL SCHOLARSHIP.

1897. — HERMAN LOUIS DUHRING.

Equal First Mentions, Chas. Z. Klauder and Oscar M. Hokanson. *Jury*: Wm. R. Ware, G. L. Heins and John Galen Howard. Subject of Competition, "A City Church."

1898. — WILLIAM CHARLES HAYS.

First Mention, Arthur Howell Brockie; Second Mention, John Molitor; Third Mention, Alfred Morton Githens. *Jury*: R. Clipston Sturgis, Bruce Price, Robt. D. Andrews. Subject of Competition, "A Farm-house and Farmstead."

1899. — ARTHUR HOWELL BROCKIE.

First Mention, Lloyd Titus; Second Mention, W. T. Trout. *Jury*: A. D. F. Hamlin, Wm. Boring, R. Clipston Sturgis. Subject of Competition, "A School of Architecture, with a Museum of Architectural Casts."

1900. — ALFRED MORTON GITHENS.

First Mention, Leon Gillette; Equal Second Mention, Lloyd Titus and C. W. Churchman. *Jury*: Cass Gilbert, Henry Bacon and Austin W. Lord. Subject of Competition, "The Improvement of the Entrance to Fairmount Park, Philadelphia."

1901. — IRA WILSON HOOVER.

First Mention, Clarke Wharton Churchman; Second Mention, Walter Horstmann Thomas; Equal Honorable Mentions, Lloyd Titus and John Molitor. *Jury*: John M. Carrère, C. Howard Walker and Walter Cook. Subject of Competition, "A Casino and Baths at a Health Resort among the Mountains."

1902. — JOHN MOLITOR.

First Mention, Walter W. Judell; Second Mention, Alexander James Harper. *Jury*: R. Clipston Sturgis, Edmund M. Wheelwright, John Russell Pope. Subject of Competition, "A Boys' School in the Country."

ILLUSTRATIONS

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

DETAILS OF ENTRANCE-HALL: NEW YORK PUBLIC LIBRARY, NEW YORK, N. Y. MESSRS. CARRÈRE & HASTINGS, ARCHITECTS, NEW YORK, N. Y.

A SUGGESTED SCHEME FOR THE IMPROVEMENT OF WASHINGTON, D. C. MR. H. A. CAPARN, LANDSCAPE ARCHITECT, NEW YORK, N. Y.

SEE article elsewhere in this issue.

ROMAN AND ROMANESQUE REMAINS IN FRANCE.

SEE article elsewhere in this issue.

Additional Illustrations in the International Edition.

HOUSE OF OGDEN GOELET, ESQ., NEWPORT, R. I. R. M. HUNT, ARCHITECT.

SIDE AND REAR ELEVATIONS: NEW YORK PUBLIC LIBRARY, NEW YORK, N. Y. MESSRS. CARRÈRE & HASTINGS, ARCHITECTS, NEW YORK, N. Y.

DETAILS OF THE ROTUNDA: NEW YORK PUBLIC LIBRARY, NEW YORK, N. Y.

NOTES & CLIPPINGS

FRANCE'S GIFT TO DETROIT. — A painting presented by the French Government to the city of Detroit, representing King Louis XIV presenting to Cadillac the letters-patent for the foundation of that city, arrived at the Detroit City hall the last of November. — *Exchange*.

PEALE'S COLLECTION OF CURIOSITIES. — "Charles Wilson Peale was as great a collector of curiosities as he was a painter," said the antiquary, pausing under a Peale portrait in the State-house. "Peale exhibited his collections in this building in 1802. His best specimen was a mastodon's skeleton that he had dug up himself, the year before, from a marl-pit in Ulster County, N. Y. He gave a dinner on the opening night of the exhibition, and the table was set inside the mastodon, twelve covers being laid. Among Peale's other curiosities were 200 stuffed animals, 1,000 stuffed birds, 4,000 well-mounted insects, a number of cabinets of minerals, and a quantity of dried and varnished fish, snakes and lizards. The show had a great success in Philadelphia, and afterward Peale packed it up and took it to England, exhibiting it there, but I understand that the English didn't take to it." — *Philadelphia Record*.

SAND-BOX METHOD OF LOWERING COLUMNS. — The use of a sand-box under the foot of a column which is to be lowered slowly has been proved to be very old by recent discoveries in Egypt, mentioned in the *Engineering Record*. Three similar tombs were found near the pyramid of Onnos, all dating from about 500 B. C., and one ready for the interment of a mummy. It was a chamber about 17 feet long, 9 feet wide and 10 feet high to the crown of the arched roof of large cut stones, the first stone arch of the kind on record. The sarcophagus was in place, and over it was the heavy limestone cover-slab which was to be lowered when the mummy was in position. This stone was 13 feet long, 3 feet thick and just a trifle narrower than the tomb-chamber. It was upheld by six rough pillars, in workmanship inferior to the other masonry and evidently temporary, and had two massive tenons on each side, fitting in vertical slots or niches in the walls. These niches were carried down about 6½ feet below the floor of the chamber, and in them would be placed sand to support wooden posts on which the weight of the slab, about seventeen tons, would come when the temporary masonry pillars were removed. Between the two niches on each side of the chamber a pit was excavated, large enough to hold a man, and the niches had openings at different elevations, connecting with this pit. When it was time to lower the stone, it would only be necessary to have a man enter each pit and open these passages one after the other in order to allow the sand to escape and the timber posts to settle slowly. Such posts were found in the niches of the two tombs containing mummies. When the slab was in place the men could crawl over it and thus leave the chamber.

DISTINGUISHED DEAF MUTES.—Throughout this country and Europe there are many distinguished deaf and dumb persons, among them, and perhaps one of the most generally known, being the French sculptor Ferdinand Homar, the creator of the Rochambeau statue erected recently in the park opposite the White House in Washington. Then there is Paul Choppin, sculptor and gold-medalist of the Paris Salon; Felix Martin, sculptor, who has attained a membership in the Legion of Honor, and Ernest Durageau, professor and also a member of the Legion of Honor. Of the Americans who have national reputations are H. H. Moore, the artist, who has now taken up his residence in Paris; Olof Hanson, one of the most prominent architects in Minnesota, and Douglas Tilden, the sculptor of California. Douglas Tilden is a native of California. At an early age he evidenced such aptitude for art that he was sent to Europe for study. In Paris he worked under the direction of Paul Choppin. Now, throughout San Francisco and its surrounding cities, Mr. Tilden's work is met with frequently. In Golden Gate Park his first work, the "Ball Player," stands. The Native Sons' Monument and the Donahoe Memorial Fountain recently erected in San Francisco are by him. For many years he was instructor in the Hopkins Art Institute of California. Later he became a member of the jury of the Columbian Exposition. — *N. Y. Evening Post.*

A NEW MOULDING PROCESS.—The steel-casting industry, which has made such wonderful strides in this country within the past decade, may be said to be still in its infancy, bright minds in the trade continuing to evolve new and still more wonderful ideas. One who has contributed in no small degree to this advancement is Frederick Baldt, Sr., general manager of the Penn Steel Casting Works, Chester, Pa. Mr. Baldt has discovered many new and important processes that have raised the standard of steel-casting to a high point, but that he has not been content to rest upon these laurels won in the past is demonstrated by recent achievements. For months he has been engaged in developing ideas that have resulted in the introduction of a system of steel-moulding that promises to revolutionize the process. Patents were recently issued to him that will materially simplify the moulding of steel. The method consists in first making a master-mould from any pattern and then casting from this as many fusible patterns as may be required. This fusible pattern is then put into an iron box of suitable size, after which, by means of compressed air, the box is filled with moulding-sand. The box is then run into the drying-oven, where the fusible pattern is melted out. The casting is then made from the dried mould. An important feature of this process is that it does away with skilled labor, the sand being conducted and driven by compressed air into all parts of the box and fusible pattern by either boys or laboring-men. Since the castings are absolutely seamless and without fins, no chipping is required afterward. The process is also particularly applicable to the casting of chain and similar interlocked articles. By this process it is also practicable to produce articles in exact duplicate and in any number. — *Iron Age.*

THE LAST OF CHRIST'S HOSPITAL, LONDON, ENG.—Note the cheerful legends put upon the railings of Christ's Hospital by those who are now reducing that venerable pile to nothingness. What a subtle element of comic callousness enters into the announcement, "Good old bricks for sale." Really, it only wants the heading, "What Ho!" to complete the onlooking antiquarian's temporary disbelief in Providence. Then there is another notice: "Hard Core and Dry Brick Rubbish for Disposal," a form of words that rings with the indecent brutality of inevitableness. Rubbish! Yes, the Grey Friars' cloister has become rubbish. Maybe the Great Hall, mixed up with old tins and cinders, will go to the making of the road in a South London suburb. It is possible that the Grecians' cloister, ground up, will become the foundations of a fried-fish shop. They can remove the masonry, but not the memories, in their carts. The Coleridge and Lamb and Leigh Hunt associations are not "for disposal" with the hard-core and dry brick rubbish. What a spot that will always be, however prosaic the rent-yielding buildings that may replace the old school, which, by the by, itself replaced an institution whereof the memory is yet green. That was the convent of Grey Friars, with adjoining churchyard that "was thought, in the Middle Ages, to be peculiarly free from incubi and flying demons of all sorts." Therefore it "became a fashionable burying-place, and almost as popular as the great Abbey, even with royalty." There the English Queen Isabella was buried with the heart of her murdered husband on her breast. There also were placed the remains of her wretched paramour, the "gentle Mortimer," who was hung at Tyburn, and left two days withering on the gallows. It was also the last resting-place of two rapacious favorites of Richard II (how frankly can one talk of distinguished personages of the past!), to wit, Sir Nicholas Brembe (Lord Mayor of London), and Sir Robert Tresilian (Chief Justice of England). Both gentlemen breathed their last at Tyburn, though it was understood at the time that the hanging of the latter proved impossible until certain magic images and the head of the devil had been removed from his person. True, those ancient monuments and tombs have not been visible for several centuries, for in 1545 Sir Martin Bowes (Lord Mayor) "basely and stupidly" sold the lot for £50. — *London Daily News.*

PROPOSED ELECTRIC UNDERGROUND RAILWAY FOR BERLIN.—It is now definitely arranged that Berlin shall have its underground electric railway. It will cost 58,000,000 marks, which sum will be raised by a special loan. The line will belong to the municipality, and will be eleven kilometres long, with fifteen stations, including the termini. It will run from the north to the south of the German capital under the most busy thoroughfares. The trains, consisting of seven carriages, will run every three minutes. The tunnels throughout will be lined with concrete. The work is expected to be begun next summer, to be completed in six years. — *N. Y. Times.*

ROME'S RUINS TO BE LABELLED.—The Minister of Public Instruction, Nunzio Nasi, is apparently determined to make his reign at the Ministry memorable in some way. He had already brought to light several projects, one of which was crushed by the King himself, and the others by public opinion. We now find him to the fore again with a new idea, which seems likely to follow in the footsteps of the others. The Minister has issued a memorandum to the Mayor, Prince Colonna, saying that he thinks it would be for the diffusion of public culture to have the monuments and ruins of ancient Rome, with the exception of those known to all, such as the Pantheon, Colosseum, etc., marked clearly with a marble tablet (marble is cheap in Italy) setting forth its ancient name. In this way he thinks the ignorant would be roused to curiosity, and take the trouble to learn about many things to which they are now indifferent. One of the clerical papers, the *Voce della Verità*, has interviewed the greatest archaeologists in Rome on the subject, and finds that one and all say that in theory it is a very fine project, but that in practice it is unworkable. The greatest objection, made by more than one eminent man, is that unfortunately all the authorities are not in unison on many, if not most, of those very ruins, and remains which the Minister proposes to mark. For instance, take the Servian wall in the Piazza Magnanapoli; so well known an archaeologist as Lanciani give it as one thing, while Professor Hülsen takes an entirely opposite view, they both being differed from by others. What would be done in such a case? The Minister, presumably, is not competent to decide when so many eminent judges fall out; so which designation would he choose? If that of Lanciani, he upholds him to the detriment of the others, and so commits the Government, and so on and so on. Professor Hülsen, among other things, remarks that on the world-renowned Temple of Vesta the only thing which could truthfully be put would be: "This is not the Temple of Vesta!" — *Pall Mall Gazette.*

POWER-DEVELOPMENT AT SAULT SAINT MARIE.—The St. Mary's River, which flows from Lake Superior into Lake Huron has been utilized for power-development upon an extensive scale during the last few years. Instead of a comparatively small flow of water at great head, here is an enormous volume with a comparatively small drop. The difference in the levels of the two lakes is about 20 feet, most of the fall occurring in the rapids known as St. Mary's Falls, or Sault Sainte Marie, at the outlet of Lake Superior. On the Canadian side of the river a power-canal has been in use for several years, yielding about 20,000 horse-power, a large part of which is used direct from the turbines for driving wood-pulp grinders. On the American side of the river a much larger power-development is approaching completion. A canal about 2½ miles in length, from 200 to 250 feet in width and of an average of about 20 feet, has been cut from Lake Superior to a point on St. Mary's River below the rapids. A massive power-house will contain turbines, capable of developing about 50,000 horse-power. All of this power will be transmitted by electricity to industries on both sides of the river. A third canal of similar proportions is to be constructed on the Canadian side of the river, paralleling the one now in operation there. A unique feature of this great development is the precaution taken to prevent possible lowering of the level of Lake Superior or interference with the vast steamship traffic which passes through the locks of the rapids. Lest the increased outlet afforded by canals should lessen the flow of water through the steamship-locks, compensating-works have been constructed at the head of the rapids for the purpose of reducing, by means of movable gates, the outflow over the falls in proportion to the increased outlet created by the power-canal. It is designed by this means to maintain the flow of water from Lake Superior as a fixed quantity, regardless of the new outlets afforded by the power-canal. — *Boston Transcript.*

THE SEQUOIA-GROVE "HOLD-UP."—The Eastern lumberman, Whiteside, who acquired possession of the big sequoia-groves in Calaveras and Mariposa counties for a comparatively small sum, is persistent in his efforts to work a graft on the Government through the sympathies of those who desire to preserve the big trees as one of the attractive curiosities of California and natural wonders of the world. He first excited the alarm of these people by announcing his intention to proceed without delay to erect a sawmill on the premises to reduce the giant trees into commercial lumber. The threat had the desired effect. An agitation was started for their preservation from the lumberman's axe, which there was no reasonable ground for believing would be applied, a fact which no one knew better than Whiteside. Having accomplished that much, he then set a time-limit to an option from the purchase of the groves at the extravagant figure of \$250,000. This had the effect of introducing a bill in Congress for the purchase at that price, but it was very properly defeated. Subsequently another bill was introduced authorizing the Secretary of the Interior to buy the two groves at a price not to exceed \$125,000. That bill is hanging fire and should not pass. Mr. Whiteside is evidently seeking to revive public interest in the sequoia-groves and to give new life to the bill pending in Congress by announcing that he has given an option upon the tract in which the big trees are located for \$1,000,000. Of course, the option is a sham, and the object of announcing it ought to fail, as all of the other moves made by Whiteside have failed. The Government established a precedent for its guidance in this case when it included private timber-holdings in the forest-reserves and gave the owners the privilege of taking lieu-land elsewhere in the unoccupied public domain. Whiteside's holdings are contiguous to the Yosemite forest-reserve, and they should be arbitrarily incorporated in that reservation and the same privilege given to him as was accorded to others to select lieu-land elsewhere. As the big trees are natural curiosities, a stronger justification exists for the adoption of this course in their case than existed in the appropriation of other private claims located in the forest reserve. Certainly no greater injustice would be done to Whiteside in the transaction than others have suffered by the Government's exercise of its power. — *San Francisco Chronicle.*

THE AMERICAN ARCHITECT AND BUILDING NEWS

ADVERTISERS' TRADE SUPPLEMENT

No. 248

SATURDAY, JANUARY 3, 1903

VOLUME LXXIX
No. 1410

REDDING, BAIRD & COMPANY.

THE firm-name of Redding, Baird & Co. has long been a familiar one among the business interests of Boston and New England, and during the many years which have elapsed since its establishment, in the year 1840, has been associated with all that is honorable and enterprising in mercantile life. Its business has shown a constant growth from year to year. Even the great fire of 1872, which devastated so large an area of the city's business-section, by which this firm, like many others, met with heavy losses, was only a temporary check to its growth; and the opening of the year 1903, its sixty-third year of existence, finds the house greater and stronger than ever before. It has broadened its scope of operations very appreciably during the last few years, and now every State in the Union and the large centres abroad are supplied with the products of this firm.

Absolute merit in its goods and work and in its methods of doing business are some of the factors contributing to a history so unbrokenly creditable. Another and all-important aid has been the thorough business and technical knowledge of Mr. John C. Baird, the head and master-mind of the concern. Every work of art that goes from the studios of this firm attests his right to a place among the first colorists of the day. The beautiful stained-glass windows adorning costly church edifices and houses in this and foreign countries, the product of this house, are all evidences of work done under his personal supervision, even to the minutest details. It is apparent, considering the magnitude of their yearly business, that this attention to detail must involve a very large amount of work; but we can readily appreciate that it is just this personal attention to and interest in each piece of work which they send out which has given Messrs. Redding, Baird & Co. their high reputation and an artistic individuality in their work not otherwise attainable.

Another element of success is the corps of assistants engaged in the several departments. In the selection of these Mr. Baird has succeeded in bringing together an admirably efficient force, and each head of a department is competent to ably second the efforts of the house in his particular line of work, for each is a specialist in his particular line.

A visitor to the workrooms cannot fail to notice the thorough harmony existing in every department. Each superintendent is responsible for his subordinates and he in turn is responsible to the head of the house.

Mr. Baird's development of colors used in

scientific signalling on railroads has given the firm a world-wide reputation among railroad magnates, and the decisions of this firm concerning technical points regarding glass-making and kindred subjects are accepted as final and authoritative by the courts and scientific institutions throughout the country.

Baird's hand-made silver glass, of which we spoke in a former number of the *American Architect*, is attaining a wide popularity. It is an exceedingly economical product for the diffusion of light. With this glass in the market no reasonable excuse exists for having dark rooms in our homes, business-places, manufactories, or elsewhere. We have in mind one case where the purchase of less than \$2,000 worth of this glass brought into use space discarded for years for want of light, thus saving the owners an outlay of from \$100,000 to \$125,000 for a new building which they had contemplated constructing. The introduction of this glass into the hitherto discarded rooms made this unnecessary. Our recent article upon this product gave at length many testimonials concerning its value under almost every conceivable condition. It is being called for by architects and builders throughout this country, and has already been shipped to England, the home of glass-making, as well; and, unquestionably, it will attain a permanently large demand, for though furnace after furnace has already been added to supply orders, more will be needed to meet requirements, and for these additions the firm is, we understand, now arranging.

At the corner of Franklin and Arch Streets this firm has been for many years situated, occupying five stories, with a floor-space of over 20,000 square feet; but this is hardly adequate for the demands of the business, especially in view of the need of more room created by the trade in Baird's hand-made silver glass, so that additional space must be arranged for in the near future.

In conclusion: The year 1903 promises to be one of the most successful in the long history of this firm. Its management shows the wisdom of age and the vitality of youth. With its facilities, enterprise, artistic and business ability there is no reason why it should not retain its leading position among the glass-manufacturing concerns of the world.

THE CAMBRIDGE RIGID REVERSIBLE METAL-LATH.

THE Cambridge Metal-laths are adapted for use wherever wooden laths, shingles and

weather-board siding are used and with much more satisfactory results.

Development in the science of building has raised the standard both architecturally and structurally. To architectural beauty should be added elements of permanence and solidity.

The modern residence should be built to resist the ravages of time and wear; and at the same time be fireproof, so far as any structure can be made so. These ends are accomplished by the Cambridge Metal-laths.

They possess many positive advantages over any other means of construction and are best suited for inside plaster or outside cement construction. They are fireproof, damp-proof, crack-proof, vermin-proof and sound-proof.

There is always great risk in putting ornate decorations upon ceilings or walls that may yield or crack with any change of temperature or humidity.

Metal-laths are used in such buildings as the Library of Congress and the Boston Library, where the decorations are elaborate. Owing to the rigidity imparted by the Metal-laths, the decorations suffer no deterioration. The wise householder is equally desirous of having ceilings, walls and partitions that will be rigid and inflexible. This object is attainable by means of the Cambridge Metal-lath.

Walls, partitions and ceilings thus constructed are proof against fire, water, vermin and sound. Metal protected by plaster is free from corrosion. All wooden beams or supports are so insulated as to be practically fireproof. We say practically fireproof because under extreme and extraordinary circumstances no building would be absolutely fireproof, for there are degrees of heat that nothing can withstand.

Gas-pipes, electric-wires and other necessary connections can be made through the walls without difficulty. The Metal-lath with plaster is also adapted to air-shafts, dumb-waiter shafts, chimney-stacks, alcoves, architraves, cisterns and vaults.

Many of the most attractive residences in the Eastern, Middle and Western States have adopted the Metal-lath overlaid with cement for their external construction.

A perfect stone-finish may be imparted to the cement; and the various colors of the cement and the adaptability of our Metal-lath render possible any architectural effect that may be desired. Houses so constructed are cooler in summer and more easily heated in winter. Aside from the monolithic character

of the material, it is a well-known fact that heat passes less readily through corrugated surfaces. No painting is necessary; and the fireproof character of such residences enables favorable insurance.

The same method of construction is adapted to other buildings. Pennsylvania R. R. Station at New Brunswick, N. J., is covered with cement over Metal-laths, giving a uniform and pleasing effect. Churches, greenhouses, stables and factories can adopt the same materials advantageously for external construction. And they are excellently adapted for the construction of stoops, archways, porticos, vestibules, cornices, fountain-basins, gate-posts, fences, walks and similar outside features.

AMERICAN SHEET STEEL CO.,
BATTERY PARK BUILDING, NEW YORK, N. Y.

MR. NORTON P. OTIS, the Chairman of the Board of Directors of the Otis Elevator Company, has been elected to Congress on the Republican ticket from the Nineteenth Congressional District.

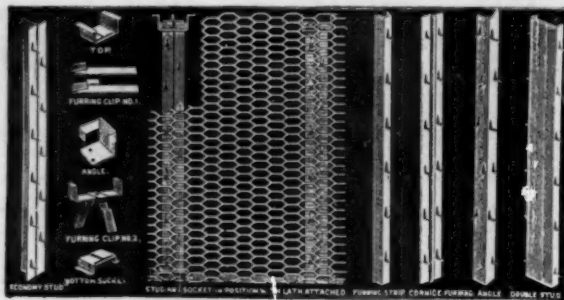
MULTIPLEX STEEL-PLATE AND OTHER SPECIALTIES.

Of the many wonderful features which have placed the last decade in a "splendid isolation" as compared with all previous periods in the history of mankind, nothing has had a greater part in producing and promoting this preëminence and prominence than the discovery of ways and means by which steel could be turned out at a cost and in sufficient quantities to make it a profitable material for construction in almost every line of manufacture.

The tremendous advantages of steel over all other metals or substances have been recognized for centuries: its greater strength, tremendous durability, comparative lightness and convenience, adaptability to all purposes, absolute fireproofness, perfect solidity and stolidity, transportability, saving of labor,

being more than ever their superior in every point of efficiency and permanence.

"The largest room in the world is the room for improvement." Recognizing this fact we have been busy perfecting our steel-plate specialties and in the following you will become acquainted with some improvements which make for greater safety, greater permanence, greater speed and less cost in building. Allow us, then, to introduce you to some twen-



Economy Studs, Angles, Furring Strips and Sockets.

tieth-century ideas that contain profit and merit.

The accompanying illustration shows better than any verbal explanation the manner in which the manifold plate is filled with concrete and used as a solid, substantial flooring.

Multiplex Plates are made from black and galvanized sheet-steel for floors, roofs, support of concrete in sidewalk and vault covering construction. Especially adapted for floors and sidewalks on bridges; floors in power-houses, elevators, mills and factories; in fact, wherever a fireproof floor of great strength and light construction is required.

Multiplex Steel-plate construction is no longer an experiment. It has been specified by the best architects, and used by the largest and most experienced contractors, with results most satisfactory in every case.

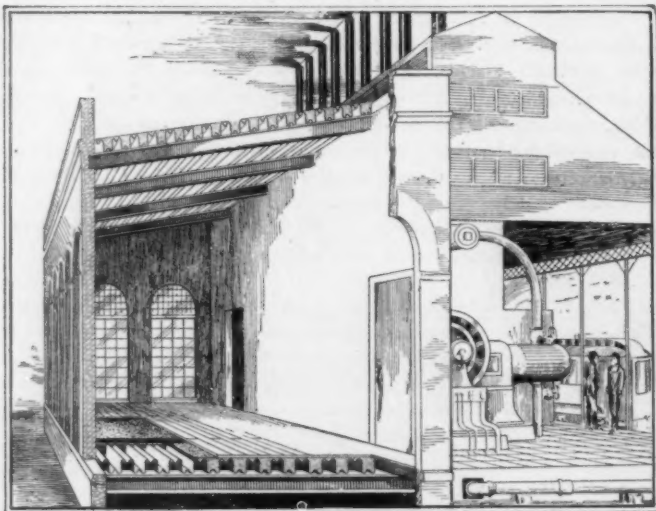
Multiplex Plate is made in various gauges from No. 16 to No. 24. It is, beyond all question, the maximum realization of safety and strength at the minimum expense of weight, labor and money. Plates are cut to fit and exactly cover floor-space as per accompanying sketch. They are laid with end bearing on "I" beam or wall. All plates interlap at ends and sides. Concrete is then put on and slightly tamped, and left to set. Floor is now ready for any kind of finish required whether wood, tile or cement.

Economy Stud. — Our Economy Stud is made from No. 18 to No. 20 gauge sheet steel by special machinery of our own which ensures absolute uniformity in strength and weight. It is furnished in any length desired; it requires no cross-bracing, being held rigid by special top and bottom

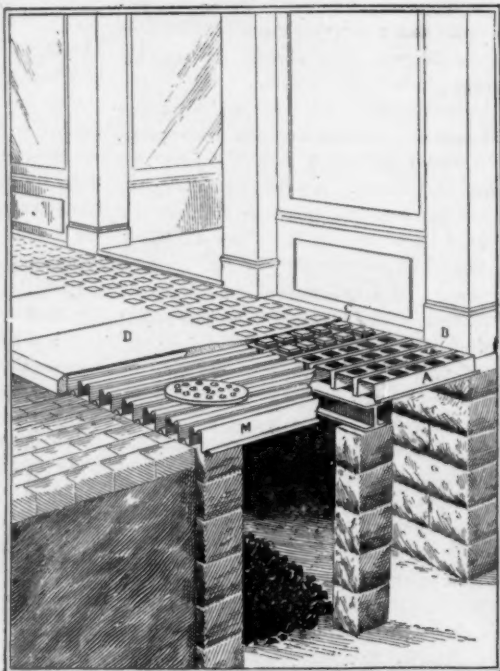
sockets; it is economical of both weight and dollars; costs less and saves more in freight than any other Stud on the market.

These Studs are made of sheet steel, and although lighter than channel-iron, are more rigid, and by means of prongs punched out from flanges Metal-lath can be fastened much more rapidly, firmly and securely than by the old method of wiring.

The excellence and efficiency of our Economy Stud is not an accident. We did not wake up one fine Friday and find ourselves making it. On the contrary, it is the outcome of years of thought, experience, labor and skill combined with every modern ap-



Multiplex Plate as used for Floors and Roofs.



Multiplex Sidewalk Support for Concrete or other Surface Material.

time and money in handling, freighting and applying; compact, stylish staunchness and its economy of cubic space — all these combine to render it so superior to wood, brick, stone or any other commonly used material that there does not appear the "ghost of a chance" for an argument on any single attribute.

With the last few years has been removed the only bar to the free and universal use of steel in manufacture and in building — namely, its cost — and this has been reduced so considerably as to render steel an actual competitor of every other substance in "price," while

Multiplex Plate is a treatment of sheet-steel by which it acquires wonderful strength and resistant power, and, consequently, is splendidly adapted for a firm, light, fireproof flooring.

An ordinary timber rafter if placed on its flat side and rested on supports at its ends will bear only a comparatively slight weight without bending or breaking; place it on its edge and it becomes able to bear many times the weight without a sign of deflection from a true level. This is the principle which has been ingeniously welded into our "Multiplex" Plate.

pliance in plant and machinery for "delivering the goods."

Fireproof Partitions. — We have made a special feature of fireproof partitions and here show both a single and double partition that is representative of perfect safety. There is a "fire insurance policy" wrapped up in each length of this Partition Stud. Another excellent point about this Partition Stud is the fact that it affords no harbor for germs or vermin — it is ideally clean and wholesome, thus making it valuable for sanitary reasons also. Berger's Partition Stud used in combination with

Atlas PORTLAND CEMENT

The
Standard
American Brand.

Used Exclusively in the Following New York Buildings:

HAVEMEYER STORES	SINGER BLDG.
ST. PAUL BLDG.	UNIVERSITY CLUB
AMERICAN SURETY BLDG.	N. Y. LIFE INS. BLDG.
BANK OF COMMERCE	STANDARD OIL BLDG.
JOHNSTON and PRESBYTERIAN BLDGS.	
AND MANY OTHERS.	

Atlas Portland Cement Company

143 LIBERTY STREET
NEW YORK

Multiplex Plate for floors renders any building thoroughly strong, healthy and safe. When you can get such an effect and save money at the same time, why do otherwise?

Ceiling and Wall Furring.—This Furring is fastened to "I" beams by means of specially made clips, and Lath is fastened thereto with prongs the same as to Studs. We claim for our Economy Stud and Ceiling Furring practical efficiency in all that the name implies.

Perfection Luminous Sidewalk Lights.—One of the most difficult of problems has been that of conveying sufficient light to vaults or basements constructed under sidewalks. We wish to call especial attention to our very successful Sidewalk Light construction. This method of lighting vaults, basements, etc., is very rapidly taking the place of the old iron frame and bull's-eye glass. Our Vault Lights are a glass 3" x 3" square by an inch thick. There are seven to eight lights to the square foot, or an average glass area of 75 square inches to the square foot.

Multiplex Plate is used for the actual pavement, while the cellar is bridged by a connected series of heavy galvanized-iron forms containing apertures for the reception of the glass. The forms are made from No. 20-gauge galvanized-iron, giving the underside a bright appearance, acting as a reflector, and easily kept clean. The glass is set in cement, and as glass and concrete have about an equal expansion and contraction there are no loose or broken lights. We have also for these lights a pendant-prism glass, same surface as the flat glass with a pendant-prism drop of 2½ inches. This glass is for the purpose of throwing the light back into the cellar or basement.

We respectfully invite the trade to investigate our material. Send for catalogue or any other information you may desire. What's the use of worrying along with old-fashioned, superannuated methods when there are enterprising, wide-awake people busy planning and making better things for you?

In conclusion we ask your earnest and business-like attention to these improved methods we have here briefly introduced. We promise prompt and accurate fulfilment of all orders we are favored with. We have the plant, the equipment and the "system" which justifies us in making such a promise.

Now we'd like to hear your side of the story. If there are any points not made clear write us. Don't be afraid of bothering us with inquiries—you can't do it. If you are interested in any of these things write us to-day. Dilly-dallying and dollars are separated by a great gulf. You can forget all about us by to-morrow and forgetting costs money. To-morrow's a long way off anyway.

THE BERGER MFG. CO.,
CANTON, O.

THERE is one New Year's gift that long experience has taught us to look forward to receiving—the box of assorted pencils that the Dixon Crucible Company of Jersey City, N. Y., send to their appreciating friends in the newspaper-offices of the country.

It is no insignificant gift this, for though the absolute manufacturing cost of the pencils may not be great, still the Dixons are large advertisers and consequently have many friends

who value the annual reminder and "many a mickle makes a muckle." Moreover, the postage on these welcome greetings is no small charge.

IN HONOR OF THE BATTLE OF MANILA.

WHEN the late President McKinley visited the Pacific Coast in May 1901 he was the leading figure in the ceremony of breaking ground for the foundation of the first permanent memorial of Admiral Dewey's epoch-making victory in Manila Bay. The monument, which stands in Union Square, San Francisco, will be a really notable artistic product of the West. Its cost, \$45,000, has been defrayed by public subscription. Its design, the work of Robert Aitken, sculptor, and Newton Tharp, architect, is simple and striking. It consists of a tall granite shaft, around which stand four heroic bronze sentinels, a naval officer, a midshipman, a gunner and a stoker. Surmounting the shaft is the figure of "Victory," a helmeted goddess, bearing an olive wreath in her right hand, and holding aloft a trident in her left. She is gracefully poised on one foot, as if alighting from flight, in a pose which is both original and effective.

The top of the shaft is to be 83 feet from the ground; "Victory" measures 18 feet more, from trident to toe. At the time of writing, the tall column is slowly rising as great granite blocks, 5 feet square in the lower courses, gradually tapering toward the top, are laboriously piled one upon another. The crowning figure has been cast, and only awaits the completion of her lofty pedestal.

The above-mentioned colossal statue of "Victory" was cast in bronze by the

JNO. WILLIAMS BRONZE FOUNDRY,
556 WEST 27TH STREET, NEW YORK, N. Y.

THE 4,000 employees of the Crane Company of Chicago received a Christmas present from the company of a sum of money equal to 5 per cent of their annual wages, the total thus distributed being \$135,000.

STEEL-CONCRETE BRIDGES.

A SMALL foot-bridge was constructed a year ago at Mamaronck, N. Y., for Mr. Henry Seigel, Esq. The bridge connects the mainland with a small island adjoining his property on the water-front of Long Island Sound. During the winter succeeding its erection a severe northeast storm, accompanied by a high tide, washed practically all of the island away, leaving only a few exposed rocks, which are partially shown in the picture. The bridge itself, which was as much exposed as the island, remained intact. Its total length from mainland to island was 165 feet, and the width between the parapet-

walls only 10 feet. It was built entirely of concrete and expanded-metal, plus a few bars of iron. The work was designed and constructed by Tucker & Vinton, designing and contracting engineers, of New York City, Mr. John L. Burley, landscape-architect, representing the owner.

A tunnel, or duct, of expanded-metal and concrete is now in course of construction by Merritt & Co., of Philadelphia, at Princeton University, to carry steam and water pipes, electric-wires, etc., between the Old North College and the new power-house. The duct, which is of rectangular section, runs beneath the centre of the Campus and is more than 1,200 feet long, 6 feet high and 5 feet wide inside. It is proposed to run a branch-duct of smaller size to each of the University buildings, so that they can all be heated and lighted from one source. Merritt & Co. also have the contract to supply over 1,000 expanded-metal lockers in the new gymnasium, the plans for which have been drawn by Cope & Stewardson, of Philadelphia, and which will be one of the finest buildings of the kind in the United States.

A similar use for expanded-metal has recently occurred at the hands of Mr. Meredith Leach, engineer for the Mittineague Paper Co., at Mittineague, Mass. He has been using expanded-metal and concrete for covering steam-pipe trenches around the yards and plant of the paper-company mentioned.

THE NEW FIRE-EXTINGUISHER.

THE Yantacaw Machine promises to revolutionize the method of fire-extinguishing business.

An illustration of the interest in fire-extinguishers was furnished recently by a large throng of people who gathered to witness a test of the Yantacaw Chemical Fire-extinguisher. In the throng were gentlemen interested practically in the subject of extinguishing fire. The test was a severe one, and was arranged in compliance with the suggestion of a man who has devoted his life to fighting fire. Seven or eight barrels were arranged in pyramid fashion, after being saturated with tar, oil and other chemicals to make them flammable. These barrels were strongly riveted, and at the base a quantity of paper was placed. At a given signal a torch was applied, and almost quicker than it takes to tell it there shot from under and around and out of the barrels tongues of flame, increasing in intensity. It seemed as though no power could save the barrels from utter and complete destruction.

Within a dozen feet of the barrels there was placed a Yantacaw Chemical Fire-extinguisher, properly equipped with hose, etc., to fight the fire. At another given signal the

ALSEN'S

AMERICAN PORTLAND CEMENT

An artificial Portland Cement of the highest character made under the supervision of Chemists and Engineers connected with the Alsen's Cement Works of Hamburg, Germany, superior to all other American Portland Cements, absolutely sound, uniform, and of great strength.

SINCLAIR & BABSON, Gen'l Agents, 45 Broadway, New York

Works at Alsen, N. Y., on Hudson River

stream was shot right into the heart of the flames, the attendant with the nozzle moving directly up to the barrels. Every movement was carefully watched by the onlookers, particularly the experts who were there to witness this new fire-fighting machine test. Watches were drawn to time the work of extinguishing the fire. With amazing rapidity the flames were, in the language of an old fire-fighter, made to the *Press* representative who witnessed the test and exhibition, literally eaten up, and in a couple of minutes clouds of black smoke took the place of the seething mass of flame, and the barrels were rolled over on their sides. It seemed after the hose was directed to the heart of the blaze the response was immediate.

The onlookers pronounced the test a very severe one and the result very satisfactory.

YANTACAW MANUFACTURING CO.,
PHILADELPHIA, PA.

DURABLE METAL COATING.

At the Thirty-third Annual Convention of Associated Master Car and Locomotive Painters, of United States and Canada, recently held in Boston, Chairman W. O. Quest of Committee on Tests reports as follows concerning Durable Metal Coating:—

Where unbroken from loose under (rust) scale, this paint is still elastic enough to award it the claim of being "Durable." It also stood a severe acid test without injury. This proves that where the Durable Metal Coating is applied to steel-frames of skyscrapers, bridges, or metalwork it will preserve it for years against rust. Great care should be taken that all rust be eliminated before applying the Durable Metal Coating.

EDWARD SMITH & CO.,
45 BROADWAY, NEW YORK.

THE LATEST IN SHEET-METAL WORK.

Those who wish to become thoroughly familiar with the very highest accomplishment in the line of sheet-metal work, such as sheet-metal skylights, ventilators, metal cornices, chimney-tops, etc., should send to the E. Van Noorden Co., 944 Massachusetts Avenue, Boston, Mass., for the latest conceptions in this line. As this concern has been a leader in its class, it is in a position to help out our readers very materially in enlightening them on the subjects involved.

NOTES.

In these days of specialized efforts a firm's claim for distinction must go farther to obtain consideration. I. P. Frink, 551 Pearl Street, New York, Manufacturer of Reflectors, has made that industry his special study for over

forty years. The business was started in 1837, and has kept step with every development in lighting from oil to electricity; and in advance of all others in the manufacture of reflecting-fixtures for the economical use of light. The trade generally appreciates the progressiveness of this house, which is evidenced by the continued growth of the business. This firm's products are made of the very best material lined with silvered corrugated, mirror glass or opal, and only expert, competent workmen are employed. Lighting a church or public hall is not an easy task, but those who have entrusted the contract to Frink have been relieved from all anxiety, as when their recommendations are followed success is assured. Over 20,000 lighting contracts for churches and public buildings have been successfully handled by them and their special Reflectors for interior, window and case lighting are installed in many of the leading stores of the country. As the energy of their establishment is guided by wide experience, we can safely predict that whatever lighting problems are offered will be solved to the satisfaction of the intending purchasers. "Frink" Reflectors are well known, having received highest rewards wherever exhibited. They are fully described in a catalogue which should be in the hands of every architect, engineer and contractor who desires to offer the best devices to his customers. A request to the above address will bring a copy, together with suggestions and estimate on whatever lighting proposition you may have in hand.

We note that the well-known firm of Gallagher & Munro, Plasterers, of 166 Devonshire Street, has become incorporated under Massachusetts laws, the personnel of the firm remaining the same, and their business, which has been so successful in the past, will, no doubt, be conducted with the same energy and ability that has characterized it hitherto.

The firm has just completed at 76 Kemble Street a very extensive plant, consisting of a large, finely equipped and steam-heated workshop for ornamental work; a dryhouse to be used in the manufacture of their plaster-board, which they have used with good results for neat, quick and urgent repairs in stores and dwellings, etc.; also a large stable and quite a number of commodious storage-sheds.

Just at present they are engaged on one of the finest and most elaborate jobs of stucco-work that there is in New England, at the new Auditorium Building, at Yale University, and during the past season they have completed a large number of important contracts, among which were the extensive repairs at the White House, Washington, D. C.;

the Conn. Mutual Life Insurance Building, Hartford; the Woman's Club Building, at Worcester; Mrs. Gardner's house on the Fenway; Mrs. Sprague's house, Brookline; the new Lecture Hall, Harvard University, and many others.

VARIOUS methods have been employed to secure pressed-brick facing, the most common of which is the diagonal bond. This is made by clipping off the back corners of the face-bricks in every sixth or seventh course and laying diagonal headers behind. This bond is not a strong one and, as it necessitates the loss of much material by clipping and accidental breakage, is also very expensive. In bonding pressed-brick with the Morse Patent Wall Ties all the above deficiencies are entirely obviated. Clipping of either common or pressed brick is unnecessary. The ties can either be laid where the courses run even, or when the face brick and common brick do not lay to same height, they can be bent to conform to the difference in level, thus forming a bond which is at once absolutely rigid and secure.

The manufacturers issue a valuable catalogue in this connection which they will be pleased to mail on request.

UNSATISFACTORY results, say the Gurney Heater Mfg. Co., in hot-water or steam-heating can be traced to one or more of the following causes, viz:—

Insufficient quantity of radiating-surface, improper location of radiating-surface, improper position of main pipes, insufficient height of column to produce circulation, insufficient rise in main pipes, obstructions in pipes caused by air or dirt, dip in the pipes, causing air-pockets, air-valves improperly fixed on radiators, insufficient size of heater, improper location of heater, deposit of soot and clinkers in heater, defective construction of chimney, improper firing, imperfect draught to chimney, deposit of soot in chimney, improper size and quality of coal, faulty ventilation, adjustable ventilators neglected, expansion-tank improperly connected, neglect to clean heater, want of attention.

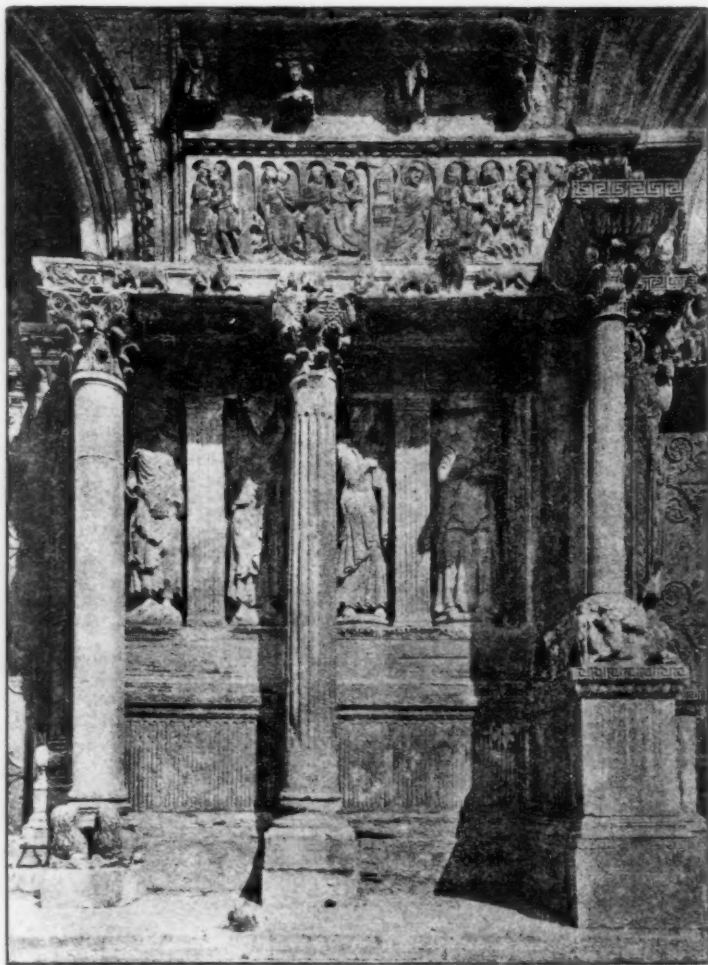
THE Otis Elevator Company's recent contracts include the following: Ten hydraulic passenger-elevators for the extension of the Manhattan Life Insurance Company's building, 64-70 Broadway; eight hydraulic passenger and two hydraulic freight elevators for the Barclay Building, Broadway and Duane Street, and four hydraulic passenger-elevators for the store of Frederick Loeser & Co., Brooklyn.



ROMAN BAS-RELIEF, ST. REMY.



PAVILLON DE LA REINE



CENTRAL DOORWAY, ST. GILLES.



THE CLOISTERS: M



DE LA REINE JEANNE, LES BAUX.

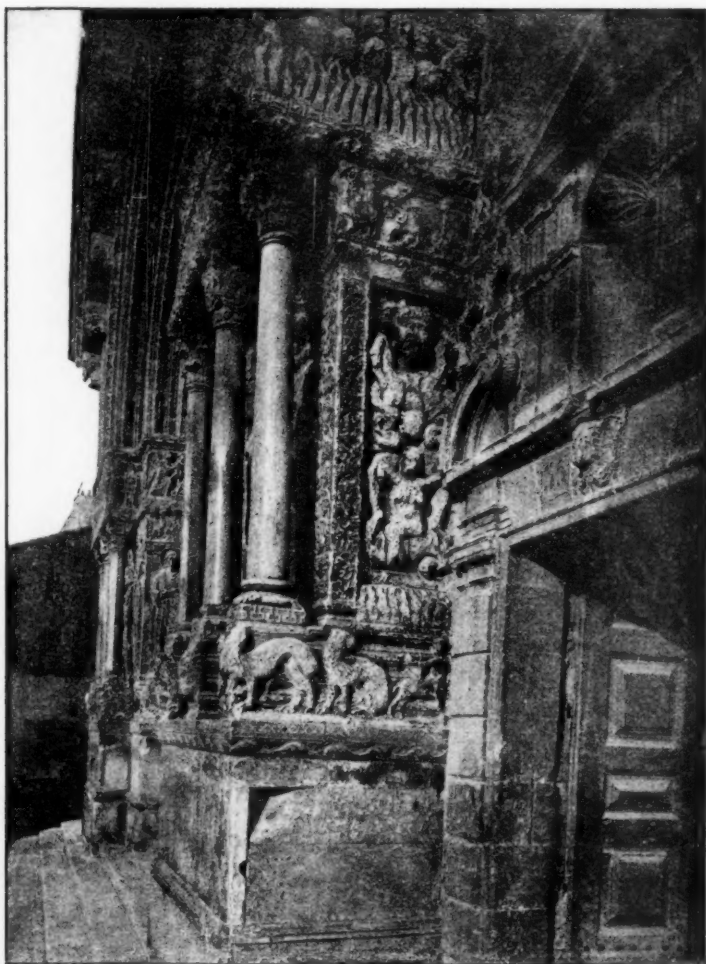


OISTERS: MONTMAJOUR.

MANESQUE REMAINS IN FRANCE.

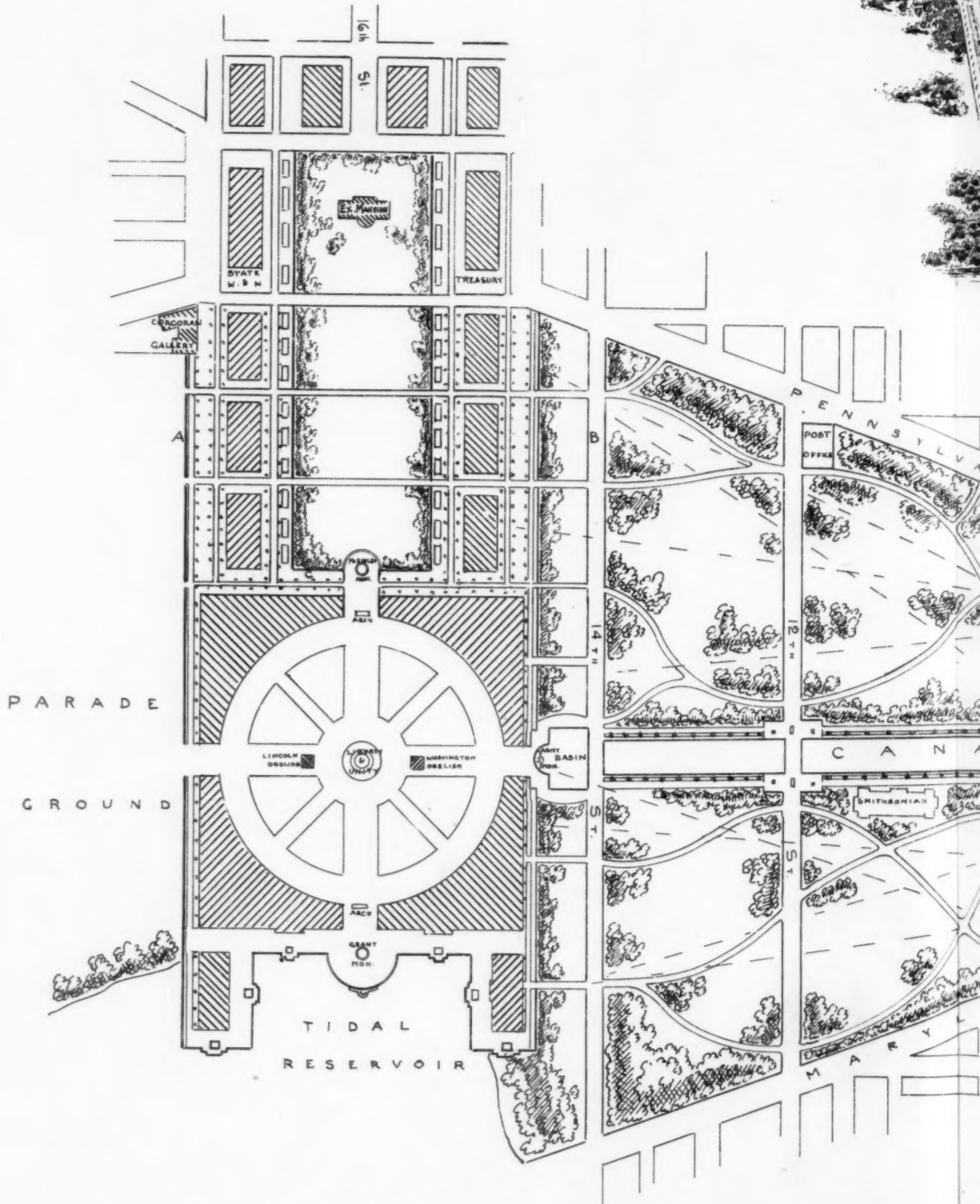
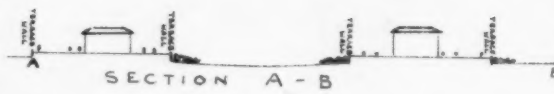


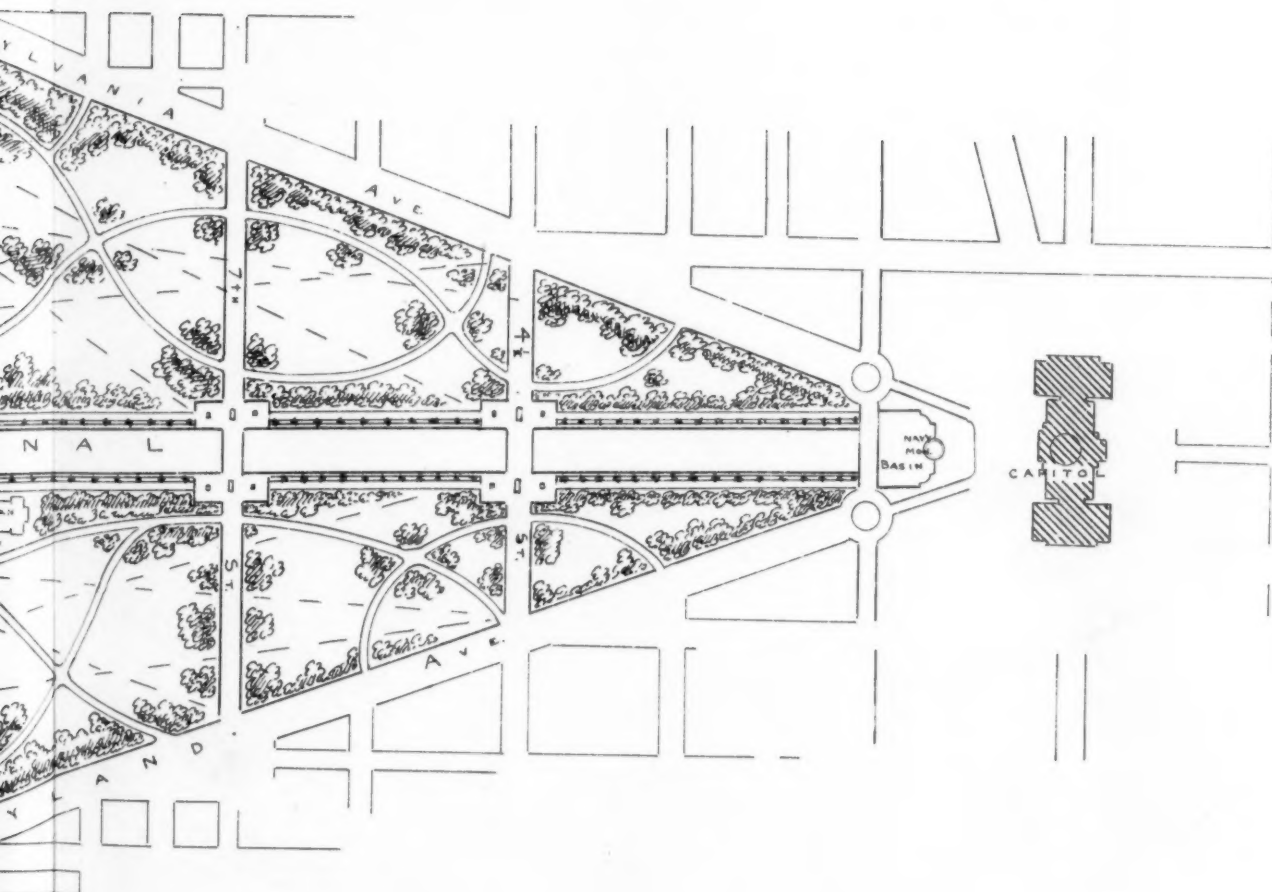
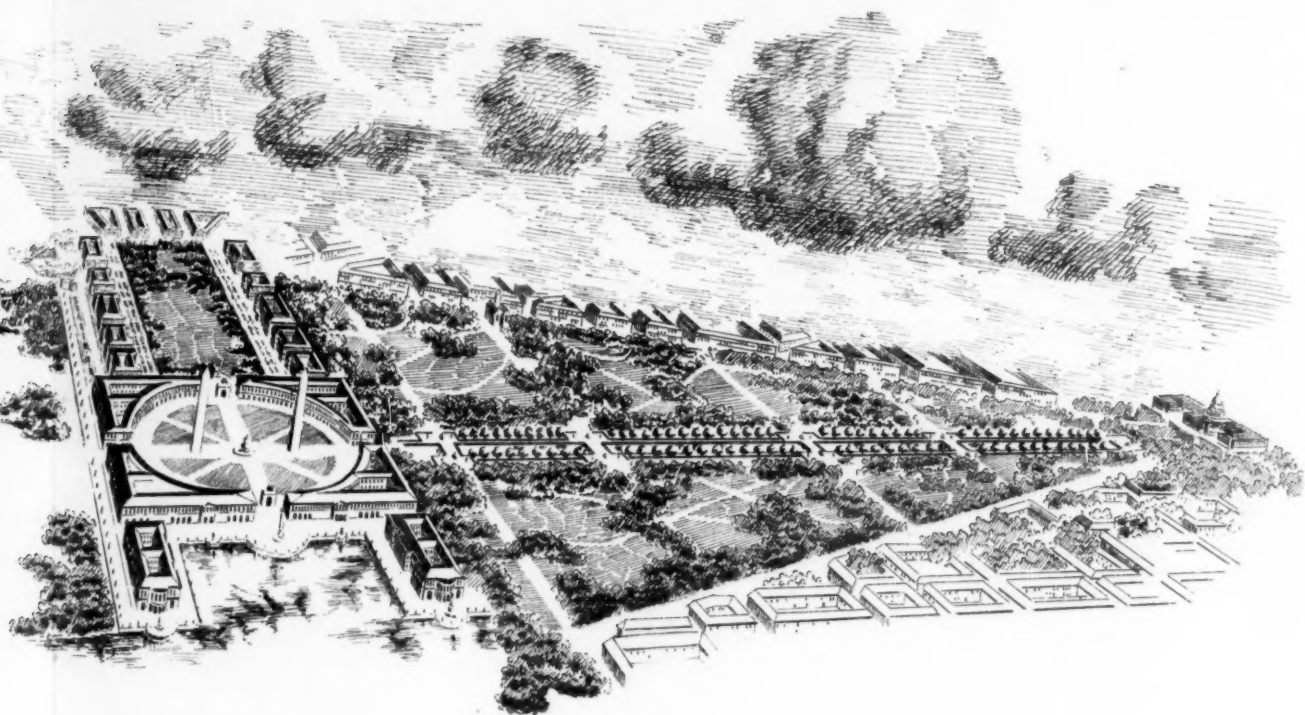
ROMAN BAS-RELIEF, ST. REMY.

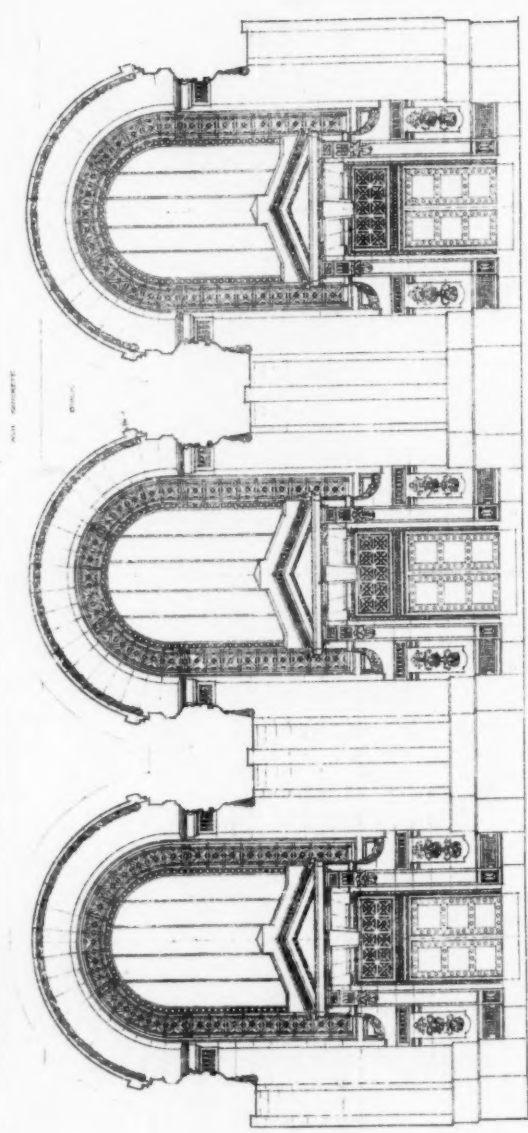
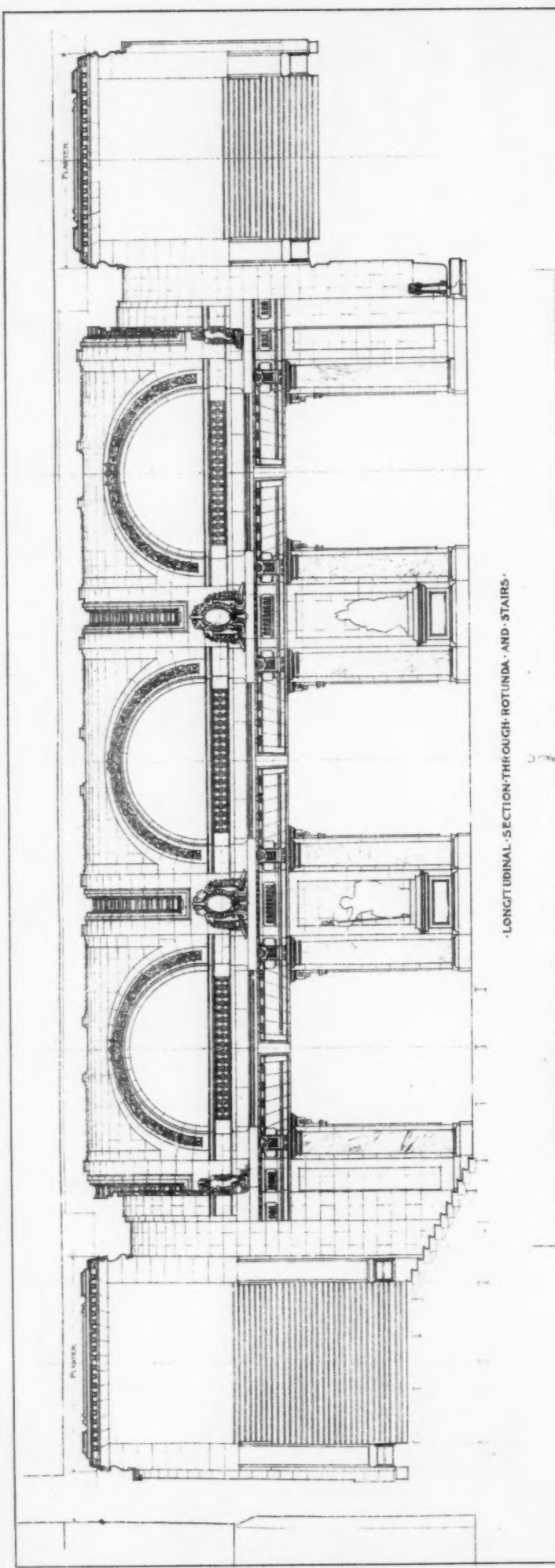


SOUTH DOORWAY, ST. GILLES.

MELLOTYNE PRINTING CO., BOSTON







LONGITUDINAL SECTION THROUGH PORTICO

THE AMERICAN ARCHITECT AND BUILDING NEWS

A WEEKLY JOURNAL OF CONSTRUCTIVE AND DECORATIVE ART

VOL. LXXIX.—No. 1410.]

SATURDAY, JANUARY 3, 1903.

PRICE, { INTERNATIONAL ISSUE, 50 CTS
REGULAR " 15 "

WHITTIER MACHINE CO.,

PASSENGER AND FREIGHT
ELEVATORS.

53 STATE STREET - - - BOSTON.

ELEVATOR SIGNALS

OF ALL KINDS

HERZOG TELESME CO.

51 WEST 24TH ST., NEW YORK



ARCHITECTURAL INSTRUCTION.

BOSTON, MASS.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY.

DEPARTMENT OF ARCHITECTURE.

Options in Architectural Engineering and Landscape Architecture.

College graduates and draughtsmen admitted as special students.

SUMMER COURSES in Elementary Design and Shades and Shadows. Proficiency in these subjects will enable draughtsmen and students from other colleges to enter third year work.

For catalogues and information apply to
H. W. TYLER, Secretary,
Mass. Institute of Technology, Boston, Mass.

CAMBRIDGE, MASS.

HARVARD UNIVERSITY.

THE LAWRENCE SCIENTIFIC SCHOOL offers professional courses in Engineering, Mining and Metallurgy, Architecture, Landscape Architecture, etc. Students admitted by examination and by transfer from other Schools or Colleges. Approved Special Students admitted without examinations. New and enlarged equipment. For Catalogue apply to the Secretary, J. L. LOVE, 16 University Hall, Cambridge, Mass.
N. S. SHALER, Dean.

LOOMIS FILTERS.

ESTABLISHED 1880.

Improved System. Simple and Effective.
LOOMIS-MANNING FILTER CO.,

Main Office: 402 CHESTNUT ST., PHILADELPHIA.
Boston. New York. Baltimore. Washington.

ITHACA, N. Y.

CORNELL UNIVERSITY

COLLEGE OF ARCHITECTURE

Offers a four-year course in Architecture leading to the degree of B. Arch.; also a two-year special course with certificate.

NEW YORK, N. Y.

COLUMBIA UNIVERSITY, IN THE CITY OF NEW YORK.

SCHOOL OF MINES.
SCHOOL OF CHEMISTRY.
SCHOOL OF ENGINEERING.
SCHOOL OF ARCHITECTURE.
SCHOOL OF PURE SCIENCE.

Four years' undergraduate courses and special facilities for graduate work in all departments. Circulars forwarded on application to the Secretary of the University.

THE PERKINS ATELIER OF ARCHITECTURE,

Submitting designs to the Society of Beaux Arts Architects, offers special courses in mathematics, drawing and modelling, preparatory for the Ecole des Beaux Arts.

FRANK EDSON PERKINS,
111 Fifth Ave., New York.

ST. LOUIS, MO.

WASHINGTON UNIVERSITY SCHOOL OF ENGINEERING AND ARCHITECTURE

Offers a four-year course in Architecture, leading to a degree of B. S. in Architecture. College Graduates admitted to advanced standing or as special students.

FREDERICK M. MANN, Professor.

COLUMBUS, OHIO.

OHIO STATE UNIVERSITY COLLEGE OF ENGINEERING

Offers four-year courses in Architecture, Civil, Electrical, Mechanical and Mining Engineering, and in Ceramics. Tuition free. For information address,
President W. O. THOMPSON, Columbus, Ohio.

FLYNT

BUILDING AND CONSTRUCTION CO.

GENERAL OFFICE, PALMER, MASS.

We contract to perform all labor and furnish all material of the different classes required to build complete

CHURCHES, HOTELS, MILLS, PUBLIC BUILDINGS AND RESIDENCES.

Also for the construction of RAILROADS, DAMS AND BRIDGES.

We solicit correspondence with those wishing to place the construction of any proposed new work under ONE CONTRACT, which shall include all branches connected with the work. To such parties we will furnish satisfactory references from those for whom we have performed similar work.

The WINSLOW BROS. COMPANY,

CHICAGO,

Ornamental Iron and Bronze.

PHILADELPHIA, PA.

UNIVERSITY OF PENNSYLVANIA.
SCHOOL OF ARCHITECTURE.
PROF. WARREN P. LAIRD.

"THE AMERICAN VIGNOLA"

PART I

THE FIVE ORDERS OF ARCHITECTURE

BY

WILLIAM R. WARE

Professor of Architecture, Columbia University
Text and Plates, 86 pp., 9"x12" Price, \$3.00
AMERICAN ARCHITECT AND BUILDING NEWS CO. PUBLISHERS

BOOKS:

"Les Concours publics d'Architecture."

(A Monthly Publication.)

Edited by MM. Wulliam and Farge.

Vol. IV. 120 Plates. Price \$9.40.

AMERICAN ARCHITECT AND BUILDING NEWS CO.

BOOKS:

"The Library of Congress."

20 Plates, folio. Price \$5.00.

AMERICAN ARCHITECT AND BUILDING NEWS CO.

BOOKS:

"Croquis d'Architecture."

(Intime Club.)

XXII Year, complete. Price \$0.70.

A hiatus of ten years occurs between the date of the 21st and 22nd volumes.

AMERICAN ARCHITECT AND BUILDING NEWS CO.

ROBERT C. FISHER & CO.

Successors to Fisher & Bird,

MARBLE AND GRANITE WORKS

97, 99, 101 and 103 EAST HOUSTON STREET,

Established 1830.

NEW YORK.

If the Steel Skeleton Rusts



The skyscraper will fall. Don't depend on worthless paints mixed with rosin oil and benzine, but case your structural metal work in moisture proof envelope of

DURABLE METAL COATING

For Booklet and information address

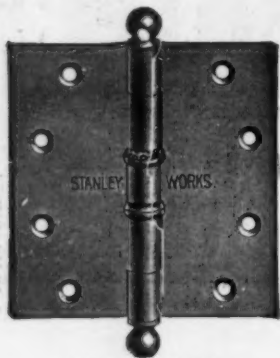
EDWARD SMITH & CO.

Varnish Makers and Color Grinders

59 Market St., Chicago, Ill. 45 Broadway, New York City

Ball Bearing Hinges

In Wrought Bronze
and Steel



ALL FINISHES

Our new Catalog can be had for the asking.

The Stanley Works, Dept. C
NEW BRITAIN, CONN.
79 Chambers Street, NEW YORK.

CLINTON WIRE-CLOTH CO.

Sole Proprietors and Manufacturers of

WIRE LATH DOUBLE TWIST WARP
STIFFENED (Iron Furred)
CLINTON CORRUGAT'D

Plain, Japanned or Galvanized.

The Most Perfect and Economic System of FIREPROOF Construction.

SEND FOR CIRCULAR.

BOSTON,
199 Washington St.

NEW YORK,
76 Beckman St.

CHICAGO,
137 Lake St.

FACTORY,
CLINTON, MASS.

FOR INFORMATION ABOUT

U. S. MAIL CHUTES

WHICH ARE

A necessity in Office Buildings and Hotels,
write to the sole makers.

THE CUTLER MFG. CO., ROCHESTER, N. Y.
PATENTED. AUTHORIZED.

"La Construction Moderne,"

A journal of whose merits our readers have had opportunity to judge because of our frequent reference to it and our occasional republication of designs that are published in it, is the most complete and most interesting of the French architectural journals.

The seventeenth annual volume is now in course of publication.

Subscription, including postage, 35 francs.

Each weekly issue contains, besides the illustrations included in the text, two full-page plates, which by themselves are worth double the amount of the annual subscription.

PRICE OF BACK ANNUAL VOLUMES,

:: 40 Francs. ::

Address for subscriptions and catalogues,
LIBRAIRIE DE LA CONSTRUCTION MODERNE,
13 Rue Bonaparte, Paris, France.

Established nearly 40 Years

The YANTACAW Chemical Fire Extinguisher

NO

Acid used, nor poisonous gas generated.
Danger from explosion or stream to person or fabric.
Periodical recharging, testing or polishing.

Always in the accustomed place and ready for instant use.
No mechanism to become defective.

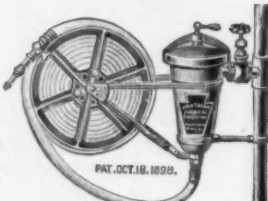
Can be recharged in from twelve to twenty seconds.
Much more powerful and efficient than carbonic acid gas machines.

Made in sizes capable of charging 25, 50 and 100 gallons of water without recharging.

With the twin Yantacaw a continuous charged stream can be obtained.

Send for descriptive booklet.

Yantacaw Mfg. Co., 802 Land Title Bldg., Phila.



Sizes 25 gals., 14 in. in height
Sizes 100 gals., 36 in. in height

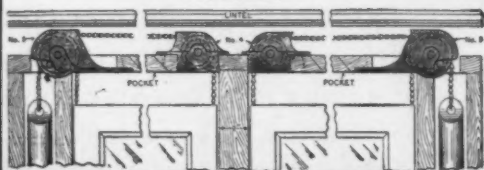
The
"TAYLOR OLD STYLE"
brand is the
STANDARD of all
Roofing Tins

Made only by
N. & G. TAYLOR CO.
PHILADELPHIA

Grant Overhead Window Pulley

McQueen's Patents

Specified by the leading Architects of United States and Canada



Send for
Catalogue

Grant Roller Bearing Pulley

GRANT PULLEY &
HARDWARE CO.

23½ Warren St. NEW YORK

.. THE ..
ARCHITECT

AND

Contract Reporter

Published Every Friday by P. A. Gilbert Wood

6 TO 11 IMPERIAL BUILDINGS
LUDGATE CIRCUS. LONDON, E. C.

PRICE, FOURPENCE

The "ARCHITECT AND CONTRACT REPORTER" has been established nearly 40 years; has a large and influential circulation; has been proved to be the best medium for advertising to Architects, Builders and Contractors; has the finest illustrations, and has been specially noted for its Art reproductions.

Send us six English 1d. stamps and we will mail you sample copy.

Send us post-office money order for 50 cents and we will send you the last six weeks' issues.

On receipt of \$6.25 we will forward for 12 months.

CODE OF PRACTICE FOR SUB-ESTIMATING AND SUB- CONTRACTING

Adopted by the Master Builders' Association of the City of Boston, Aug. 2, 1894.

ARTICLE I.

Obligation of Principal Contractor to Sub-Contractor.

A principal contractor is under obligation to treat upon an equal basis all estimates which he "receives" prior to putting in his own bid. Estimates must be considered as "received" when they come into a principal contractor's possession, either by his direct solicitation or by being accepted by him. The opening of a bid, knowing it to be such, constitutes receipt of the same.

A principal contractor is under no obligation to use a bid which he has not solicited, accepted, or received, but if he does not wish to use the estimate of a sub-bidder he should decline it, if proffered personally, or should return it unopened if sent to him by mail or otherwise. The retention of a bid should be construed as a receipt of the same.

A principal contractor, when making up his estimate, is not entitled to receive bids from sub-contractors if he is at the same time making himself their competitor by figuring their portion of the contemplated work. It is legitimate for a principal contractor to figure all portions of work, depending upon no one for what are usually known as sub-estimates, but it is not legitimate for him to receive bids from others for sub-work if he is himself figuring those portions independently.

ARTICLE II.

Award of Sub-Contracts.

The principal contractor having been awarded a general contract should immediately award the sub-contracts to the lowest bidder in each branch.

ARTICLE III.

Penalty for not Awarding Contract to Lowest Sub-Bidder.

A principal contractor failing to award a sub-contract to the lowest sub-bidder to whom he is under obligation as previously provided should be liable to pay damages to the said lowest bidder, in amount not less than ten per cent of the amount of the estimate.

Payment of such damages will not relieve the principal contractor from liability to discipline under provisions of Article X of the By-Laws of this Association.

ARTICLE V.

Payments to Sub-Contractors.

Unless the contracts made with sub-contractors otherwise provide, payments during the progress of the work should be made by the principal contractor to the sub-contractors upon the same basis of payment, in relation to amount of work performed, as is prescribed in the contract made by the principal contractor with the owner.

Final payment to a sub-contractor should be considered as due at the expiration of thirty days after the completion of his work and its approval by the architect or owner, unless otherwise provided by the sub-contract or agreement.

ARTICLE VII.

Obligation of Sub-Contractor to Principal Contractor.

Should a sub-contractor refuse to contract at the amount of the estimate he has given to a principal contractor who has used the said estimate in good faith, he then should be liable to the said principal contractor for damages in amount not less than the difference between the amount of the estimate which was submitted by him and the amount at which the principal contractor may be obliged to contract the work.

Payment of such damages will not relieve the sub-contractor from liability to discipline under provisions of Article X of the By-Laws of this Association.

ARTICLE X.

Bids to Architects or Owners.

When bids for separate departments of work on a building are solicited by the architect or the owner, they should be submitted with the understanding that they are direct estimates, for which direct contracts are to be made by the owner with the lowest bidder, and no other disposition of such bids should be permitted without consent of the bidder submitting the same.

Sub-bids should be given only to the principal contractors who are estimating the work in question, and should not be left with architects or owners for the inspection and information of principal contractors. Sub-contractors must understand that bids thus left with architects or owners are in great danger of losing their confidential character, and that if they so leave them they cannot claim protection or redress under the first article of this Code.

SUGGESTIONS.

Members of this Association having sub-contracts to let, or material to buy, should, as far as may be consistent with business principles, deal only with members of the Association, or at all events give their fellow-members an opportunity to compete, and then give them the preference, other things being equal.

All bidders should take cognizance of the danger they may be subjected to through the practice, so prevalent in some architects' offices, of making change in plans or specifications, or in both, during the progress of estimating. Correction of this pernicious practice can only be obtained through refusal by contractors to estimate under such conditions.

A true copy.

Attest: WM. H. SAYWARD,
Secretary, M. B. A.



The Kinnear Stamped Steel Ceiling, Sidewall

etc., has held its place in the front for years. It has no equal in construction or design.

Catalogue and prices furnished upon request.

The Kinnear & Gager Co. Manufacturers

(New Plant) 236 Mt. Vernon Ave.
Columbus, Ohio
Eastern Warehouse and Office
No. 125 Broad St., Boston

"WHITE METAL CLEAR THROUGH"

This phrase explains the superiority of



BENEDICT-NICKEL SEAMLESS TUBING

Nickel plated brass soon shows wear, but "BENEDICT NICKEL" wears forever.

It is highly non-corrosive and an occasional wiping restores its original bright nickel lustre.

Our "Table Book" tells more fully of its advantages and of our Seamless Brass and Copper Tubing, of which we are among the largest manufacturers.

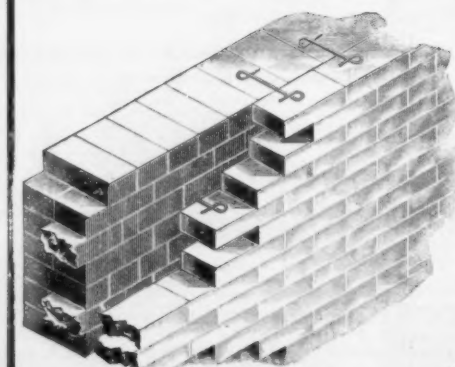
BENEDICT & BURNHAM MFG. COMPANY

Factory and Main Offices, WATERBURY, CONN.
NEW YORK, 253 Broadway BOSTON, 172 High Street

LUDLOW SAYLOR WIRE CO. N. E. Cor. Fourth & Elm Sts. ST. LOUIS, MO.



Elevator Enclosures and Cabs,
Metal Work in Brass,
Wire and Wrought-Iron,
Office and Bank Railings,
Wire and Iron Fences, etc.



A Pressed Brick Facing Bonded with Morse Ties.

Bonding with STEEL

The Morse Patent Ties and Bonds are approved by 1,000 leading architects and have been used in every city in the U. S.

Adapted to all situations of brick and stone construction and much cheaper than other methods.

Send now for large catalog.

J. B. PRESCOTT & SON
Webster, Mass.



Notable Persian Rugs

Our collection of Persian Rugs and Carpets — which of all Oriental Rugs are the best, is composed of pieces selected for their individual merit by our representative in Persia.

The high quality of material, superior weaves and variety of color schemes, designs and sizes, make our stock unique in this market. We can comply with the most exacting demands.

Our dealings being only with the trade and profession, Architects and Decorators will find special facilities. Their clients will receive every courtesy, when introduced by letter or in person.

The furnishing throughout of Hotels, Business Offices and Apartment Houses is a feature to which we ask special attention.

KENT-COSTIKYAN

MAKERS AND IMPORTERS

Fine Persian Rugs and Carpets

WHOLESALE

890 Broadway, Cor. 19th St., New York

Telephone 2069 18th Street

The Heliotype Printing Co.

LITHOGRAPHERS, ETC.

211 Tremont Street
Boston

FAC-SIMILE REPRODUCTIONS IN COLOR
OR MONOCHROME A SPECIALTY



Lithography

Heliotype

Color Printing

Photogravure

Maps, Plans, etc.

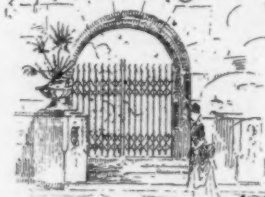
BEST WORK ONLY
PROMPT DELIVERY
REASONABLE PRICES

WRITE FOR ESTIMATES

WILLIAM R. PITT

COMPOSITE IRON WORKS

Telephone 890 18th Street.



THE
WILLIAM R. PITT.
COMPOSITE
IRON WORKS

111 Fifth Ave.

New York, Nov 28, 1902

Mr Architect
Dear Sir

ARCHITECTURAL IRON WORK.

PITT "BOSTWICK" NOVELTY
AND COMPOSITE. PATENT
FOLDING GATES AND
GUARDS IN STEEL, IRON,
BRASS OR BRONZE.

RAILINGS, GATES AND
GUARDS IN IRON, BRASS
OR BRONZE.

ELEVATOR GATES AND
GUARDS.

IRON STAIRS, CIRCULAR
AND STRAIGHT.

WINDOW GRILLES.

BANK AND OFFICE RAILINGS.

LANTERNS, BRACKETS,
AND IRONS AND SPECIAL
HARDWARE IN WROUGHT
IRON, BRASS OR BRONZE.

ARTISTIC IRON WORK.

WIRE GUARDS AND GATES.

MARQUEE'S AND FIRE
ESCAPES.

We have issued
a new Folding Gate
catalogue which will be
mailed to you on application

But if you have the
"Catalogue Cabinet" in your
office one will be placed
there without any request
from you

It will be to your
advantage to always
specify the "Pitt" Folding
Gates and always see that
you get them. Our prices
are as low as any but
our work is the best

Yours Truly

William R Pitt
Pms.

CONSTABLE BUILDING 111 FIFTH AVE, N.Y.

STANDARD FOR RUBBER INSULATION.



TRADE MARK.

WILLARD L. CANDEE, Mgrs. GEO. T. MANSON, Gen'l Supt.
H. DURANT CHEEVER, W. H. HODGINS, Sec'y.

OKONITE INSULATED ELECTRIC LIGHT WIRES

Are pronounced by leading Architects to be SAFE, DURABLE and EASILY ADJUSTED for the inside wiring of PUBLIC and PRIVATE BUILDINGS.

CANDEE WEATHERPROOF WIRES, OKONITE WATERPROOF TAPE, MANSON PROTECTING TAPE.

— SOLE MANUFACTURERS —

THE OKONITE CO., LTD., 253 BROADWAY, NEW YORK.

ESTABLISHED 1868
SKYLIGHTS, LATHING & S.
HAYES METAL
71 8TH AVE. NEW YORK.
FIREPROOF WIRE-GLASS WINDOWS.

TRADE MARK **Everlastins** MARK
READY MIXED RED PAINT
Guaranteed the cheapest, most durable and absolutely the best for Buildings, Structures and all work that needs paint.
MEANS & THACHER, 6-8 CUSTOM HOUSE ST., BOSTON
Sole Manufacturers. Sample and prices on request.



80-Paged Illustrated Catalogue of over 250 Designs of Superior

WEATHER VANES, TOWER ORNAMENTS, CHURCH CROSSES, FINIALS, Etc., Etc.

Mailed to any address for 2-cent stamp—half the postage.

T. W. JONES, Manufacturer, 18 FLETCHER ST., NEW YORK.



DIXON'S DRAWING PENCILS are perfectly uniform and uniformly perfect; eleven degrees of hardness and softness. Ask for booklet 14.

JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J.



NEW ENGLAND FELT ROOFING WORKS,

18 Post Office Sq., BOSTON.

Originators of Felt Roofing in New England.

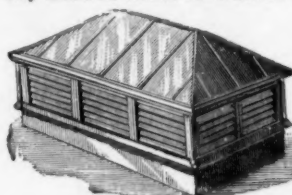
Inventors and only Manufacturers of the Celebrated

"BEEHIVE BRAND."

The Lovell Window AND Shutter Device

FOR FACTORIES, MILLS, FOUNDRIES, ETC.

THE BEST APPARATUS ON THE MARKET FOR OPENING AND CLOSING MONITOR SASHES. A LINE OF SASH 500 FEET LONG CAN BE OPERATED FROM ONE STATION IF DESIRED. Adapted to any kind of SASH or WINDOW.



Send for descriptive Leaflet.

MANUFACTURED ONLY BY

THE G. DROUVÉ CO.
Bridgeport, Conn.

Manufacturers and erectors of all kinds of Sheet Metal Architectural Work. Work erected in all parts of the country. Satisfaction guaranteed. Estimates cheerfully furnished from plans and blue prints. Correspondence solicited.



(CIRE-PERDUE PROCESS)
BRONZE TABLETS
WOODLAND BRONZE WORKS
GEORGE P. TILTON
NEWBURYPORT, MASSACHUSETTS
ARCHITECTURAL, ECCLESIASTICAL, AND STATUARY
DESIGNING, MODELING, CASTING, EITHER OR ALL

The Craig Cleanout and Dead-End Stopper

AN IMPROVEMENT IN DRAINAGE CLEANOUTS

Manufactured by

DAVID CRAIG, 70 BROAD STREET, BOSTON, MASS.

For Sale by all Jobbers. Send for Descriptive Circular "A."

WHEN THE NAME MERCHANT

Is stamped on a sheet of roofing tin it means the very best of everything is there—

IN THE PLATE

—not in the advertisement.

MERCHANT & CO., Inc.
PHILADELPHIA

New York

Brooklyn

Baltimore

Chicago

HITCHINGS & CO., Established 50 years

HORTICULTURAL ARCHITECTS AND BUILDERS

and largest manufacturers of

GREENHOUSE HEATING AND VENTILATING APPARATUS.



The highest awards received at the World's Fair for Horticultural Architecture, Greenhouse Construction and Heating Apparatus. Conservatories, Greenhouses, Palmhouses, etc., erected complete with our Patent Iron Frame Construction.

Send four cents for Illustrated Catalogue.

233 MERCER STREET, N. Y. CITY.

THE LIBRARY of CONGRESS,

WASHINGTON, D. C.

Architects: Smithmyer & Pelz:

P. J. Pelz; E. P. Casey.

Twenty Gelatine Plates, in Portfolio,

14" x 16 1/2".

PRICE - - \$5.00.

AMERICAN ARCHITECT AND BUILDING NEWS CO.

BINDING.

The Standard Binding of the *American Architect* is a Cloth binding, which varies in color for the several editions, as follows:—

For the Regular Edition - - Maroon.
" " International Edition - - Blue.

The REGULAR EDITION is bound in Semi-annual Volumes.

The INTERNATIONAL EDITION is bound in Quarterly Volumes.

The price for binding is \$2.00 per volume, Semi-Annual or Quarterly. Any variation from our standard practice will entail an increased charge. In every case the Plates are bound all together at the back of the volume to which they belong—the Double Plates being mounted upon guards.

Volumes sent to us for Binding will be treated according to this system, unless instructions of a contrary nature are given at the time the work is placed in our hands.

JENKINS IMPROVED AUTOMATIC AIR VALVES

Suitable for high or low pressure. Take no more room than an ordinary air cock. Endorsed by the leading steam experts as the best made and the quickest working. All genuine stamped with our Trade Mark.

JENKINS BROTHERS, New York, Boston, Chicago, Philadelphia

Send for
Samples

**SAMSON SPOT CORD**

is our Extra Quality SASH CORD

The colored spot is our trademark

Samson Cordage Works, Boston, Mass.

WARREN'S TRINIDAD ASPHALT

ROOFING

"ANCHOR BRAND"

PAVING

THE BEST MATERIAL FOR

WARREN CHEMICAL & MFG. CO., 170 Broadway, N. Y.

CRANE VALVES

ESTABLISHED 1855

ELECTRIC HOUSE SERVICE PUMPS

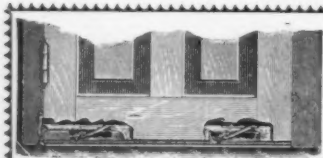
WILLIAM E. QUIMBY

[Incorporated]

141 Broadway, New York

CHICAGO
EDWARD YEOMANS
1141 MONADNOCK BLDG.

NEW ORLEANS
SAFETY ELECTRIC MFG. CO.
303 MAGAZINE ST.



THE UP-TO-DATE DOOR STRIP

The Introstile

Clears rugs and carpets—fits close and snug to floor—works automatically. Felt buffer at bottom. Keeps out draughts, dust and dirt. Write for illustrated booklet.

The Introstile & Novelty Co.
Marietta, Ohio.

Have you a large commercial office to equip?

If it is in a fireproof building, why not furnish it with metal fixtures, discard book vaults and make the room itself fireproof?

Economy of space, perfect security and greater convenience are attained. It is distinctly worth while investigating this treatment.

To any architect interested we shall be glad to send views of typical equipments.

ART METAL CONSTRUCTION CO.

Jamestown, N. Y.

ASPHALT FLOORS, ROOFS, SIDEWALKS AND CARRIAGE-WAYS

Of Public Buildings, Hospitals, Warehouses, Stables, Cellars, etc.

Laid with VAL de TRAVERS ROCK ASPHALT,

DURABLE, FIREPROOF AND IMPERVIOUS.

For estimates and list of works executed, apply to THE NEUCHATEL ASPHALT CO., Limited,

206 BROADWAY - - - NEW YORK.



TELEPHONE - 46 18th ST.

NEW YORK METAL CEILING CO.

537-539-541 WEST 24th ST. N.Y.

Boston Office: 48 Congress St., Room 24.

"CONSERVO"

WOOD PRESERVATIVE

For Posts, Sills, Stable Floors and all Woodwork that is exposed to decay

SAMUEL CABOT, Sole Manufacturer, BOSTON

Buckeye Paint & Varnish Co.

PAINT, COLOR

AND

VARNISH MAKERS

Crystal-Rock Finishes

Liquid and Paste Fillers

Varnishes and Japans

TOLEDO, OHIO

Conservatories,

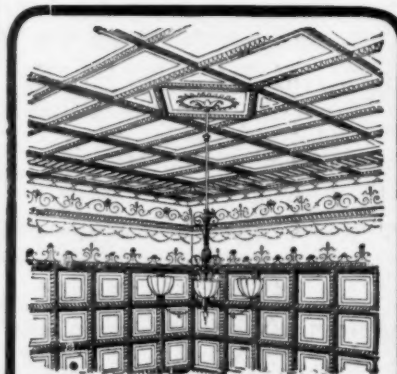
Greenhouses,

Vineries, Etc.

Designed, erected and heated. Catalogue, also special plans and estimates, on application.

LORD & BURNHAM CO.,

1133 Broadway - - - New York City.



BERGER'S

METAL CEILINGS

Are symmetrical and pleasing to the eye and command the admiration of all. They can be used in all classes of buildings, are easy to apply, and highly ornamental. They don't shrink, crack, get water-soaked, or fall off. They are safe and sanitary. Their durability makes them the most economical ceilings in existence. Our "Classified Designs" embrace a variety of styles, and there is no building that we cannot match in its style of architecture. Send for our booklet "A New Idea in Metal Ceilings," it is free.

The Berger Manufacturing Co.
CANTON, OHIO

New York Office: 210 E. 22d St., New York, N. Y.

New England Branch: 116 Federal St., Boston, Mass.



INTERLOCKING RUBBER TILING

as laid by us in the Ladies' Retiring Room, Broad St. station Philadelphia.

Noiseless, non-slippery, sanitary. Cleans perfectly; always bright and fresh. The only tile floor that servants can stand on without making the feet sore. A perfect floor for offices, banking-rooms, libraries, hospital wards, cafés, bath-rooms, billiard-rooms, vestibules, halls, church aisles, piazzas, etc. Laid directly on wood, stone, concrete or iron. Call or write.

New York Belting & Packing Co., Ltd.

New York 25 Park Place
Philadelphia 724 Chestnut St.
Chicago 150 Lake St.
St. Louis 411 No. 3d St.
San Francisco 509-511 Market St.
London, Eng. The B. & S. Folding Gate Co., 19 to 21 Tower St., Upper St. Martin's Lane, W. C.
Baltimore Baltimore Rubber Co. 101 Hopkins Place.

Smith's Shutterless Automatic Closing Fire-Proof Metal ... WINDOWS ...



Our sliding sashes can be made to pivot to permit cleaning from inside of building if desired.

Are the BEST FIRE-PROOF WINDOWS of ANY KIND in the world to-day. They are absolutely FIRE and WEATHER PROOF. They SAVE INSURANCE, REQUIRE NO SHUTTERS, INCREASE and better DIFFUSE LIGHT, cannot be distinguished from the best woodwork, are the ONLY sliding sashes that

CLOSE AND LOCK AUTOMATICALLY

when subjected to a mild degree of heat, and are made in FOURTEEN DIFFERENT STYLES for OFFICE, HOTEL and APARTMENT buildings, FACTORIES, WAREHOUSES, Etc.

WE OPERATE NINE LARGE FACTORIES

Write for Catalogue and information to

SMITH-WARREN CO.
93 Federal St., BOSTON, MASS.

Quick Escape from

..FIRE..

is secured by means of our Patent Self-Locking SCUTTLE OPENER

ALSO

Patent Sky Light Lift and Ventilating Sash Locks

Send for Descriptive Pamphlets

Geo. Bickelhaupt Skylight Works

243 and 245 West 47th St.

Tel. 675-38th.

NEW YORK

PERSPECTIVES RENDERED

IN PEN-AND-INK AND WATER-COLOR,

WALTER M. CAMPBELL,

8 Beacon St., Boston, Mass.

HAVE YOU A COPY of our New Illustrated Catalogue?

AMERICAN MASON SAFETY TREAD CO., BOSTON

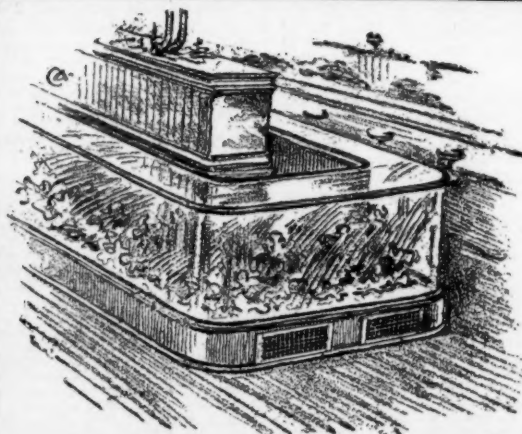
J. W. TAYLOR'S PHOTOGRAPH SERIES OF AMERICAN ARCHITECTURE

324 Dearborn Street, CHICAGO, ILL.

Send two 5 cent stamps for Catalogue.

E. ELDON DEANE,

Architectural Colorist and Draughtsman.
63 Seymour Building, Fifth Ave., cor. 42d St.
NEW YORK CITY.



STORE HEATING AND VENTILATION

is only beginning to receive the attention it deserves. The really progressive merchant already sees the advertising value of a comfortable store and recognizes the mission of pure air as a means of increasing the efficiency of his employees. We employ the fan system, forcing the air under pressure to the desired points and insuring positive ventilation. The heating surface is localized, extended piping systems are avoided and the temperature automatically controlled.

B. F. STURTEVANT CO.
BOSTON, MASS.
NEW YORK / PHILADELPHIA / CHICAGO / LONDON

CALIFORNIA REDWOOD LUMBER



To the Trade

With the advent of another year we are permitted to thank you for the generous patronage bestowed on us by the trade. Redwood is our specialty and the demand for this material is rapidly increasing, for which there are several reasons, among them being its low cost compared with other woods and its beauty and usefulness.

In six months of 1898 our sales amounted to about 300 M. ft. In 12 months of 1902 we sold 3,698,000 and we hope to make it ten million or more during this year.

Send us your orders.

BARTLETT LUMBER COMPANY
ROOM 409, EXCHANGE BLDG., STATE ST., BOSTON, MASS.

ROCKLAND-ROCKPORT LIME COMPANY

Plants Located at Rockland, Rockport and Thomaston, Maine

Manufacturers of the best grade of "State of Maine Lime."

Rail shipments made direct from works to any point desired

Prompt shipments also made in cargo lots to any port on the Atlantic coast

This Company owns and has in commission six steel barges and an ocean going steel tug, by means of which the New York Market is promptly supplied with fresh lime at all times

MAIN OFFICE

ROCKLAND, MAINE

New York Office

Greenpoint Avenue and Newtowne Creek, Brooklyn, N. Y.

Orders for both rail and water shipment will receive prompt and careful attention

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

It is said that the work of building the proposed large new store for John Wanamaker on the block bounded by Broadway, 4th Ave., 8th and 9th Sts., will be begun as soon as possible. The new store will be used exclusively by the Wanamaker business. A ten or twelve story building will stand on the block. The building plans, however, have not yet been decided on.

Omaha, Neb.—The Omaha Tanning Co. will enlarge its plant by the erection of a new building to cost complete, \$75,000.

Oskaloosa, Ia.—Chas. McCulloch and E. H. Gibbs, owners of the Hotel Downing, have plans in view to rebuild the property in the spring. A fourth story is to be added, and an electric passenger elevator installed. A heating plant and hot and

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

cold water will be put in through the entire house. The changes will cost about \$60,000.

Pella, Ia.—Funds have been raised by the Central College, which will make extensive improvements to the old main building and probably erect a new structure.

Pittsburgh, Pa.—The erection of a new church and parochial school building is being contemplated by St. Peter's Roman Catholic congregation. Approximate cost, \$150,000.

Princeton, N. J.—A \$125,000 three story stone and steel fireproof dormitory building will be erected by the Princeton University. Architect has not been selected.

(Continued on pages xii and xiii.)

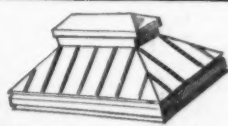
YANKEE VARNISH REMOVER

Thoroughly and speedily removes varnish, shellac, wood filler, stain, etc. Woodwork may be refinished immediately without the least danger or injury, if our directions are followed. Used with perfect success for removing the finish on several hundred rooms at Yale College. Sample furnished upon application.

THE BRIDGEPORT WOOD FINISHING CO.
NEW MILFORD, CONN.

55 FULTON ST., NEW YORK; 70 W. LAKE ST., CHICAGO; 231 DOCK ST., PHILADELPHIA

Metal Skylights



If you are "face to face" with the Skylight question, you would find our fully illustrated Catalogue a great enlightener. We bring to the building of Metal Skylights many years of experience, and our constructive methods entirely overcome all of those undesirable features so constantly connected with ordinary Skylights. Shall we mail it?

VAN NOORDEN COMPANY
944 Massachusetts Avenue
BOSTON, MASS.

EASTLAKE METAL SHINGLES
For ROOFING use Our METAL SHINGLES and TILES, the best covering in the world for House or Barn. Catalogue, Prices and Testimonials at Montross Metal Shingle Co., Camden, N. J.

MONTROSS METAL SHINGLE CO.,
CAMDEN, N. J.
VICTOR TILES



**Architectural Sheet Metal
Ornamental Work
Cornices, Skylights
Tile Roofing
Statuary**

Send for illustrated catalogue.
Architects' special designs accurately produced in sheet metal.
Write for our prices.

W. H. MULLINS
107 Depot St.
SALEM, - OHIO

PASSAIC ROLLING MILL CO.,
PATERNON, N. J.

Steel Beams

4 inches
to
20 inches
deep.

ALL STRUCTURAL SHAPES.
NEW YORK OFFICE . . . 45 BROADWAY.
Boston Office, No. 31 State Street.

**You
Should
Include**

**Expanded Metal
Lockers**
in your Plans and Specifications.
For information write
MERRITT & CO.
1011 Ridge Ave., Phila.

BUILDING INTELLIGENCE.

EDUCATIONAL

New York, N. Y.—One Hundred and Twenty-sixth St., nr. 24 Ave., four-sty bk. school, 61' 8" x 142' 4"; \$130,000; o. City; a., C. B. J. Snyder.

FACTORIES.

La Porte, Ind.—Two-sty bk. & st. factory, 150' x 350', gravel roof, hot air; \$35,000; o. The Plauett Mfg. Co., 112 N. Oakley Ave., Chicago; a., Fred'k Lindquist, 90 Washington St., Chicago.

HOUSES.

Brooklyn, N. Y.—E. Fourteenth St., nr. Avenue P, 2 two-sty bk. & fr. dwells., shingle roofs, hot air; \$12,000; o. A. E. Smith, 252 E. 26th St.; a., A. D. Lham, 220 Broadway.

Chicago, Ill.—Jackson Boulevard, Nos. 1652-54, 2 three-sty dwells. & flats, 25' x 80' & 67'; \$20,000; o. I. B. Farthy; a., D. E. Postle, Marquette Building; b., John Kinnare.

New York, N. Y.—Jackson Ave., nr. cor. 166th St., 5 bk. stores & dwell., three 19' 0" x 87' 5", one 19' 9" x 87' 5" & one 20' x 87' 5"; \$42,000; o. Thomas J. Quinn; a., W. C. Dock-rs-n.

Chicago, Ill.—Freeman St., 3 two-sty fr. dwells., 21' x 59'; \$15,000; o. & a., William T. Lavalle.

Worcester, Mass.—Lincoln Ave., two-sty fr. dwell., 25' x 52'; \$4,400; o. & c., H. B. Pender.

Windsor St., two-sty fr. dwell., 33' x 59'; \$6,000; o., Elizabeth J. Bannagan; a., Earle & Fisher; day work.

Hollywood St., two-sty fr. dwell., 33' x 53'; \$5,000; o., Misses G. V. and R. O. Smith; a., D. R. Rixford; c., C. A. Colburn.

Massachusetts Ave., two-sty fr. private dwell., 29' x 44'; \$8,000; o., R. B. Dodge; c., W. F. Simonds; a., George R. Clemence.

W. Baylston St., th. on-sty fr. dwell., 27' x 55'; \$4,000; o. & c., A. N. Booth.

OFFICE-BUILDINGS.

New York, N. Y.—Eighteenth St., nr. 8th Ave., through to 17th St., eleven-sty bk. offices with store, 75' x 184'; \$35,000; o., J. C. Lyons Building and Op. rating Co.; a., Buchman & Fox.

Liberty St., No. 2, six-sty bk. office-building, 30' 1" x 70' 4"; \$30,000; o., Estate of David Bishop; a., Clinton & Russell.

STRUCTURAL STEEL for Every Purpose BUILDINGS



**American
Bridge
Company**
GENERAL OFFICES
100 BROADWAY
NEW YORK
OF NEW YORK

**ENGINEERS AND
CONTRACTORS**

Light Structural Work

EXPANDED METAL

For Fireproofing and Concrete Construction
ASSOCIATED EXPANDED METAL COMPANIES Room 1209, 256 Broadway
NEW YORK

BUILDING INTELLIGENCE.

STABLES.

Cambridge, Mass.—Highland St., cor. Reservoir St., one-sty fr. stable; \$7,000; o., A. F. Sortwell; b., J. Quin & Son.

New York, N. Y.—Spencer Pl., nr. 144th St., one-sty bk. stable, 5 1/2' x 90'; \$14,000; o., Walter W. Taylor; a., Frederick Mores.

E. Eighth St., No. 69, three-sty bk. stable, 20' 8" x 39' 2"; \$35,000; o., Evans & Buscall; a., R. L. Falconer.

One Hundred and Fifty-first St., nr. Courtland Ave., rear, two-sty bk. stable, 25' x 50'; \$2,000; o., William Blumensaur; a., A. F. A. Schmitt.

TENEMENT-HOUSES.

New York, N. Y.—Avenue D, Nos. 66-70, six-sty bk. tenement with stores, 57' x 59'; \$40,000; o., J. Margovits, 163 Henry St.; a., Horenburger & Straub, 122 Bowery.

Division and Attorney Sts., six-sty bk. tenement with stores, 56' 3" x 75' 5" & 49' 7"; \$45,000; o., S. Greenstein; a., G. F. Pelham.

St. Nicholas Ave., nr. 1334 St., six-sty bk. tenement, 50' 8" x 108' 2"; \$100,000; o., Realty Co. of N. Y. York; a., Moore & Laudsiedel.

Grand and Attorney Sts., six-sty bk. tenement, 40' x 90'; \$42,000; o., A. Silverson, 236 E. 61st St.; a., G. F. Pelham, 303 Fifth Ave.

WAREHOUSES.

Chicago, Ill.—S. Clinton St., Nos. 12-14, four-sty warehouse, 40' x 151'; \$36,000; o., Wm. Ganschow; a., William Ohlhaber; b., Philip Loze.

New York, N. Y.—Madison St., No. 317, seven-sty bk. lofts with shop, 25' x 83'; \$20,000; o., M. Radt; a., Sass & Smalheiser.

Fifth Ave., No. 125, eleven-sty bk. store & loft building, 22' x 100'; \$132,000; o., H. Bargdorf; a., A. Zucker.

MISCELLANEOUS.

Worcester, Mass.—Fremont St., one-sty blower house & machine-shop; \$1,000,000; o., Worcester Consolidated St. R. Co.; c., E. J. Cross.

COMPETITIONS.

HIGH SCHOOL.

[At Beaumont, Tex.]

Competitive plans will be received until January 15 by the Board of Trustees of the Public School for a first-class two or three-story and basement high school to be erected on a block of ground, 300 feet square; said building to be constructed of brick, with stone, granite or terra-cotta trimmings, to have a slate roof, and cost not to exceed \$65,000. B. E. PETTUS, Supt. 1410

PROPOSALS.

PAVING.

[At Washington, Ia.]

The city clerk will receive bids until January 15 for 12 blocks of brick paving in the business district. 1410

PROPOSALS.

WATER SYSTEM.

[At New Orleans, La.]

Sealed proposals will be received at the Bureau of Yards and Docks, Navy Department, Washington, D. C., until January 10, 1903, for a temporary water system and electric lighting plant at the naval station, New Orleans, La. Plans and specifications will be furnished by the commandant of the navy yard named or by the bureau. MORDECAI T. EN-DICOTT, chief of bureau. 1410

PUMP HOUSE.

[At Fort Snelling, Minn.]

Office Chief Q. M., St. Paul, Minn. Sealed proposals will be received at this office until January 15, 1903, for the construction of a pump house and equipment, including pumps and boilers complete, also water tank and trestle and extension of water mains at Fort Snelling, Minn. Plans and specifications may be seen and blank proposals with full instructions, had upon application here. GEO. E. POND, C. Q. M. 1410

COURT-HOUSE.

[At Hickman, Ky.]

Bids will be received until January 14 by the Fiscal Court of Fulton Co., for erecting a court-house according to plans prepared by Frank P. Milburn, Columbia, S. C. S. D. LUTEN, clk. 1410

DORMITORY.

[At Chemawa, Ore.]

Department of the Interior, Office of Indian Affairs, Washington, D. C. Sealed proposals will be received at the Indian Office until January 15, 1903, for furnishing the necessary materials and labor required to construct and complete a brick dormitory with plumbing, steam heat and electric light at the Salem School, Chemawa, Ore., in strict accordance with plans, specifications and instructions to bidders which may be examined at this office, 265 S. Canal St., Chicago, Ill., and 119-121 Wooster St., New York City, and at the school. For further information apply to Thos. W. Potter, superintendent Indian school, Chemawa, Ore. W. A. JONES, commissioner. 1410

Treasury Department, Office Supervising Architect, Washington, D. C., December 23, 1902. Sealed proposals will be received at this office until 2 o'clock P. M. on the 27th day of January, 1903, and then opened, for furnishing the low pressure steam heating apparatus, etc., complete in place, for 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 Superintendent at Creston, Iowa, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1411

SCHOOL.

[At Bloomer, Wis.]

The undersigned hereby gives notice that sealed proposals for the erection of a two-story, eight-room, solid brick school-house, including all labor and material, will be received by the Board of Education at Bloomer, Wis., until the 30th day of January, 1411

REVOLVING DOORS

Keep Out all Snow, Wind, Rain and Dust. Cannot be Left Open, Blown Open or Slammed. Are Always Closed, yet Allowing Passage of Persons.

USED IN OFFICE AND PUBLIC BUILDINGS, BANKS, HOTELS, CHURCHES, THEATRES, CAFES, CLUBS, LIBRARIES, MILLS, FACTORIES, ETC.

SEND FOR CATALOGUE

Dept.
J.

VAN KANNEL REVOLVING DOOR CO.

Home Office and Factory: 524 East 134th Street, NEW YORK

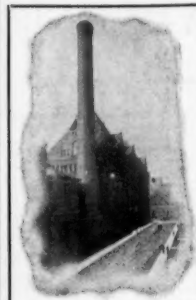
Chamber of Commerce Bldg., CHICAGO.
North American Bldg., PHILADELPHIA.

40 Sheriff St., CLEVELAND.
Paddock Bldg., BOSTON.

PERSPECTIVE DRAWING

TAUGHT BY MAIL

Other Courses for Draftsmen
**Mechanical Drawing
Architecture**



MAIN BUILDING
ARMOUR INSTITUTE.

Instruction
Under
Members
of
Faculty
of
Armour
Institute of
Technology

EVERY Architect and Builder engaged in the installation of Electrical, Steam or Power plants can gain a thorough working knowledge of these subjects through our courses in

HEATING, VENTILATION AND PLUMBING

Electrical and Steam Engineering

In addition to their regular instruction papers students in full Engineering courses are furnished a Technical Reference Library (in ten volumes) as a help in their studies. An invaluable reference work for architects. Catalogue sent on request.

AMERICAN SCHOOL OF CORRESPONDENCE

at

Armour Institute of Technology
CHICAGO, ILL.

Mention American Architect.

Telephone Call, 1481 John

HENRY S. NORTHROP, Manufacturer of

Special attention to deep panels, curved work, etc., to architect's designs.

.. Stamped Steel Ceilings

40 Cherry St., New York

Also Room 74, EQUITABLE BUILDING, BOSTON.

PROPOSALS.

National Bank, Chippewa Falls, Wis., and A. E. Parkinson, architect, Sparta, Wis. ROBERT COTTINGTON, President Board of Education. 1411

OFFICE-BUILDING.

Bids will be received until January 20 for the erection of a three-story store and office building for the Supreme Div. Knights of the Loyd Guard, Flint, Mich. Work will include pressed brick, structural iron and steel, steam heating, electric wiring and plumbing. 1411

HOSPITAL.

[At Chickamauga Park, Ga.] Bids will be received until January 22 for constructing, plumbing, heating and gas-piping brick hospital building at Chickamauga Park, Ga. H. J. SLOCUM, Chattanooga, Tenn., quartermaster. 1411

POWER PLANT.

[At Richmond, Va.] Bids are wanted for the construction of a complete power plant for the \$180,000 cell building at the State Penitentiary, now in course of construction. P. Thornton Maryo, Newport News, architect. 1411

HOSPITAL.

[At Dayton, O.] Bids will be received until February 1 for the construction of a \$30,000 two-story brick and stone hospital building for the Frank Jefferson Patterson Memorial. Plans by Architect Chas. Insko Williams, Callahan Building. 1412

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

San Francisco, Cal. — Mrs. Stanford has accepted the plans prepared by Architect Clinton Day, 135



Send for catalog, dimensions, etc.
NORTHERN ENGINEERING WORKS
24 Chene St., Detroit, Mich.

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

Geary St., for the \$600,000 library building for Stanford University.

Seattle, Wash. — Herman Chapin has let the contract for the erection of a new building at 3d Ave. S. and Jackson St. to Matthew Dow. Cost complete, \$86,000.

Spokane, Wash. — The treasury department has selected a \$100,000 site at Lincoln St. and Riverside Ave. for the erection of the public building.

Sewickley, Pa. — Bids will be received after February 1st for the erection of the \$40,000 three-story pressed brick Y. M. C. A. building, 60' x 125', plans for which are now being prepared by Architect T. E. Bilquist, 341 Sixth Ave., Pittsburgh.

APARTMENT-HOUSES.

Chicago, Ill. — Madison Ave., Nos. 5223-25, three-story bk. apart., 50' x 84'; \$24,000; o., Jas. Eastland, 5119 Michigan Ave.; a., Robert S. Smith, 818, 185 Dearborn St.; b., A. G. Fitch, 540 N. Normal Park Way.

Kenmore Ave., nr. Buena Ave., three-story bk. & st. apart., 58' x 135', steam; \$30,000; o., H. J. Peet; a., Huehl & Schmid, 163 Randolph St.

BRANCH OFFICES

BOSTON
8 Oliver Street
PITTSBURG
1215 Empire Building
MONTREAL
905 Dorchester St.
CHICAGO
184 LaSalle St.



RICHEY, BROWNE & DONALD

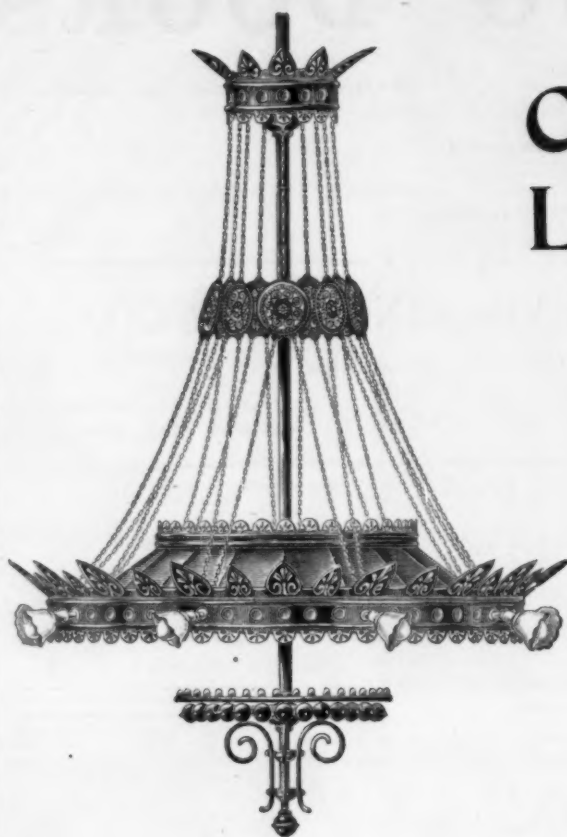
Architectural Cast and Wrought
IRON, BRASS AND BRONZE

Borden and Review Aves.

LONG ISLAND CITY, N. Y.

PROPOSALS.

1903. All bids must be in strict accordance with the plans and specifications, prepared by A. E. Parkinson, architect, of Sparta, Wis., which may be seen at the office of R. Cottingham, Bloomer, Wis., First



Geo. Frink Spencer, Mgr.

Contracts for Church Lighting

Should include an estimate on the system adopted by more than 20,000 churches as the best. This system is the development of over forty years' experience in church lighting, and the fact that it has supplanted other systems, originally installed but found unsatisfactory, is a good reason for putting in the right thing the first time. We make "The Great Church Light" for its place, conditions of size, and proportion of the interior, determining the size, character, and relative angles of the reflecting surfaces, and the minimum number of lamps for the required light. We are constantly receiving the most commendatory letters from contracting engineers who have installed this light. Send measurements, or plans, and we will send an estimate free.

I. P. Frink
551 Pearl Street
NEW YORK



35 Warren St., New York.
239 Franklin St., Boston.
692 Craig St., Montreal, P. Q.

HALF ENOUGH WATER

is quite enough for some people, but most people want water every day. If

Rider or Ericsson Hot-Air Pumps

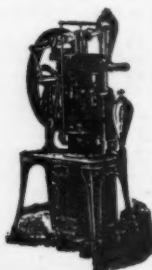
are used you can have water every day in the year, and your cook or stable-boy is the only engineer needed. 25,000 in daily use.

Catalogue "B" on application to nearest store.

RIDER-ERICSSON ENGINE CO.

40 Dearborn St., Chicago.
40 N. 7th St., Philadelphia.
Teniente Rey 71, Havana.

22a Pitt St., Sydney, N. S. W.



S. WILKS MFG. CO.

MANUFACTURERS OF

Wilks Hot Water Heaters

Steam Generators, Steel Tanks, Etc.

For Supplying with Hot Water Hotels, Dwellings, Greenhouses,
Laundries, Churches and Baptisteries, Bath
Houses, Carriage Houses, Etc.

ECONOMICAL & SAFE & DURABLE

For all purposes for which Hot Water and Steam are required.

53-5 S. Clinton Street, CHICAGO, ILL.



The W. S. Tyler Company
Cleveland, Ohio

Ornamental Iron
and Bronze

Special Designs Furnished

Masonry in Modern Work

A "Prolegomenos" on the Function
of Masonry in Modern Architectural
Structures.

By R. GUASTAVINO, ARCHITECT.

Price, Paper Cover, 30 Cents.

For Sale by the AMERICAN ARCHITECT.

REMEMBER

that each part of "THE GEORGIAN PERIOD" has
been made better than its predecessors

MINERAL WOOL

FIRE, SOUND and VERMIN PROOF INSULATOR.

Samples and Circulars Free.

**U. S. Mineral Wool Co., 143 Liberty Street,
NEW YORK.**



Urbino Design.
20 x 3 3/8 inches.

The products of THE YALE & TOWNE
MANUFACTURING COMPANY, comprising

The Yale Locks,
Builders' Hardware,
Art Metal Work,
Blount Door Checks, Etc.

can be obtained from the Hardware Trade
throughout the country. All the larger
houses can show its large Trade Cata-
logue No. 17, and many of them can ex-
hibit the goods in their show-rooms.

Complete collections can be seen in the Exhibit
Rooms maintained by the Company in its General
and Branch Offices.

Special brochures, of technical interest, furnished
to Architects on request.

THE YALE AND TOWNE MFG. COMPANY.

GENERAL OFFICES:

Nos. 9, 11 and 13 Murray Street,
New York City.

NATIONAL FIRE-PROOFING CO.

PITTSBURGH

NEW YORK

BOSTON

PHILADELPHIA

CHICAGO

NEW ENGLAND MATERIAL-MEN AND CONTRACTORS.

BLUE PRINTING.

B. L. MAKEPEACE,
345 Washington St., Boston, Mass.
CHAS. E. MOSS,
Rapid Printing Papers,
38 Broad St., Boston.

CONTRACTOR & BUILDERS.

WILLIAM L. RUTAN,
1016 Tremont Bldg., Boston.

DOORS, WINDOWS, ETC.

E. A. CARLISLE, POPE & CO.,
2 Sudbury St., Boston, Mass.

FIRE-ESCAPES.

STANDARD FIRE-ESCAPE & MFG.
CO.,
120 Milk St., Boston, Mass.

PLASTERERS.

GALLAGHER & MUNRO,
166 Devonshire St., Boston, Mass.

PORTABLE OVENS.

H. A. JOHNSON & CO.,
224 State St., Boston, Mass.

ROOFING DUCK.

C. H. BATCHELDER & CO.,
234 State St.,
Cor. India St., Boston, Mass.

SASH CORD.

SILVER LAKE CO.,
78 Chauncy St., Boston.

SEAM-FACE GRANITE.

GILBRETH SEAM-FACE GRANITE
CO.,
Park Row Building, New York.
85 Water St., Boston.

STABLE FIXTURES.

BROAD GAUGE IRON STALL &
VANE WORKS,
53 Elm St., Boston, Mass.

STONE CARVING AND MOD- ELLING.

HUGH CAIRNS,
48A Sudbury Street, Boston.

WATERPROOF CELLARS.

FRANK B. GILBRETH,
Park Row Bldg., New York.
176 Federal St., Boston.

Professional Ethics.

The following . . .

. . . CODE OF ETHICS . . .

Prepared in Conformity with the
Best Standards of Practice, and
Recommended to its Members by
the Boston Society of Architects,
was . . .

ADOPTED BY THE SOCIETY, FEBRUARY 1.

. . . 1895. . .

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.

SECTION 5. It is unprofessional to offer draw-
ings 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.

SECTION 7. It is unprofessional to make altera-
tions of a building designed by another archi-
tect, 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, with-
out due notice to the said designer.

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

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 de-
signs 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 draw-
ings 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 Archi-
tects' "schedule of charges" represents mini-
mum 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.

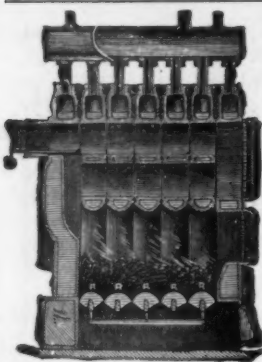
SECTION 14. It is unprofessional to enter into
competition with or to consult with an archi-
tect who has been dishonorably expelled from
the "Institute" or "Society."

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.

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

BRONZE

JNO. WILLIAMS
BRONZE FOUNDRY AND WORKS
WROUGHT IRON WORKS
544 to 556 WEST 27th STREET, NEW YORK

WROUGHT IRON

THE H. B. SMITH CO. 133-135 ...
Centre Street,
New York.
MANUFACTURERS.

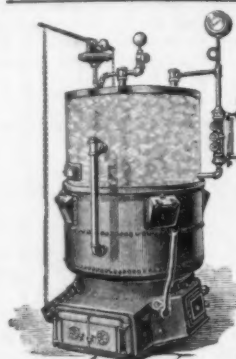
Steam and Water
Heating Apparatus,

Factory: Westfield, Mass.

ESTABLISHED 1853.

Send for Catalogue.

NEW YORK, PROVIDENCE
PHILADELPHIA.



THE
Gorton Side-Feed Boilers

Insure a warm building day and night
in coldest weather.

Our Book, MODERN HOUSE HEATING, gives the information.
Mailed free.

Send for a copy, and investigate for yourself.

GORTON & LIDGERWOOD COMPANY

96 Liberty Street NEW YORK 77 Oliver Street BOSTON Old Colony Building CHICAGO



BUTCHER'S BOSTON POLISH
is the best finish for
FLOORS, ... MANUFACTURED BY THE
BUTCHER POLISH CO.,

Interior Woodwork and Furniture.

Circulars Sent on Application.
For Sale by Dealers in Painters' Supplies.

356 Atlantic Ave., Boston, Mass.

Our No. 3 Reviver is a Superior Finish for Kitchen and Piazza Floors.

ANY PAINT WILL CRACK

If repainting be too long delayed. When the old paint has become brittle the new paint will pull it off.

ZINC WHITE PAINTS

Retain their oil longer than other paints, hence do not require repainting so frequently. In this and their great spreading power lies their superior economy. Their superior beauty is self-evident.

FREE: Our Practical Pamphlets
"The Paint Question."
"Paints in Architecture."
"Specifications for Architects."
"French Government Decrees."

The New Jersey Zinc Co.

11 Broadway

New York

THE
Northwestern Terra-Cotta Co.
Manufacturers of
Architectural Terra-Cotta.

WORKS & MAIN OFFICE: CITY OFFICES:
Cor. Cuyabara & Wright- Room 1118 Bookery Bldg.
wood Avenues. cor. La Salle & Adams St.

CHICAGO.

Estimates given on application. Send for
Catalogue and Samples.

PERTH AMBOY
TERRA-COTTA COMPANY,

— OF —
PERTH AMBOY, NEW JERSEY.

OFFICE, 160 Fifth Ave., NEW YORK.

BOSTON AGENTS:

WALDO BROS., 102 MILK STREET.

Published Saturday, November 15

"The American Vignola"

PART I

The Five Orders of Architecture

BY

WILLIAM R. WARE

Professor of Architecture, Columbia University

Text and Plates 86 pp., 9"x12"

PRICE, 3.00

American Architect and Building News Co.

PUBLISHERS

[See Alphabetical Index on Cover 2 for Pagination.]

CLASSIFIED ADVERTISEMENTS.

[Advertisers can be indexed only under a single head free of charge.]

ARCHITECTURAL METALWORK.

Mullins, W. H., Salem, O.

ART METALWORK.

Art Metal Construction Co., James-
town, N. Y.
Ludlow Saylor Wire Co., St. Louis,
Mo.

ARCHITECT'L ORNAMENTATION.

Lombard & Co., A. P., Boston.

ASPHALT.

Neuchatel Asphalt Co., New York.

ASPHALT ROOFING.

Warren Chemical & Mfg. Co., N. Y.

BLUE PRINTS.

Makepeace, E. L., Boston.
Moss, Chas. E., Boston.
Spaulding Print Paper Co., Boston

BOILERS (Side-Feed).

Gorton & Lidgerwood Co., New York.

BRICKS (Red Oxide).

Wisconsin Graphite Co., Pittsb'g, Pa.

BRONZE TABLETS.

Tilton, George P., Newburyport, Mass.

BRONZEWORK (Ornamental).

Rieley, Browne & Donald, Long
Island City, N. Y.
Tyler Co., The W. S., Cleveland, O.
Winslow Bros. Co., The, Chicago, Ill.

BUSINESS FOR SALE.

Ostrander, W. M., Philadelphia, Pa.

CAPITALS.

Lombard & Co., A. P., Boston.

CAPITALS (Carved).

O. T. Nelson Co., The, Columbus, Ohio

CARVING.

Lombard & Co., A. P., Boston.

Waddell Mfg. Co., Grand Rapids, Mich.

CEMENT.

Alson's Cement Works, N. Y. (now)

Atlas Cement Co., New York.

CLEAN-OUT.

Craig, David, Boston.

COMPOSITION ORNAMENT.

Lombard & Co., A. P., Boston.

CONSERVATORIES.

Lord & Burnham Co., Irvington-on-

Hudson, N. Y.

CONTRACTING.

Flynt Building & Construction Co.,

Palmer, Mass.

Rutan, William L., Boston.

CONTRACTOR AND BUILDER.

Rutan, William L., Boston.

CORDAGE.

Samson Cordage Works, Boston. (now)

CRANES.

Northern Engineering Works, De-

troit, Mich.

CUPOLAS (Foundry).

Northern Engineering Works, De-

troit, Mich.

CUTLER PAT. MAILING SYSTEM.

Cutler Mfg. Co., Rochester, N. Y.

DEAFENING QUILT.

Samuel Cabot, Boston, Mass.

DOORS (Steel Rolling).

Kinnear Mfg. Co., The, Columbus, O.

DOORS, WINDOWS, ETC.

Carlisle, Pope & Co., E. A., Boston.

DRAUGHTSMAN.

E. Eldon Deane, New York.

ELECTRIC SIGNALS.

Elevator Supply & Repair Co., New

York.

ELEVATORS, ETC.

Morse, Williams & Co., Philadelphia.

Whittier Machine Co., Boston.

ELEVATORS (Foundry).

Northern Engineering Works, De-

troit, Mich.

ELEVATOR SIGNALS.

Herzog Telesome Co., New York.

ENGINES (Hot-Air).

Rider-Eriesson Engine Co., New York.

EXPANDED METAL LOCKERS.

Merritt & Co., Philadelphia, Pa.

FAN SYSTEM.

Sturtevant Co., B. F., Boston, Mass.

FILING DEVICES.

Art Metal Construction Co., James-

town, N. Y.

FILTER.

Loomis-Manning Filter Co., Phila., Pa.

FIRE EXTINGUISHER.

Yantacaw Mfg. Co., Philadelphia, Pa.

FIREPROOFING.

Associated Expanded Metal Co., New

York.

National Fireproofing Co., Pittsburg,

Pa.

FIRE-ESCAPES.

Standard Fire escape & Mfg. Co., Bos-

ton.

FIREPROOF LATHING.

Hayes, Geo., New York.

FIREPROOF SHUTTERS.

Kinnear Mfg. Co., The, Columbus, O.

FLOOR POLISH.

Butcher Polish Co., Boston.

FOUNDRY EQUIPMENT.

Northern Engineering Works, De-

troit, Mich.

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.