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A NEW element in the building situation in New York is the ratification of an agreement between the George A. Fuller Company, which has held aloof from the Employers' Association, and the allied unions, by which the Company agrees to employ only members of the allied unions, and to leave all controversies between it and its men to a board of arbitration of five members, two chosen by each side, and the fifth by the other four. In return for this, the unions agree to keep the Fuller Company supplied with workmen in the different trades. According to the newspapers, other contracting companies are considering similar agreements, but no names are given. Although great publicity has been given to the Fuller settlement, it does not seem to involve any large number of men, or any important point. Just at present, the Fuller Company, although it is carrying on extensive operations elsewhere, is doing very little in New York. Apart from an office-building on Broadway, which it practically owns, it has, according to the *Record and Guide*, contracts only for a printing-office, of no very great importance, the new Siegel & Cooper store, and, perhaps, one or two smaller buildings. In all these undertakings it employs four or five hundred men. It is natural that the Fuller Company, which has always prided itself on keeping on good terms with the unions, should wish to make a settlement as soon as possible, not only to keep up its reputation as a friend of organized labor, but, incidentally, for the sake of the gratuitous advertising which its action brings to it; and it is not impossible that, as other contractors hint, it may see advantage in a policy which is likely to lead to a transfer of contracts to it from other builders, who, being pledged to the Employers' Association, must suspend operations until a settlement is reached which will comprehend all; but, on the other hand, its separate agreement with the unions, by which it is bound to employ only union men, upon terms practically dictated by the walking-delegates, may prove highly inconvenient later. If the Employers' Association remains firm to the end, as is likely to be the case, the settlement will undoubtedly establish the right of contractors to employ non-union men. In this case the Fuller Company, being limited to union men, would be at a disadvantage in comparison with its competitors; so that its present action looks like a manœuvre in which it has staked a good deal upon the success of the walking-delegates, for the sake of a temporary advantage.

MR. JEROME has a case which, although by no means exceptional, happens to present a very clear issue concerning the right of unions to deprive non-union men of the opportunity to earn a living, and he proposes to carry it before the highest courts in New York. A certain walking-delegate found that trim not made by union men had been used in a building. The rules of the New York unions prescribe that all trim and finishing material used in the construction of buildings shall be manufactured by union men within the city of New York. The walking-delegate, acting under this rule, ordered that the trim should be torn out, or, if this was not done, that a fine should be paid. The contractor chose to pay the fine, and the walking-delegate received the money. The delegate, who seems to have been perfectly honest, required the contractor to write a letter, stating the reason for which the fine was paid; and, so far as is known, the union duly received the money. The principle to be determined is, however, whether the union could lawfully establish such a rule, or require the payment of a fine for violation of it; and the decision of the Court of Appeals on this point will be awaited with the deepest interest. As every one knows, the practice of unions, in prohibiting their men from handling or transporting goods made by non-union men, has given them great power of distressing, not only non-union men, but the public, and this power has been used without scruple. Occasionally, the public, tired of being continually put to injury and inconvenience in furtherance of the schemes of labor leaders, has rebelled, and we think that non-union goods must, at least, be transported in some States without discrimination; but much is yet to be done before American citizens will enjoy the right to which they are entitled, a right far more precious than that of liberty of conscience, — that of working for the support of their families at such honest employment, and on such terms, as they may find fit, without molestation or hindrance from any one.

MR. GEORGE S. MORISON, one of the most distinguished of American engineers, died a few days ago in New York. Mr. Morison was educated as a lawyer, graduating from Harvard University in 1863, and from the Harvard Law School in 1866. He was immediately admitted to the bar in New York, but preferred to devote his brilliant talents to the more congenial problems of engineering, and, a year later, was employed as an engineer in Kansas City. He spent several years in the West, where he was constantly employed in works of the most important character. He built five bridges across the Mississippi River, and ten across the Missouri, one of his Mississippi bridges, that at Memphis, having the third longest span in the world. He was also skilled in certain departments of mechanical engineering, utilizing his knowledge in studying the conditions of railway systems, in which he was a distinguished expert. In 1898, he was selected as the engineer member of the Isthmian Canal Commission, and his clearsighted conception of the subject undoubtedly contributed to the remarkable success of the work of that Commission. He served as President of the American Society of Civil Engineers, and was a member of many professional and scientific organizations, at home and abroad.

THE designs for the Manhattan Bridge in New York have been utilized politically in a curious way, as appears from a very interesting letter to the *Evening Post*. Commissioner Lindenthal, as our readers know, has had plans prepared for a bridge in which the suspension members consist of chains of enormous eyebars, and strongly urges the adoption of this scheme by the Board of Aldermen. On the other hand, plans were prepared nearly two years ago for the same bridge, in which wire cables were used for suspension, as in all the large suspension bridges now in existence. Each system has its professional advocates, but the opponents of the chain can make the strong point that no large bridge has ever been built on this system. On the other hand, those who favor Mr. Lindenthal's plan talk with the positiveness which generally attends the advocacy of experimental schemes, and accuse their opponents of being "in the pay of the Roebling Company," while Mayor Low, and other high officials of the present reform administration, naturally, although perhaps incautiously, take the same side. Meanwhile, the Tammany members of the Board of Aldermen oppose the chain plan with a singular unanimity, of which the *Evening Post's* correspondent furnishes an explanation.

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ACCORDING to him, the Tammany element in New York politics would really like nothing so much as to see Mr. Lindenthal's plan adopted, against their ostensible opposition, for the sake of the political capital which they would derive from it. There is in this country, as he says, no establishment capable of forging and testing the eye-bars for Mr. Lindenthal's chain; and, if his plan is adopted, a plant will have to be specially constructed for this purpose, at a cost of several hundred thousand dollars, which will, of course, be added to the price of the chain, as the plant would be of no value for any other purpose. It is already estimated that the chains will cost five million dollars more than cables of equal strength; so that this item alone would serve as an admirable campaign argument against the reform administration, which was put into power by the people who desire economy and common sense in municipal affairs. This is not all, however. Mr. Lindenthal, instead of arranging for separate contracts for the cables, as has been usual, has combined the towers, anchorages, floors, chains and other portions of the superstructure in one contract. Remembering that there is but one concern in this country which can build the plant, and furnish the chains, that is, the Steel Trust, it is obvious that Mr. Lindenthal's arrangement, without necessity, and in violation of long-established precedent, throws the whole contract without competition into the hands of the most powerful of American trusts. This alone would furnish the opponents of the present administration with a great store of political ammunition; but by enlisting in aid of their arguments the popular hatred and suspicion of trusts, there is reason to think that the Lindenthal bridge may be utilized so effectually as to secure an adverse majority at the polls next autumn. This would be a public misfortune; and the *Evening Post's* correspondent makes a suggestion which appears both sensible and prudent; saying that, as the Board of Aldermen has not only approved the cable plans, but appropriated the money for carrying them out, it is hardly judicious for the new administration to commit itself, in opposition to the judgment of the previous one, to what is, after all, simply a theory of a single engineer, or a small group of engineers; and that it would at least do no harm to have both plans estimated, in the interest of the citizens, and, on ascertaining the comparative cost, judge as dispassionately as possible whether the chain bridge was worth the additional expense. In this way the cost of the chain bridge would probably be materially reduced, by competition with the cable bridge, and the opposing party would be deprived of the opportunity for charging against the reformers a transaction which the worst Tammany administration never would have ventured upon, in arranging, without necessity, and against the opinion of distinguished engineers, as well as the experience of the city, to throw one of the largest municipal contracts ever entered upon, without competition into the hands of the largest and, except the coal combination, the most execrated of the trusts.

THE Act providing for the work preparatory to the construction of the Charles River Dam, in Boston, has been passed by the Massachusetts Legislature, and the dredging out of the water-courses in the Fens, with the permanent exclusion from them, and from the Charles River basin, of all sewage, must, under the Act, be begun at once. The actual construction of the dam cannot be carried out, or even ordered, until the War Department at Washington has given its consent; but it is understood that this will not long be withheld, and the Act empowers the Commissioners in charge to complete the work as soon as permission is obtained. The scheme, as now adopted, is an admirable one, providing for a high-level dam, which will shut out tide-water, making the Charles and its tributaries fresh-water streams. The dam itself is to be one hundred feet wide, and is to be laid out as a park; and the shores of the basin are also to be formed into parks. The present Charlesgate is to be reconstructed, and made, we trust, artistically creditable to the city; and other important changes will naturally follow from the establishment of a permanent high level in all the waters above the dam.

IT appears that the sale of the Park Street Church property, in Boston, and the demolition of the beautiful building on it, was only postponed by the failure of the attempt made last winter to carry the scheme through; and a new syndicate has made propositions which the owners have voted, by a very large majority, to accept. As there is now no probability that money enough can be raised to preserve the church in its present location, the alternative seems to be to buy the building and remove it to a different lot, probably in some portion of the Back Bay region restricted against mercantile business, so that it may remain undisturbed for at least another century. There would probably be no appreciable difficulty or inconvenience in moving the building, either to the Fens, which seems to be the most suitable location, or to unoccupied land nearer the business quarter, perhaps on Park Square; and it is certainly desirable to preserve it. So far as the historical objections to moving it from its present site are concerned, it may be observed that, while they should have every possible consideration, there are precedents enough for the migration of historical monuments to make such a change at least preferable to a total loss of the structure. The Plymouth Rock, for example, loses very little of the veneration which it merits from the fact that it has been repeatedly shifted, and now rests at a considerable distance from the place where the Puritans found it; and similar peregrinations of objects of popular interest have been common at least since the seventh century B. C., when the first Greek colonists of Sicily, upon landing on the shores of their new abode, were agreeably surprised to find that the Arethusan spring had followed them under the sea from their old home, and was bubbling as clearly as ever in the foreign soil.

THE statistics of importation of iron for the past fiscal year show conditions of much interest. In two years the value of iron imports has about tripled, rising from seventeen to fifty million dollars. Of this increase the greatest, proportionally, has been in "railway-bars," structural steel being, presumably, included in this item. The figures show that, in 1901, the value of the imports under this head was only forty-three thousand dollars; in 1903, the value will be about three millions, — an increase of about seven thousand per cent. In pig-iron the value of imports has increased from one million to fifteen; in scrap iron, from three hundred thousand to nearly two millions, and, in ingots, billets and other partly manufactured material, from one million to nine millions. Apart from these items, the value of imports has varied little. The obvious conclusion from the figures is that the great volume of imports is due mainly to the pressing demands upon American manufacturers of finished products, who, on account of the impossibility of getting iron here within a reasonable time, have been obliged to import it from abroad. In structural steel, as we know, several contracts for frames have been placed in Germany, and the promptness with which the steel has been delivered, and the neatness and precision of the framing, have produced such a favorable impression upon architects and builders that the transactions are likely to be repeated, notwithstanding the duties and the cost of importation. On the whole, the showing is favorable, as indicating the continued prosperity of industries in this country; and, while the building world generally attributes the present stagnation in construction to a suspicion, on the part of the public, that present prices of material and labor are artificially raised, and cannot be maintained, it is probable, considering the general prosperity, that a small concession would materially revive building business.

EVERY admirer of the Metropolitan Park system of Massachusetts, which reserves for the use of the inhabitants of Boston forever the most beautiful natural scenery in the neighborhood of the city, will be interested in the modest memorial which it is proposed to erect in the Blue Hill Reservation, near the highest point of the park system, to the late Charles Eliot, to whom, more than to any one else, is due the development of this splendid work. Only three thousand dollars will be required to complete the memorial, which is to be in the form of a bronze tablet, attached to a simple stone footbridge, crossing a ravine at a point in the path encircling the summit of Blue Hill from which a view is obtained over the greater part of the Metropolitan park system. Nothing could, perhaps, be more appropriate as a monument to an artist in landscape who always deprecated the intrusion of buildings or other architectural creations into parks; yet few monuments could be more imposing than the vast sweep of the park system, as seen from Blue Hill, with which his name will be in this way connected. The greater part of the sum required has already been raised, but those who would like to add their names to the list of contributors are requested to send their subscriptions to Mr. Charles S. Rackemann, 23 Court Street, Boston.

LESS WORK IN CHICAGO THAN ELSEWHERE. — THE MOVEMENT FOR ENLARGED PARK AREA. — THE PROPOSED FIELD'S MUSEUM AND THE LAKE FRONT. — PLAYGROUNDS. — SALE OF THE FERRIS WHEEL. — THE CARAVELS IN JACKSON PARK. — A SUBWAY MOVABLE SIDEWALK. — THE ANNUAL EXHIBITIONS AT THE ART INSTITUTE.

THOUGH Chicago, as well as the rest of the country, may be enjoying prosperity, as said in my last letter, the high price of building-material and the attitude of the laboring world so discourage building operations here that it has been calculated that over thirty per cent less work is being carried on this year than last. In 1903 622 permits were issued, the buildings costing $3,317,200. In 1902 566 permits were issued at a cost of over $5,245,125, which means a decrease of thirty-seven per cent in expenditure. If other large cities were affected in a similar way it would not be so noticeable, but the increase in building in 1903 over the amount done in 1902 in nearly all cases is large. In New York there has been a gain of nineteen per cent, in Philadelphia three, San Francisco 131, Detroit 187, Cincinnati 178, Washington eighty-two, Milwaukee seventy, and so the list continues, the gain being almost invariably on the side of 1903. The facts of this report are borne out by the conditions in architects' offices, for while the large offices, such as Burnham & Co.'s who are doing work, not only in Chicago, but anywhere from New York to San Francisco, are full of activity, the majority of the offices find the work unusually slack.

Chicago, which has heretofore been considered a city rich in parks, is now agitating the question of constructing still more. The proposition of pushing the north end of Lincoln Park farther out into the lake on made ground, has been put to a vote, and though, to many, it would be a drawback to change the present shore-line, yet the urgent need for greater space in this especially crowded pleasure-ground has outweighed any other consideration. To read the plans published from time to time in the papers, one would almost be led to believe that nearly every desirable spot within twenty miles of Chicago was about to be bought up for park purposes. Every large city needs parks and none more badly than Chicago, with its noise, its dirty streets, its smoky atmosphere. To make Chicago at all bearable as a place of residence everything must be done to make it easy for its citizens to get away from its centre. Last week a new park bearing the name of McKinley was opened in the southwestern portion of the city. This is more in the nature of a playground than a park given over to landscape-gardening effects. It has taken only two years to transform it from a cabbage patch into its present state. It contains thirty-five acres, fifteen of which are used for a ball-field. Smaller portions are set aside for tennis-courts, wading-pool for children and swimming-pool for older people.

It now looks as if what is to be known as Grant Park, the former "Lake Front" of local parlance, would materialize into a feature of beauty, and that we might be able to have Mr. Field's multi-million dollar building for the museum placed upon it. If it could be certain that this Field Museum Building would be beautiful as well as solid and substantial greater enthusiasm might be evinced. The Art Institute, one of Shepley, Rutan & Coolidge's buildings, has always been a delight, placed as it is on the northern end of this Lake Front, but if we must have just so many thousand square feet of building sent out from some architect's office and dumped on the Lake Front to cut off the view, it certainly is questionable how desirable it would be. Half of the local architects have been eager for years to build themselves monuments on this same Lake Front, and when political pull comes into the question it is not always an assured thing what will be the result. It has been quite noticeable, this last winter, in all the talk of a permanent home which it was desired to build on Michigan Avenue for the Chicago orchestra, that constant references have been made to the Parthenon, and comparisons have filled the air, as to how this building would be a crown to Chicago as the Parthenon was to Athens. No citizen of Chicago would ever regret the crown, provided it were to be of the right size and proportion; but to have it so one would need to start with a dictator of sense and refinement, which would mean first catch your Pericles, and then would follow the necessity for a Phidias, an Ictinus, and a Callistratus in the background. Certainly, from preliminary sketches published, no such overwhelming galaxy of talent was made apparent in the decidedly commonplace Italian Renaissance façade of the proposed building. Neither was there, so far as was generally known, any great rush among the men of the architectural profession to subscribe liberally to this proposed "crown." Though there has been no official announcement that the scheme has been given up, the matter seems to have been dropped for the time being at least, and it is to be inferred that the needful sum was not raised.

The President of the South Park Board has recently given hints as to plans seething in the official brains. One million dollars has been set aside for playgrounds, and ten more such parks as the McKinley pleasure-ground, before mentioned, may soon be equipped, ready for use by the children. The President has urged the acquirement of property for the establishment of an outer belt of parks along the Calumet River, the valley of the Des Plaines and the divide to the Skokee Valley, the line to turn east and strike the shore somewhere in the vicinity of Winnetka and thence south, *via* Sheridan Road, to Lincoln Park. This is a dream of the future, but would certainly take in nearly all the various features of natural beauty around Chicago.

A propos of the park talk, it has been rather amusing to have some of our treasures left over from the World's Fair brought into notice again by the Commissioners in connection with their possible sale.

That poor old statue of Columbus, which many of us thought was ornamenting some rural park, it seems has been reposing on the rubbish heap all these years in Washington Park. It was proposed this year by the Commissioners to have a "rummage sale" and to offer to the unsuspecting public bargains in Ferris Wheels, Columbus statues and Spanish Caravels. The Ferris Wheel, which for several years past has been losing money for its owners, in a small beer-garden on the north side, was first to accomplish a sale and was knocked down under the auctioneer's hammer to the highest bidder for $1,800. This is rather a low figure when one remembers that the original cost of the wheel was $362,000 and a trifle discouraging, too, when you are told that there are $300,000 of bonds outstanding against it and a further indebtedness of $100,000. Thus is this marvel of engineering skill destined to become old junk in the hands of its new purchasers. It has not been reported that the bronze expanse of poor old "Columbus" has proved attractive to any one, and public sentiment drew the hammer away from the caravels before it was too late to save these picturesque objects for the lagoon where they lie. When the caravels were given to the park a certain sum of money went with them from the Government, if our memory serves us correctly, to keep them in order. Whether this money has ever been expended it is hard to tell, but certainly they are in a very dilapidated condition at present and a menace to every one who goes near them. Yet with it all they are by far the most picturesque objects in the park. Seen at sunset on the lagoon they are really beautiful and it seems a great pity they should have been allowed to fall into the state of decay in which they now are. The picturesque sails have been used to cover the little Japanese houses, which were left from the Fair on the Wooded Island. Jackson Park is not as yet a beautiful park. Its trees are small, its spaces large, generous and sweeping, but with no striking objects of interest to hold one's attention. The impression of the park is that of an excellent low-toned background which, to have any value, needs some highly colored or characteristic objects in the foreground. Just such objects exist in the German building, the little Japanese buildings on the Wooded Island, and the Spanish caravels, and that any of them should have been allowed to fall into a state of dilapidation is more than a pity. Why! the caravels are worth more to Jackson Park than fourteen cages of wild animals, but should such a gift have been made, no doubt it would have been "kept up" to the last notch. In view of just such sentiments as these, the Park Commissioners withdrew their offer of sale, but that the poor old ships are to be better cared for in the future remains yet to be seen. When the question of selling the vessels came up, numerous quaint belongings pertaining to them were brought to light. Twenty very decorative flags were discovered, six large and two small cannon, chains, powder-flasks, stone cannon-balls, shields and arquebuses. Had the good condition of the caravels been maintained these articles would have made the old ships doubly interesting.

Another subject which brings up memories of the World's Fair days is the scheme for placing one of the movable sidewalks, such as was located on the long pier in 1893, in a subway under the main business streets. A company under the name of Multiple Speed and Traction Company of Chicago is now working for a franchise with the City Council. As those who were at the Columbian Fair will remember, the movable sidewalk consisted of three platforms moving at different rates of speed. From these graded platforms passengers could step till they reached the last one, which went at the fastest rate of speed, and on which there were seats. It certainly would be a novelty in the transportation line. As yet it is only a scheme in the minds of the promoters, and in the minds of other people liable to remain so, though it certainly has some good points.

With the closing of the school year the Art Institute makes its usual display of students' works and never before has the school made such a strong showing. It is a matter Chicago can well be proud of. The exhibition is equally interesting from the work of the juvenile classes right through the department, architectural drawings, design, applied design, which includes work in pottery, jewelry and baskets, modelling, drawing from casts — still-life, nude and draped models. A slight change in the system has been adopted during the last year. The advanced students work in different *ateliers* with a special master and the exhibits are made in these groups. Several pictures of much merit have been the result of this year's work and actual picture-making by those who can draw seems no longer to be discouraged.

The exhibition is unusual in its strength and evinces an ability and enthusiasm on the part of the students which speaks volumes for the school.

The annual exhibition of the Architectural Club held in the Institute this spring was carried along legitimate lines more strictly than it was last year, and the result was a more dignified whole, though doubtless it took the fancy of the general public less than did

the cat-tails and ceramics of last year. It was an exhibit of serious work and contained much of merit and worth.

PROTECTION AND PRESERVATION OF WOOD FROM FIRE AND DECAY.[1]

THE problem of wood protection, of converting it from a highly inflammable into an absolutely non-inflammable product, has floated before the minds of generations of men rather as a vague, dreamy proposition than as subject-matter upon which to concentrate intense intellectual attention. Sporadic efforts void of practical utility are historically recorded at irregular epochs, from Roman days to the present time.

So little is known by the general public of the practical results achieved in the line of protection of wood from fire that it is a tax upon its credulity to ask it to believe that the wood of a structure can simply, rapidly and cheaply be rendered as uninflammable as brick or stone. It is even likely that such a statement may be questioned here and now.

It is not claimed that wood cannot ultimately be disintegrated and destroyed by attacking flame, as we know brick, stone and steel may be; but it is claimed that wood may be so treated, and that the wood before you is so treated, that, upon the withdrawal of such flame, it will not of itself, except perhaps momentarily, hold flame, whether in beam, board or splinter. If this be literally or even measurably true, what is its significance?

Many years ago, in a great fire on Chestnut Street below Third Street in this city, the heat was so great as to disintegrate enormous masses of the granite walls. If wood is robbed of its inflammability, it is voided of its most serious objection in a structure.

If the wood in a building will not inflame from fire attack, but only slowly disintegrate, as other uninflammable materials will from contact with fire, then the contents of the building alone can be destroyed by fire in the building. Further, if the contents of a room inflame and the wood will not, then the fire can be localized, because the wood will not receive or transmit flame.

The elimination of the inflammable characteristic from wood is therefore a matter of vital consequence. And such treatment, further, as shall cause it to resist disintegration from fierce heat the greatest length of time, without at any time inflaming, must be the most desirable.

The sum of values arrived at, as a resultant of all recorded study, inventions and scientific deduction, up to the beginning of the present decade, as to protective treatment of wood, may be stated as: —

1. That wood is susceptible of absorbing varied percentages of liquids.
2. That certain chemical solutions, when injected into the cellular structure of wood and afterward dried, leave a residual deposit of dry chemical therein, from which, with water, the solution was originally formed.
3. That such impregnation may be effected by pressure mechanically applied and by incidental processes.
4. That such deposit of chemical substance in the wood-cells has in one case a preservative and in another a fire-resistant effect.

Practically, this formula condenses the whole state of the art up to a very recent period. The mechanical saturation of wood is really a new art. It found its first concrete development less than thirty years ago, in apparatus designed to saturate timbers with preservative solution. Previously abortive efforts had been made on a smaller scale, but were of no practical account.

Strangely enough, the preservative proposition claimed first attention; and as the work to be done required capital, capital called upon the engineer to formulate the apparatus with which to saturate the wood. The original theory of saturation, in its processional steps, is practised to-day with but slight modifications.

Fourteen preservative plants exist in this country, five in England, three in France and five in Germany, as reported. All have the original typical apparatus and system of saturation, so far as can be ascertained.

The belief prevailed, and prevails, that the interfibrous and cellular system of wood contained elements denominated sap, which according to recognized authority was vicious, and generative of destructive fungus. No distinction seems to have been made between the *real sap*, the solid deposit, and the *sap water* which came to the tree heart from the ground laden with vital power, performed its function, parted with its tree food, and failed to find its way as simple water into the atmosphere, only because the tree was cut down.

This *sap water* is very favorable to the propagation of germs, and is therefore really an undesirable element in wood. But the sap water is very small in amount in lumber cut for any time, and there is no reason whatever for any effort to eliminate it. For if the preservative solution is of any strength or value, it will impregnate such sap water and utterly destroy any germinative tendency. But the fact is that every effort is actually made to liquefy the *real sap*, the soul of the wood, and suck it out by vacual extraction.

The real bottom fact of the matter is that the original creator of the theory of saturation realized that, in sappy woods like yellow pines, the sap, being in such large volume, would resist saturation, and the only way he could see to get over the difficulty was to liquefy the sap by steaming, and exhaust it by the vacuum-pump. Within the last two years a statement was made in a scientific journal, describing this process, that this result was so successfully accomplished as to "leave the wood in a condition of a finely divided honeycomb." Comment on such a statement is superfluous.

The steps of process by this original method of saturation are, after the cylinder is charged: —

1. To introduce steam to liquefy the saps.
2. After prolonged steaming, to remove by vacuum-pumps the substances so liquefied, the operation requiring many hours.
3. To fill the cylinder with the preservative solution, allowing it to impregnate the wood, so far as it will, by its own infiltrative action.
4. Then applying hydraulic pressure to complete the saturation.

This apparatus and process mark the first systematic effort to produce a commercial result in the saturation of wood, and it has been continued from the first until now, with immaterial changes, as the universally adopted type.

That the business of preservative saturation has not obtained universal acceptance may proceed from several causes: —

1. The process of saturation occupies undue time, rarely taking less than from twenty-four to thirty hours for a charge.
2. Heart saturation in timbers of moderate square section is incomplete.
3. It is believed that the strength of the wood is seriously impaired by the processional steps, steaming and exhaustion of the liquefied sap.
4. The chemicals put into the wood, being excessively dilute, are ineffective.
5. That the exposure to atmospheric influence causes them to volatilize.
6. That the cost for such a modified result is excessive.

At any rate, it is manifest that the growth of treatment of wood with preservative is sluggish, and not at all in proportion to the advance in price of such woods. It would seem that, if it were clearly demonstrated that ties, piles and bridge-timbers could be saturated at reasonable cost with a preservative which would treble or quadruple their average life when untreated, in a country like ours one hundred plants would scarcely suffice to meet the demand, instead of fourteen in thirty years.

The advance in cost of ties, owing to the great railroad development of the country and rapid exhaustion of the timber, has, however, induced a number of the Middle West and Western railroads to put in plants of the old type, to treat ties, and their growing use is evidence that it is found an economy, even with the crude apparatus and an expensive chemical.

Observation of the operation of the mechanism and processes employed, and a study of wood and its susceptibility to absorption of liquids, led to the conclusion that the desired results could be obtained by much simpler mechanism and an entire reversal of process. The old form of apparatus consisted of a cylinder of from 62 to 84 inches diameter and from 85 to 112 feet long, closed at one end, having a massive door at the other, swinging either horizontally or lifted vertically. This door is fastened by a multilocking system of bolts passing through lugs on the periphery of the cylinder.

It is obvious that an external joint of from 62 to 84 inches diameter which has to be opened, say, once or twice every twenty-four hours presents a practical difficulty of great significance when it is desired to make it absolutely tight against any considerable pressure from within. If it leaks badly, no uniform pressure can be maintained. Further, perfect saturation, even of 1-inch-thick white-pine boards, cannot be effected in any practical time unless a pressure of at least 175 pounds is applied for several hours, no matter what preliminary process may have been employed. If a pressure of 175 pounds is put on the 84-inch gate-area, it has been found impossible to maintain a tight joint and even pressure. If much leakage occurs, the pressure pump must make it up, and, in speeding up, its reciprocating shocks, delivered against wood whose exterior surface has been softened by previous steaming, exert a most damaging and disastrous effect.

Therefore, the method of employment is to use, as that part of the process, a lower pressure, and avoid the rupture of the joint and damaging compression of the wood; but this is accomplished only at the cost of a great extension of time.

The new method wholly abandons all preliminary process. It was found from long practical testing that it was erroneous in principle, uncalled for, enormously expensive and practically ineffective.

As stated in published descriptions, saturation of boards and planks by the old system required from twenty-four to forty hours.

The new mechanism is, instead of a cylindrical body of 84 inches diameter, 50 inches in diameter and 112 feet in length. The cylinder body is made up of cast-steel flanged sections, $2\frac{1}{4}$ inches thickness of metal, with a special hydraulic joint at the flanges capable of enduring a hydraulic pressure of 1,000 pounds per square inch.

At each end is a domed gate, with a vertical hydraulic cylinder superimposed, which operates a vertical gate-valve weighing five tons. The gate is provided with phosphor-bronze rings as also the inner and outer guide surfaces. When the internal operating pressure comes upon the gate, these ring surfaces coincide, and the joint is perfect, whether with ten pounds or 1,000 pounds pressure. The

[1] Extracts from a paper by Mr. Joseph L. Ferrell read before the Engineers' Club of Philadelphia and published in the *Proceedings* of the Club.

greater the pressure, the tighter the joint. In this case it is the reverse of the old externally applied gate.

Furthermore, all possibility of communicated shock from the pressure pump is obviated by the interposition of an hydraulic accumulator loaded to the normal saturating pressure of each kind of wood. For white pine the normal saturating pressure is 300 pounds; yellow pine, 350 pounds; ash, 400 pounds; chestnut, 400 pounds; beech, birch and maple, 450 pounds; oaks, 650 pounds; and the direct saturation in this machine of 1-inch thickness of these woods can be performed under these pressures because of the absorption of shock from pressure-pump, with perfect results to the wood, and in a small fraction of the time required by the old system.

The wood is simply taken as it comes from the source of supply, put in the cylinder, the gate is closed, the cylinder is run full of saturating liquor, pressure is applied, liquor is returned to the tanks, the lumber is run into dry kiln, and another charge of lumber is run into the cylinder.

The process is identical whether the wood is saturated with preservative or fireproofing solution, with this exception: The growth of experience demonstrated that the criticism of engineers regarding the non-permanence of the preservative solution hitherto injected into ties, piles, beams, etc., was a just criticism. It *would* seep out, slowly perhaps, but inevitably, under varying atmospheric conditions. For instance, several railroad companies having tie-treating plants believe that chloride of zinc most effectually acts as a fungus-destroyer. Chloride of zinc is an expensive chemical, costing from five to six cents per pound. Therefore, to be able to use it for their purpose, and not make their product too costly, they use a very dilute solution. In its dilute form the residual protective matter left in the wood is so slight that successive rains and evaporations in a relatively short time exhaust the infused material, — wash it out. Practical investigation having positively confirmed this it was believed that for wood exposed to weather conditions no treatment would be permanent except such a one as would create a chemical double decomposition in the interior of the wood. Three years of continuous investigation resulted in the production of an apparatus applicable to the treatment of railroad ties by a wholly new method. This consisted in saturating them *individually*, instead of in mass, which can be done with great speed and absolute thoroughness and uniformity. . . . .

The saturation of wood to make it *fire-resistant* differs in many respects from preservative treatment. Wood treated to make it fire-resistant is subjected to many stringent requirements not essential in the case of preservative. For instance, the saturation must be complete to the heart. The *color* of the original wood must not be impaired. The *strength of fibre* must be preserved. There must be no lingering of flame on withdrawal of attacking flame. To effect this, the strength of solution must be as high as possible. This, of course, adds to the cost and the density of solution requires greater pressure to infiltrate.

The "state of the art" at the time this work was begun embodied the employment of the original apparatus above described and processes therein exhibited.

This chemical, superficially studied, seemed to be all that could be desired. Wood saturated with it certainly would not *inflame*. Shavings planed from it would carry no flame. The treated wood would discolor more or less, but the refusal to carry flame seemed so admirable a result that such a defect seemed trifling. Longer acquaintance, however, destroyed the illusion. Familiarity bred contempt. Sulphate of ammonia is a whited sepulchre. It discolors wood. It effloresces and loses its virtue. It is hygroscopic and destroys paint and varnish. It decays wood inevitably. Its resistant virtue is excellent *while it lasts*, but its endurance against attacking flame is brief. For instance, if we stand vertically a piece of untreated 1-inch white pine before a horizontal Bunsen burner so that the blue-point impinges, the average resistance to penetration and disintegration is thirty-two minutes. Similarly exposed, the average resistance of a piece of 1-inch white pine saturated with sulphate or phosphate of ammonia is sixty-three minutes, or an extension of life, due to the chemical, of thirty-one minutes.

Now, it is an admirable result to secure immunity from fire for thirty-one minutes, if no better result could be attained, and know that woodwork will not spread flame when treated; but it is not commensurate with the cost, and is not much to be proud of. Universally understood, it would not be considered a valuable commercial result.

The effectiveness of ammonia salts to repel flame from a wood surface depends upon the rapid volatilization of the ammoniacal gas. The greater the applied heat, the more rapid the exhaustion of the protective gas, and, when exhausted, no residual inert substance remains to bar the advance of flame or progress of disintegration. The gaseous emission chemicals were the only known materials used, up to five years ago, in any commercial fireproofing plant.

It became necessary to seek for practical materials, operating on a *reverse principle* from the gaseous emission, and after years of laborious effort sulphate of aluminum was discovered to be the substance endowed with the property of fire-resistance inconceivably beyond any previous conception. For instance, the best results from the *gaseous emission* substances was an added life over untreated wood of thirty-one minutes. Now the average of 2,800 pieces of 1-inch white pine treated with sulphate of aluminum has an added life of seven hours and thirty-eight minutes, or over fourteen times that of wood treated with the gaseous emission chemicals.

This most satisfactory result comes from the simple fact that sulphate of aluminum under flame loses its water of crystallization, its sulphuric acid of combination, and remains then *residual pure aluminum* which has the admirable property of expansion in the vacant cells of wood, to two and one-half or three times its original volume of dry sulphate; and in doing so it interposes between flame and wood fiber a compact mass of pure alumina, infusible by the flame of any conflagration, and an admirable non-conductor of heat.

It appears, therefore, that the fire-resistance achieved in saturated wood proceeds from the *massing within it* of an inert and infusible substance, which from its non-conducting character *bars* destructive heat and produces endurance of the mass, and absolutely negation to flame, for a prolonged period of time.

This, as the best result, seems to assure that the *massing principle* is the correct one; and it is further illustrated and confirmed by the extension of it in a wholly different application.

A casual remark was made over two years ago by a prominent insurance man, to the effect that the saturation of wood by sulphate of aluminum was assuredly a great gain to it in fire-resistant quality, but that *he* was quite as much, if not more, interested in the preservation of *existent* structures, from attack by fire, than he was in preparation for protection of non-existent structures, or those only in contemplation; and he counselled the serious study of this phase of wood treatment.

The proposition, in view of the small results accruing from the multitudinous so-called fireproof paints, was by no means an encouraging one; but the powerful results accomplished on the massing principle *in* the cellular structure of wood bodies indicated the direction to be a *massing* of a series of chemical solutions *on* the external faces of wood bodies.

A wholly new set of phenomena appeared for consideration: —

All paints known to the writer, applied to the superficies of wood, on the application of heat break up sooner or later, scale off, or otherwise disappear.

The attachment to the superficial cells of wood seems to be slight, and to effect a *bond* the *penetrative* effect of an initial application should be marked.

A chemical substance was discovered possessed of extraordinary penetrative power, a simple application entering below the surface even of oak one-quarter of an inch.

By subsequent coatings, other chemicals, *making chemical union* with the first, insured adhesion and condensation, and an *enamel, not a paint*, grew upon the wood surface, possessing a fire-resistance over six times, on the average, that of wood treated by sulphate of ammonia solution diffused throughout the entire wood body.

The problem involved the discovery of a *transparent enamel* for hard and fine woods in interior work.

It compelled the discovery of means of application to woods covered with old paints and old varnish; the ability to absorb and receive on its surface lead or zinc paints when required; and it finally led to the discovery of means of incorporation of all shades of coloring in the massed enamel, so incorporated as to be proof against wear of weather exposure, and by such incorporation to preserve indefinitely the original freshness and brightness of the coloring-matter.

The palpable results of this work are before you. The aim has been to honestly and most practically cover the whole ground of wood protection from the attacks of flame and fungus.

It is not for a moment claimed that wood treated by these processes is absolutely impervious to fire; that such wood is irreducible by fire; but it is believed that by these processes and chemical solutions wood has gained a large immunity from attacking flame, and that in each instance it will only disintegrate after the flame has persisted for such a great length of time that ample opportunity will be given for extraneous aid to extinguish it.

In going over the ground of results accomplished in the more effective protection of wood from fire, the vital value seems to be that its treatment produces unquestionable *non-inflammability*. It thus becomes a determined fact that wood thus treated, sustaining no flame itself, can communicate no flame; and attacking flame can endure only so long as its original fuel-supply remains unconsumed. Therefore, a fire originating in untreated contents of a structure will consume such untreated contents, and may blacken and roughen the surfaces of the structural wood, but can never excite any flame thereon if the fire-resistance resulting from treatment is efficacious, and must necessarily be limited to the radial distance of the extension of the projected flame.

These facts are not only proved by minor tests, as those before you, but in case of actual structures of treated and untreated wood of practical dimensions erected for comparative observation.

PRESERVATION OF IRON IN CONCRETE.

IN 1890 there was built in Berlin a revetment-wall consisting of reinforced concrete slabs between I-beam posts resting on piles cut off below low water and held horizontally by back-stays. The piles are survivals of a previous crib. In the spring of 1901 the Department of Public Works undertook a thorough investigation of the condition of the concrete slabs and the iron imbedded in them,

which is reported in a recent issue of the *Zentralblatt der Bauverwaltung*. The reinforcing consists of horizontal $\frac{3}{8}$-inch round iron rods, in number depending upon the earth pressure acting on the slabs, and of vertical rods about $\frac{3}{16}$-inch in diameter. The vertical and horizontal rods are tied together by wire so as to form a netting.

To investigate the condition of the slabs and the iron imbedded in them, nine slabs were chosen which showed cracks and other injuries, and twelve slabs which had a perfectly good appearance. Thirty-two holes about 10″ x 10″ were chiselled out, completely uncovering the rods, and at all places also where marked injuries were noticed the concrete was removed completely from the rods. The horizontal rods were .04 inch to .4 inch, and the vertical rods .4 inch to 1 inch from the faces of the slabs. In an injured slab three horizontal and two vertical rods were uncovered. The greater part of the upper horizontal rod was covered by a thin layer of rust, and the mortar, from the rod to the face, was destroyed. The two lower rods were free of rust. The vertical rods were somewhat rusty at several spots. In another injured slab, the uncovered rods, four horizontal and four vertical, were all equally rusty.

In a slab, which appeared on the outside to be in perfectly good condition, three horizontal and four vertical rods were uncovered. The two upper rods were rusted the same as in the slab first mentioned, but the lower rod was free of rust. The four vertical rods showed slight rusting at several spots. In another uninjured slab, all the rods uncovered, four horizontal and three vertical, were found to be free of rust.

In a slab in the upper row, the concrete had scaled off for about 4 inches above the bed-joint, and short distances each side of the post. The uncovered rods were much coated with rust on the face. In another slab the concrete had cracked off near the lower edge for about 4 inches. A horizontal rod laid .2 inch from the face had become loose, and was much rusted on the face. In still another slab, seven horizontal rods became loose because the concrete layer covering them had cracked off. The rods were much rusted. Three other slabs showed the same injuries. The concrete layer, which was only .12 inch thick, had cracked off, and the rods which were laid bare began to rust.

Some conclusions as to the building of reinforced concrete slabs of this type and the arrangement of the imbedded rods may be based on these observations. Rods with incipient rust were found in a relatively great number in injured slabs and in slabs in good condition externally, but destruction of the concrete was found almost invariably only where the rods were near the external face. At such spots, having only a thin protecting layer of cement, it was found that the rod was much rusted on its front only while the rest of the surface remained clean. Apparently the injury to the slabs may have been caused partly by the improper location of the rods, even, when free from rust, and partly by the use of rusted rods. Wherever rods free of rust protected by a good layer of cement of .3 inch to .4 inch and more in thickness were uncovered, the slabs showed no injury. It was also observed that the mortar adhered less strongly to the rusty rods than to the rods free of rust. From the latter the mortar had always to be removed by the point of the hammer.

Since the greatest bending stresses take place at the middle of the slab, it will be well to bend the rods so that they will be near the centre of thickness at the supports and the requisite distance from the face in the middle. No greater difficulties will be encountered in tamping the concrete than are encountered with straight rods which have to be bent in at the ends because of the flanges of the I-beam post. No accuracy is required for the curve of the bent rod. — *Building News.*

THE GREAT QUESTION OF LEVEES.

THE levee question will come before Congress this winter in a shape it has never assumed before and with a strength heretofore unknown. It is understood that the Mississippi River Commission will lay before Congress a demand for a larger appropriation for levees, if not the assumption by the national Government of complete control over them and responsibility for their construction and maintenance. This demand will be based on the experience of the present year, when the deforestation and drainage of the land in the upper Mississippi Valley, the recklessness of the people, and the carelessness of the Government have resulted in such a flood pouring down the river as to render it impossible for the people living in the alluvial lands along the Mississippi to protect their country from overflow. The further fact that wherever levees have been built of the proper size and strength they have sufficed to keep out the flood fixes the obligation on the Federal Government to assist more generously in the matter, if not to assume full care of and responsibility for the levees.

When the high water in the lower river reached its maximum and crevasses were reported from the St. Francis, Yazoo, and Tensas basins, there was a disposition on part of many Northern papers, ignorant of the real conditions prevailing here, to exaggerate and to see in the few crevasses that occurred a general failure of the levees. So eager were some of the Northern papers for sensations that they had even Memphis under water, although it is on a bluff, and New Orleans flooded, in spite of its complete escape; and it required some effort on our part to disabuse them of their wild and absurd ideas.

It is well, then, that they should be given all the facts in regard to levees to show how well they stood the flood and what a protection they have proved. There were some crevasses, it is true, seven in all, in Louisiana, Mississippi and Arkansas, but in all cases these breaks were due to the fact that, because of insufficient provision by the Federal Government, it was not possible to build these levees of sufficient height or strength. Mr. Charles Scott, of the Mississippi River Improvement and Levee Association, has given to the Memphis *News* some interesting information on the lesson of the flood and levees.

Mr. Scott considers that the late flood in the lower Mississippi teaches us two lessons: —

(1) The necessity of controlling the Mississippi River in the interest of the riparian owners and of the country at large; and

(2) That it can be perfectly and permanently controlled by a massive system of dikes properly constructed.

Reviewing the history of the Mississippi River, he shows the origin of levees and the good work done by them in redeeming the overflowed land and bringing it under cultivation; and he points out the utter failure of the other schemes for protecting the alluvial lands from overflow.

Any point that might be made because of crevasses here and there he disposes of with the following figures, showing how great the improvement that has occurred since we have built higher and stronger levees: —

Number crevasses in 1882	282
Number crevasses in 1897	38
Number crevasses in 1903	7
Number miles of levee destroyed in 1882	54
Number miles of levee destroyed in 1897	8.7
Number miles of levee destroyed in 1903	2.5

Out of 1,400 miles, which constituted the entire levee system.
Proportion of alluvial lands inundated: —
In 1882, practically the whole, 100 per cent.
In 1897, 33 per cent of the whole.
In 1903, 16 per cent of the whole. (Very little under cultivation.)

It should be remembered finally that the high water of 1903 greatly exceeded that of either of the two years with which comparison was made. That these lands are worth the cost of protection from overflow he proves by the following figures he gives of the work of land reclamation in Holland: —

Number of acres of area in the entire Netherlands in 1833 was 5,611,860.

Area in 1877 increased to 8,148,020 acres.

Increase in area and amount of land rescued by dikes from inundation, 2,536,160 acres.

Cost of building the dikes, $61,000,000.

Value of land as reclaimed, figuring at an average of $500 per acre, $12,680,180,000.

Gain to the Netherlands by the reclamation, $12,619,180,000.

The Holland lands reclaimed from the ocean will not compare with the alluvial lands of the Mississippi that will be protected from overflow and rendered cultivable by the erection of levees of the proper size. When their value is considered, when the responsibility of the Federal Government in the matter is demonstrated, we do not see how Congress will be able to refuse the demand that should be made on it this fall and vigorously pressed and insisted on. The Mississippi is a national river; its floods are caused by conditions existing outside of the lower alluvial States, over which these States have no control, whereas the Federal Government has. If it had exerted itself in the matter years ago, if it had protected the forests at the headwaters of the Mississippi and its tributaries from destruction, improved the condition of the river, deepened its channel and strengthened its banks as the settlement of the valley lands went on and the volume of water poured down on the States below increased, we would not now be facing the dangers of high water. This neglect of the past must be made good now by the Federal Government assuring us levees high enough and strong enough to keep out the flood. — *New Orleans Times-Democrat.*

BOOKS AND PAPERS.

IT is not easy to offer anything but favorable criticism of Guy's notable work on the flexure of beams. This book[1] is a reprint of a series of articles which appeared in the *American Machinist.* The scope of the work is indicated in the preface by the statement that "The study of the failure of beams by the buckling of the compression side has been strangely neglected, and now that it has been taken up, it proves to be the central fact and key to the entire subject when looked at in the broadest sense. The analogy of the failure of the compression-side of a beam by buckling to the method of failure of a long column was, of course, long ago remarked, but we believe there has been no previous attempt, certainly no successful attempt, to connect the two by a formula."

Every constructor has at times felt the inadequacy of existing formulas to determine correctly the proportions of a beam, taking

[1] "*Experiments on the Flexure of Beams,*" Resulting in the Discovery of New Laws of Failure by Buckling. By Albert E. Guy. New York: D. Van Nostrand Company. 1903. Price $1.25 net.

into account its liability to fail by buckling. Mr. Guy's work is purely analytical in its presentation, but the analysis is based so entirely upon the most careful, exact experiments and the resulting formulas are put in such usable, practical shape that the deductions have a value far in excess of what is usually expected of analytical research. Guy claims to have "solved experimentally the question of the lateral collapse of the beam and excavated the sectional area from good experience sanctioned by practice." It is so rarely that an investigator of this sort is willing to consider that his formulas are for use quite as much as for intellectual diversion that the writer certainly deserves more than the ordinary meed of praise. He has formulated the results of his experiments and analysis in three laws which deserve to be identified by his name, and which in some respects constitute the most remarkable addition to our knowledge upon the subject which has been contributed within several generations. These laws are as follows: —

First Law. — The load causing the buckling of a beam through flexure is inversely proportional to the square of the length upon which it acts directly.

Second Law. — The load is directly proportional to the cube of the thickness and to the depth of the solid or, generally, directly proportional to the moment-of-inertia of the section of the beam considered, taken in reference to an axis passing through the centre-of-gravity of the section, parallel to the direction of the load.

Third Law. — The total effect of one or several forces or of their components is equal to the algebraic sum of their individual effects.

The book, however, does not stop with merely determining the laws. It makes practical application to a simple beam, and shows how to calculate all the parts with an exactitude not possible under any other existing formulas. We do not agree personally with all the writer's statements. He seems to consider a factor-of-safety of two as ample in figuring the resistance to buckling. Furthermore, all his experiments were made upon small units, and in defence thereof, or, as he puts it, to strengthen the confidence of readers, he states that the science of the resistance of material owes more to laboratory experiments on small scale than to those made on large specimens. We should distinctly not agree with this. Nor can we quite appreciate why, with so keen an analysis as he has undertaken, he should be satisfied to assume that in a beam with any symmetrical cross-section the neutral axis is necessarily exactly midway of the height. But, aside from a few slight objections of this nature, the book is unreservedly deserving of the highest praise and it marks a distinct epoch in the development of structural science.

MOST architects and draughtsmen occasionally need to determine the strains in a truss, or an arch, or an unequally loaded beam, and, for that purpose, often wish to refresh their memories from some text-book of statics. The science of statics has advanced materially within a few years, and the notation, particularly in the graphical branch, has been made clearer; so that a modern text-book is always to be preferred for reference, even for those who have been familiar with the older ones. In Professor Johnson's book,[1] while the graphical system is explained very clearly, it is treated in a novel way, as coördinate at every step with the analytic, or, as Professor Johnson prefers to call it, the algebraic method. There can be no doubt of the advantage to students of this treatment, which, by taking up every problem both graphically and algebraically, and showing the practical identity of the two methods in all cases, greatly facilitates the understanding of both. It may be imagined that a student accustomed to making graphical diagrams of statical problems will rarely be at a loss for the proper equation if an analytical solution is required; and, on the other hand, an occasional algebraic treatment helps in giving clearness of conception of problems, and preventing the graphical method from sinking into the rule-of-thumb matter which it often becomes with students. This is, perhaps, the most valuable feature of the book for architects. As drawing is easy for them, and they have the materials always at hand, they, as a rule, always use graphical methods for calculating frames of any kind, reserving algebraic solutions for problems of loaded beams, or cantilevers, where there are no trigonometric functions to be looked up in the book of tables; but, as every architect knows, there are a good many trusses, particularly of the ornamental sort, which present members of very uncertain structural quality. Sometimes the stress diagram for the joint including them closes without them; and it occasionally happens that the direction of the stress in them is not easily determined. In such cases the clearness of mental vision cultivated by a moderate practice of analytical methods is very useful; while, in problems which would, in general, be treated graphically, certain elements, as the reactions of the supports under unequal loading, or under wind-pressure, are more quickly and accurately calculated algebraically than graphically.

GERMAN VANDALISM AT ATHENS. — Athenian newspapers denounce a party of four German vandals who got access to the Acropolis and in an unguarded moment forthwith proceeded to chip off parts of the invaluable sculptures. — *Exchange.*

[1] "*Statics*," by Algebraic and Graphic Methods; intended primarily for Students of Engineering and Architecture. By Lewis J. Johnson, C. E., Assistant Professor of Civil Engineering in Harvard University. New York: John Wiley & Sons. 1903. Price $2.

ILLUSTRATIONS

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

THE CREDIT FONCIER EGYPTIEN, CAIRO, EGYPT. SIG. CARLO PRAMPOLINI, ARCHITECT, CAIRO, EGYPT.

THE Credit Foncier Egyptien, desiring to have a new building for the installation of its several services, so as to respond to its present actual needs, decided to open a competition for the construction of a building satisfying every possible condition of security. Architects of every nationality were allowed to take part in this competition. The total cost of the building was not to exceed the sum of £25,000 Egyptian; that is to say, $130,000. Two prizes were established for the authors of the best two schemes — the first prize of 6,500 francs, and the second prize of 2,600. In the month of December last, a committee of architects of every nationality examined and reported upon the 200 designs submitted. The first prize was awarded by unanimous vote to the design marked *Comme un rêve*, by the architect Carlo Prampolini, of the Ministry of Public Works at Cairo. This design was found by the committee to be the most noteworthy and best studied of all the designs in the matter of the arrangement of the different services and in point-of-view of providing security.

The building designed by Signor Prampolini occupies an area of 1,989 square metres, and consists of a basement, ground-floor and first story. The principal façade is 55 metres long, and the total height of the building is 21.85 metres. In the basement are the strong-rooms, closed with shutters, and the offices of the accountants and the secretarial force. Especial care has been given to protecting all the rooms of the basement, not only against fire, but also against dampness and burglars.

Upon the ground-floor is the main vestibule, with two halls opening from it, giving access to the grand counting-room, of rectangular form, with an area of 108 square metres, very well lighted. The cashier's department, which occupies 115 square metres, is very favorably arranged after the manner in common use both in Europe and in America. This also provides for the service of loans and discounts.

In the upper story is the hall of the directorate, the apartment of the administrative chief and divers financial departments. The staircase which leads from the ground to the first floor is richly and artistically decorated, as is also the counting-room, in a manner entirely appropriate and in good taste. The same thing may be said of the directors' room.

The façade sufficiently declares the character of the structure as a public building.

COUNTING-ROOM DETAIL: CREDIT FONCIER EGYPTIEN, CAIRO, EGYPT. SIG. CARLO PRAMPOLINI, ARCHITECT, CAIRO, EGYPT.

THE BOURROUGHS HOME FOR OLD WOMEN, BRIDGEPORT, CONN. MR. J. W. NORTHROP, ARCHITECT, BRIDGEPORT, CONN.

CANDELABRUM. DRAWN BY MR. W. L. WELTON, LATE HOLDER OF THE ROTCH TRAVELLING-SCHOLARSHIP.

Additional Illustrations in the International Edition.

DOME OF THE RHODE ISLAND STATE CAPITOL, PROVIDENCE, R. I. MESSRS. MCKIM, MEAD & WHITE, ARCHITECTS, NEW YORK, N. Y.

THE ROYAL TOWN PALACE, POTSDAM, PRUSSIA.

WOODEN CEILINGS: IN THE REGGIA DEI GONZAGA, MANTUA, ITALY. — IN THE BADIA, ITALY.

THE NEW BANQUETING HALL, MANNHEIM, BADEN. BRUNO SCHMITZ, ARCHITECT.

THE BEETHOVEN DOOR: NEW BANQUETING HALL, MANNHEIM, BADEN. BRUNO SCHMITZ, ARCHITECT.

NOTES & CLIPPINGS

A GREAT WHEEL-PIT AT NIAGARA. — The Toronto and Niagara Power Company is to build a power wheel-pit at Niagara Falls 480 feet long, 180 feet deep and 27 feet wide, cut through the solid rock. The work will cost $1,250,000 and will develop 225,000 horse-power. — *Exchange.*

Roman Frescos. — Among the Roman frescos from Bosco Reale sold recently in Paris one finds wall-spaces painted to represent an outlook on garden or town, as if the wall were absent and large windows unincumbered by screen or grating were framed by pillars having golden capitals. In one case the view embraces a front door, flanked by a tall jardinière with growing plants on the left, and a pillar crowned by a draped female figure in bronze on the right Over the door is a device like a balcony and above the balcony come the eaves of the house. On the wall to the left is a window of wood with four colonnettes making three openings, the whole window frame applied to the wall in the fashion still to be seen in Egypt and Turkey. The most curious thing in this perspective of a town is the group of tall buildings which show above the roof of the house. There are tall square towers with loggias above, like the belfry story of Italian campaniles. Directly out from a high wall springs a square chamber with broad windows on opposite sides, apparently a lofty loggia to catch the wind. While to a certain degree fantastic in the close clustering of the towers and high walls, this glimpse of a Roman townscape is of great use to architects who are trying to reconstruct old buildings from the ruins left by the ages. Another wall gives glimpses into a square surrounded by a portico of large columns, in the centre of which rises one of those round, pillared, slender monuments like that of Lysicrates which survives in Athens. It has a sharply pointed conical roof ending in a graceful finial. The painted gardens show arbors with vines running over the trellis, terraces topped by balustrades, bold rockwork which is artificial and marble benches such as are found in Pompeii. These frescos retain much of their original colors and indicate a very powerful color-sense in the artisans who composed them, and even a good understanding how to reproduce sunlight and out-of-doors effects. The features of the women are strongly marked, very earnest, even determined in expression, and resemble certain Greek types more than they do the living types about the Bay of Naples. — *N. Y. Times.*

Chicago sorry for her Noise. — That Chicago is in earnest in her anti-noise crusade is shown by the preparation of plans to lay the rails of its elevated railway system in a bed of hard rubber. The expense is figured at $2,000,000, but hang the expense if you can enable one Chicagoan to talk to another downtown without bursting a blood-vessel. As for visitors, they break and run for the lake-front when they feel the necessity of conversing together. A few more years of the present indescribable uproar in Chicago and the people there will do nothing but make signs. As it is now, you see thousands of them walking along talking to themselves as if they had just escaped from an asylum for the insane. It is the only way they can think. Without uttering their thoughts it is actually impossible to make themselves comprehend what their own minds are busying themselves about. Chicago used to be proud of this noise. She felt that it impressed strangers with the bigness of Chicago, and at one time if the volume of sound could have been punctured with minute guns of dynamite it would have completely expressed the Chicago spirit. The idea was that no one should be allowed to go to sleep, and that everybody was to "holler," as the ringmaster and the roustabouts at the circus do when the bareback rider is doing his grand jumping on and off finale. The noise made the bricklayers lay brick faster, the pavers hasten with their concrete hoes, the sewer diggers' spades flew the more rapidly, the flying multitudes on the sidewalk broke into a run, and every human activity was spurred up at least fifty per cent. But Chicago is tired of all this now. She has stopped long enough to ask the purpose of it all; and, since she has now taken the other chute, the chances are that, with the usual Chicago energy applied to it, she will become so noiseless that you can hear the rustle of a newspaper the man is unfolding in the next block. — *St. Louis Globe-Democrat.*

A Fine Queensland Tree. — The silky oak (*Grevillea robusta*), one of the most valued trees for timber purposes in North Queensland, is spreading in many parts of the world, especially in Ceylon. It is very hardy and drought-resisting, and flourishes quite well at sea-level and 6,000 feet above. The tree enjoys popularity and wide diffusion on account of its vitality, beauty of foliage, and value of timber. Its favorite habitat are the scrubs that lie back from the northern coasts of Queensland. The silky oak exudes both a gum and a resin. As to its vernacular name, Hooker says: "From its deeply dissected foliage and the silkiness of its underside, it has obtained the name of 'silk oak' among the pine cutters on Moreton Bay (Queensland)." When split on the quarter, this timber shows a handsome oak-line grain, the prefix silky being either because of the silky underside of the leaf, or on account of the bright appearance of the freshly-split wood. The Queensland aborigines call the tree "Koomkabang." The tree bears a profusion of orange-yellow flowers, which, like those of most members of the natural order to which it belongs, are rich in honey, and hence are sought after by the bees. The chief characteristic of the timber is its fissility. It is light in color, and has a handsome oak-like figure. It is moderately hard, and works well. Two well-seasoned slabs of this wood have weights which correspond to 38 lb. 14 oz. and 36 lb. 2 oz. respectively per cubic foot. — *Building News.*

Discovery of Stolen Tapestries. — The Paris police discovered by accident when making a visit to the apartment of a certain Mme. Berthon, accused of some minor offence, one of the superb Aubusson tapestries recently stolen from the cathedral of Tours. The priceless piece representing the adoration of the Magi, was used by the woman as a portière. Two of the other tapestries stolen at the same time were found in the apartment cut to pieces. The police have been unable to discover as yet how they were stolen. — *N. Y. Evening Post.*

Paris House Statistics. — Of the 79,742 houses in Paris, 47,716 may be regarded, says *Le Journal* of Paris, as very good, or good from a hygienic standpoint, and 32,026 as indifferent or defective. Out of the above total 59,959 are provided with spring water, and 11,050 with both spring and river water; while 23,252 have modern sanitary arrangements. Lightning is effected by electricity in 4,651, by gas in 57,740, and by oil or petroleum in 17,351. The number of Paris houses entirely warmed by caloriferes is 6,017, and of those provided with lifts 2,224.

McClellan Models Rejected. — At a meeting of the McClellan Statue Commission in Washington on June 17, the following resolution was adopted unanimously: —

"*Resolved*, That, inasmuch as it appears by the final letter of advice from the advisory committee, consisting of Messrs. Saint-Gaudens, French and McKim, that no model submitted upon the competition is satisfactory, the commission exercises the right reserved in the programme of competition, and rejects all the designs and models submitted."

It was stated that the commission will invite some sculptor who was not in competition to submit a design or model of a statue to McClellan instead of again calling for designs in competition. — *Exchange.*

Treasure-trove and the British Museum. — Buyers of antiques or objects of art or archæology often enter, with the best of intentions, into transactions which appear simple enough at first sight, but which later develop surprising complexities. The collector, individual or corporation, frequently purchases on the understanding that the seller is without reservation the owner. Subsequently it transpires that some one else has claims, that there is a lawsuit involved, or Government claims the right to preëmpt, or the object turns out to be treasure-trove. The last has just occurred in England. The British Museum had bought from an Irish collector (who was a member of the Royal Irish Academy) a collection of Celtic antiques. These the Irishman had bought from a Belfast jeweller, and he, in his turn, from the peasant who had found them. The jewels were safely installed in the British Museum, when, after waiting eighteen months, the Royal Irish Academy came forward with the claim that these articles were treasure-trove, and, therefore, appertained to the Crown. The claim added that, according to the practice of the Home Office, Ireland should have the right of preëmption. After lengthy litigation, the courts have sustained the first claim, and the property reverts to the Crown. Whether the Royal Irish Academy will now gain possession of it remains to be seen, as the matter is at the disposal of King Edward. Of course, the Treasury will see to it that the British Museum trustees get back the £600 which they paid "very properly in the discharge of their duty," as the Attorney-General commented. But every collector who tries to involve himself in a similar tangle does not come out so easily. — *N. Y. Evening Post.*

A New Form of Automatic Sprinkler. — One of the most objectionable features of the automatic sprinklers now so often fitted in factories and warehouses, and other large buildings, is the serious damage by water, which frequently takes place by the unnecessary flooding of a comparatively large area for the purpose of quenching a fire which may be confined to a few feet of floor-space. It has frequently happened that where the fire has broken out and been extinguished without discovery, the sprinklers remain in action for hours afterwards, and the water has done as much damage as a serious fire. Mr. George C. Hale, till recently chief of the fire-department of Kansas City, has devised an apparatus which combines some of the characteristics of the sprinkler system with that of the Babcock tank extinguisher. The pipes, instead of being filled with water, contain air under pressure. The unusual heat causes the breaking of a seal, as in the case of the sprinklers, and this release of air automatically performs the operations of generating the gas, which thereupon issues from the pipes and extinguishes the fire by smothering it. There is a small amount of water in the tank, which is necessary to create the required pressure of gas, and some of this issues through the pipes, but it would not in most cases be enough to cause any material damage. — *Building News.*

To raze Expensive Buildings. — Because inferior mortar was used in the construction of two big buildings at the Government Powder Works, Picatinny, they are to be torn down and others erected. The buildings are of brick, and were built at an expense of $15,000, a New York firm having the work. When the Inspector from Washington went through the works lately he discovered that mortar had been used which was not up to the grade specified in the contract, and he immediately ordered the destruction of the buildings. — *N. Y. Times.*

World's Fair Expenditure. — The World's Fair Company has expended in actual cash $8,500,000 up to the first of the present month, as shown by the report of the Auditing Committee of the National Committee at work here. The Commission has been informally notified by the Exposition Company that a request will be made upon the Secretary of the United States Treasury to be allowed to draw on the fund of $5,000,000, appropriated by the Commission for the Fair, between now and September, probably in August. Contracts have been let by the Exposition Company that will approximately complete the expenditure of the $10,000,000 required by the Act of Congress before any of the Government funds are available. The report of the Auditing Committee will be forwarded to Washington, and when the Government fund is available the money will be paid out under rules and regulations prescribed by the Secretary of the Treasury. — *Exchange.*

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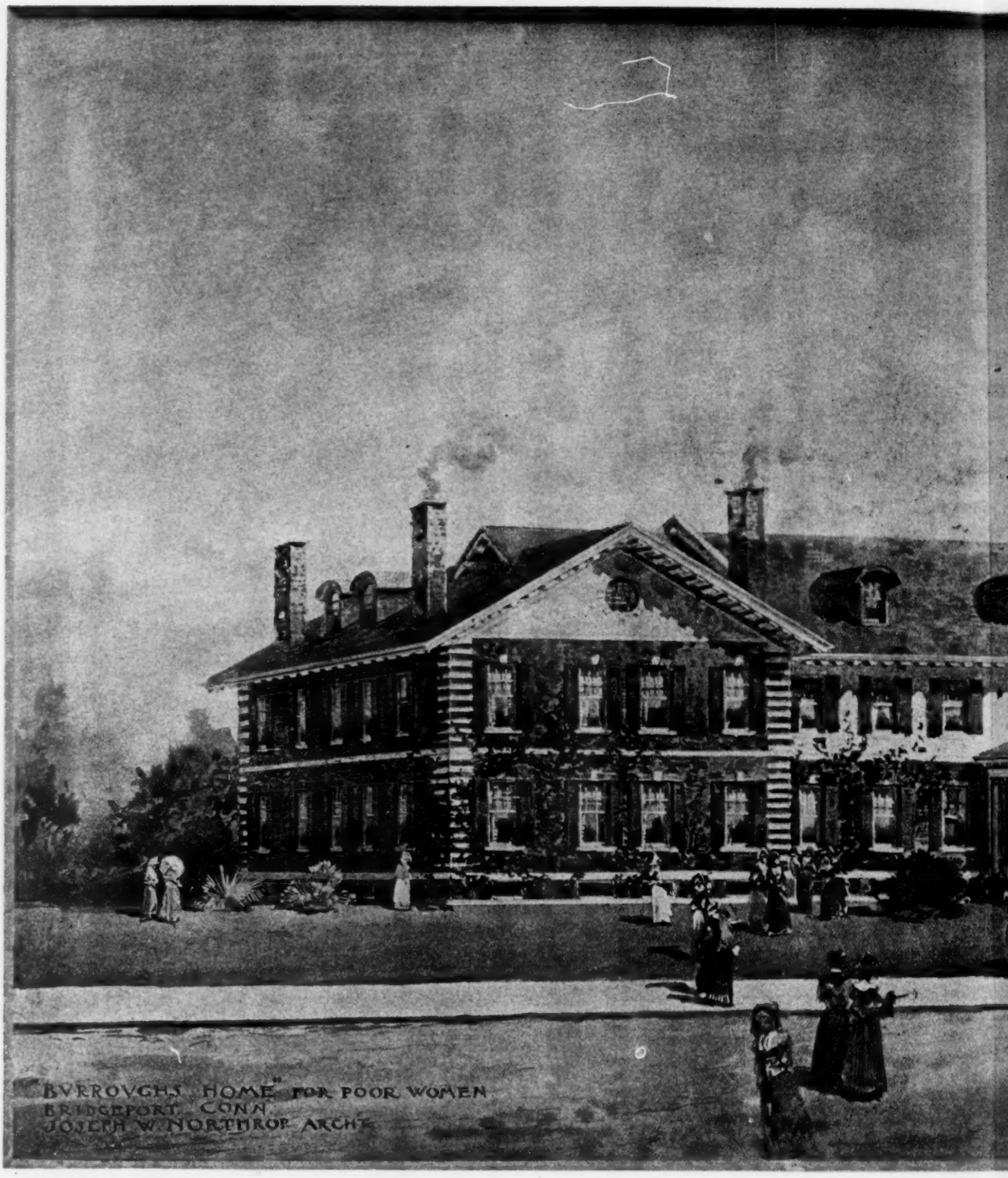

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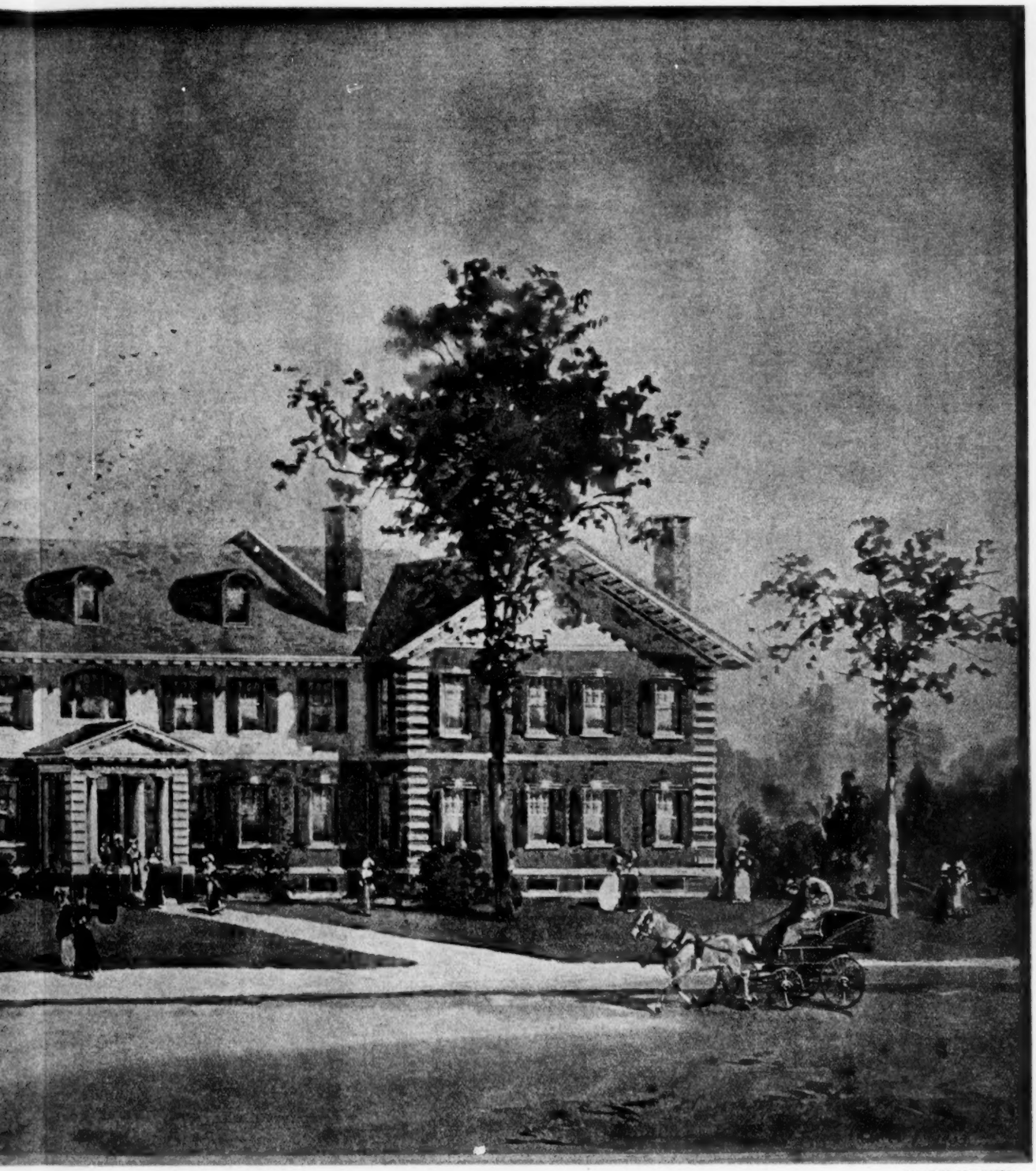

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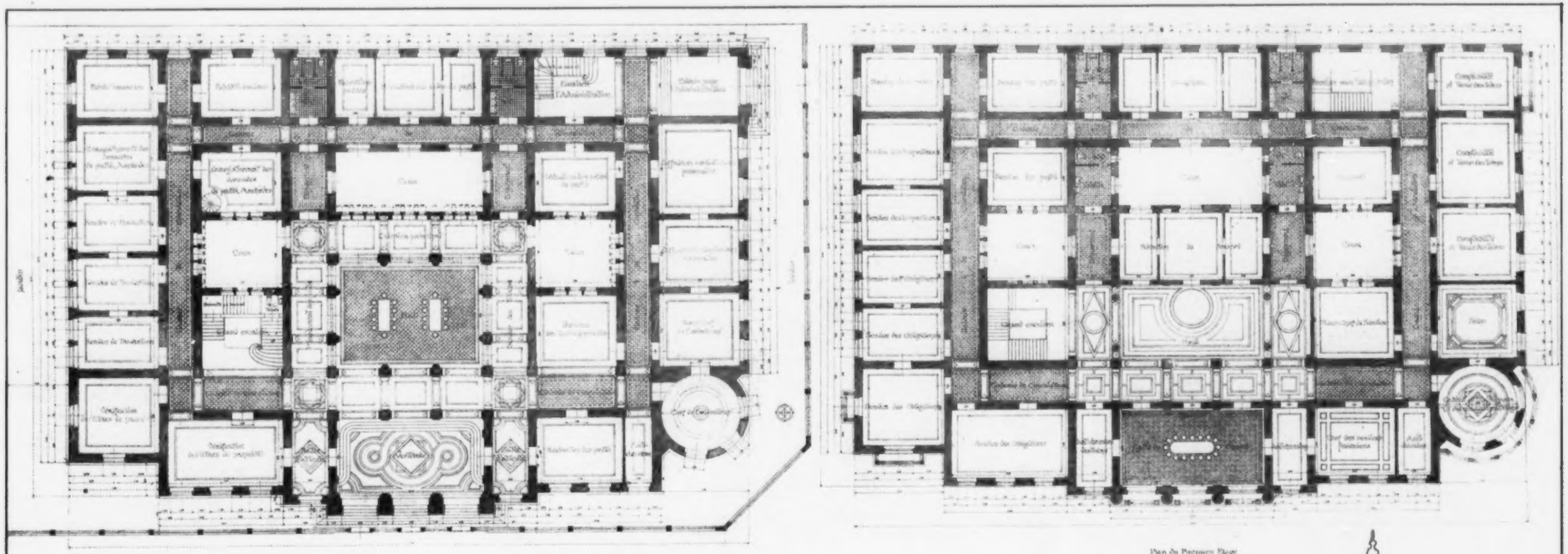

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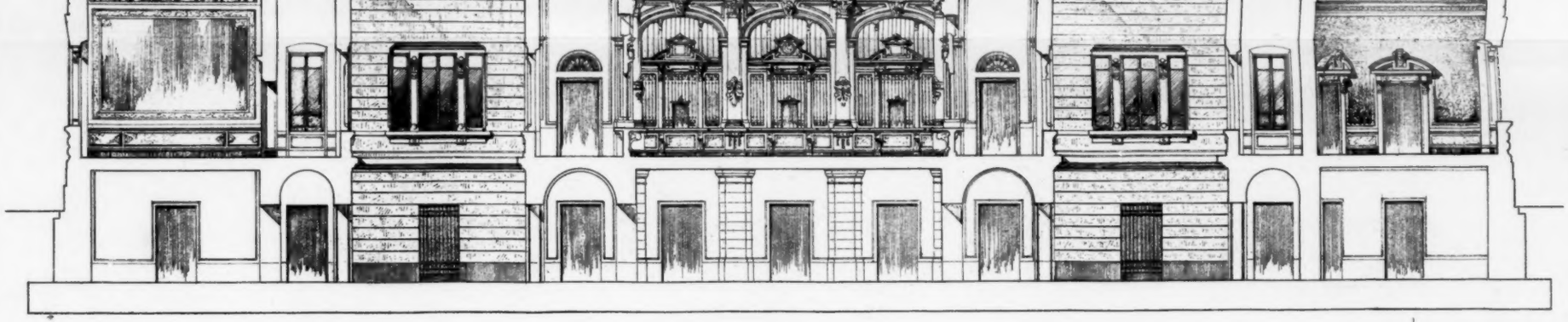

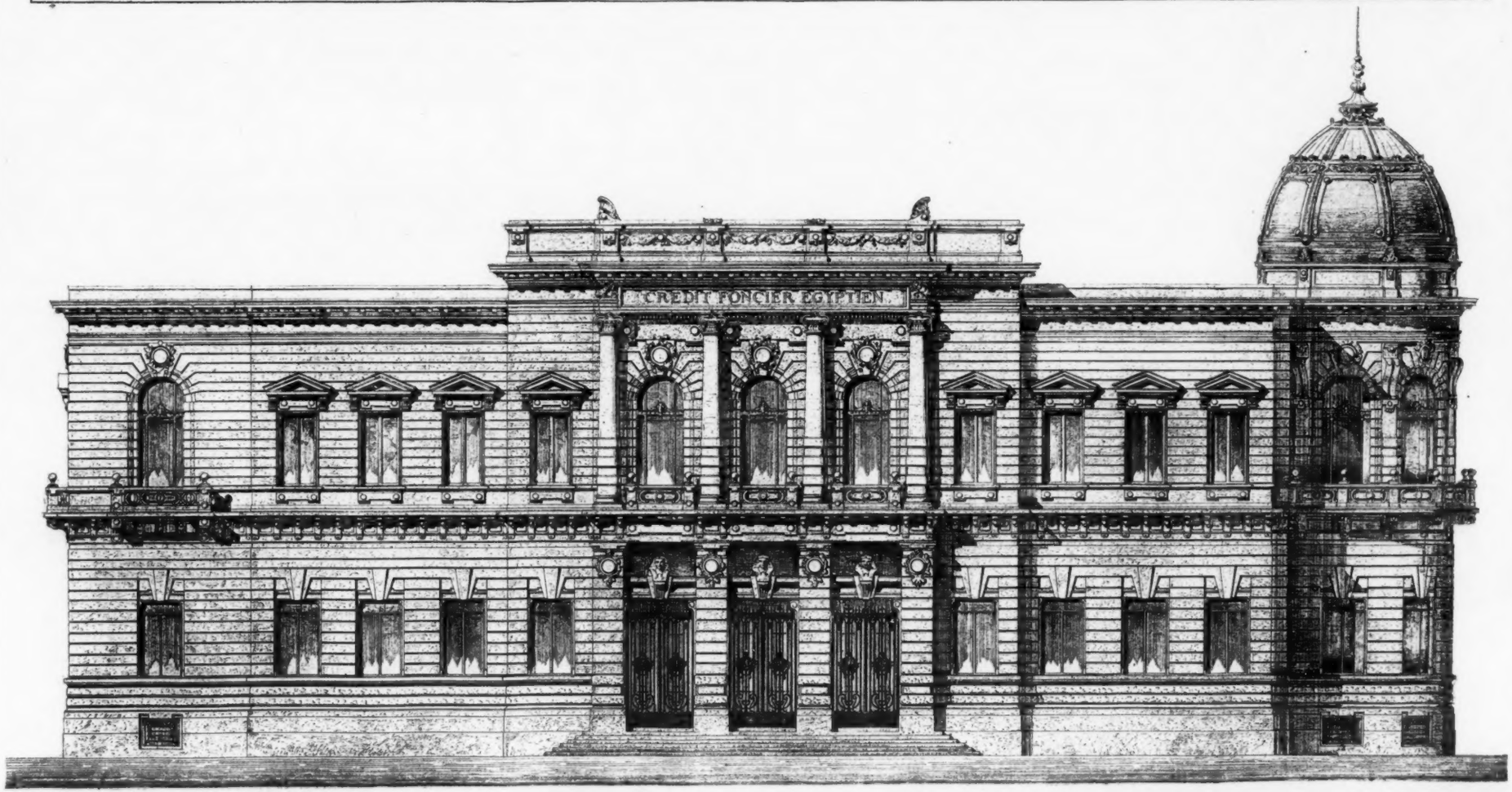

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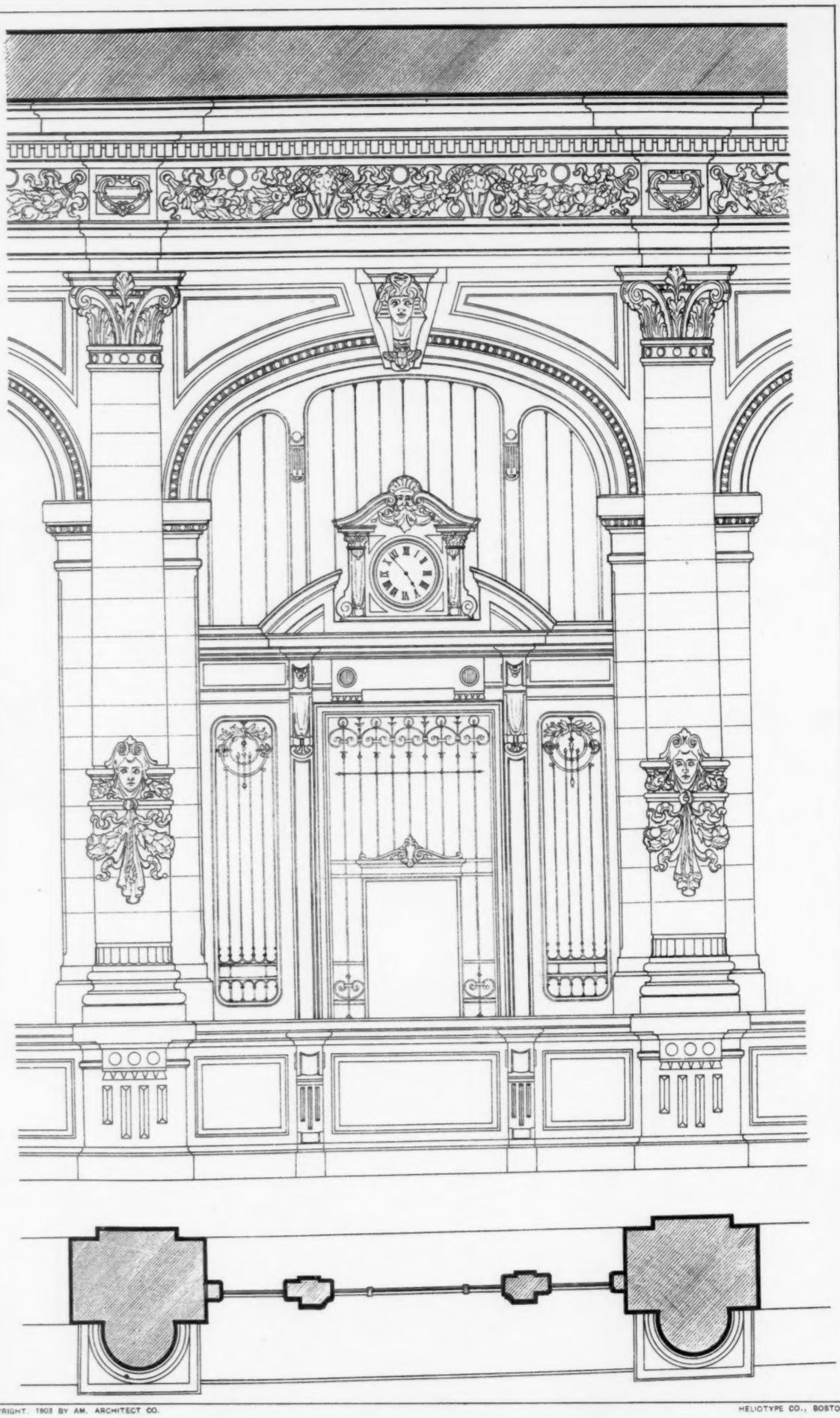

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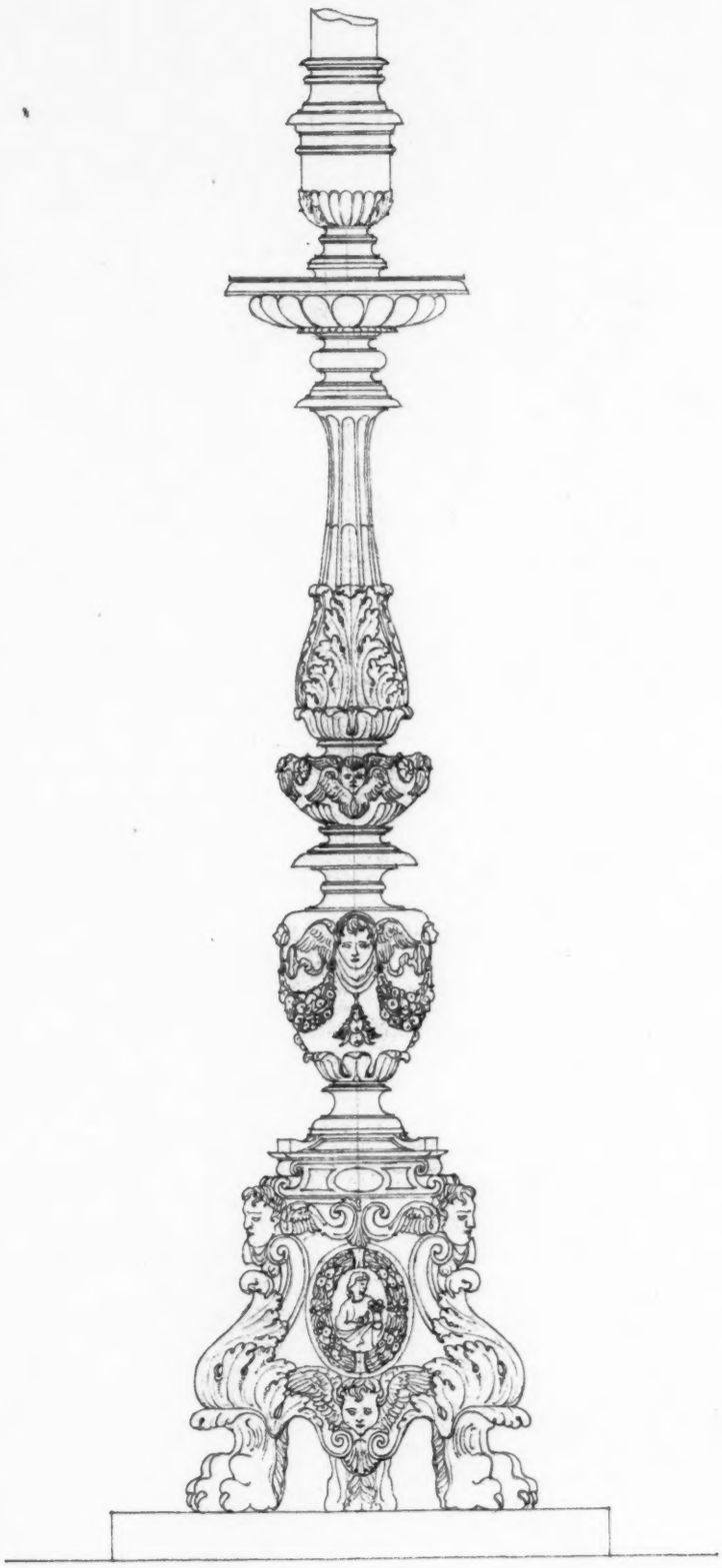

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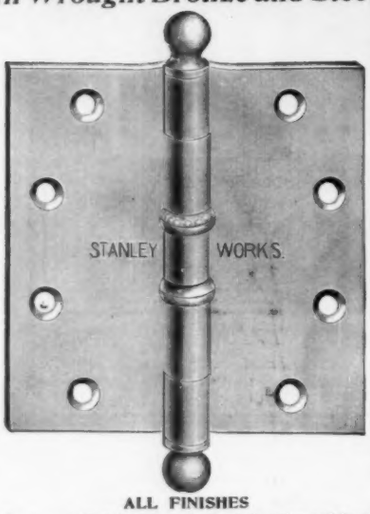

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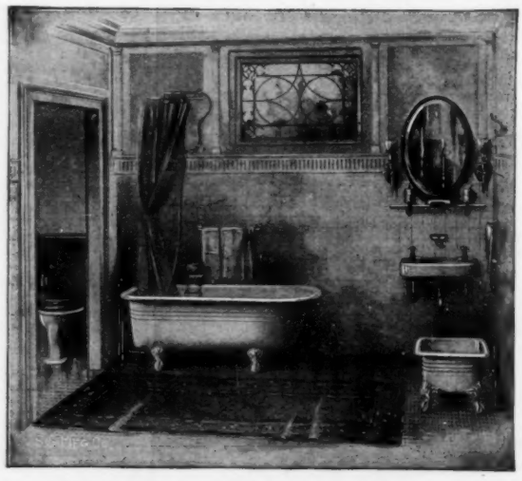

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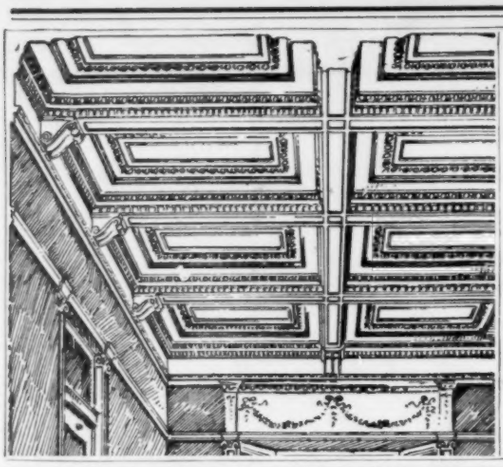

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Code Of Practice

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.

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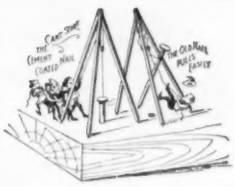

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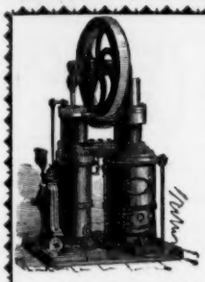

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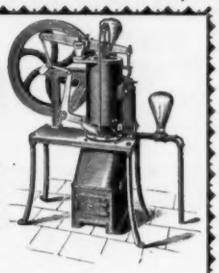

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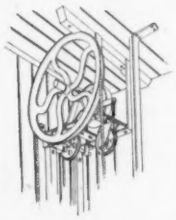

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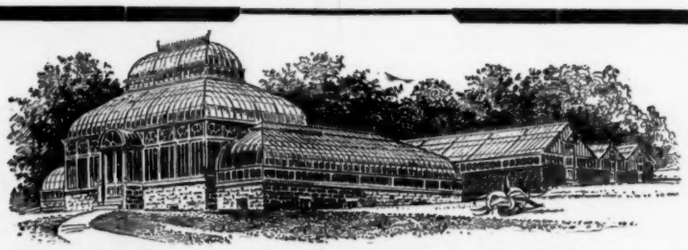

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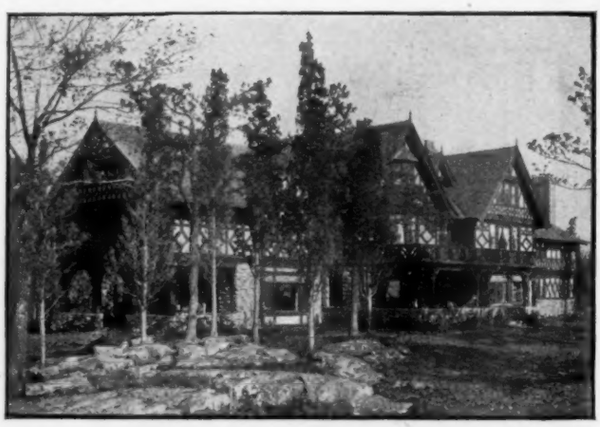

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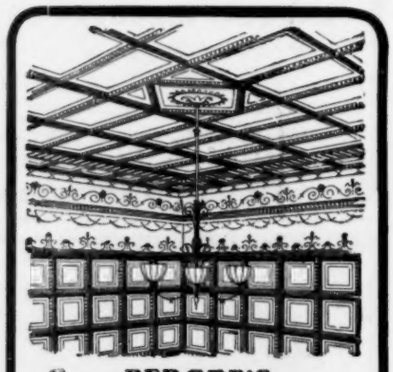

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BUILDING INTELLIGENCE.

(Reported for the American Architect and Building News.)

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

ADVANCE RUMORS.

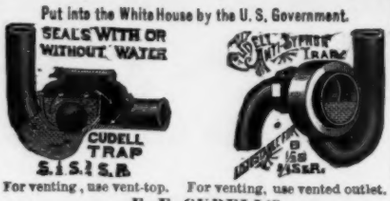
Altoona, Pa. — Ground has been broken for a new convent for St. Mary's German Catholic parish. It will be a three-story brick building, 40' x 65', containing 15 rooms and a chapel. It will cost $20,000 and will be ready for occupancy by November 1.

Asheville, N. C. — It is reported that George W. Vanderbilt has acquired a large tract of land between Hendersonville and Brevard, about thirty miles from here, and will shortly commence construction of a model manufacturing city. A complete system of water-works, electric lighting, heat and power will be installed.

Bellefonte, Pa. — Contractors George W. Beard & Co. have received the contract to erect an annex to the State College which will cost $100,000. It will be three stories high, 70' x 125'.

Bolton, Mass. — The corner-stone of the new Whitney Library, gift of Misses Anna E. and Emma Whitney, was laid June 17. The building will be of rough-faced stone, one story, with high-pitched roof of tiles.

Put into the White House by the U. S. Government.



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BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

Boston, Mass. — Samuel Wells and R. H. Dana, trustees of the Washington Building Trust, have purchased the estate numbered 12, 14, 16 and 18 Bromfield St. The present structure which is a three and one-half story stone building, containing stores and offices, will be torn down and a modern eight-story fireproof building erected, which building will also cover the lot now occupied by the Washington Building, which has also been conveyed to the same purchaser.

John L. Behneke, 31 State St., and others will have work started at once on the erection of a $350,000 office-building at the corner of Broad and Franklin Sts. It will be of brick and stone, nine stories, 80' x 90'. Plans by C. E. Park, 110 Tremont St.

Bridgeport, Conn. — The large brick addition to the county court-house to be constructed for the law library will be started in a few days.

Brockton, Mass. — The High School Commissioners considered bids for the construction, heating and ventilating of the new high-school building on July 2. They decided to ask the city government for a further loan of $75,000, none of the bids received coming within the appropriation of $180,000.

Brooklyn, N. Y. — A hotel, to cost $750,000, is to be built by the Standish Arms Realty Co. at 167-69 Columbia Heights, now occupied by a stable and three dwelling-houses. The first three stories of the front will be of Vermont granite and limestone and the remainder of brick. The building will have a frontage of 75 feet and a depth of 101 feet. It will contain 225 rooms and 60 bath-rooms. The plans have been drawn by Frank S. Lowe and their execution placed in the hands of the Thompson-Starrett Construction Co. Work will begin within a few days.

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

Charles City, Ia. — Patton & Miller have completed plans for a $12,000 Carnegie Library to be erected here.

Charton, Ia. — Patton & Miller have completed plans for a $10,000 Carnegie Library to be erected here.

Chicago, Ill. — Definite steps toward the erection of the $3,000,000 art museum here have been taken.

Plans have been completed for a handsome sixteen-story structure to be erected at the corner of State and Madison Sts. by Joseph E. and Ralph C. Otis. Plans for the building have been prepared by Architects Holabird & Roche. The exterior will be of white enamel pressed brick and the interior will be fireproofed. The building will cost $600,000 and construction will be commenced May 1 next.

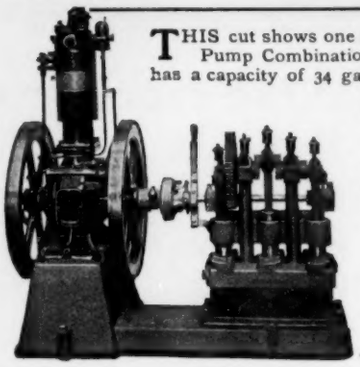
The Star and Crescent Milling Co. will construct a six-story brick mill and grain elevator on the Calumet River, the cost of which will be from $300,000 to $350,000. The mill is to be completed early next year.

First steps to carry out the plan of building a new million-dollar club-house for the Union League Club on its property at Jackson Boulevard and Custom-house Court have been taken.

Cleveland, O. — Building Inspector Dooley has granted a permit for the erection of a fine new stone church at the corner of Ansel Ave. and Superior St. The church is to be the place of worship for St. Thomas Aquinas Roman Catholic congregation, and will cost $65,000. H. J. Harks, formerly building inspector, is the architect.

The contract for the Jewish synagogue on Forest St. has been let to Walter I. Thompson by Architect A. F. Janowitz. The building will be of brick and stone and will cost about $40,000.

The corner-stone of the handsome $30,000 church



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BUILDING INTELLIGENCE.

(*Advance Rumors Continued.*)

to be erected by the Evangelical Lutheran Christian Society at the corner of Robert St. and Selden Ave., was laid recently. The building is to be of gray stone and pressed brick It is hoped to have it completed about January 1.

Danby, Vt. — Hon. S. L. Griffith is having plans drawn for a public library building which he will erect at a cost of about $30,000, and endow with a sum sufficient to support it.

Davenport, Ia.—Storehouse A which was destroyed by fire last February will be rebuilt as soon as the plans, which are being drawn up by Ralph Modjeska, are completed. There is available for the building of this structure the sum of $150,000, granted by Congress not long after the fire, and it is hoped that this appropriation may be sufficient to cover the cost of the new building.

Davenport, Wash. — It is reported that a $30,000 addition to the court-house will be built.

Deal, N. J. — Daniel O'Day, who headed the subscription list with a donation of $10,000 for the building of a new Catholic church has been instrumental in raising an equal amount from other subscriptions. It is expected the church will be finished in a year.

Dubuque, Ia. — Buechner & Orth, St. Paul, Minn., report the general contract to erect the St. Joseph's Mercy Hospital at this place was let to Albert Ney, 446 Main St. His contract calls for the superstructure complete except heating and ventilating, plumbing, electric wiring and fixtures, furnishings and fittings, which will be let later. His bid was $101,000.

Durham, N. C. — There is a movement on foot to build in connection with Trinity College, a great female college. A meeting of the executive committee of the Board of Trustees of Trinity will be held soon to consider the organization of this college.

East Kingston, N. H. — The trustees of the new Brown Academy have authorized the construction of a brick building to accommodate a fair number of pupils, fitted with every convenience, to be located on the hill just west of the railroad station.

Everett, Mass. — The new school-building to be erected on Glendale St. will cost $75,000.

Fergus Falls, Minn. — A new high school will be erected at a cost of $30,000.

Flatbush, L. I., N. Y. — The corner-stone of the new Sunday-school building of Grace Reformed Church was laid recently in the presence of a large gathering. The building, of which George Francis Morse is the architect, will be of buff brick, stone foundation, trimmed in hardwood, with open timber roof, and will seat about 500 people. The building will be thoroughly modern and is located at the corner of Bedford Ave. and Lefferts St. It will cost $22,000.

Fort Dodge, Ia. — J. H. Albright is preparing plans for the hotel which is to be erected here at a cost of $100,000.

Franklin, N. H. — The seventy-fifth anniversary of the Town's incorporation will occur this fall, and a celebration is contemplated. It has been suggested that the occasion would be a fitting time to lay the corner-stone of a free public library. Such an event, it is argued, would greatly augment the interest in the occasion and would inspire many to work more zealously for its success.

Geneva, Ill. — Plans have been drawn for a $50,000 structure for the Home of Juvenile Offenders. Cost, $25,000.

Gull River, Wash. — It is stated that G. M. Savage will establish a $50,000 plant for the manufacture of vitrified brick.

Hamlin, Minn. — Clarence H. Johnston has plans for a dormitory at the State Farm. Bids will be opened by the State Board of Control July 6. The appropriation for the work was $40,000.

Hartford, Conn. — Mount St. Joseph's Seminary, one of the leading Roman Catholic educational institutions in this diocese, is to have a new plant which will double the capacity of the school. Plans are now being drawn. The main building will be four stories high and will cost not less than $150,000.

BUILDING INTELLIGENCE.

(*Advance Rumors Continued.*)

Hoboken, N. J. — C. Fred Long is preparing the plans for the $200,000 institution with which the commission intends to replace the present old buildings on the City Hospital grounds. The commission will visit Philadelphia for ideas.

Indianapolis, Ind. — The plans of the new Herron Art Institute, designed by Vonnegut & Bohn, have been formally accepted by the Indianapolis Art Association. The building will cost $250,000. The style will be the Italian Renaissance. The material will be of Italian colitic limestone. Under the portico will be a large frieze in marble mosaic, with a gold background and medallions of great artists.

Lawrence, Mass. — Bids are asked for the construction of U. S. Post-office at this place. (See proposals.)

Lincoln, Neb. — The contract for the erection of the four story wholesale building of Harpham Bros. Harness and Saddlery Co. has been let to T. P. Harrison for $25,000.

Marshalltown, Ia. — A $50,000 office-building will be built by a local syndicate on the Tremont Hotel site.

Memphis, Tenn. — The School Board has allotted $75,000 for construction and enlargement of the buildings in different parts of the city.

Site has been bought for the Shelby County Industrial School, some six miles from Court Sq. Cost of buildings, $100,000.

The Goodwyn Institute at 3d and Madison Sts. is to be of brick or stone, from eight to twelve stories high and to cost about $250,000.

A $40,000 office-building is to be erected on 3d and Court Sts.

The Labor Temple, to be erected at 3d and Jefferson Sts., will be four stories high, and cost $100,000.

Menominee, Mich. — August Spies has given to the city $30,000 for a public library building. Patton & Miller have drawn the plans.

Mt. Pleasant, Ia. — Patton & Miller have completed plans for a $13,000 Carnegie Library to be erected here.

Mulberry, Ark. — A company has been formed for the construction of a $60,000 oil mill.

New Castle, Pa. — The Shenango Valley Hospital is to have a $25,000 addition.

New Haven, Conn. — Since the First Baptist and the Hope Baptist congregations united the need of a larger church has been sorely felt, and these people some time ago decided to purchase land elsewhere and erect a spacious edifice on it. They have bought a lot at the corner of Edwards and Livingston Sts., and the work of building a handsome church, which is to be of brick with stone trimmings, is to be commenced soon.

New Orleans, La. — The erection of a new club-house, equipped with all modern conveniences, is contemplated.

Newport, R. I. — Mr. Creighton Withers who has been selected as architect for the new barracks at the Naval Training Station for which the government will pay $217,000, is at work on the plans and will soon have them in readiness for the work of construction to begin. The building will be constructed of buff brick and will be located to the northeast of the present barracks.

Newton, Mass. — The Congregational Society will erect a one-story stone edifice, 96′ x 115′, at Centre and Homer Sts., after plans by Shepley, Rutan & Coolidge. Cost, $100,000.

New York, N. Y. — The contract for the erection of the new hall long contemplated for St. John's College, Fordham, has been awarded to John Maher & Son. Their bid for the hall exclusive of plumbing, steam, gas and electrical equipment was $99,250. The building, completely furnished, is estimated to cost about $125,000. This sum will be raised by loan or mortgage unless donors present the whole or a portion of the fund required.

It is reported that plans have been prepared and filed for the $170,000 hotel building for C. L. Felt, 246 W. 106th St.

A press report states that "Bridge Commissioner Lindenthal has presented to the Board of Estimate a report in which he approves the suggestion of Mayor Low for a great city building and railroad

BUILDING INTELLIGENCE.

(*Advance Rumors Continued.*)

station on the triangle of land bounded by Centre St., Park Row and Chambers St. The commissioner also presented a set of detail drawings of a combination station and municipal building, with estimates of cost. The estimated cost of the land to be acquired is $4,581,000, and of the building $4,445,825. The commissioner suggests the building of a court-house beyond the municipal building, and the removal of all buildings except the City-hall from City-hall Park. This arrangement, he suggests, would create a square larger and far more artistic than Trafalgar Square, London, or the Place de la Concorde, Paris."

The American Society of Mechanical Engineers have accepted the offer of Andrew Carnegie to give $1,000,000 for a union engineering building here. A cablegram of thanks was sent to the donor.

Plans have been filed with the Manhattan Bureau of Buildings for a four-story brick nurses' home, to be built on Blackwell's Island at a point opposite 51st St. The building, which is being erected by the city, will occupy a plot 35′ 2″ x 167′, and will cost $65,000. Renwick, Aspinwall & Owen are the architects.

Plans have been filed for a new five-story and basement hospital to be built on 51st St., just west of 9th Ave. It is understood that the building is to be erected for a new St. Elizabeth's Hospital. It will have a fifty-five foot front, with a façade of brick, limestone and terra-cotta and will cost $70,000.

A commission has been appointed by Mayor Low to determine a site and procure general plans for a new County Court-house.

North Tonawanda, N. Y. — Architect Joraleman, of Niagara Falls, will make the plans for a new library to be built on Goundry St. Andrew Carnegie has pledged $20,000 toward the cost.

Norwich, Conn. — The committee in charge of selecting a site for the new State Insane Hospital, for which the Legislature has appropriated $100,000, have selected a plot of land at Brewster's Neck. The building will be located about 200 yards from the Fort Point Station on the "Consolidated" Road and will be entirely fireproof, with accommodations for 100 patients. The plans have already been prepared and estimates have been given by contractors.

Omaha, Neb. — The John Gund Brewing Co. will make this city the distributing centre for a big territory both east and west and will erect a large building to cost upwards of $50,000.

Peoria, Ill. — A press report states that a $50,000 office-building will be erected by the Royal Neighbors.

Peshtigo, Wis. — A new fire-engine house will be erected here soon.

Philadelphia, Pa. — The Charles McCaul Co. have permit and will break ground at once for an exchange building for the Bell Telephone Co., at 254-56 S. 4th St. It will be a four story brick and terra-cotta structure, to measure 45′ x 102′ 10″. The cost will be $125,000. Plans by Rankin & Kellogg.

It is stated that Lewis Havens & Sons have been awarded the contract for the new $125,000 building for the John C. Winston Co., to be erected on the site of the Arch St. Presbyterian Church, in Arch St., above 10th. It will be an eight-story and basement steel, frame and brick structure, of semi-fireproof construction. Plans by William C. Pritchett, architect.

Pine Bluff, Ark. — The Bluff City Oil Co. has been incorporated with a capital stock of $100,000. A site has been purchased and new buildings will be erected.

Pittsburgh, Pa. — A ten-story brick hotel building will be erected by D. F. Henry. It will cost $500,000.

Rutan & Russel, First National Bank Building, have made plans for the new Pittsburgh County Club-house, to be erected, at a cost of $100,000, on Beachwood Boulevard.

J. L. Beatty, Jackson Building, has made plans for a three-story addition to the United Presbyterian Home for the Aged. Cost, $20,000.

Max Friedman is to put up a ten-story office-building at 412-14 Grant St. It will cost $200,000.

Plans have been prepared by Architect T. D. Evans, Lewis Building, for the Allegheny County Memorial Hall. Cost, $1,000,000.

A site has been secured for a $40,000 club-house to be erected for Montefiore lodge, No. 794, Independent Order of Odd Fellows.

The refectory, the first of a group of buildings to be erected by the Sisters of the Good Shepherd on the old Ross Farm, on Lincoln Ave., will soon go up. The whole group will cost about $350,000, including two refectories, a chapel, school and laundry.

Port Angeles, Wash. — It is said that the Port Angeles & St. Louis Investment Co. will erect a $35,000 hospital.

Reynoldsville, Pa. — Plans have been drawn by Robinson & Winkler, Park Building, Pittsburgh, for a stone church for the Methodist Episcopal congregation. Cost, $25,000.

Rumford Falls, Me. — Plans and specifications for the Carnegie Library are in the hands of the trustees, and it is hoped that a beginning may be made on the building very soon.

Salem, Mass. — The City Council has appointed a committee to interview the Boston & Maine Railroad Co. to endeavor to secure immediate action in regard to the long-promised new passenger station in this city.

Saratoga, N. Y. — Plans have been received by C. S. Averill for the new sanatarium which he and his business partner, G. F. Gregory, are to build here. The building will be sixteen stories and will have 500 suites. Cost, $3,000,000. The work of construction will occupy a year and a half.

Sebewaing, Mich. — Dr. O. P. Barber, of Saginaw, is interested in a company which will convert the Hotel Hannah into a sanitarium building.

Shelbyville, Ill. — Patton & Miller have completed plans for a $20,000 Carnegie Library to be erected here.

Sioux City, Ia. — It is said that $50,000 has been secured and work on the Cathedral of the Epiphany will be rushed.

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Main Office and Works, Paterson, N. J. Boston Office, 31 State St. New York Office, 5 Nassau St.

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

Southampton, Mass. — The Southampton Congregational parish has sold to the town a lot for a site for the Edwards Library.

Spencer, Ia.—Patton & Miller have completed plans for a $10,000 Carnegie Library to be erected here.

Spokane, Wash. – The directors of St. Luke's Hospital have approved the plans for the new building and construction will be commenced at once.

St. Joseph, Mo. — A new church is to be erected by the First Presbyterian Society, costing $100,000. The site is at the corner of Jule and 7th Sts.

St. Louis, Mo.—Barnett, Haynes & Barnett, 8th and Locust Sts., have prepared plans for a $150,000 hotel for the Cook Hotel & Excursion Co., 1220 Holland Building.

Work on the new building of the Carondelet M. E. Church, South, will begin very soon. The new edifice is to occupy the site of the present one, at Virginia Ave. and Haven St., and will cost $20,000.

The plans by Wing & Mahwian, Fort Wayne, Ind., have been accepted for the Indiana State Building at the Louisiana Purchase Exposition.

The Rhode Island Commissioners appointed to represent the State at the St. Louis Fair have selected a design for the State building, prepared by Thornton & Thornton, of Providence, R. I. The commissioners gave awards of $100 each to Stone, Carpenter & Willson and to Field & Slocum.

A Buffalo man proposes to build the largest hotel in the world here in anticipation of the Exposition rush. He plans to make the hotel's minimum capacity 6,000 guests, the building to be one-fifth of a mile long and more than half as wide.

Superior, Wis.—Callison Brothers & Co., of the Northwestern Machine and Boiler Works, will erect a new $100,000 plant.

Syracuse, N. Y.—Architect M. D. Makepeace is now at work on plans for an extension to the East Syracuse High School building, which is to be built this summer at a cost of $20,000. The building will be of brick and two stories high. The dimensions are 64' x 76'. There are to be eight rooms.

Terre Haute, Ind.—It is said that the Beggs family will build a $400,000 distillery in this city.

Trenton, N. J.—An effort has been launched to secure an appropriation from Congress of $200,000 for enlargement of the Trenton Post-office building. According to present plans the addition will be 50' x 115' and of modern appointment.

Utica, N. Y.—The Masonic Temple, 23d St. and 6th Ave., is to be converted into a modern twenty-story steel structure. An architect will prepare estimates and then final action will be taken by the Trustees.

Washington, D. C.—Plans have been prepared by C. A. Didden, Corcoran Building, for a $300,000 eight-story brick and stone hotel for Robert P. Portner. The building will be fireproof, located at 13th and 14th Sts.

The trustees of Columbian University have signed a contract for the purchase of the historic Van Ness estate, at the foot of 17th St., N. W. The price paid is $161,200. On this tract the trustees will erect four buildings for university purposes, and the entire university plant, with the exception of the medical school, will be ultimately located there. The new buildings will cost $500,000 or more.

PROPOSALS.

Treasury Department, Office of the Supervising Architect, Washington, D. C., June 30, 1903. Sealed proposals will be received at this office until 3 o'clock P. M. on the 11th day of August, 1903, and then opened, for the construction, including electric wiring, but excluding heating, of the extension to the U. S. Post-office and Court-house at Portland, Oregon, in accordance with the drawings and specification, copies of which may be had at this office or at the office of the Custodian at Portland, Oregon, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1438

Treasury Department, Office of the Supervising Architect, Washington, D. C., July 1, 1903. Sealed proposals will be received at this office until 3 o'clock P. M. on the 12th day of August, 1903, and then opened, for the construction (including plumbing, heating apparatus, electric wiring and conduits) of the U. S. Post-office at Kirksville, Missouri, in accordance with the drawings and specification, copies of which may be had at this office, or at the office of the Postmaster at Kirksville, Missouri, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1438

PROPOSALS.

LAND. [At Boston, Mass.]
The School-house Commissioners of the City of Boston will receive sealed proposals for selling to the city land for site for Normal School, in the vicinity of Martin School District, to contain about 60,000 square feet. All proposals should be submitted **on or before July 16, 1903,** at the office of the Commissioners, 120 Boylston St., Boston. R. CLIPSTON STURGIS, FREDERIC O. NORTH, JOSEPH J. CORBETT. 1437

PAINTING, DECORATING AND FURNISHING. [At New York, N. Y.]
Sealed bids will be received by the President of the Borough of Manhattan, at the City-hall, Room No. 16, **until July 14, 1903.** No. 1. For furnishing and delivering furniture for the mayor's reception room in the City hall. No. 2. For painting and decorating the Council Chamber and Aldermanic Chamber in the City-hall. JACOB A. CANTOR, Borough President. 1437

GRADING, ROADS, ETC. [At Fort Strong, Mass.]
Depot Quartermaster's Office, 170 Summer St., Boston, Mass. Sealed proposals will be received at this office **until August 6, 1903,** for grading and constructing roads and walks at Fort Strong, Long Island, Boston Harbor, Mass. Proposals and information furnished on application. Plans and specifications can be seen at this office. A. M. PALMER, Depot Quartermaster. 1438

WAREHOUSE. [At Fort Totten, N. Y.]
Office of Constructing Quartermaster, Fort Totten, Willets Point, N. Y. Sealed proposals for warehouse, foundation of piling, at Quartermaster's wharf, Fort Totten, N. Y., will be received here **until July 24, 1903.** Information furnished upon application. G. H. McMANUS, Constructing Quartermaster. 1428

Treasury Department, Office Supervising Architect, Washington, D. C., June 30, 1903. Notice is hereby given that the work of the construction (including plumbing, heating, electric wiring and conduits) of the U. S. Post-office building at Winstone, North Carolina, has been withdrawn from the market and bids therefor will not be received on July 14, 1903, as formerly stated. JAMES KNOX TAYLOR, Supervising Architect. 1437

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PROPOSALS.

LIFE-SAVING STATION. [At Great Wass Island, Me.]
U. S. Life-saving Service, Washington, D. C. Sealed proposals will be received at this office **until July 20, 1903**, for the construction of a Life-saving station on Great Wass Island, Me. Specifications and drawings, forms of proposal, etc., can be obtained upon application to the Superintendents of Construction of Life-saving Stations, 17 State St., New York City; to the Superintendent of the First Life-saving District, Portsmouth, N. H.; to the Assistant Inspector, First and Second Life-saving Districts, Room 148, Post-office Building, Boston, Mass.; or to this office. S. I. KIMBALL, General Superintendent. 1437

CONSTRUCTION, HEATING AND PLUMBING. [At Wahpeton, N. D.]
Sealed bids will be received by the Board of Trustees for the State Academy of Science **until July 25** for the erection and completion of a brick academy building, according to plans and specifications by Schuler Bros., architects. Plans and specifications on file at the office of Schuler Bros., architects, Wahpeton, N. D.; Builders' Exchange, St. Paul, and Builders' Exchange, Minneapolis, after July 1, 1903. Also bids wanted for heating and plumbing at the same time. Certified check, $100. W. R. PURDON, Secretary, Wahpeton, N. D. 1438

CEMENT. [At Charleston, S. C.]
U. S. Engineer Office, Charleston, S. C. Sealed proposals for furnishing and delivering about 17,000 barrels American Portland cement at Charleston, S. C., will be received here **until July 21, 1903**. Information furnished on application. G. P. HOWELL, capt., engrs. 1437

RETAINING WALL. [At League Island, Pa.]
Bureau of Yards and Docks, Navy Department. Sealed proposals will be received at the Bureau of Yards and Docks, Navy Department, Washington, **until July 18, 1903**, for constructing a retaining wall about the reserve basin at the Navy Yard, League Island, Pa. Appropriation available, $50,000. Plans and specifications can be seen at the Bureau, or will be furnished by the Commandant of the navy yard named. MORDECAI T. ENDICOTT, chief of bureau. 1437

BUILDINGS. [At Forts Miley and Baker, Cal.]
San Francisco, Cal. Sealed proposals will be received here **until July 22, 1903**, for construction of frame buildings, including plumbing, wiring and heating at Fort Miley and Fort Baker, Cal. Information furnished on application to J. McE. HYDE, deputy quartermaster general, chief Q. M. 1437

PUBLIC BUILDINGS. [At Portland, Me.]
Office Constructing Quartermaster, U. S. A., 185 Middle St., Portland, Me. Sealed proposals will be received at this office **until July 20, 1903**, for the construction of two barrack buildings, five sets officers' quarters, and two sets N. C. O. quarters and one quartermaster's storehouse at Fort McKinley, Great Diamond Island, Portland Harbor, Me. Information, specifications and blanks on application. CAPT. A. W. YATES, Quartermaster, U. S. A. 1437

FIRE HYDRANTS. [At Washington, D. C.]
Office of the Commissioners, D. C., Washington. Sealed proposals will be received at this office **until August 8, 1903**, for furnishing three hundred (300) high pressure fire hydrants. Award to be made after comparative tests of sample hydrants submitted. Specifications, blank forms of proposal and all necessary information may be obtained at this office. HENRY B. F. MACFARLAND, HENRY L. WEST, JOHN BIDDLE, Commissioners, D. C. 1437

PROPOSALS.

SCHOOL-HOUSE. [At Springfield, O.]
Sealed proposals will be received at the office of the clerk of the Springfield Township School Board, Clark County, O., for furnishing all the materials and constructing a four-room school-building in Subdistrict No. 9 (Rockaway School-house, about two miles west of Springfield, O.), according to plans, specifications and details on file at this office and at office of Robert C. Gotwald, architect, Springfield, O. All bids must be on file with the clerk of the Springfield Township School Board **by July 18, 1903**, to be opened and read at the next meeting of the Springfield Township School Board thereafter. By order of the Springfield Township School Board. JOHN S. BIRD, Township Clerk. 1437

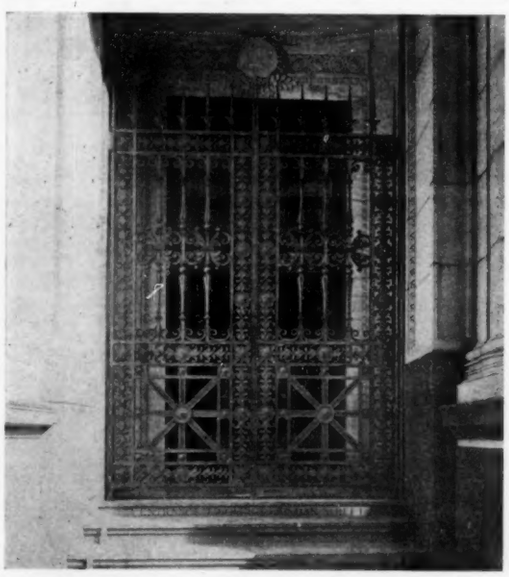
Treasury Department, Office of the Supervising Architect, Washington, D. C., June 25, 1903. Sealed proposals will be received at this office until 3 o'clock P. M. on the 29th day of July, 1903, and then opened, for the construction (except heating apparatus, electric conduits and wiring) of the U. S. Post-office at Lawrence, Massachusetts, in accordance with the drawings and specification, copies of which may be had at this office or the office of the Postmaster, Lawrence, Mass., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1437

BANK BUILDING. [At Hazleton, Ind.]
Bids for the $35,000 two story brick building for the Citizens' State Bank will be received **until July 20**. W. F. CASSIDY, Chairman Building Committee. 1437

PROPOSALS.

BUILDINGS. [At Hot Springs, S. D.]
Sealed proposals addressed to Moses Harris, General Treasurer National Home for D. V. S., in care of Thomas R. Kimball, architect, 503 McCague Building, Omaha, Neb., will be received at the above address, **until 12 o'clock M., Tuesday, July 28, 1903**, and then opened, for furnishing materials, labor, etc., for the construction of the main group of buildings at the Battle Mountain Sanitarium, at Hot Springs, S. D. Plans may be seen, and copies of instructions and specifications together with blank proposals had upon application to the architect, Thomas R. Kimball, 503 McCague Building, Omaha, Neb.; to the Builders' and Traders' Exchange, 138 Washington St., Chicago, Ill.; to John F. Daggett, Secretary, Denver Building Contractors' Council, 203 *Times* Building, Denver, Col.; to the Builders' Exchange, St. Paul, Minn.; to E. S. Kelley, Banker, Hot Springs, S. D.; and to the office of the National Home for D. V. S., 346 Broadway, New York, N. Y. Address all inquiries regarding drawings and specifications to the architect as above. 1438

DRY DOCK. [At Norfolk, Va.]
Sealed proposals will be received at the Bureau of Yards and Docks, Navy Department, Washington, **until July 25, 1903**, for constructing a concrete and granite dry dock, exclusive of pumping plant and caisson at the Navy Yard, Norfolk, Va. Limit of cost of entire work $1,200,000. Plans and specifications can be seen at the navy yard named, or will be furnished by the Bureau upon deposit of $100 to secure their return. MORDECAI T. ENDICOTT, chief of bureau. 1438



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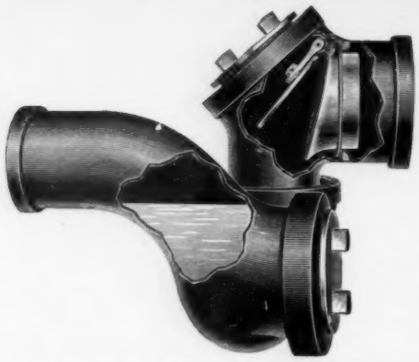

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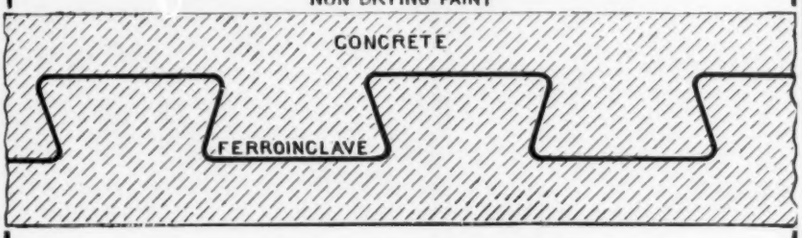

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