



THE AMERICAN ARCHITECT AND BUILDING NEWS

VOL. LXXIX

BY THE

SATURDAY, MARCH 21, 1903

Public Library
WASHINGTON, D. C.
RECEIVED

No. 1421

SUMMARY:

The Ownership of Drawings.—The Copyrighting of an Architect's Design.—The Decoration of the Hall of Records, New York.—The Use of Nitrate of Soda in Smoke-prevention.—A Chance for an Architect in the American School at Athens.—The American Bridge Company and the Ironworkers' Union.—A California Grove of Big Trees in Danger.—Water-power vs. Natural Scenery at Niagara Falls.—Regulating the Mouth of the Seine.	89
LETTER FROM CHICAGO.	91
METHODS OF MOSAIC CONSTRUCTION.	92
PORPHYRY.	94
BOOKS AND PAPERS.	95

ILLUSTRATIONS:—

The Church of St. Rose of Lima, New York, N. Y.—A Monumental Sun-dial for a Park.—Doorway to the Sundsvallis Enskilda Bank, Stockholm, Sweden.—Main Entrance: Compagnie d'Assurance la Nationale, Paris, France.—Corner Entrance to the same Building.	
Additional: House of John Gribell, Esq., Wyncote, Pa.—Library in the same House.—The Staircase, Blickling Hall, England.—Bertrand Dugesclin.—The Château de Bornhem, Province of Antwerp, Belgium.	95
NOTES AND CLIPPINGS.	95

WE think that we ought to warn those of our readers who have been interested in the discussion in our columns of the architect's ownership in plans that, however fair and reasonable the position may seem to them that drawings are merely instruments of service, and, as such, belong exclusively to the architect, the courts do not support this view, and it has been decided many times in this country, in England and in France, that, unless there is a special agreement between the architect and his client that the plans shall remain the property of the former, the client is entitled to them. In practice, of course, clients generally prefer to have the architect keep them, so that he can refer to them in case of need; but if an architect and his client have a misunderstanding on any subject, the latter's lawyer generally begins making himself disagreeable to the architect by demanding the plans, in the hope, not only of giving annoyance, but of entrapping the architect into an attempt at resistance to the demand, in which he is sure to be defeated, after an expensive contest. Mr. Huss says, in our last issue, that the architect's plans "are his absolute property at all times." Undoubtedly, it ought to be so; but, as a matter of fact, the courts always rule that the plans are the absolute property of the client; the only reservation that we know of being that made by a French court, which decided that the architect was not bound to give them up until the fee agreed upon for his services had been paid.

WHETHER the client's ownership of the plans entitles him to use them for another building, or to sell them to be so used, is a different matter, about which we do not think that any authoritative decision has been given. In France, where artistic property is legally recognized, we doubt whether a client could use plans belonging to him to the injury of an artist whose design was represented in those plans; but artistic property is virtually unknown to the law in this country, and it would be a costly and doubtful experiment to try to enforce any artistic rights in a design, unless they had been secured by copyright. There has been some doubt whether an artist could copyright for his own benefit a picture executed by contract for some one else; but recent decisions have maintained that the sale of a picture did not convey to the purchaser the copyright, and that the artist could reserve this, without notice to his patron, for his own benefit, and could prevent reproduction of the work, after it had passed out of his possession, without his consent. This doctrine applies very well to architects' designs. If they choose to copyright them, they can prevent for forty years their client or any one else from using them for another building, whether they belong to the client or not; and, where the copyright statutes provide so easy a way of protecting his artistic interest, the courts would be very reluctant to infer, for the benefit of an architect who had neglected so obvious a precaution, any unusual common-law rights.

THE whole matter of copyrighting, or otherwise securing, the artistic interest of architects in their designs is a very important one, and is well worthy of being taken up by the American Institute of Architects at its next Convention.

To trace, or photograph, a plan, or elevation, send it to Washington and have it copyrighted, would be easy enough, but it might injure the author by preventing the reproduction of his design in the professional journals which do so much to make an architect's reputation. Possibly the general copyright of a periodical might protect the author's rights in a design published in the periodical, if the author desired to benefit by it, and this might be the easiest and simplest way to gain such protection. In this country, it must be understood, a journal could not copyright a design for its own benefit, unless it had expressly purchased the copyright from the author, its general copyright protecting the actual authors, but leaving them free to dispose of their rights afterwards as they chose. In England, it has been held that a photographer, by photographing an actual building from a particular point, could copyright for his own use that view of the structure, but the spirit of the copyright laws is very different in this country. Without very much trouble, and with competent advice, a committee of the Institute could undoubtedly propose a plan by which the Federal statutes could be made to prevent unlicensed use of an architect's designs, without hampering him in publishing them, and without restricting the use of details and motives which are the common property of the whole profession; and a greater benefit could hardly be conferred upon architects.

THE absurd story from New York about a "trap," which was alleged to have been "sprung" upon the unsuspecting Art Commission by Messrs. Horgan & Slattery and H. K. Bush-Brown, the architects and sculptor, respectively, employed upon the new Hall of Records, was promptly contradicted by Mr. Bush-Brown, who is much too accomplished a sculptor to find it needful to bolster up his work with "traps." Apart from his share in it, the story is that the architects, having presented several models for the sculpture on the building, which were rejected by the Art Commission, bethought themselves of a way of retaliating on the Commission by holding it up to ridicule; and, to that end, submitted, as models for some of their proposed sculpture, copies of certain gargoyles from Saint Peter's, at Rome, supposed to have been designed by Michael Angelo, and of capitals from the Temple of Diana, at Ephesus, and other details supposed to have been designed by Leonardo da Vinci for the Vatican, at Rome. These models were also rejected by the Art Commission, and the people who never heard of Michael Angelo or Leonardo da Vinci before are said to derive great enjoyment from the clever trick by which the Art Commission was outwitted.

ARCHITECTS in general will hardly share the admiration of the public for this ingenious ruse. In the first place, it would not follow that because a certain gargoyle was copied from one of Michael Angelo's, that it was equal to Michael Angelo's work; and, even if it had been, it might, while suited to its place on Saint Peter's, have been very inappropriate to the position in which Messrs. Horgan & Slattery proposed to place it. No one, we presume, would claim that the cherubs, each twenty feet high, with which Michael Angelo adorned the interior of Saint Peter's, would be suited to the room of the Hall of Records; and appropriateness to its position is the most important quality of architectural sculpture. The same may be said of the Leonardo da Vinci and the Ephesus details, which, whatever their individual merits, could hardly look well together, or with sculpture in the Michael-Angelo manner. The Art Commission has labored under great difficulty in judging of the suitability to their position of the models submitted, owing to the failure of the architects to furnish any general plan of the sculptured decoration, from which the relations of the different portions might be learned; and it seems to have done the best that it could in such uncertainty.

A NEW system for the suppression of smoke from boiler fires has been tried recently, with very favorable results. The ordinary smoke-consumers merely introduce air into the fire-box, either through the bridge wall, or at some other point beyond the grate, so as to supply oxygen for combining

with the free carbon of the smoke. They answer this purpose tolerably well, but the current of cold air, which is usually much larger in quantity than would be required for combustion, chills the heated gases, and it is found that these devices are apt to diminish the efficiency of the boiler. To meet this difficulty, the new "Wilson process" injects, not air alone, but air mingled with a solution of nitrate of soda. The drops of the latter, falling on the hot surfaces of the bridge wall, or the burning fuel, evaporate, leaving a residue of nitrate of soda, which, in combination with the carbon present, burns like gunpowder. The theory of the process is that these little gunpowder-like flashes serve to kindle a mixture of smoke and air which would be too cool to ignite spontaneously, and not only is the smoke more thoroughly consumed in consequence, but its carbon is more efficiently utilized as fuel. Some experiments with the process, carried out with Babcock & Wilcox boilers, showed that, besides consuming the smoke, it increased the evaporating efficiency of the boilers, for a given quantity of fuel, by more than twenty per cent. The cost of the nitrate of soda consumed is very small, only six or eight cents' worth being required for a ton of coal.

PROF. J. R. WHEELER, of Columbia University, New York, Chairman of the Managing Committee of the American School at Athens, writes to the *Evening Post* that the School is in need of the services of an architect, who can make, in connection with the work of excavation at Corinth, studies similar to those which Mr. Tilton made at Argos. As the discoveries now being made at Corinth are of great architectural importance, it is particularly desirable to have them studied on the spot, before the fragments are removed from the places in which they are found, by a trained architect, to whom they will reveal, while still in place, much more than to any one else. The School is poor, the actual expense of excavation, which is about twenty-five hundred dollars a year, being defrayed by its friends; so that it would be impracticable to offer an adequate salary; but there must be many highly-trained young men, having a knowledge of classical antiquity, as well as of architectural detail and ancient construction, who could well afford to give their time for a season or two in consideration of the artistic inspiration which the work would afford, and the reputation which it would bring. Actual excavations are carried on only about two months of every year, so that much of the work of restoration could be done from notes and photographs at home.

WE are so often told that trades-unions exist only for the purpose of defending helpless workingmen against the "greed" of capital that it may be well to mention a case in which they seem, at least, to have been utilized for something else. According to an official of the American Bridge Company, the "business agent" of the structural iron-workers' union in Pittsburgh wanted to visit a building in which some of his constituents were at work, on a contract of the American Bridge Company. The owners of the building had, for their own purposes, built a fence around it. When the business agent arrived, he found the gate closed, and was told that the owners did not allow anybody to come in without a pass, but that he could undoubtedly get a pass by applying to them. The idea of humiliating himself before a representative of capitalistic "greed" so far as to ask for a pass to get into the latter's premises was too much for the dignity of the business agent, who climbed over the fence instead. When he reached the other side of the fence, he was put out; and, apparently for no other object than to show his resentment and his power, he immediately called out all the structural iron-workers on the building. Finding that the contract was held by the American Bridge Company, he followed up this action by calling out all the structural iron-workers employed by the Company in Pittsburgh, some seven hundred in number; and, not content with seeing his own constituents sacrificing nearly three thousand dollars a day in wages to help him to gratify his spite, the men employed by the Company in New York, presumably by his influence, have also been called out. This strike, it must be understood, has nothing to do with the demand for higher wages which it is expected that the structural iron-workers will make on the first of May, but appears to be purely a personal matter, and it might be worth while to observe that the iron-workers, like all other people engaged in building-trades, would be much more likely to get increased

wages hereafter if those who employ them, and pay them their wages, could have some assurance that their business would not be thrown into confusion at any moment, to their great loss, through the whims or plots of people who care absolutely nothing for the interests of workingmen, or for those of any one but themselves.

IT is to be hoped that all the people who have any regard for the reputation of their country will hasten to join in protesting against the sweeping out of existence of the famous "big-tree" grove, in Calaveras County, California. For nearly half a century this little group of giant sequoia trees, the only one in existence, has been one of the principal attractions of the Pacific Coast, and for many years petitions have been laid before Congress to take the grove, and preserve it as public property. Once, even, a bill to this effect was passed by the Senate, and turned over to the House of Representatives, which never acted upon it. Now, it appears, the grove has been sold to lumbermen, who have contracted for the building of a railroad into it, to facilitate their purpose of clearing all the timber off the ground, and selling it for what it will bring. The State of California has so great an interest, not only in preserving the scanty forests that it has left, but in attracting tourists by the natural scenery of which it has a few remarkable examples, that it is surprising that such devastation should be permitted; and any steps that the public-spirited citizens of California may take to prevent it will be warmly seconded by the people of the rest of the Union.

EVERY one does not seem to understand that the Falls of Niagara are rapidly going to the same bourne for which the sequoia forest is destined. The Company which has been taking water from the American side of the fall, for generating electricity, is said to be intending to double its plant; while a gigantic corporation, with English capital, is nearly ready to begin operations on the Canada side. It is needless to say that every gallon of water diverted through the power canals and turbines is so much abstracted from the cataract, and even the Horseshoe Fall must show the effect of the diversion sooner or later, while the American Fall, the water of which is only about eighteen inches deep in summer, will, in all probability, be reduced to a trifling stream by the operations in progress beside it. Some years ago, the State of New York laid out a public park on the shore of the Niagara River, so that people might be enabled forever to gaze upon the grandeur of the most stupendous cataract on earth. If "modern science," and "industrial development" keep on a little while longer, the Niagara Park will serve only as a point from which to view a hole in the ground, and a forest of factory chimneys.

SOME interesting work is going on in the mouth of the Seine, at Havre, in regulating the channel. At this place, which is now a very important centre of maritime and inland navigation, the Seine forms a broad estuary, with a sandy bottom, intersected by a narrow channel, the position of which is constantly shifting. Two islands, or rather sandbanks, divide the estuary into three parts, and the navigable channel shifts constantly among these islands. Since 1880, the ship channel has been six times north of the principal sandbank, known as the Ratier, and four times south of it; while its general direction has been sometimes parallel to the south shore, and close to it, and sometimes nearly parallel to the north shore. The cause of these eccentricities is said to be that the current of the river, joined with that of the ebb tide, seeking the deepest channel, soon fills it up with silt, until it becomes more difficult for it to get through the old passage than to force a new one through the old accumulations. A new passage is therefore broken through, to be again filled up, when the process is renewed. In view of the great commercial importance of the estuary, the French Government has recently commissioned the Service of Roads and Bridges to provide a permanent channel, first by excavating, and, later, by building dikes or jetties, and steam suction dredges have been set at work upon it. As the sea is often very rough in the estuary of the Seine, the dredges of the ordinary type, which depend upon barges to carry off excavated material, can only be used in fair weather; and most of the work is done by means of special craft, which afford storage for the material sucked up from the bottom, and can steam away and deposit it where required, returning again to their anchorage.



WAGE ADVANCE JUSTIFIED BY INCREASED COST OF LIVING. — ADVANCE IN BUILDING MATERIAL DUE TO ACTION OF TRUSTS. — THE NEW TENEMENT-HOUSE ORDINANCE. — THE OFFICE OF BUILDING-COMMISSIONER VACANT. — THE BUILDING CONTRACTORS' COUNCIL TO OPPOSE SYMPATHETIC STRIKES. — THE FEDERAL BUILDING NOT TO BE CHEAPENED. — THE MUNICIPAL ART COMMISSION REJECTS AN EQUESTRIAN STATUE OF KOSCIUSKO.

THE spring season opens with rather a dull prospect in building-circles, in spite of plans for activity laid during the winter months.

The high prices of the present building season have been commented upon in these letters before. In spite of these conditions many plans were made, both in the brains of speculators and on the boards of architects, for sundry and divers large down-town buildings. When, however, the actual figures were obtained on these structures, the rise in the cost of building became a concrete matter rather than one of hearsay, and discouraged much building of a speculative nature.

The First National Bank Building and the Schlesinger & Mayer Building are actually in process of construction, but these two seem to be the main centres of activity of all the many which were talked of last winter.

Here in Chicago, in building matters, we stand between Scylla and Charybdis. The soil of our city seems especially suited to the trust root, which flourisheth like unto the green bay tree. On the other hand, nowhere does there seem to be so fitting a place for the hot-bed of organized labor, which is more unreasonable and has greater strength here than in any other place in the United States.

These two factions have at present a cross ruff which leaves the architect, as well as the real-estate man and contractor, but a feeble prop on which to support life. The cost of living has been so materially increased by the trusts that the labor unions seem pardonable in obtaining for their members a relative advance in wages. Carpenters are getting sixty cents an hour for their eight-hour day and for overtime \$1.20 and, the contractors say, do less work than ever before.

Though the advance in price of the necessities of life may have been some excuse for the advance in the price of labor here, as in other cities, it is certainly not true that unionism, responsible as it is for many evils, can be held accountable for the great advance in building-material. This advance must be laid at the door of the combinations and trusts, though organized labor is an apt scholar, ever ready to learn its lesson of these same trusts which it affects to oppose and combat. Certain it is that both sides are overstepping themselves, and what will be the outcome for the building-interests here in Chicago is difficult to see. One thing is certain: investors are taking their money elsewhere rather than place it here in buildings at the present factitious values. As official evidence of the actual state of affairs, the statistics of the Building Department recently issued show the unparalleled reduction in building of seventy-six per cent as compared with the corresponding report for January and February of last year.

There are certain people who lay a large part of our present depressed building conditions at the door of the new tenement-house ordinance, though this can scarcely be the case, as the depression extends through all classes of work. The new tenement-house ordinance is certainly quite ideal in its requirements for good building, as noticed in the last Chicago letter and consequently does mean a somewhat increased cost in the lower grade of tenement work. But, still, even its moderate requirements have not been strictly carried out, since numerous "orders of Council" have permitted changes back to the old system, considerably to the scandal of the reputation of this august body. During the actual passage of this very ordinance the desirable sanitary features were so altered as to be scarcely recognizable. The ordinance provided for an inspection of all tenements once a year by the Health Department. On the trivial excuse that this laid upon the Health Department too much work, this section was changed so as to read, that all tenements should be visited by the Health Department when necessary. This of course amounts to nothing at all, and effectively nullifies the latter part of the section, which required that notice of all defects found by the Health Board should be published in the public halls of the building where they occurred. To further weaken the effect of this clause, notice of any defects are to be privately served on owner or agent, ten days being allowed for the remedies of them.

Mr. Koilbasser, former Building Commissioner of the city, after having been found culpably inefficient in his department, tendered his resignation, another berth being found for him with as fat a salary as the one he left. No successor has yet been appointed, as the laws governing the qualifications of the Building Commissioner have been made so complicated and complex that it looks as if no suitable applicant would ever be found. A few simple laws enforced would be better than more complicated ones evaded. It is provided that

the Commissioner, who is appointed by the Mayor, must have had ten years' practical experience as an architect, engineer, or builder. It is required that he give personal bonds of \$25,000 and that his bondsmen shall be liable for any mistakes he makes. The Deputy Commissioner must also have ten years' experience as builder, engineer, or architect, and a \$10,000 bond is required of him. The Chief Inspector is required to give a similar bond, but need only have had five years' experience. The Chief Inspector and Deputy Commissioner are both to be appointed from the civil-service list.

While always opposing sympathetic strikes, and having made its main fight on this point two years ago, the Building Contractors' Council has again put itself on record by the adoption of certain resolutions. The adoption of these resolutions anew was brought about by the action of two affiliated trades, the Marble Manufacturers' Association and the Employing Plasterers, who made contracts with their workmen recognizing sympathetic strikes. The Council ordered these two associations to rescind their contracts or to withdraw from the body. If there is to be a great war declared, May 1, between the iron-workers and iron-manufacturers, with a billion of dollars on one side and three or four thousand of souls on the other, the question of sympathetic strikes will be one which will be felt all over the length and breadth of this broad land, and the Building Contractors' Council may have its hands full. Should the iron war be declared, it would be more than likely to live up to its name, as its prime object will be to fight that most vital of all questions to the wage-earner, wages, and cannot fail to affect every class of work where the question of sympathy is considered, as it doubtlessly will be, especially in Chicago.

We have had our cry, like spoiled children, over the cheapening of our Federal Building and have been told that it "will be all right" and that our marble is not going to turn to plaster, our bronze to oak, or our mahogany to graining. One of the worst changes that might have come was that which would have attended the changes in the boilers and furnaces, changing the building from a smokeless one into one of the worst offenders against the city smoke-ordinance.

Fortunately, an additional appropriation of \$750,000 has been made, which will keep the interior finish as originally planned. On the exterior the building has many good features and it would have been very deplorable to have cheapened its interior in the manner which was for a time contemplated. With the reductions on the building proposed it is certainly not to be wondered at that we did cry for a while. The original specifications called for the finish of the dome to be of marble, ornamental iron and bronze. The cornices were of ornamental metal, while the walls, columns, pilasters, etc., were to be of marble. That this was all to be changed to plaster was indeed disheartening, and, furthermore, it would only have been an index of what the whole building would have been in its cheapened state. Even the mail-chutes were to have been cut out and it was deemed advisable to reduce the plumbing-fixtures by a paltry two hundred dollars. When one remembers that this is a Federal Building belonging to the great United States, it certainly was much to be deplored that it was considered advisable to reduce this home of Uncle Sam to a state of plainness far below that of the average office-building.

As has been mentioned in these letters, Chicago has a Municipal Art Commission. It is composed of C. L. Hutchinson, President of the Art Institute; W. L. B. Jenney, architect; Lorado Taft, sculptor; Ralph Clarkson, painter, and the president of the three Park Boards. This Commission passes on the works of art to be given to the city, notably the statues for the parks and public squares. Such works must first be approved by the Commission before they can be handed over to the city. It has been a question in the minds of many whether the Commission would ever have sufficient backbone to reject a gift, though the men who compose it are certainly not those whose spinal columns were supposed to have any inherited or chronic weakness. The time has arrived which has proved that the committee can refuse a work of art (?), the special case being the model of an equestrian statue of Kosciusko which the two hundred and fifty thousand Polish inhabitants of the city were proposing to erect in Humbolt Park.

Lorado Taft says, "It is hopelessly bad. It gives the idea of restlessness out of touch with the modern idea in equestrian statues, which is toward quiet reserve and dignity. It is old-fashioned, a Napoleon-crossing-the-Alps sort of thing. So far as treatment is concerned, it is the work of an inexperienced beginner in sculpture, unacquainted with the human figure and the anatomy of a horse." That the statue of Kosciusko, the hero so dear to every Polish heart should be rejected, is a great disappointment to the Poles, every man, woman and child of Chicago's 250,000 Polish inhabitants having contributed to the fund of twenty-five thousand dollars which the statue was to have cost.

This experience shows the value of the Municipal Art Commission, a value so vital to the good artistic growth of a city that it would seem that "no city should be without one." The chief question in establishing one is how to "first catch your commission." The essential point is that it should have enough moral courage to do what it was chosen to do—judge of work irrespective of any personal or sympathetic feeling.

Such things make us feel we are growing in matters artistic. Especially noticeable has been the growth of the appreciation of landscape-gardening, as a special branch of art, here in the West. Ten

or twelve years ago, to the average man, landscape-gardening meant rustic bridges, impossible grottos and fantastic fountains in a large and extensive park. Now it may mean the best effect of planting at the rear of a 25-foot lot, or the skilful grouping of shrubs in the parkway in front of a house. A contest recently held at the University of Illinois shows that the interest is by no means confined to Chicago and its suburbs here in the State. Several gentlemen in Bloomington, owning a block of land, decided to have plans drawn by students at the University for the successful laying out of this tract, as to drives, planting, etc. Three prizes of thirty, twenty and ten dollars respectively were offered for the best three designs and students who entered the competition were allowed to make a trip to Bloomington at the expense of the owners of the land, in order to examine the lots and collect data for the work.

METHODS OF MOSAIC CONSTRUCTION.¹

IT is now more than sixty years ago since the revival in England of mosaic as an architectural adjunct may be said to have begun.

In 1840, Mr. Blashfield endeavored to produce decorative pavements, and in this endeavor he was assisted by Mr. Minton and Messrs. Maw & Co., who succeeded in making excellent material for that purpose. Following Mr. Blashfield (and to a certain extent working in coöperation with him) came Sir Digby Wyatt, who, in 1848, published a work on the subject, and gave much practical assistance to the manufacturers who were engaged in producing the *tessera*. Their efforts appear to have been mainly concentrated on the production of pavements, geometrical in design, and made of such materials as asphalt, colored cement, and compressed china-clay. The results obtained were so satisfactory that on the announcement of the intended Exhibition of 1862, Messrs. Maw & Co. decided to move a step in advance of what had hitherto been done, and to produce a pictorial pavement in several colors. They therefore commissioned Sir Digby Wyatt to design a pavement of that character for them which they executed in *tessera* of nearly a hundred different tints made by themselves; and, as Sir Digby Wyatt states, "this was the first practical effort to revive pictorial mosaic amongst us."

Such was the position of the mosaic art in England in 1862. It shows that a certain interest in the art had been created, and this interest was stimulated by Sir Digby Wyatt, who in that year read a valuable and most interesting paper before the Royal Institute of British Architects on "Pictorial Mosaics as an Architectural Embellishment," dealing with the subject (as he himself states) from the point-of-view "from which we may best realize what architects have to learn and to do, in order to effect a practical revival of the art at the present day," and with this aim in view he gave the main historical phases of pictorial mosaic, and dwelt upon the various scopes and difficulties of the art in its production and application.

Many artists and architects now gave serious attention to the revival of the art. The improvement in public taste, aided by an increased feeling for color and decoration, gave encouragement to those who were interested in the revival, and it was not long before several eminent firms in England succeeded in producing mosaics in enamel. The names of Messrs. Simpson & Sons, Messrs. Rust & Co., and Messrs. Harland, Fisher & Co., occur to me, as some of their full-length figures are to be seen in the principal hall of the South Kensington Museum. But not until some years later were any important enamel mosaics executed in this country.

In Italy, the traditions of the workers in mosaic had been handed down through centuries, and although the art had fallen low, it had never altogether died out. About the year 1860, a poor glass-blower of Murano, named Lorenzo Radi, with the love of his art strong within him, made efforts to improve the manufacture of enamels, and especially of gold mosaic, and in his necessity he applied to a Venetian lawyer, Dr. Salviati, who found the means to enable him to continue his efforts in the production of the *smalti* (or enamel), by means of which Radi was endeavoring to revive the mosaic art in Venice. In a small way these efforts were successful, but for want of means and prestige they would have resulted in failure, had not an artist of high merit and great social position extended to them a helping hand. I refer to the late Sir Austen Henry Layard—a man who was not only an artist in the highest and broadest sense of the term, but who was also a distinguished diplomat and archaeologist. From the moment he extended his protection to the revived industry, the success of that industry was assured. He, together with a few other English gentlemen, provided the necessary capital. The business which had been established by Radi and Salviati became their property and was speedily merged into the concern which they then formed under the title of the "Venice and Murano Glass and Mosaic Company."

The first important commissions obtained by the Company were the decoration of the Wolsey Chapel at Windsor and that of the Albert Memorial in Kensington Gardens. The general designs for both works were by Sir Gilbert Scott, and were carried out under his directions from the cartoons of Mr. John Clayton, of Messrs. Clayton & Bell.

About this time also were executed for the South Kensington Museum several full-length figures from the designs of the late Lord Leighton, Sir Edward Poynter, P. R. A., Mr. Val Prinsep, R. A., and other distinguished artists.

In Westminster Abbey, the "Last Supper," over the communion

¹A paper by W. L. Hamilton, read before the Society of Arts, and printed in the *Journal* of that Society.

table, was executed from the design by Mr. Clayton; and in St. Paul's Cathedral two of the large spandrels under the great dome were covered with mosaics from cartoons by Mr. George Frederick Watts and the late Alfred Stevens.

From that time to the present day much excellent work has been done in various parts of the United Kingdom, in the Colonies, and in America, by several well-known English firms of mosaists as well as by the Venetians, and the demand for mosaic decoration is steadily increasing. Of that there is no doubt; and the question of the hour is not whether mosaics should be executed, but *how* they should be executed so as to obtain the best results at the least possible cost. It is with a view to elucidating this question that I have prepared some notes on the methods of mosaic construction which I hope may be of interest, and may at the same time tend to remove misconception and prejudice.

Speaking broadly, there are two methods of construction:—

(1) The Old Method, viz, that of fixing the *tessera* on the wall directly and one by one.

(2) The New Method, whereby the mosaic is first executed on paper, and thence transferred to the wall.

The *Old Method* is simple enough; the wall destined to receive the mosaic is prepared with cement, the cartoon is outlined on the cement, and the mosaists, with the cartoon before them, proceed to place the *tessera* on the wall one by one.

It is needless to say that under certain conditions the very finest mosaics can be—and even in recent times have been—produced by this method. The ancient mosaists, it would seem, invariably employed it, and, probably, no other process was known to them.

The first works executed in England by the Venetian mosaists were so executed, and the result was entirely successful, but it was soon made clear that unless some less expensive and more expeditious means could be devised for executing and fixing mosaics very little could be done to advance the art either in this country or elsewhere.

Any one possessing a knowledge of mosaic art knows that it is futile to expect the production of a really good mosaic unless the work is carefully supervised by a properly qualified artist. Men no longer "work for the angels," and even the best workmen require the supervision of the master. Where the artist is designer and mosaist in one, as were so many of the ancient mosaists, and where time and money are secondary considerations, the principal disadvantages of this method disappear; but it is rarely indeed that such a fortuitous combination of circumstances is to be met with. The artist who, by reason of his genius and reputation, would be commissioned to design a scheme of mosaic decoration for some large cathedral or public building would probably not be a mosaist in the sense of possessing a close technical knowledge of the art, and if he were, he could not be expected to overlook for several hours each day the workmen who are placing the *tessera* on the wall. Even supposing it were possible to secure so considerable a part of his time, the cost would necessarily be enormous. His designs and intentions have therefore to be carried out by another, who must be both artist and mosaist. Such men are not easy to find, and when it is remembered that any large firm of mosaists working by this method would require to retain on their staff many such artists, it will be seen that the difficulty presented is a very formidable one indeed.

Another difficulty which presents itself in the application of this method is the necessity of sending workmen from their homes to any part of the world where a mosaic is to be executed. In the first place it is difficult to get first-class workmen to leave their homes, and if this difficulty be overcome by increasing their remuneration, the necessary expenditure for travelling and maintenance adds largely to the cost of the mosaic.

Then, again, where the mosaists have to work on the spot, only a very limited number can work on the cartoon at the same time, and on such days and at such times as the condition of weather and light will permit, so that the work must necessarily proceed slowly.

These are difficulties which directly affect the *cost* of the mosaic. There are also difficulties which may, and in many cases do, affect the *quality* of the work. The conditions under which a mosaist working on the spot has to carry on his work are frequently well-nigh insupportable. He is dependent on the climate of the country in which he finds himself, and even under the most favorable atmospheric conditions he must work in the imperfect light which comes to him through the shrouds and scaffolding by which he is surrounded; in winter he is chilled by the cold, and in summer he is half suffocated by the heat; he has to lie in all sorts of uncomfortable positions—sometimes on his side, and sometimes on his back; and in spite of all these difficulties he is expected to exercise to their best his faculties and skill in reproducing not only the design, but the exact colors, of the cartoon which he is engaged in copying. What wonder if, under these circumstances, when the scaffolding and shrouds have been removed, the mosaic is discovered to be faulty and that some parts have to be demolished and begun all over again, or, worse still, the defects are permitted to remain because the expense of removing them would be too great!

There are in addition technical difficulties into which I need not enter. Those I have cited are sufficient to indicate the reason which led the mosaists who thirty-five years ago revived the art to the conclusion that unless some other process could be found, little progress could be made either in this country or abroad.

When one remembers how much that is beautiful in mosaic art has been produced by means of this ancient method, it seems natural that it should have the affection, and even veneration, of many mosaists. To abandon it is to break with the past, and artistic sentiment is conservative, but

"The old order changeth, yielding place to new,"

and there are many indications leading to the conclusion that, except with reference to small works in which the designer is interested as mosaicist, this venerable method will not survive the stress of modern conditions, and that the existing wave of opinion in its favor will, after a few costly experiments, subside.

In expressing this opinion, I do not forget the important work recently executed in the choir of St. Paul's Cathedral; but in that case the work was carried out under all the conditions necessary for the successful application of the method; there was no want of money, no limitation as to time, and the mosaists were under the direct control of Sir William Richmond, who designed the cartoons. It would be quite out of place here to criticise the result, but it would be interesting to know the cost, from first to last, of each square foot of mosaic executed, including the fees paid to the distinguished artist who superintended the work.

I now come to the *New Method*. The Venetian mosaists, having decided to abandon the application of the old method to the construction of decorative mosaics, adopted, developed and, after many costly experiments, brought to perfection the method which has become associated with their name and which they have applied to nearly all the large decorative works executed by them during the past thirty years. This method, or process, was explained by the late Sir Austen Henry Layard in the following passage of a paper read by him at a meeting of the Royal Institute of British Architects:—

"The necessity of working on the spot is now avoided by an ingenious process, which, however, is only applicable to decorative mosaic, and cannot be used when much delicacy of execution and extreme nicety in the gradation of tints are required. The workmen reverse the cartoon, and place the *tesserae* with their proper faces downwards. The *tesserae* are fastened with common paste to sheets of coarse brown paper, on which the cartoon is traced. When the work is finished it has only to be fixed with cement upon the wall destined to receive it, and the brown paper is then removed from the face of it. This process requires considerable skill and practice, especially when figures have to be executed, but is perfectly successful. Thus, the decoration of any number of square feet of surface can be forwarded from Venice to any part of the world—to America or to India—with safety and at little cost."

To go a little into detail: the studio should always be well lighted and well ventilated.

The workers are under the control of an artist who is also an experienced mosaicist—indeed, his qualification for the post is that he possesses a large and varied experience in the practice of mosaic art.

The working mosaists are divided into grades or classes. The workers in the first grade work on those parts of a mosaic which require the most careful treatment, such as the face, hands and feet of a figure; those in the second grade work on ornaments and drapery; those in the third grade have given to them the execution of simple backgrounds, and so on—each man being given that work which he is best fitted to perform.

When a cartoon is brought into the studio it is traced and reversed on coarse brown paper. This reversed tracing is then cut up into pieces of irregular shape, and these pieces are distributed among the various grades of workers. The cartoon is then hung up so that it may be seen by all, and the workers being comfortably seated at their desks with a small anvil, a small hammer, some paste and the enamels they will require by their side, the work begins. Each worker, having carefully noted the colors and the size and shape of the *tesserae* required for his part of the cartoon, proceeds to cut his enamels accordingly, and to place them with their proper faces downwards onto the plain tracing before him, and to attach them thereto with common paste.

With the exception of the *tesserae* used for metal backgrounds (to which I shall refer later on), each *tessera* is the same in color throughout, and all the *tesserae* are of equal thickness, and are evenly shaped from top to bottom. When, therefore, they are placed on the paper "face downwards," there remains under the eye of the worker the exact counterpart of the work he has executed—the design being carried right through the *tesserae*—and he is thus able to judge of the effect of his work, and to make any necessary alterations or corrections as it proceeds.

Metal backgrounds sometimes require a slightly different treatment. Owing to the construction of "metal cakes," the metal is only visible from the front, or face, of the mosaic. All that the worker can see when he has placed the metal *tesserae* face downwards on the paper is the glass by which the metal is backed. In the case of a plain gold or silver background, no modification of the method is necessary, as the worker, by long experience, knows exactly the effect which is being produced on the face of the mosaic. When, however, a background is to be composed of various shades of gold or gold and silver, a treatment requiring the exercise of great skill

and judgment, it is constructed face upwards, so that the workers may see the effect of each *tessera* as it is laid; then paper is pasted over it, and it is ready to be packed.

The artist who controls the studio is in constant touch with all the workers, and in the course of his frequent visits to each one, advises or corrects as he watches the progress of the work. It is he who divides the cartoon and distributes the pieces among the workmen; and in this connection it may be observed that sometimes a mosaic is required to be executed by a certain date much within the ordinary limit of time given to a work of the kind. It is impossible to hurry the workers, for that would be detrimental to the quality of the mosaic. The cartoon is therefore divided into smaller pieces than usual, and a larger number of workers are employed on the work; and by this means, without hurry or injury, the mosaic is executed within the time allowed. Under the old method an expeditious treatment is not possible.

It may seem at first sight as though the employment of many workers on one design would produce inequalities in the workmanship which would mar the harmony of the work; but it must be borne in mind that the superintending artist controls the whole work and imposes his interpretation of the cartoon on all the workers. The slight variations in style which he would permit would only tend to add an interest to the mosaic without in any way disturbing the harmonious blending of its parts.

Practical mosaists know well how difficult it is to avoid the intrusion of bits of enamel, of the same color and possibly taken from the same cake, which, when seen in a particular light or at a certain distance convey one tint, but in another light or at another distance convey a different tint; this may be due to some slight defect in the enamel, so slight as to be unobservable to the worker when placing the *tesserae*. Again, enamels which in one light appear to match exactly the colors of the cartoon when seen in another light produce a different effect. Now, here again we have an advantage over the older method, for the mosaic can be viewed at any angle of light while the work is in progress and before the *tesserae* are placed on the wall; and any defective parts can be removed with ease and at little cost.

When all the tracings forming the cartoon have been covered with enamel they are collected and placed in a frame, so that the whole design, now translated into glass, comes before the artist and workers and is again critically examined in various lights. In this final examination the artist has the assistance of all those who have been engaged on the work, an assistance which is of great value to him, for the eyes of the workers, trained by long experience in the practice of their art, are able to detect the least variations in color, and the chances of a defective *tessera* escaping their notice are few indeed. When, therefore, they and the artist agree that the colors of the mosaic correctly interpret the colors of the cartoon, and fulfil the conditions (if any) imposed by the designer, it is passed, packed, and sent to its destination ready to be fixed.

In recent times there has been in certain quarters some carping at this method; but the only important objections—and important only by reason of their widespread acceptance—are two: (1) That by this method the workmen are working in the dark, so to speak; cannot see what they are doing, and are unable, therefore, to correct their work as it proceeds. (2) That because the *tesserae* are placed face downwards onto paper resting on a flat surface, the surface of the mosaic must necessarily be flat.

The first objection has been disposed of in the description of the process already given, and there remains nothing further to be added.

As regards the second objection, it is difficult to understand how the fallacy came to be propagated and accepted by many as an article of faith. Even the latest writer on mosaics, Mr. Lys Baldry, in his charming book on "*Mural Decorations*," repeats it and condemns the method on that ground. Some months ago the Royal Institute of British Architects held a meeting¹ to hear a paper read on the practice of pictorial mosaics, and the particular objection under consideration was restated, with considerable assurance, by the reader of the paper. Fortunately there was present at the meeting the eminent artist, Mr. Walter Crane, whose wide experience in every branch of decorative art had brought him into contact with mosaics executed by this method. He took exception to the statement, though seeming somewhat mystified by the assertion of his friends, which contradicted his own experience. Referring to certain mosaics which had been executed from his cartoons by this method, he said:—

"He was very much astonished at the facility with which his designs were reproduced. . . . The *tesserae* were given with the utmost exactitude, and the matching of the colors, allowing for difference in translation of the dead color of the cartoon into the brilliant colors of the glass mosaic, was simply extraordinary; and even when designs were worked on this method he believed they had some method of giving a little push to the *tesserae*, in parts, to get more variation of facet in the gold of the background."

Mr. Walter Crane was right. The fact is, the placing of the *tesserae* face downwards on the paper does not in any way affect the surface quality of the mosaic, which is regulated at the time the *tesserae* are being fixed upon the wall.

When the mosaic is brought to the wall which is destined to receive it, the wall is prepared with cement, and the pieces into which the

¹ November 18, 1901, proceedings reported in *Journal of the Institute*.

mosaic has been divided are taken from their cases, and the work of fixing begins.

If one fixer only is working on a panel, about four feet of mosaic can be placed on the wall at the time. The *tesserae* are pressed into the cement, and after a few minutes the paper is damped off and the mosaic discovered. It is at this stage that the character of the surface is determined. There is no need for hurry while the manipulation of the *tesserae* is proceeding, as the cement used does not set firm for some hours after the paper has been removed; and there is no fear of the *tesserae* sagging, as they are laid from the bottom and not from the top, as in the old method. If, therefore, the designer is also a practical mosaicist, and wishes personally to undertake the work of fixing, this method affords him facilities for stamping the work, in its final stage, with his individuality by giving to the *tesserae* with his own hands that "little push" to which reference has already been made.

To facilitate fixing in localities where skilled fixers are not to be met with, mosaics intended to cover flat surfaces are sometimes set in cement before they leave the studio. The process is as follows: A bed of cement about half an inch thick is laid upon a smooth wooden surface and before the cement has set an iron frame of ingenious construction (the invention of a Venetian) is pressed into it. This is then covered with an upper layer of cement prepared to receive the *tesserae*, which are placed upon it in the same manner as, by this method, they are placed upon the wall. When the work is completed its appearance is that of a slab of marble, rimmed with iron and covered on one side with mosaics. It can then be placed in position by any competent mason, and for that reason this special construction is suitable for mosaics intended for India or the Colonies. The colossal figure of "Minerva" in the Library of Congress, at Washington, was so constructed, and the result is perfectly satisfactory. Large panels are divided into sections, to facilitate packing, and these sections (like the sections into which the cartoons are divided) are irregular in shape and follow the lines of the designs, so that when fitted together no joints are visible.

It must be distinctly understood that the "face downwards" method is applicable only to decorative work and cannot be used (to re-quote Sir Henry Layard) when much delicacy of execution and extreme nicety in gradation of tints are required. In such cases the work is always executed "face upwards" and when finished is taken up onto paper from the front.

This, then, in brief, is the method which is now known as the Venetian method. For its successful application considerable skill and practice are necessary, but the experimental stage has been passed long ago, and experience has shown that the Venetians are capable of good work. They smile at the notion of a return to the older method, for they know that, by the means they employ, a mosaic of equal quality can be executed at half the cost, and in less than half the time; and so they are content to allow the "battle of the methods" to be fought out in their absence, while they continue to raise higher and higher the standard of quality, being convinced that, with the two masters, time and money, on their side, their views will prevail.

In the course of this paper I have called the working mosaicists "workers" or "workmen," but, in truth, those in the higher grades are entitled to be more suitably designated. They have studied every style of mosaic construction and thoroughly understand the possibilities as well as the limitations of the material with which they work. Their wide practical experience has given them freedom and assurance in shaping and placing the *tesserae*, and in adding all those subtle touches which mark the difference between a mere slavish copy of a design and a work of art. To make my meaning clearer I will read a letter received from Cavaliere Giovanale, architect to His Eminence Cardinal Rampolla, on the completion of the mosaics recently executed for His Eminence, and now placed in the crypt of St. Cecilia in Trastevere at Rome:—

"The mosaics are a perfect copy of the cartoons, reproducing with fidelity not only the outlines, but retaining in the treatment of light and shade, and in the expression of the faces, all the intentions of the artist who designed them, and truly interpreting the scheme of coloring expressed in the small sketches which accompanied the cartoons. Nor must I fail to express my admiration, and the admiration of those who have examined these mosaics, at the perfect technique and wise distribution of the *tesserae* by means of which all the most delicate effects of modelling and coloring have been obtained. This proves the artistic taste and technical skill of those who executed the work."

Men who can produce work of this kind are, I think, entitled to be called artists, and in this opinion I am supported by the late Sir Edward Burne-Jones, who addressed the following letter to the chief of some Venetian mosaicists who had executed mosaics from his designs:—

"To the artists at Venice, who have been so indefatigable in carrying out my designs, I owe much gratitude, and I should be obliged to you if you would convey to those who executed the work some expression of my delight at the result of our cooperation, and my trust that it is only a beginning of our labors together. Will you kindly do this for me, because I know their skill and workmanship have been of an unusual kind."

Such words, addressed to them by such an authority, go far to establish the claim of the Venetians to be the best mosaicists in the world.

PORPHYRY.

HERE was no science like geology among the ancients, and in consequence the references to the materials employed in sculpture are often very vague. When, to take one instance, we hear of a vase, sarcophagus, or column being made of porphyry, we cannot imagine what was its color or appearance. Many varieties of stones of an igneous class were believed to be porphyry. There are, for example, references to green, black, rose and mottled porphyries. Stones that would now be considered as syenite, serpentine, obsidian or basalt were formerly regarded under that generic name. From its endurance, and the colors some varieties presented, it was esteemed as a most valuable decorative material.

The Egyptians were long familiar with it, but the Romans do not appear to have become acquainted with it until the third or fourth century of our era. According to Pliny, the first blocks were sent from Egypt by Vitrasius Pollio, and it is supposed the material did not meet with admiration. Winckelmann was of opinion that the porphyry was not in blocks, but in the form of statues of the era of the Ptolemies. Visconti, on the other hand, maintains that the Romans were already cognizant of porphyry, and there was no novelty for them in the material. It is, therefore, not unlikely that the presents of Vitrasius were works which he had ordered, and which from their archaicism were not judged to be in good style. From the quantity of porphyry discovered in the ruins of Palmyra it is evident that the Romans were able to appreciate so tenacious a stone. Another proof of admiration for it is to be observed in the attempt to make the draperies of white marble statues assume the semblance of porphyry by means of painting. Under Antoninus Pius it was extremely valued. From its color it was supposed to bear some relation with purple, and was consequently assigned to statues of deities, emperors and exalted personages. Sometimes it was used for draperies by sculptors, and sometimes for heads.

It is to be regretted that the introduction of the material should have been deferred until a time when Roman art, and especially sculpture, no longer displayed Greek influence. Constantine the Great employed porphyry for sarcophagi. In the Vatican there are two remarkable examples. One sarcophagus served as a receptacle for the remains of his daughter, St. Constantia, the other for those of his mother, St. Helena. The reliefs which embellish the exterior of the former are sufficient to indicate the condition of art at the period. The composition resembles some of those painted in the catacombs. We see winged *amorini* gathering grapes from branches or trampling on them in the wine-press. The figures are, of course, symbolic. There are also peacocks, which had ceased to be recognized as the attributes of Juno alone. Porphyry is extremely difficult to carve, and allowance should be made accordingly for the imperfections. But when all is taken into account the conclusion cannot be resisted that the early Christian sculptors were deficient in artistic skill, and with the most pliable materials would not have been much more successful.

The sarcophagus of St. Helena is more ambitious in its ornamentation. It is suggestive of a battle-field, and may have some reference to the victory of her son over Maxentius, which, as an important event in Church history, was one of the last works selected as a subject by Raphael. After the battle, Constantine introduced the labarum with a figure of the Cross as the army ensign, and the inscription "In hoc signo vinces." St. Helena was credited with the finding of the Cross, and she could be easily supposed to have had some influence on the mysterious events of the battle. As the Rotunda of the Vatican was intended to be a shrine for the colossal porphyry vase, so the adjoining hall of the Greek Cross was formed to house the pair of immense sarcophagi. It is related that the restoration of the sarcophagus of St. Helena occupied eight sculptors during ten years.

Leon Baptista Alberti, the architect, was attracted by the difficulty of working porphyry, and endeavored by research to discover the secret of the ancient operations. It is so hard as to resist strokes of the chisel, and it is only, as it were, in grains the surface can be abraded. According to Vasari's account, it was essential for the porphyry worker to have heavy hammers pointed with a diamond, and, what seems more extraordinary, the hammers must be soaked in the blood of goats. Cosmo de' Medici also investigated the subject, and he was reputed to have been able to harden the tools required by means of vegetable juices. He communicated his discovery to one of the Florentine sculptors, Baptista del Tadda, who followed it with success. Modern scepticism will not accept the statements, and probably there was no other way to conquer the consistency of porphyry than by patient labor. It is said, however, that Michael Angelo, who was strong armed, was amazed at Tadda's facility in operating on hard stones. One instance of his skill was familiar to the Florentines. It was the porphyry statue of "Justice" erected by Cosmo to commemorate his victory over his countrymen at Montemurlo. The material was overcome to excess, for it was necessary to add a mantle of bronze in order to remove the appearance of slenderness which the figure presented.

Owing to the slowness of the operations, it was requisite to employ a large number of workmen on every example which had to be produced in porphyry. The vases of the Vatican and of the Naples Museum, and the statues and busts in the material, must have cost a sum of money which it is now difficult to estimate. It has been maintained by some archaeologists that the ancient sculptors may have been acquainted with processes, or rather appliances, by which manual

labor was diminished. If, however, they had been conversant with a machine such as the modern "rock-drill," it would be easy to imagine that a more delicate variety could be used for sculpture. But, so far as is known, the Romans trusted entirely to human hands, and it is not unlikely they possessed trained slaves who were capable to undertake the mechanical exercises of stone-working. From experiments carried out in recent years it has been concluded that porphyry is ten or twelve times harder than marble. In Vasari's time the saws in use were without teeth, and were formed of copper. It was likely that sand or emery was an auxiliary, and the saw merely kept the grains in motion. — *The Architect*.

BOOKS AND PAPERS

ALL our readers know something of the British Fire Prevention Committee, and of the admirable tests of materials and methods of construction which the Committee has carried on at its testing-station in London. The official accounts of all the tests so far made, some sixty-five in number, have now been collected in two handsome volumes,¹ which may be said to form the standard work on the subject. Naturally, many more tests remain to be made before our knowledge of the fire-resisting properties of materials will be more than rudimentary; but a very great deal has been accomplished; and it may be truthfully said that a test once made at the Westbourne Testing Station never needs to be repeated. The tests, until the present time, have been devoted to floors, including those of solid beams, set close together, with mortar in the joints; those of beams spread a little distance apart, with concrete between; those of beams with ordinary spacing, plastered on expanded-metal, and with concrete-filling between them; to partitions, of wire and terracotta, fireproofed wood, and other materials; to asbestos curtains, tin-covered doors; ordinary doors of various woods, and many other details of building; and the results have been instructive and valuable in the highest degree. Of course, many more tests remain to be made, including those devoted to modern combinations of iron and concrete or terracotta, and, possibly, some applied to naturally slow-burning woods, such as our own hemlock, and various tropical species; but these will undoubtedly come in time. Meanwhile, the records of the tests already made serve as an excellent guide for designing the details of fire-resisting construction, and architects and insurance-men will profit greatly by having them collected in a form so convenient for reference.

WE have been waiting for many years for such a work as Dr. Louis Bell has just written.² The problem of illumination has been studied in the past very thoroughly from the standpoint of the manufacture and individual use of various lighting-devices, but the author goes a great deal farther with this volume, and after discussing the fundamental principles of light, of color, reflection, etc., and describing in detail the various kinds of lamps and lighting-appliances, he presents a thorough analysis of the conditions which bring about effective illumination as applied to interior and exterior effects, including both the lighting of houses and large halls, as well as decorative and scenic illumination. We know of no other work upon this subject. Every architect who has had to deal with such problems will find Dr. Bell's work intensely interesting from cover to finish. Without being burdened with mere scientific disquisitions, all of the problems involved are studied thoroughly and exhaustively and the conclusions are so reasonable, and applied in general principles so intelligently, that one cannot escape the feeling that the book represents the results of many years' actual acquaintance with such work. The advent of the electric-light has materially changed the possibilities of illumination. The innovations came upon us so suddenly that it has taken a number of years to fully adjust ourselves to the possibilities now within the reach of the architect and decorator, and it is a fact that every year the demands for light are increasing. What was considered ample illumination even so short a while ago as five or six years would to-day be rather behind times. The public expects a great deal of light, and it is so easy to make combinations with electric-bulbs that the possibilities in an artistic sense are sometimes quite bewildering, as was evidenced by the remarkable display of illumination at the Pan-American Exposition. We every year use more light and use it more abundantly, and this book sets forth the principles which can safely be followed in determining the direction of experiment and growth. The writer states the best current practice in regard to proportioning the amount of illumination, as well as setting forth most excellent hints as to the placing of the individual sources of light. It would not be reasonable to suppose that the author's deductions would meet with the full approval of every one, nor can his formulas and reasoning be applied to all cases, for the natural reason that even under similar conditions it is not always desirable to obtain exactly the same result, and what would

be ample illumination for a certain kind of auditorium or for a certain style of stage-setting might be totally inadequate for the same hall and settings when put to a different use. Thus, a ball-room has to be lighted with a great surplus of illumination, while a lecture-hall requires very little. But all that can be said generally upon the subject the writer has said and said well, and he adds an interesting chapter on the illumination of the future which presents subject for a good deal of thought. The volume includes 339 pages very fully and intelligently illustrated and supplemented by an ample index.

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 CHURCH OF ST. ROSE OF LIMA, NEW YORK, N. Y. MR. J. H. MCGUIRE, ARCHITECT, NEW YORK, N. Y.

THE Church of St. Rose of Lima, of New York, consists of an upper and lower church, both of approximately the same floor area. The lower church will eventually be used as a hall and Sunday-school. It is about 14 feet high in the clear. The upper church is 60 feet in height and has a large organ-loft over the vestibule. There will be five altars. The building is constructed of red brick, Longmeadow sandstone and terra-cotta, and has a slate roof with copper flashings and finials. The cost of the building will be about ninety thousand dollars. The upper church will seat eight hundred people and will be connected directly with the priest's residence now being erected, through a conservatory passage. The cost of the rectory will be about eighteen thousand dollars.

A MONUMENTAL SUN-DIAL FOR A PARK. MR. W. E. CHAMBERLIN, ARCHITECT, CAMBRIDGEPORT, MASS.

DOORWAY TO THE SUNDSVALLS ENSKILDA BANK, STOCKHOLM, SWEDEN. MR. G. WICKMAN, ARCHITECT.

This plate is copied from *Teknisk Tidskrift*.

MAIN ENTRANCE: COMPAGNIE D'ASSURANCE LA NATIONALE, PARIS, FRANCE. M. NENOT, ARCHITECT.

This and the following plate are copied from *La Construction Moderne*.

CORNER ENTRANCE TO THE SAME BUILDING.

Additional Illustrations in the International Edition.

HOUSE OF JOHN GRIBELL, ESQ., WYNCOTE, PA. MR. HORACE TRUMBAUER, ARCHITECT, PHILADELPHIA, PA.

LIBRARY IN THE SAME HOUSE.

THE STAIRCASE, BLICKLING HALL, ENGLAND.

This plate is copied from *Building News*.

BERTRAND DUGESCLIN. M. E. FRÉMIET, SCULPTOR.

This plate is copied from *Art et Décoration*.

THE CHÂTEAU DE BORNHEM, PROVINCE OF ANTWERP, BELGIUM. MM. HENRI BEYAERT AND EMILE JANLET, ARCHITECTS.

This plate is copied from *L'Emulation*.

NOTES AND CLIPPINGS

BABYLONIAN SIXTIES. — While we are lost in admiration before the stone tapestry of the palaces of Nineveh, and surprised at the ingenuity of a Burnouf, Lassen, Rawlinson, Hincks, Norris and Oppert, who could discover in these cuneiform inscriptions the real language of Sennacherib and Darius, we are not aware that, to a certain extent, we are all still Babylonians, and that we carry about with us and read every day what is, to all intents and purposes, a Babylonian inscription, namely, the dial-plate of our watches. Why is our hour divided into sixty minutes, each minute into sixty seconds, and so forth? For the same reason, it would appear, for which the Greek talent was divided into sixty minae, and originally each mina into sixty shekels, a Babylonian word, literally translated by the Greek *stater*. It was in Babylonia, and at first in Babylonia only, where, in addition to the decimal

¹ "Facts on Fire Prevention": The Results of Fire Tests conducted by the British Fire Prevention Committee. Edited by Edwin O. Sachs, Architect. London: B. T. Batsford, 94 High Holborn. New York: Chas. Scribner's Sons, 153 Fifth Avenue. 1902. 2 vols. Price \$10 net.

² "The Art of Illumination." By Louis Bell, Ph. D. New York: McGraw Publishing Co. 1902. Price \$2.50.

notation, there existed for all practical purposes the sexagesimal system. Why the number sixty was fixed upon instead of ten, or twelve, or twenty, or a hundred, it is not difficult to see, for no number has so many divisors as sixty. But what is important is this, that while even the French, when revolutionizing weights, measures, coins, dates and everything, respected our clocks and watches, the Babylonians, those monstrous conservatives of the East, carried their sexagesimal reform right through everything, not excepting the high-roads on earth or the high-roads to heaven, by dividing the sun's passage into twenty-four parasangs or 720 stadia, and subdividing each hour into sixty minutes, each minute into sixty seconds. Hipparchus, the great Greek astronomer, about 150 B. C., availing himself of the observations of Babylonian astronomers, introduced the hour, with its sixty minutes and 3,600 seconds, into Greece. Ptolemy about 150 A. D. adopted and thus gave still wider currency to the same system. With Ptolemy's work it was carried down the stream of traditional knowledge through the Middle Ages to the cataract of the French Revolution, and after passing safe and sound through that fearful crisis, it will probably be the last remnant of Babylonian antiquity hereafter to be swept away by the decimal system, which, revolutionary as it may seem, is nevertheless the most rational, the most natural and the most ancient numerical system of the world. It was known from Greek astronomers that the Babylonians divided the circle into 360 degrees, and the degree into sixty minutes. It was also known, from the fragments of the Babylonian history of Berosus, that their political and mythological chronology was based on a sexagesimal system. They counted by *sossi* and *sari*, the *sossos* representing sixty, the *saros* 60 x 60, or 3,600 years. The *neros*, which is mentioned by Berosus as consisting of 10 x 60, or 600 years, might well have been dispensed with, at least for arithmetical purposes, for whenever there are two figures in the row of *sossi*, the former would necessarily represent the so-called *neri*. According to this system Berosus says that the Babylonians counted 120 *sari* from the creation of the world to the Deluge, i. e., 120 x 60 x 60, i. e., 432,000 years. This is an important period in the historical traditions, or rather in the astronomical and chronological fictions, of the ancient world, and it was adopted, for instance, as the duration of the Kaliyuga by the Hindus, who, like the Greeks, became in later times the pupils of the Babylonian. — *The Architect*.

REINFORCED CONCRETE. — As the result of recent experiments conducted in Paris, it appears that moderately hard steel is the most suitable material for the longitudinal reinforcement of concrete, while mild steel or ordinary wrought-iron is the best when concrete is reinforced by network. As a general rule, it is advisable that the percentage of metal to concrete should average .015 for longitudinal armatures, and .025 for network. Tests made upon those two varieties for reinforced concrete show that the use of iron or steel network affords better results than longitudinal bars or rods, ductility and resistance being considerably greater. It should be borne in mind that a proportion of cement amply sufficient to fill all voids is always necessary in the case of compression-members having to bear heavy strains. Another point of some importance is that columns and struts must be moulded in a vertical position if elastic symmetry is to be attained. Horizontal moulding is inevitably attended by lack of symmetry, as the result of differences in the density of the successive layers of concrete. If possible, all members of reinforced concrete should be moulded in a properly equipped workshop, affording shelter from sun and rain, and facilities for the careful examination of completed work. — *The Builder*.

THE PAVILLON DE MADAME, VERSAILLES. — Among the residences in Versailles one of the most interesting is known as the Pavillon de Madame. It was constructed in 1780 for the Princess Joséphine Louise of Savoy, who was married to the Count of Provence, one of the grandsons of Louis XV, and afterwards Louis XVIII. He was styled Monsieur during his brother's lifetime, and his wife was therefore Madame. The building was in the fashion of the time when everything seemed favorable to royalty in France and a French Revolution was thought to be an impossibility. The house is accordingly decorated in a charming manner, with wall and ceiling paintings of great merit. For some years past it has been possessed by M. Chauchard, the founder, and for several years the chief proprietor, of the "Louvre," the great warehouse which every Parisian woman from the highest to the lowest is likely to have patronized. He now owns the most valuable collection of paintings in Paris, one of his treasures being Millet's "Angelus." M. Chauchard does not forget the scene of his success and the representatives of the men who helped to make him a millionaire. He has made over the beautiful Pavillon de Madame in order that it may become a house of retreat for old employees. In such a palace men who have performed their task may find well-earned repose. — *The Architect*.

THE TEMPLE OF ÆSCULAPIUS. — Dr. Herzog, of Tübingen, has been digging on the Island of Kos, in the Ægean, and found under a Byzantine church the site of the famous temple to Æsculapius. It was of marble and Doric in architecture. A wide stairway, remains of two temples in the Ionic style, tablets with the inscriptions giving thanks to the god for restored health, and records of the winners in the local games, are among the finds. Many fragments of sculpture have also rewarded his efforts. — *Exchange*.

ABATING THE FUMES FROM SMELTERS. — The citizens of Anaconda, one of the copper cities of Montana, are sorely afflicted with the stifling vapors that have ascended from the chimneys of the smelters. Loaded with the fumes of arsenic, antimony, zinc and sulphuric-acid, these vapors have been anything but agreeable and healthful. Experiments looking to their elimination have been carried on for the past three months, and it has finally been discovered that by cooling the gases of

the volatilized compounds they will condense, and by building flues sufficiently large so that the velocity of the gases will be very low, the condensed particles will settle at the bottom of the flue, allowing only the permanent gases to escape. These are not injurious, either to vegetable or animal life, hence it is thought that the "smoke nuisance" of the copper city can be abated. A flue 60 feet in width and 20 feet deep will be constructed at once in connection with the new smelter of the Anaconda Company, which will pass its gases into a monster stack 30 feet in diameter and 300 feet high, delivering the permanent gases and products of the combustion at an elevation so high above the valley that no trace of their fumes will load the air of the town or the valley below. The expense will be enormous, but if there is a business that can stand it, it is the copper business. The effort of the Company to abate this disagreeable feature of its industry cannot be charged wholly to its regard for suffering humanity, since it was undertaken to quiet clamor raised against the location of its new reduction-works. However, no one is inclined to look the gift-horse in the mouth, and the people will accept the relief promised without questioning the motive that prompted it. — *Portland Oregonian*.

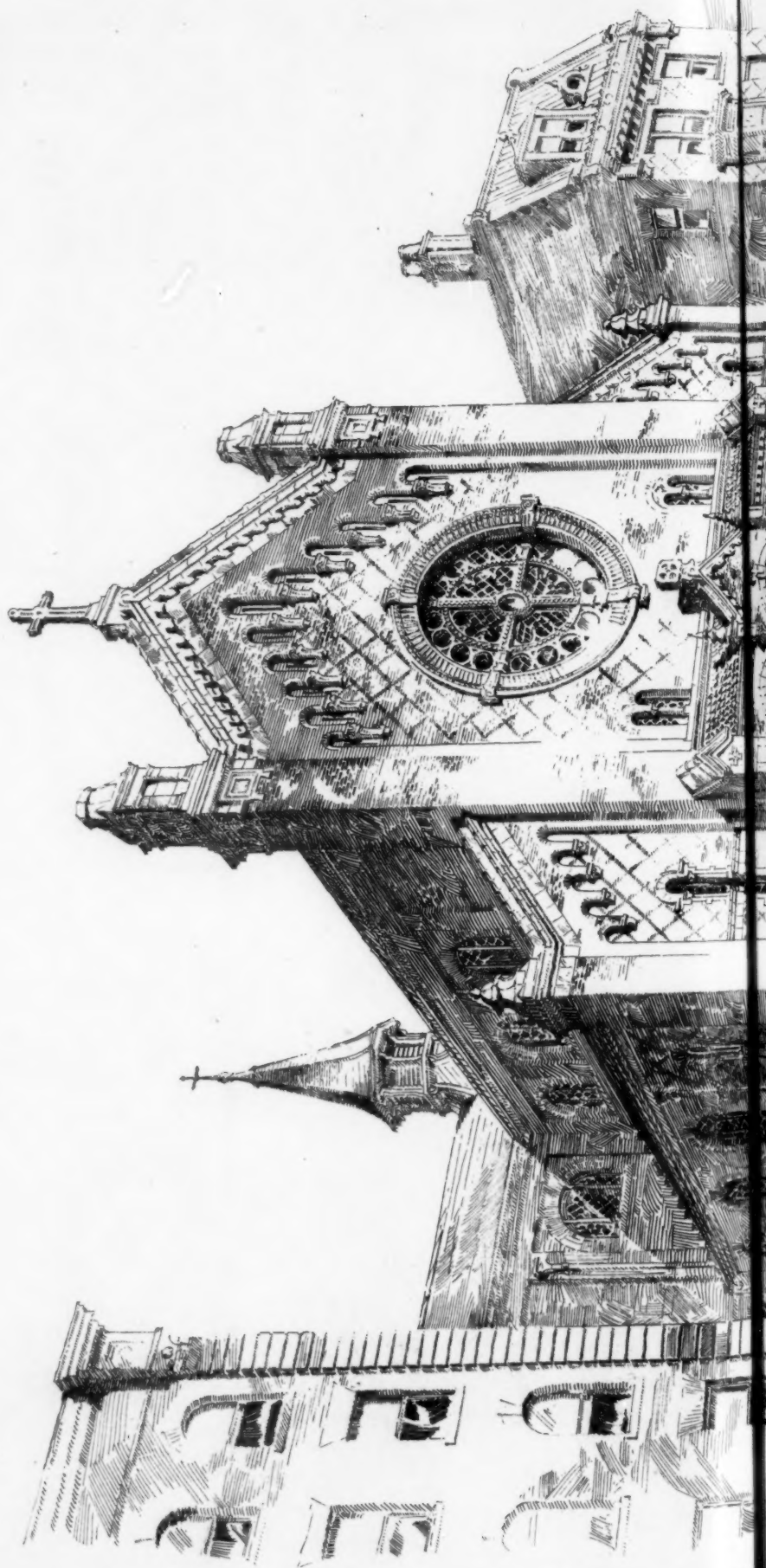
DANGER OF CEMENT TILES. — In the reports of the Fire Department of a large European city we find the following remarks upon the danger of cement roofing-tiles made waterproof with tar. Two serious fires were the result of using these tarred-cement roofing-tiles, the one at Stalldorf, in Lower Franconia, the other at Dertow, Brandenburg. As a consequence of the first case a test of the fire-resisting properties of these tiles was made at the Bavarian Royal Laboratory. They were found to be unsatisfactory, and the recognition of this kind of roofing-tile as a good and sufficient fire-resisting roofing-material was withdrawn. Thereupon, the manufacturers of these tiles, foreseeing that there would be an end to their business, bestirred themselves and had further tests made, both at the Bavarian Institution and at the Prussian Royal Technological Institute, at Charlottenburg. The results were not decisive. It was found that some of the tiles were sufficiently fire-resisting, while others were distinctly dangerous. The differences were caused by the differing densities of the tiles before being dipped in the tar. If the tile was made up with a larger proportion of sand it was more porous, and consequently took in and retained a greater quantity of tar, which, when heat was applied, sweated out and burned. Where the pores of the cement tile were much finer the tar in a thick state could be absorbed to but a slight extent. Only the thin and fluid portion of the tar entered a little way into the tile and combined so closely with the cement that it could not be separated from it by fire. The general conclusion was that there was so much uncertainty about the tarred-cement roofing-tiles that it would be necessary to make repeated and continual tests if they were allowed to be used. — *Thon-industrie Zeitung*.

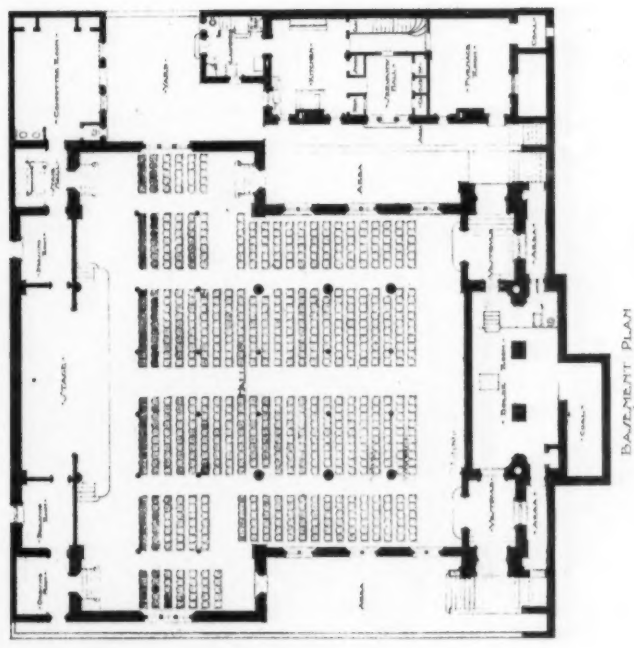
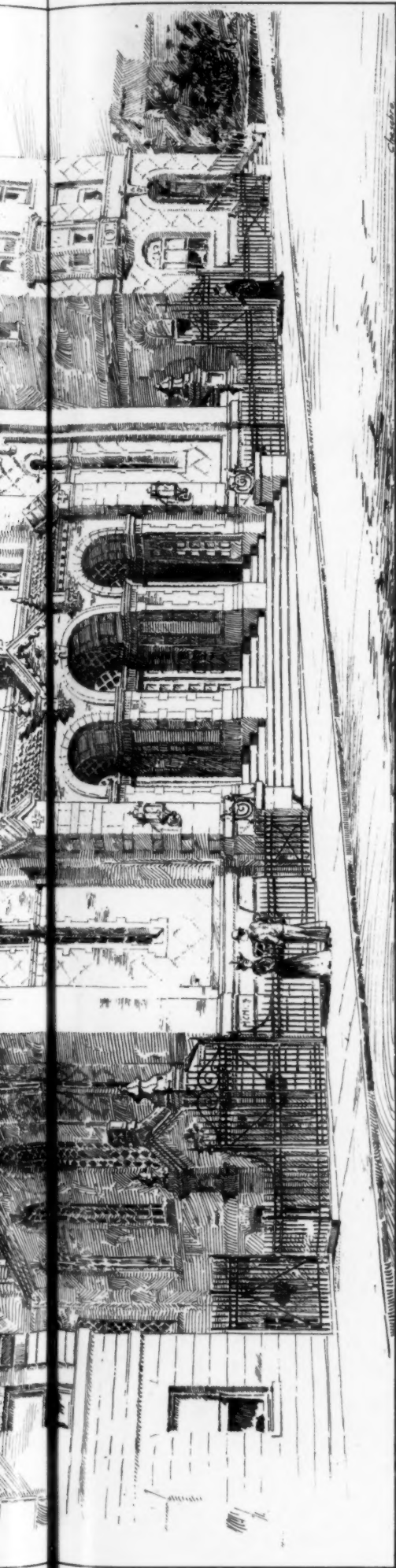
CORNSTALK PAPER. — American farmers and newspaper men are very likely to become joint beneficiaries of a great scheme of coöperation in making the most of the corn-crop; not of the grain merely, but of the whole plant, stalk, leaves, pitch, tassels, husks, cobs and kernels. After a long course of experimentation, carried on at Kankakee, Ill., under the encouragement of the National Agricultural Department, it is found that high-grade paper can be profitably manufactured, in different varieties, from various parts of the plant. One kind is made from the hard shell of the stalk, another from the pith and a third from the husk. "From the pith is turned out the finest grade of oil-paper, almost equal to linen-paper," so it is claimed by experts at the Department. A machine has been invented, and is now being manufactured, which will take the cornstalk, with the ear still on it, husk the ear, separate the husk from the stalk, and then remove the shell from the pith. Sending this machine into the fields, the paper manufacturers will propose to farmers to buy their corn-crops as they stand in the fields. If the farmers wish the corn after it has been husked, it will be passed back to them; otherwise it will be marketed by the owner of the machine, who will convert every remaining part of the plant into some form of manufacture. — *St. Paul Pioneer Press*.

UNSUCCESSFUL ATTEMPT TO REMOVE A MURAL PAINTING FROM THE DUCAL PALACE. — Orders were given some time ago by the authorities of Venice to remove, if possible, Tintoretto's famous mural painting, "Glory of the Blessed in Paradise," which occupies the whole of the east wall of the Council Hall in the Palace of the Doges. Defects in the building had aroused a fear lest the wall should go to pieces, and a committee of Venetian artists was appointed to make the removal. The work, however, has been found to be impossible, owing to the crumbling condition of the wall, and has been abandoned. The painting, which is said to have been the largest in the world, is 84 feet long by 34 feet high, and dates from 1550. — *N. Y. Evening Post*.

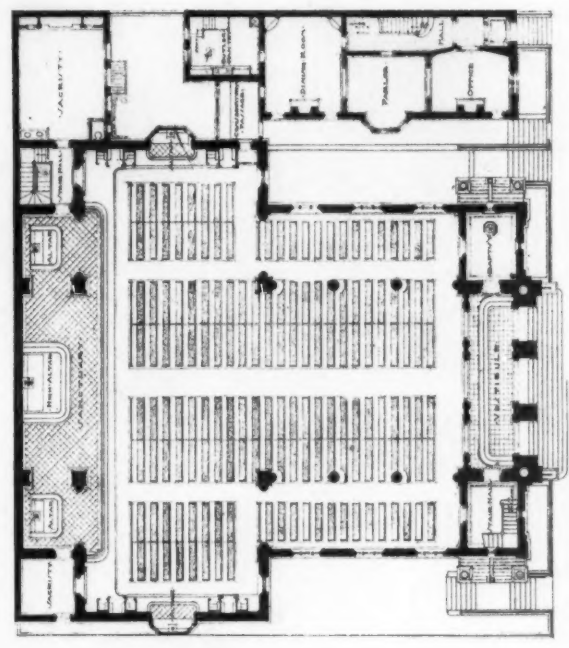
THE PULASKI AND VON STEUBEN MONUMENTS, WASHINGTON, D. C. — The President has signed a bill providing fifty thousand dollars each for monuments to the memory of Count Pulaski and Baron von Steuben, both of the Continental Army during the Revolution. The bill provides that the monuments shall be erected under a commission composed of the Chairmen of the Senate and House Committees on Libraries, and the Secretary of War. The idea is to place the new monuments in the northwest and northeast corners of Lafayette Square, corresponding to the monument to Lafayette in the southeast corner, and the one to Rochambeau in the southwest corner. — *Exchange*.

A TENANT'S REVENGE. — In revenge for his landlord's refusal to paint his house, an Antwerp tenant has hung out this text: "At the Sign of the Dirty Front." — *Exchange*.





BASMENT PLAN



MAIN FLOOR PLAN

COPYRIGHT 1903 BY THE AMERICAN ARCHITECT AND BUILDING NEWS CO.

CHURCH OF ST. MARY OF LIMA, NEW YORK, N. Y.
J. H. McGUIRE, ARCHITECT.

MILWAUKEE PRINTING CO. PRINTED

The American Architect
Mar. 21, 1903.
No. 1421.

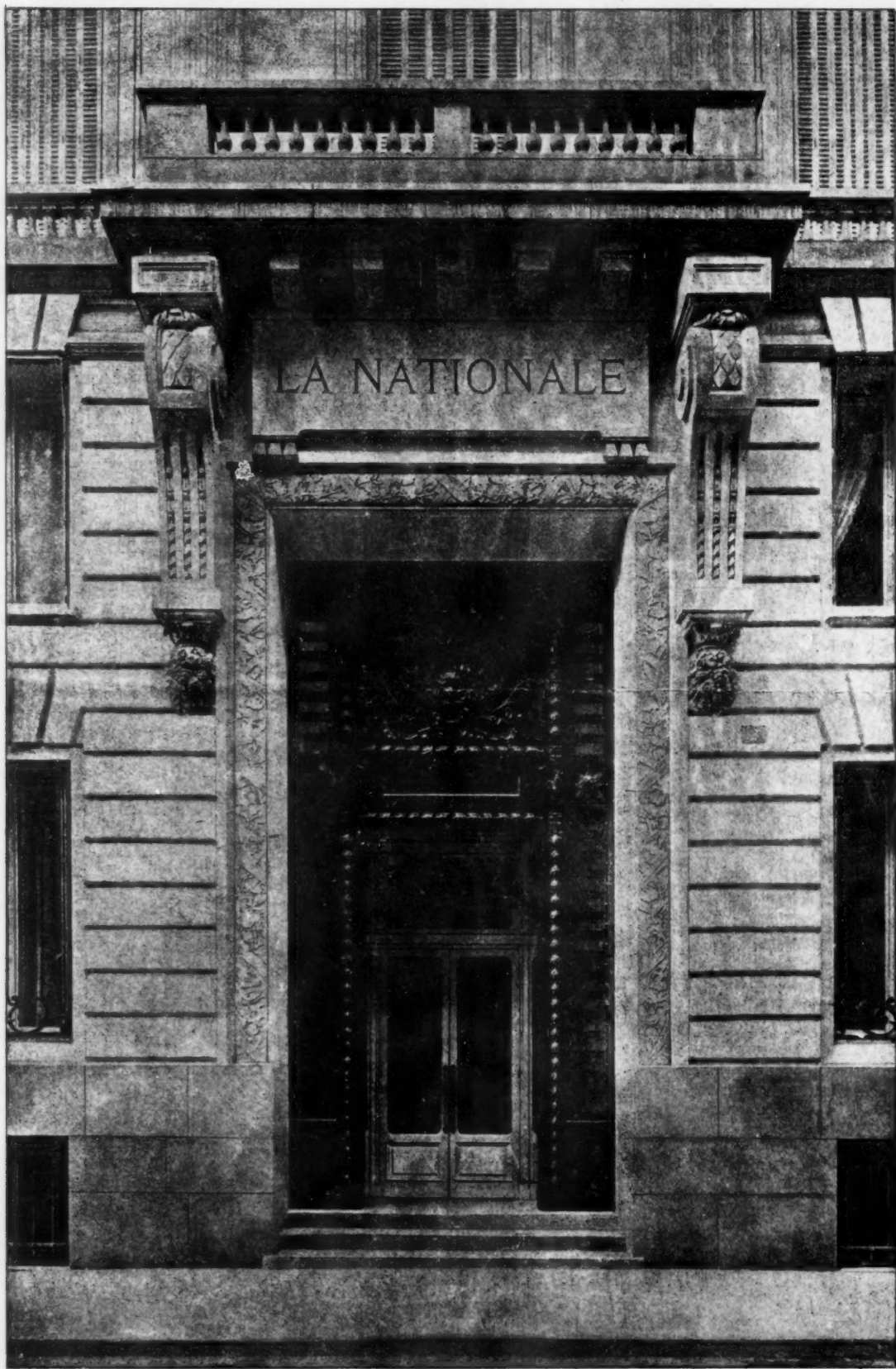


Copyright 1903 by The American Architect and Building News Co.

From the Teknisk Tidkrift.

DOORWAY TO THE SUNDSVALLS ENSKILDA BANK, STOCKHOLM, SWEDEN.
G. WICKMAN, ARCHITECT

The American Architect
Mar. 21, 1903.
No. 1421.



From La Construction Moderne

MILITARY PRINTING CO., BOSTON.

MAIN ENTRANCE: COMPAGNIE D' ASSURANCE LA NATIONALE, PARIS.

M. NENOT, ARCHITECT.

The American Architect
Mar. 21, 1903.
No. 1421.

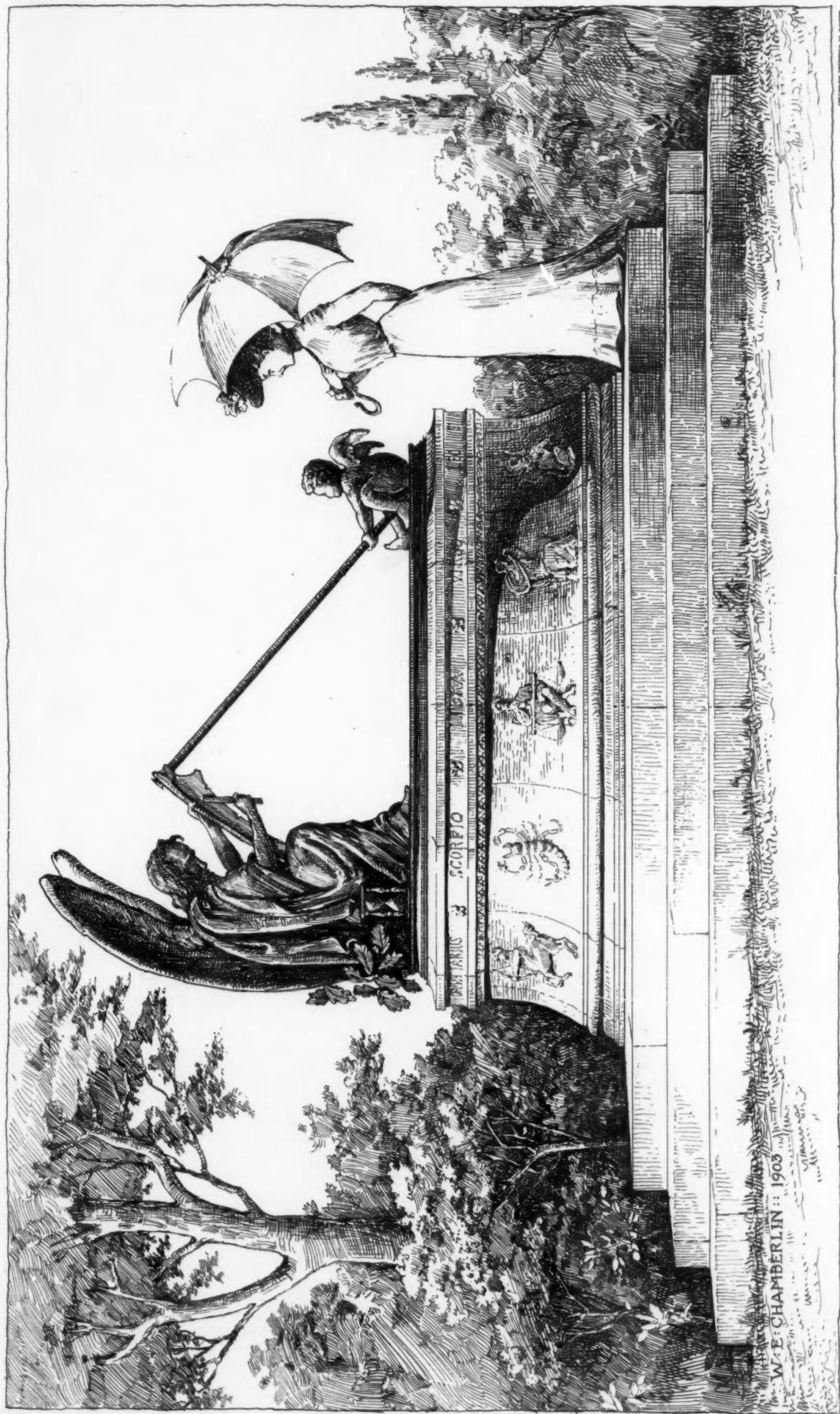


From La Construction Moderne

DELICIOUS PRINTING CO., BARRIS

CORNER ENTRANCE: COMPAGNIE D' ASSURANCE LA NATIONALE, PARIS.
M. NENOT, ARCHITECT.

The American Architect
Mar. 21, 1903.
No. 1421.



REPRODUCED BY THE AMERICAN ARCHITECTURE AND ARTISTS' BOARD

A MONUMENTAL SUN DIAL FOR A PARK.
W. E. CHAMBERLIN, ARCHITECT.

The American Architect
Mar. 21, 1903.
No. 1421.

THE AMERICAN ARCHITECT AND BUILDING NEWS

A WEEKLY JOURNAL OF CONSTRUCTIVE AND DECORATIVE ART

VOL. LXXIX.—No. 1421.]

SATURDAY, MARCH 21, 1903.

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

WHITTIER MACHINE CO.,

PASSENGER AND FREIGHT
ELEVATORS.

53 STATE STREET - - - BOSTON.

ELEVATOR SIGNALS

OF ALL KINDS

HERZOG TELESEME CO.

51 WEST 24TH ST., NEW YORK



ARCHITECTURAL INSTRUCTION.

BOSTON, MASS.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY.

DEPARTMENT OF ARCHITECTURE.

Options in Architectural Engineering and Landscape Architecture.

College graduates and draughtsmen admitted as special students.

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

For catalogues and information apply to

H. W. TYLER, Secretary,

Mass. Institute of Technology, Boston, Mass.

CAMBRIDGE, MASS.

HARVARD UNIVERSITY.

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

Redding, Baird & Co.

Stained Glass

83 Franklin St., Boston

Original Designs for Church and Memorial Windows of every type and in all grades of outlay.

LOOMIS FILTERS.

ESTABLISHED 1880.

Improved System. Simple and Effective.

LOOMIS-MANNING FILTER CO.,

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

"THE AMERICAN VIGNOLA"

THE FIVE ORDERS OF ARCHITECTURE

BY

WILLIAM R. WARE

Professor of Architecture, Columbia University
Text and Plates, 86 pp., 9"x12" Price, \$3.00

AMERICAN ARCHITECT AND BUILDING NEWS CO.
PUBLISHERS

ITHACA, N. Y.

CORNELL UNIVERSITY

COLLEGE OF ARCHITECTURE

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

NEW YORK, N. Y.

COLUMBIA UNIVERSITY,
IN THE CITY OF NEW YORK.

SCHOOL OF MINES.

SCHOOL OF CHEMISTRY.

SCHOOL OF ENGINEERING.

SCHOOL OF ARCHITECTURE.

SCHOOL OF PURE SCIENCE.

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

FLYNT

BUILDING AND CONSTRUCTION CO.

GENERAL OFFICE, PALMER, MASS.

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

CHURCHES, HOTELS, MILLS, PUBLIC
BUILDINGS AND RESIDENCES.

Also for the construction of
RAILROADS, DAMS AND BRIDGES.

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

The WINSLOW BROS. COMPANY,

CHICAGO,

Ornamental Iron and Bronze.

ST. LOUIS, MO.

WASHINGTON UNIVERSITY
SCHOOL OF ENGINEERING AND
ARCHITECTURE

Offers a four-year course in Architecture, leading to a degree of B. S. in Architecture.

College Graduates admitted to advanced standing or as special students.

FREDERICK M. MANN, Professor.

COLUMBUS, OHIO.

OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Offers four-year courses in Architecture, Civil, Electrical, Mechanical and Mining Engineering, and in Ceramics. Tuition free. For information address,

President W. O. THOMPSON, Columbus, Ohio.

PHILADELPHIA, PA.

UNIVERSITY OF PENNSYLVANIA.

SCHOOL OF ARCHITECTURE.

PROF. WARREN P. LAIRD.

BOOKS:

"Norman Monuments of Palermo."

Illustrated with 50 Plates: 13" x 17 1/2".

Price bound, \$10.00. Unbound, \$9.00.

AMERICAN ARCHITECT AND BUILDING NEWS CO.
Publishers.

BOOKS:

"The Library of Congress."

50 Plates, folio. Price \$5.00.

AMERICAN ARCHITECT AND BUILDING NEWS CO.

ROBERT C. FISHER & CO.

Successors to Fisher & Bird,

MARBLE AND GRANITE WORKS

97, 99, 101 and 103 EAST HOUSTON STREET,

Established 1830.

NEW YORK.

When You Build a Skyscraper



59 Market St., Chicago

Don't risk its early destruction by using cheap paint on its steel skeleton. There is one material that will perfectly protect metal from rust—

Durable Metal Coating

Specify it and be safe.

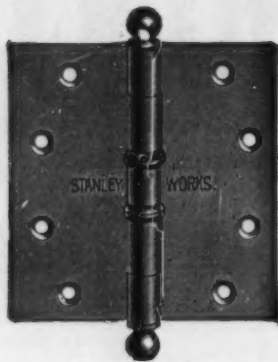
EDWARD SMITH & COMPANY

Varnish Makers and Color Grinders

45 Broadway, New York

Ball Bearing Hinges

In Wrought Bronze
and Steel



ALL FINISHES

Our new Catalog can be had for the asking.

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

CLINTON WIRE-CLOTH CO.

Sole Proprietors and Manufacturers of

WIRE LATH

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

Plain, Japanned or Galvanized.

The Most Perfect and Economic System of FIREPROOF Construction.

SEND FOR CIRCULAR.

BOSTON,
199 Washington St.

NEW YORK,
76 Beekman St.

CHICAGO,
137 Lake St.

FACTORY,
CLINTON, MASS.

FOR INFORMATION ABOUT

U. S. MAIL CHUTES

WHICH ARE

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

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

"La Construction Moderne,"

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

The seventeenth annual volume is now in course of publication.

Subscription, including postage, 35 francs.

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

PRICE OF BACK ANNUAL VOLUMES,

:: 40 Francs. ::

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

Established nearly 40 Years

.. THE ..

ARCHITECT

AND

Contract Reporter

Published Every Friday by P. A. Gilbert Wood

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

PRICE, FOURPENCE

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

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

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

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

The YANTACAW Chemical Fire Extinguisher

NO Acid used, nor poisonous gas generated
Danger from explosion
Danger from Chemical or stream to person or fabric
Periodical recharging, testing or polishing.
Always in the accustomed place and ready for instant use.
No mechanism to become defective.
Can be recharged in from twelve to twenty seconds.
Much more powerful and efficient than carbonic acid gas machines.
Made in sizes capable of charging 25, 50 and 100 gallons of water without recharging.
With the twin Yantacaw a continuous charged stream can be obtained.

Send for descriptive booklet.

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



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

REMEMBER

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



THE NAME "Standard"

is cast in relief on every piece of the

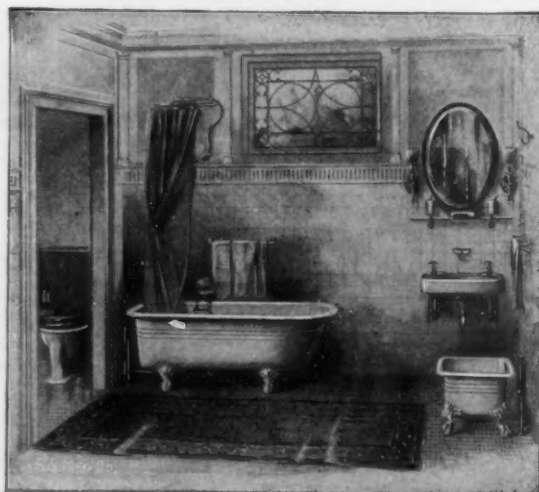
Porcelain Enameled Ware

that has received the Highest Awards at All World's Fairs
and Expositions.

The guarantee which this name carries with it is absolute and a positive assurance against the annoyances inseparable from the use of inferior and non-guaranteed brands.

"Standard" Porcelain Enameled Ware has the hard, smooth and absolutely non-porous surface that is essential to perfect sanitation, combining the daintiness and purity of china with the strength and durability of iron.

Catalogue matter on request.



STANDARD SANITARY MFG. COMPANY
PITTSBURGH, PA.

NATIONAL FIRE-PROOFING CO.

PITTSBURGH
PHILADELPHIA

NEW YORK

BOSTON
CHICAGO



Part XI of the Georgian Period

THIS Part, which deals entirely with the Colonial Architecture of the Southern States, contains 24 pages of text, illustrated with 36 text-cuts, and 25 plates.

It is certainly as good as the preceding Parts, of which critics have spoken thus:—

Of Part IX.

"Brought out in a comprehensive and exhaustive manner, to a useful size, on fine paper, beautifully printed and well delineated."—*Building News*, London.

"Every part of which should be almost as interesting to Englishmen as to Americans."—*The Architect*, London.

"Fully up to its predecessors, both in letterpress and illustrations."—*The Architectural Review*, London.

"We are glad to reiterate our favorable opinion of the enterprise."—*N. Y. Tribune*.

"In repeated notices in these columns the great excellence of the collection has been pointed out."—*The Nation*.

"Needs only to be better known in order to serve a wider audience."—*N. Y. Times' Saturday Review of Books*.

"We can only express the hope that the publishers will continue the series."—*Journal of the Royal Institute of British Architects*.

Of Part VIII.

"In truth a work of superior excellence and great usefulness."—*Irish Builder*, Dublin.

"This great work."—*The Architectural Review*, London.

"Is especially happy in illustrating nearly every phase of the designer's art."—*N. Y. Tribune*.

"Is of great value as a record of a class of structures of great interest."—*The Builder*, London.

Of Part VII.

"The illustrations are extremely attractive."—*The Architectural Review*, London.

"Peculiarly attractive."—*Baltimore Sun*.

Of Part VI.

"Whether from the technical or the general aspect these half dozen portfolios seem quite indispensable."—*Review of Reviews*.

"A peculiarly fascinating and instructive work."—*N. Y. Tribune*.

"One of the most delightful as well as valuable contributions to the study of American architecture yet published."—*Springfield Republican*.

Of Part V.

[Clippings lost.]

Of Part IV.

"This valuable publication grows in interest with every succeeding number."—*N. Y. Evening Post*.

Of Part III.

"The further progress of this work only increases our admiration for the serious spirit and thoroughness with which the work is inspired."—*Art Interchange*.

"One of the most important American works on architecture is, and will remain for some time, this work that is gradually taking definite shape."—*The Nation*.

Of Part I.

"A set of models of inestimable value."—*Art Interchange*.

American Architect & Building News Co., 211 Tremont St., Boston

Topographical Index of Advertisers.

[For pagination, see Alphabetical Index on Cover 2.]

CONNECTICUT.
Bridgeport.
Dodge Co., The G.....[Sash Opener]
New Britain.
The Stanley Works.....[Wrought-Steel Busts]
New Milford.
Bridgeport Wood Finishing Co., The.....
Yale & Towne Mfg. Co.....[Locks]
Stamford.
Benedict & Burnham Mfg. Co.....[Benedict Nickel] Seamless Tubing for Exposed Plumbing
ENGLAND.
London.
The Architect and Contract Reporter.....[Magnifying Glass]
ILLINOIS.
Chicago.
American School of Correspondence.....[Architectural Schools]
Chicago & Alton Railway.....[Railroad Crane Co.]
Northwestern Terra-Cotta Co.....[Terra-Cotta Tiles]
Taylor, J. W.....[Photography]
Wilks Mfg. Co., S.....[Hot-Water Heater]
Winslow Bros. Co., The.....[Ornamental Iron and Brass]
MAINE.
Rockport.
Rockland-Rockport Lime Co.....[Lime]
MARYLAND.
Baltimore.
Vails & Young.....[Sightlights]
MASSACHUSETTS.
Boston.
Amer. Mason Safety Tread Co.....[Stair Tread]
Barlett Lumber Co.....[Redwood Lumber]
Broad Gauge Iron Rail & Vane Works.....
Butcher Polish Co.....[Stable Fixtures]
Cabot, Samuel.....[Floor Polish]
Carr, Hugh.....[Dressing Gaiters]
Campbell, Walter M.....[Perspective]
Carlisle, Pope & Co., E. A.....[Doors, Windows, etc.]
Carter Ink Co.....
Columbian Marble Quarrying Co.....[Marble Dealers]
Couch Co., S. H.....[Telephones]
Craig, David.....[Clean-out]

MASSACHUSETTS.
Boston.
Crawford Specialty Co.....[Traps]
Dedman, Leon E.....[Photography (Architectural and Commercial)]
Elston & Co., A. W.....[Buildings Torn Down]
Erickson Electric Equipment Co.....[Electrical Contractors]
Folsom Snow Guard Co.....[Snow Guards]
Fowler, Herbert.....[Ornamental Plastering]
Gallagher & Munro Co.....[Plasterers]
Gurney Heater Mfg. Co.....[Hot-water, etc.]
Heliotype Printing Co.....[Art Printing]
Howard Clock Co., The E.....[Clocks]
Jager Co., Charles J.....[Engineers]
Johnson & Co., H. A.....[Portable Ovens]
Lombard & Co., A. P.....[Architectural Ornamentation]
Lunt, Moss & Co.....[Water supply Goods]
Mackay, B. L.....[Blue Prints]
Marble Co., W. F.....[Brass Finishers]
Massachusetts Institute of Technology.....
Moore & Thacher.....[Paints]
McKay & Woolner.....[Constructors and Builders]
Morrell & Whitton Construction Co.....[Masons and Builders]
Redding, Baird & Co.....[Stained Glass]
Hanson Cordage Works.....[Sash-Cord]
Sleep, Elliot & King Co.....[Modeling and Ornamental Plaster]
Smith-Warren Co.....[Windows (Fireproof)]
Spaulding Print Paper Co.....[Blue Prints]
Standard Fire-escape & Mfg. Co.....[Fire-escapes]
Stebbins, N. L.....[Photography (Architectural and Commercial)]
Sturtevant Co., B. F.....[Fan System]
Van Noorden Co., E.....[Sightlights, Metal Whittier Machine Co.....[Elevators]
Clinton.
Clinton Wire Cloth Co.....[Metallic Lathing]
PAINTER.
First Building & Construction Co.....[Building Contractors]
MICHIGAN.
Detroit.
Barry Brothers, Limited.....[Shinglelens]
Northern Engineering Works.....[Cranes]
MISSOURI.
St. Louis.
Washington University School of Engineering and Architecture.....[School]
NEW JERSEY.
Camden.
Monroe Metal Shingle Co.....[Metal Shingles]

NEW JERSEY.
Jersey City.
Dixon Crucible Co., Jos.....[Graphite]
Paterson.
Passaic Steel Co.....[Structural Iron]
Perth Amboy.
Perth Amboy Terra-Cotta Co.....[Terra-Cotta Tiles]
NEW YORK.
Irvington-on-Hudson.
Lord & Burnham Co.....[Conservatories]
Ithaca.
Cornell University.....[School]
Jamestown.
Art Metal Construction Co.....[Art Metal Work]
Long Island City.
Richey, Browne & Donald.....[Ornamental Iron and Bronze]
N. Y. City.
Alsen's Cement Works.....[Cement]
American Iron Bridge Co.....[Steel Structures]
American Sheet Steel Co.....[Galvanized Iron]
Associated Expanded Metal Co.....[Expanded Metal]
Atlas Cement Co.....[Cement]
Columbia University.....[School]
Deane, E. Eldon.....[Colorist]
Elevator Supply and Repair Co.....[Electric Signals]
Fisher & Co., Robert C.....[Marble]
Frank, I. F.....[Reflectors]
Grant Pulley and Hardware Co.....[Pulley (Overhead)]
Hagen, Claude L.....[Stage Architect and Carpenter]
Hayes, George.....[Metallic Lathing]
Hercot Telescope Co.....[Elevator Signals]
Hitchings & Co.....[Greenhouses]
Jackson & Co., Wm. H.....[Grates]
Jenkins Bros.....[Lockers (Expanded Metal)]
Jones, T. W.....[Frames]
Kent-Costikyan.....[Rugs (Carpets)]
Mott Iron Works, The.....[Iron Work]
Neuchatel Asphalt Co.....[Asphalt]
New Jersey Zinc Co.....[Zinc White]
New York Belting and Packing Co., Ltd.
N. Y. Metal Ceiling Co.....[Metal Ceilings]
Okonite Co. (Ltd.).....[Insulated Wire]
Otis Elevator Co.....[Elevators]
Pitt, W. B.....[Folding Gates]
Quincy, W. E. (Inc.).....[Electric Pumps]
Rider-Brisson Engine Co.....[Hot-Air Engines]

NEW YORK.
N. Y. City.
Sargent & Co.....[Builders' Hardware]
Smith Co., H. B.....[Steam Heat]
Smith & Co., Edward.....[Furnishes]
U. S. Mineral Wool Co.....[Mineral Wool]
Van Kannel Revolving Door Co.....[Revolving Doors]
Warren Chemical & Mfg. Co.....[Asphalt Roofing]
Williams, John.....[Wrought Metal]
Yale & Towne.....[Hardware (Art)]
ROCHESTER.
Culver Mfg. Co.....[Mail Chutes]
TROY.
Globe Ventilator Co.....[Ventilators]
Troy Laundry Machinery Co.....[Washing Machines]
OHIO.
Canton.
Berger Mfg. Co., The.....[Metal Ceilings]
Cleveland.
Tyler Co., The W. S.....[Ornamental Iron and Bronze]
Columbus.
Kinnear & Gager Co., The.....[Metal Ceiling]
Nelson Co., The C. T.....[Capitals (Carves)]
Ohio State University.....[School]
Marietta.
Introspective and Novelty Co.....[Introscite]
Salem.
Mulhaus, W. H.....[Architectural Metalwork]
West Cleveland.
Cudell, F. E.....[Traps]
PENNSYLVANIA.
Ambler.
Kearby & Mattison Co.....[Magnesia Covering]
PHILADELPHIA.
French & Co., Samuel H.....[Mortar Colors]
Loomis Filters Improved System.....[Filters]
Merritt & Co.....[Lockers (Expanded Metal)]
Merchant & Co., Inc.....[Roofing Plates]
Morse, Williams & Co.....[Elevators]
Taylor Co., N. & G.....[Roofing Tin]
Thorn, J. S. Co.....[Sheet Metal]
University of Pennsylvania.....[School]
Yanacaw Mfg. Co.....[Fire Extinguisher]
PITTSBURGH.
National Fireproofing Co.....[Fireproofing]
Standard Sanitary Mfg. Co.....[Porcelain Enamelled Ware]
Wisconsin Graphite Paint.....[Graphite Paints]
YORK.
Vager Heating Co.....[Heating Apparatus, Steam]



The Kinnear Stamped Steel Ceiling, Sidewall

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

Catalogue and prices furnished upon request.

The Kinnear & Gager Co.
Manufacturers
(New Plant) 236 Mt. Vernon Ave.
Columbus, Ohio
Eastern Warehouse and Office
No. 125 Broad St., Boston

"COHESIVE CONSTRUCTION."

An Essay on the Theory and History of Cohesive Construction.

By **RAFAEL GUASTAVINO, Architect.**

Price, \$1.25.

[Now Ready: The Second Volume of the "Topical Architecture" Library]

"Door and Window Grilles"

104 Plates: 10 in. x 14½ in.

Uniform with the first volume ["Italian Renaissance Doorways"] of this Library

MARCH 22, 1902

THE next time you pass along the streets of one of our large cities, note what rapid progress is making in the use of wrought-metal grilles, screens and gates of various kinds for the ornamental protection of doorways and the window-openings of lower stories.

The great interest shown in this particular form of artistic artisanship just now is our reason for devoting the second volume of this Library to door and window grilles.

PRICE: Bound in Cloth \$7.50
In Portfolio 6.50

American Architect and Building News Co.
211 Tremont Street, Boston

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, payment 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. It plans or specifications, or in both, during the progress of estimating. Correction of this pernicious practice can only be obtained through refusal by contractors to estimate under such conditions.

A true copy.

Attest:

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

"THE AMERICAN VIGNOLA"

The Five Orders of Architecture

By **WILLIAM R. WARE**, Professor of Architecture, Columbia University

Text and Plates, 86 pp., 9"x12". Price, \$3.00

AMERICAN ARCHITECT & BUILDING NEWS CO., Boston, Publishers

The Heliotype Printing Co.

LITHOGRAPHERS, ETC.

211 Tremont Street
Boston

FAC-SIMILE REPRODUCTIONS IN COLOR
OR MONOCHROME A SPECIALTY



Lithography

Heliotype

Color Printing

Photogravure

Maps, Plans, etc.

BEST WORK ONLY
PROMPT DELIVERY
REASONABLE PRICES

■ WRITE FOR ESTIMATES, ■

[Published February 7, 1903]

PART XII

“THE
GEORGIAN
PERIOD”

[PRICE \$6.00]

Containing 47 plates—gelatine, half-tone and line—10" x 14", 36 pages of text enlivened by 64 cuts, and the index for the third Volume.



This Part completes the third and final Volume of a work that critics have agreed to hold worth doing and to have been well done. We ourselves believe it to be a work of real value to the practising architect, for whose daily needs we have prepared it.



In the past we have done all that we could to enable subscribers to procure the work at the lowest practicable cost, and in future will accommodate purchasers in the matter of distributing payment over a reasonable period of time so far as we find it businesslike to do so.



As previously announced, the work now becomes a net publication at \$60.00.



AMERICAN ARCHITECT & BUILDING NEWS CO.

211 Tremont Street, Boston

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

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

 **D**IXON'S DRAWING PENCILS are perfectly uniform and uniformly perfect; eleven degrees of hardness and softness. Ask for booklet 14.
JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J.

The Lovell Window AND Shutter Device

FOR FACTORIES, MILLS, FOUNDRIES, ETC.
THE BEST APPARATUS ON THE MARKET FOR OPENING AND CLOSING MONITOR SASHES.

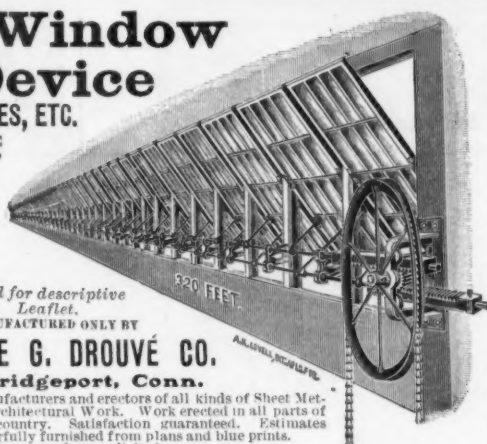
A line of sash 500 feet long can be operated from one station if desired. Adapted to any kind of Sash or Window.



Send for descriptive Leaflet.
MANUFACTURED ONLY BY

THE G. DROUVÉ CO.
Bridgeport, Conn.

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



ELECTRIC HOUSE SERVICE PUMPS

WILLIAM E. QUIMBY

[Incorporated]

141 Broadway, New York

CHICAGO
EDWARD YEOMANS
1141 MONADNOCK BLDG.

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

Masonry in Modern Work.

A "PROLEGOMENOS" ON THE FUNCTION OF MASONRY IN MODERN ARCHITECTURAL STRUCTURES.

BY **R. GUASTAVINO** - - - Architect. Price, Paper Cover - - 30 Cents.

FOR SALE BY THE
AMERICAN ARCHITECT.

HITCHINGS & CO., Established 50 years
HORTICULTURAL ARCHITECTS AND BUILDERS
and largest manufacturers of
GREENHOUSE HEATING AND VENTILATING APPARATUS.



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

Send four cents for Illustrated Catalogue.

233 MERCER STREET, N. Y. CITY.

DRAWING

CARTER'S
LIQUID
INDIA
INK
POSTAL FOR COLOR CARD AND CIRCULAR.
THE CARTER'S INK COMPANY
BOSTON, MASS.

 **INK** 

EVERY Architectural Draughtsman

NEEDS A COURSE IN
PERSPECTIVE
DRAWING

Prepared especially for home study by Prof. W. H. Lawrence, Massachusetts Institute of Technology



Machinery Hall, Armour Institute of Technology

Instruction Under Supervision of Members of Faculty of **ARMOUR INSTITUTE OF TECHNOLOGY**

Courses also offered in
Mechanical Drawing, Heating, Ventilation and Plumbing, Architecture

and Electrical, Mechanical, Locomotive, Stationary, Marine and Civil Engineering; Navigation, Refrigeration, Sheet Metal Work, Telegraphy, Telephony, Textile Manufacturing, also 40 short special Engineering Courses.

The instruction papers have been prepared for the School by men of wide practical experience, based on broad theoretical training.

The courses are in no way intended to replace resident school courses, but are intended to offer ambitious young men who have not the means or time to attend a resident school an opportunity for self-improvement.

In addition to the regular instruction papers, students in full Engineering course are furnished a Technical Reference Library (in ten volumes) as a help in their studies.

AMERICAN SCHOOL OF CORRESPONDENCE
at
Armour Institute of Technology
CHICAGO, ILL.



JENKINS BROTHERS' VALVES

Perfectly tight under all pressures of steam, oils or acids.
Warranted to give satisfaction under the worst conditions.

RECEIVED THE **GOLD MEDAL** AT THE PAN-AMERICAN EXPOSITION

Insist on having the genuine, stamped with Trade Mark.

JENKINS BROTHERS, New York, Boston, Philadelphia, Chicago.

WARREN'S TRINIDAD ASPHALT

ROOFING "ANCHOR BRAND" PAVING
THE BEST MATERIAL FOR

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

CRANE VALVES

ESTABLISHED 1855

ASPHALT FLOORS, ROOFS, SIDEWALKS AND CARRIAGE-WAYS

Of Public Buildings, Hospitals, Warehouses, Stables, Cellars, etc.
Laid with **VAL de TRAVERS ROCK ASPHALT**,
DURABLE, FIREPROOF AND IMPERVIOUS.

For estimates and list of works executed, apply to
THE NEUCHÂTEL ASPHALT CO., Limited,
205 BROADWAY - NEW YORK.

METAL CEILINGS
SIDE WALLS
AND
WAINSCOTING.
TELEPHONE - 46-10th ST.
NEW YORK METAL CEILING CO.
537-539-541 WEST 24th ST. N.Y.

Boston Office: 48 Congress St., Room 24.

Cabot's Creosote Shingle Stains

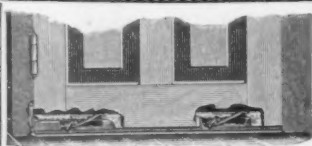
Samples and full information sent on request



H. C. Pelton, Architect, New York.

The
Standard
For
Twenty
Years

SAMUEL CABOT, Sole Mfr.
Boston, Mass.



The Introstile

Keeps out draughts, dust, dirt and noise
It's worth looking into.

Write for illustrated booklet.

The Introstile Co. Novelty Co.
Marietta, Ohio.

Conservatories, Greenhouses, Vineries, Etc.

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

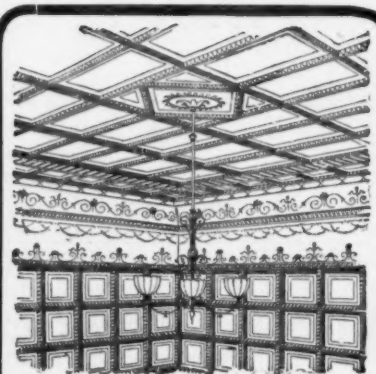
LORD & BURNHAM CO.,
1133 Broadway - New York City.

If our Metallic Cabinet work did not as fully meet the demands of good taste as it does the necessities of security, convenience and durability, we should not be working overtime. Wood is not the only material for furniture capable of artistic treatment. If it was, ours would not be going into the finest directors' rooms and private offices throughout the country.

Submission sketches showing detail will be furnished on application. Bank work a specialty.

ART METAL CONSTRUCTION CO.

152 Gifford Ave., Jamestown, N. Y.



BERGER'S METAL CEILINGS

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

The Berger Manufacturing Co.
CANTON, OHIO

New York Office: 210 E. 25th St., New York, N. Y.
New England Branch: 176 Federal St., Boston, Mass.

Important Litigation Relating to Magnesia Covering Patents

THE KEASBEY & MATTISON CO., the owners of the patents for magnesia covering, have commenced a suit in the United States Circuit Court for the Southern District of New York against the Philip Carey Mfg. Co., George D. Crabbs, J. E. Breese, Schoellkopf, Hartford & Hanna Co., J. F. Schoellkopf, Jr., James Hartford, W. W. Hanna, C. P. Hugo Schoellkopf and Jesse W. Starr, to restrain the defendants from making and selling magnesia covering for boilers and steam pipes containing more than 50 per cent of magnesia, and especially coverings containing 85 per cent magnesia.

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

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

Beware of Fraudulent so-called "Magnesia" Coverings as well as those infringing on patents.

KEASBEY & MATTISON COMPANY AMBLER, PENNA.

New York Boston Chicago Washington Atlanta New Orleans

Cleveland Cincinnati Milwaukee

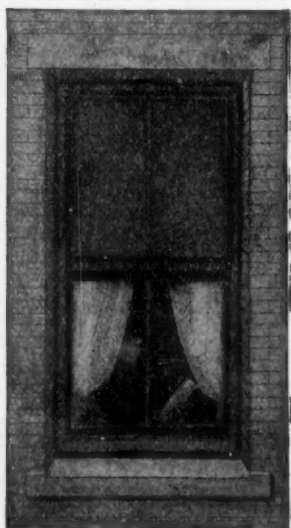
AUTHORIZED SELLING AGENTS

Boston . . . S. C. Nightingale & Childs
New York . . . Robert A. Keasbey
Philadelphia . . . Magnesia Covering Co.
Baltimore . . . Wallace & Gale
Richmond . . . Smith-Courtney Co.

Norfolk . . . Henry Walke Co.
Charleston . . . W. M. Bird & Co.
St. Louis . . . F. Bocler
Omaha . . . Spencer Otis
Kansas City . . . Spencer Otis

Chicago . . . Walch & Wyeth
Detroit . . . S. P. Conkling
San Francisco . . . DeSolla-Deussing Co.
Seattle . . . DeSolla-Deussing Co.

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



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

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

CLOSE AND LOCK AUTOMATICALLY

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

WE OPERATE NINE LARGE FACTORIES

Write for Catalogue and information to

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

PERSPECTIVES RENDERED

IN PEN-AND-INK AND WATER-COLOR,
WALTER M. CAMPBELL,
8 Beacon St., Boston, Mass.

MASON SAFETY TREAD

The All-Metal Stair Protection

Adopted for New York Subway
AMERICAN MASON SAFETY TREAD CO., BOSTON

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

324 Dearborn Street, CHICAGO, ILL.

E. ELDON DEANE,

Architectural Colorist and Draughtsman.
63 Seymour Building, Fifth Ave., cor. 43d St.
NEW YORK CITY.

Masonry in Modern Work

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

By R. GUASTAVINO, ARCHITECT.

Price, Paper Cover, 30 Cents.

For Sale by the AMERICAN ARCHITECT.

SCHOOL - HOUSE HEATING AND VENTILATION

is no longer a matter of secondary importance in the eyes of the educator. When he demands an ample supply of properly warmed fresh air he realizes that it will not only maintain the health of the pupils, but also materially increase their mental activity.

It is the province of our Public Building Department to study such problems, and to assist in the solution.

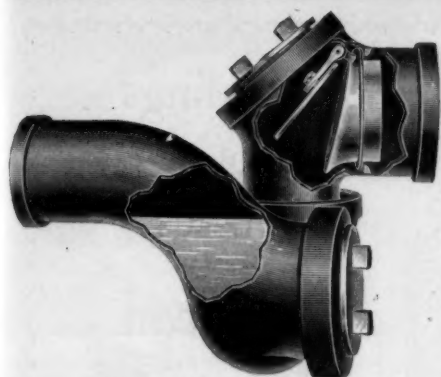
B. F. STURTEVANT CO., BOSTON, MASS.

NEW YORK

PHILADELPHIA

CHICAGO

LONDON

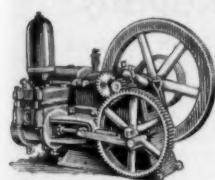


CRAWFORD Adjustable Running Trap

With Back Water Valve

(PATENTED)

Crawford Specialty Co. 311 Warren Street
BOSTON, MASS.



THE LUNT-MOSS Gas or Gasoline Pumping Engine

Sure to supersede Hot Air and Steam Pumps,
Because They Are Better and More Economical. They START
INSTANTLY. Will Pump 1000 gals. Water 100 ft. high
per hour. Write Us Your Wants.

LUNT, MOSS & CO., Dept. B

Contractors, Dealers in Water Supply Goods

43 SOUTH MARKET STREET,

BOSTON, MASS.

Branch Office, Providence, R. I.

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

Cullinan, Ala.—It is reported that the Benedictine Sisters will erect a \$100,000 convent here.

Danville, Va.—Important contracts have been signed for erecting buildings for the Dan River Power & Manufacturing Co.

Davenport, Ia.—M. D. Peterson is interested in the erection of a \$200,000 hotel at Main and 4th Sts.

Denver, Col.—Plans have been completed by R. Phillips, 47 Jacobson Building, for remodeling the Kaubt Block at 17th and Champa Sts. The cost will be \$30,000.

Des Moines, Ia.—The First Church of Christ Scientist will build a \$30,000 church here.

The Des Moines College is to erect a \$20,000 gymnasium building.

The Agar Packing Co. will expend \$100,000 in improvements.

The Clifton Land Co. will expend \$40,000 in the erection of a number of new houses in its south side addition.

A business building, to cost \$25,000, will be erected by the Wallace Publishing Co.

It is said that the Blue Line Transfer Co. will erect a four-story building, 132' x 132', to be used for machinery and transfer purposes; cost, \$60,000.

E. M. Ellingson & Co. will erect a cold-storage building, to cost \$20,000.

Detroit, Mich.—Plans have been drawn by Kastler & Hunter, 927 Chamber of Commerce Building, for a \$150,000 brick edifice to be erected at Weston Ave. and Buchanan St. for the congregation of St. Francis's Polish Catholic Church.

Duluth, Minn.—The congregation of the United Norwegian Lutheran Church will erect a hospital at 1st St. and 8th Ave. W.; cost, \$75,000.

Erie, Pa.—A three-story brick building at 1110 State St., will be erected by Dr. C. M. Dunigan. Probable cost, \$50,000.

Everett, Wash.—It is reported that the officials of the American Bank will erect a four-story brick building at Hewitt and Colby Aves., to cost from \$90,000 to \$100,000.

Great Falls, Mont.—It is reported that J. S. Jones, Manchester, Ia., will move his woollen plant to about forty miles from here. A \$100,000 mill will be erected.

Gurport, Miss.—M. T. Lewman & Co., of Louisville, Ky., has the contract for erecting the courthouse and public building for Harrison County, for \$38,000.

Homestead, Pa.—The contract will soon be let for erecting a four-story brick building at 8th and McClure Aves., for S. W. B. Hays; cost, \$125,000.

Indian Orchard, Mass.—Work will begin at once on the buildings of the Fiberloid Co., which is to remove its plant from Newburyport to this place next fall. The plant will be from designs by Fred S. Hinds, mill architect and engineer, of Boston.

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

It will consist of 20 brick buildings of various sizes, and from one to three stories in height, including an office-building, a power-house of 1,000-horsepower and a 160-foot brick chimney.

Kansas City, Mo.—A. Van Brunt & Bro., 716 Delaware St., have prepared plans for a brick store to be erected at 8th St. and Broadway, to cost \$40,000.

Knoxville, Tenn.—A press report states that the Louisville & Nashville R. R. Co. will erect a depot here costing \$125,000.

Laramie, Wyo.—Andrew Carnegie gives this city \$20,000 for a library building.

La Salle, Ill.—R. M. Neustadt will build a \$30,000 store and office building after plans by Kesson White, Ottawa.

Lockhart, S. C.—The Lockhart Mills have approved plans and specifications for their new four and five-story structure, 130' x 450'. It will be necessary to construct a steel bridge across Broad River and to build a waterworks system in order to provide full modern facilities for the new mill. Lockwood, Greene & Co., Boston, are the engineers of these improvements.

Los Angeles, Cal.—The United States, through the federal land office here, will open to settlers within the next 60 days about 1,000,000 acres of land in California. This land is situated between Needles and Mojave, and borders on the Colorado River. Much of it is valuable agriculturally. In the territory which embraces this great tract, the Southern Pacific has selection privilege.

Louisville, Ky.—Important betterments will be made by the Hope Worsted Mills. Plans and specifications for an additional building to be erected for the Hope Worsted Mills have been secured from D. X. Murphy. This building is to take the place of the present structure. It will be three stories high, 80' x 200' in size, and cost about \$50,000.

Lynn, Mass.—In Nahant, on the "Old Castle Road" the property known as the Phillips estate, adjoining the Relax House grounds, consisting of about 145,000 feet of land, with two houses, has been sold. This property is to be immediately divided into lots and will be sold with the understanding that houses will be built upon the same for the purchasers.

A shore lot, located on Nahant St., having a frontage of 75 feet, and containing 10,202 feet, owned by Benjamin F. Spinney has been sold to Joseph Caunt on private terms. Mr. Caunt buys for the purpose of building thereon a dwelling for his own occupancy.

A lot of land on Chatham St., owned by Sarah E. Coffin, measuring 50' x 100', has been sold to Sarah J. Nutter, who will build a dwelling thereon for her own occupancy.

Malden, Mass.—The Geo. P. Cox Last Co. has new plans in progress for a wooden factory, three stories, 130' x 42', 2 dry houses of wood, together with a

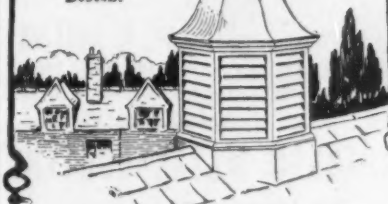
Van Noorden's Ventilators

The most essential thing to health is fresh air. The surest way to secure live, fresh air is to use Van Noorden's Ventilators. They are different. In that difference lies their originality. In that originality lies their science. They let out dead, contaminated air, suck in fresh air, and keep it in motion. They are ornamental, mechanically perfect, and made to live up to the artistic treatment of any building.

Suppose you send for illustrations, descriptions and prices. A postal will do.

E. VAN NOORDEN CO.

944 Mass. Ave.,
Boston.



BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

brick heater building and a brick boiler and engine house. Plans by T. Griffin, 114 State St., Boston.

New Castle, Pa.—It is reported that the Pennsylvania Co. is preparing plans for a \$500,000 depot to be erected here. Thos. Rodd, Ch. Eng., Pittsburgh.

Newport, R. I.—It is stated that a school-house will be erected here; probable cost, \$100,000.

New York, N. Y.—A \$1,000,000 gift to Barnard College for the purchase of ground opposite the university is reported, and it is rumored that John D. Rockefeller is the benefactor. The money is to be used to purchase three blocks south of the college, between 116th and 119th Sts., from Broadway to Claremont Ave. When funds are provided, another academic building, two dormitories, an exercise ground and suitable campus for the girl students of the university are to be placed there.

The 2 four-story brick dwelling-houses Nos. 40 and 42 E. 19th St., near Broadway, have been sold to a party who proposes to erect a ten-story store and loft mercantile building.

George F. Miller is said to have bought the vacant lot, 25' x 100' 5", on the south side of E. 52d St., 150 feet east of Madison Ave. He will improve the premises.

Ottumwa, Ia.—The First Baptist Society will erect a \$20,000 church here.

Paterson, N. J.—The Helvetia mill is to be enlarged by an addition of four stories, 50' x 142'. Cost, about \$20,000.

Philadelphia, Pa.—John Wanamaker will begin at once on the erection of a twelve-story steel-frame store, costing \$5,000,000. It will be built in sections on the site of the present shop at 13th and Chestnut Sts. Work will be begun at the corner of 13th St., and business will go on uninterruptedly in the other parts of the present structure. D. H. Burnham, of Chicago, is the architect.

Pittsburgh, Pa.—The Hamilton Ave. United Presbyterian congregation will erect a \$40,000 edifice.

E. J. Carlisle, 700 Lewis Block, will make drawings for a new edifice for the Mt. Washington M. E. Society, to replace the one destroyed by fire. Cost, \$25,000.

Princeton, N. J.—Captain Archer, of Princeton's Gun Club, has announced that a new club-house will be erected on the south campus, back of Brown Hall. The plans are now being drawn by David Adler, '04, and work on the building will be commenced at once.

San Francisco, Cal.—Plans have been prepared for the Laguna Honda School; probable cost, \$40,000.

Plans have been drawn by Louis Stone, Archt. Bd. of Educ., for the Washington Grammar School, approximate cost, \$100,000; and the Bergeret School, probable cost, \$35,000.

Sault Ste. Marie, Mich.—The congregation of the Methodist Church will erect an edifice at Albert and Spring Sts., to cost \$20,000.

Seattle, Wash.—It is stated that the contract will soon be let for the three-story addition to the business building occupied by Stone, Fisher & Lane, at 2d Ave. and University St.; probable cost, \$60,000.

Plans have been drawn by Saunders & Lawton, 733 New York Block, for an addition to the courthouse; estimated cost, \$25,000.

Sioux City, Ia.—The rebuilding of the Armour & Co. plant will cost \$900,000.

South Bend, Ind.—The South Bend Maccabees lodges expect to erect a \$75,000 temple.

Springfield, Mass.—The National Automatic Needle Co. has purchased land for the erection of a new plant. The plans for new buildings involve an expenditure of \$360,000.

Swissvale, Pa.—C. W. Milligan is preparing plans for a three-story brick building to be erected at Edgewood and Braddock Aves., for R. E. Dickson & Bros.; cost, \$35,000.

Syracuse, N. Y.—The Onondaga Historical Association is considering the erection of a \$40,000 building.

BEAUTIFUL HARDWOOD FLOORS

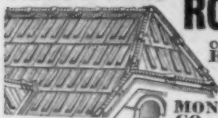
To obtain the most satisfactory and durable results, first fill with Wheeler's Patent Wood Filler (which is everywhere recognized as the standard, and specified by all leading architects,) then apply Breinig's Floor Polish. Our process is on the true principle for lasting qualities—walk on the floor, not on the finish. Write for particulars.

THE BRIDGEPORT WOOD FINISHING CO.

NEW MILFORD, CONN.

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

METAL SHINGLE-ROOFING



Best for house or barn. Fire-proof. Easily Laid. Cheaper than slate or wood. Prices, catalogue and testimonials FREE. MONTROSS SHINGLE CO., Camden, N. J.



Architectural Sheet Metal
Ornamental Work
Cornices, Skylights
Tile Roofing
Statuary

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

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

EXPANDED METAL LOCKERS

and WARDROBES OF METAL

Should be included in your specifications.

MERRITT & CO.
1011 Ridge Avenue, PHILADELPHIA

J. S. THORN CO.

Architectural Sheet Metal Works

Manufacturers and Erectors of Ventilating Skylights, Fire-proof Window Frames and Sash, and Opening Fixtures to operate ventilating sashes.

Nos. 1223 to 1233 Callowhill Street
PHILADELPHIA, PA.

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

Trenton, N. J. — A \$300,000 city-hall is to be erected here.

Tupelo, Miss. — Ely, Walker & Co., of St. Louis, Mo., will build here a knitting mill to cost \$50,000.

Upper Alton, Ill. — The Western Military Academy will erect a \$40,000 building.

Valdosta, Ga. — It is stated that J. N. Bray will erect a \$25,000 brick residence.

Whatecom, Wash. — The congregation of the Catholic Church is considering the erection of a \$50,000 edifice.

Winnipeg, Man. — The congregation of St. Augustine's Church has had plans prepared for an edifice, to cost \$50,000.

Woonsocket, R. I. — The Lafayette Worsted Co. has had plans drawn for a large new mill, the size of the present structure. Work on it will begin this spring.

ALTERATIONS AND ADDITIONS.

Chicago, Ill. — E. Monroe St., No. 7, seven-sty' bk. interior alterations, 34' x 181'; \$30,000; o., International Harvesting Co.; a., W. C. Swerin; b., D. G. Stevens, 215 Dearborn St.

S. Halsted St., No. 4836, one and two-sty' bk. additions, 100' x 199'; \$25,000; o., Goodman Manufacturing Co., 48th Pl. & S. Halsted St.; a., George R. Dean, 918, 218 La Salle St.; b., Jacob Rodatz, 414 Rookery Building.

APARTMENT-HOUSES.

Chicago, Ill. — Catalpa Pl., Nos. 110-112, three-sty' bk. apart., 43' x 66'; \$25,000; o. & b., J. E. Crate, 160 Washington St.; a., D. A. Lapointe, 811 Security Building.

New York, N. Y. — One Hundred and Fifteenth St., nr. Lenox Ave., six-sty' bk. flat-house, 24' 5" x 87' 11"; \$125,000; o., C. M. Silverman; a., Neville & Bagge.

CHURCHES.

Chicago, Ill. — Woodlawn Ave., Nos. 4600-4602, one & two-sty' bk. church & school, 57' x 135'; \$25,000; o., Church of New Jerusalem; a., John S. Woolcott, 1103 Schiller Building; b., O'Day & Farwell.

New York, N. Y. — Lawrence St., No. 101, one-sty' & base, bk. church, with galvanized iron front; \$20,000; o., St. Mary's Church; a., Stirratt, Vaux & Emery.

FACTORIES.

Chicago, Ill. — One Hundred and Eighth St. and Pullman Railroad, three-sty' bk. mill building, 151' x 262' & 64' x 68'; \$50,000; o., Pullman Co., Pullman Building; a., C. F. Jobson, Pullman Building; b., H. & S. Sollitt, 140 Dearborn St.

HOUSES.

Chicago, Ill. — Woodlawn Ave., No. 4843, two-sty' bk. & st. dwell., 36' x 65'; \$20,000; o., George Birkhoff, Jr.; a., W. G. Barfield.

Livingston, Mont. — Two-sty' bk. dwell., 40' x 45', shingle roof, hot water; \$10,000; o., E. H. Talcott; a., G. E. Bell, Helena.

Mankato, Minn. — Two-sty' fr. dwell., 31' x 48', steam; \$5,000; o., M. D. Fritz; a., Albert Pass.



Hotel Regia, S. E. cor. 5th Ave. and 55th St., New York.

Buildings
Roof
Trusses

American
Bridge
Company

OF NEW YORK

Engineers and
Contractors

Structural
Steel

for Every
Purpose

EXPANDED METAL

For Fireproofing and Concrete Construction

ASSOCIATED EXPANDED METAL COMPANIES Room 1209, 256 Broadway NEW YORK

PASSAIC STEEL COMPANY

SUCCESSOR TO
Passaic Rolling Mill Company

A. C. FAIRCHILD, Pres.

GEO. H. BLAKELEY, Chf. Engr.

J. B. COOKE, Sec. and Treas.

Manufacturers, Contractors and Engineers for all kinds of

Structural Steel Work for Buildings

Plans, Specifications and Estimates Furnished on Application.

Main Office and Works, Paterson, N. J.

Boston Office, 81 State St.

New York Office, 5 Nassau St.

BUILDING INTELLIGENCE.

(Houses Continued.)

New York, N. Y. — White Plains Ave., nr. 26 St., two-sty' bk. stable & dwell., 34' x 70'; \$10,000; o., George Ballard; a., Louis Falk.

Oshkosh, Wis. — Two-sty' fr. dwell., 27' x 27', shingle roof, hot air; \$5,000; o., J. J. Conway; a., W. C. Klapproth.

Philadelphia, Pa. — Forty-sixth St., Nos. 1126-32, 4 three-sty' bk. & st. dwells., 16' x 56', tin roofs, hot air; \$20,000; o. & b., W. M. Taylor.

MERCANTILE BUILDINGS.

Minneapolis, Minn. — S. Third St., Nos. 9-11, four-sty' & base, bk. building, 44' x 94', steam; \$25,000; o., The Provision Co.; a., Bertrand & Chamberlin.

STABLES.

New York, N. Y. — Lawrence St., Nos. 3-5, and W. One Hundred and Twenty-seventh St., No. 410, four-sty' bk. stable, 58' 4" x irregular; \$25,000; o., Mrs. C. T. Shotwell; a., H. Anderson.

One Hundred and Sixty-sixth St., Nos. 508-510, one-sty' bk. stable, 50' x 91' 8" x irregular; \$8,000; o., A. Kummack; a., B. & J. P. Walther.

STORES.

New York, N. Y. — Boston Road, nr. 172d St., three-sty' bk. store & offices, 29' x 112'; \$20,000; o., Chas. M. Briencenbach; a., B. Ebeling.

TENEMENT-HOUSES.

New York, N. Y. — E. Second St., Nos. 130-132, six-sty' bk. tenement, 40' 5" x 57'; \$35,000; o., S. Mandel; a., Horenburger & Straub.

First Ave. and Second St., six-sty' bk. tenement, 44' x 67'; \$45,000; o., S. Markransky; a., G. F. Pelham.

One Hundred and Seventh St., nr. Columbus Ave., 2 five-sty' bk. tenements, 37' 6" x 88' 11"; \$30,000; o., H. V. Donellen; a., Moore & Landsiedel.

One Hundred and Eleventh St., nr. Broadway, six-sty' bk. tenement, 87' 11" x 100' 1"; \$175,000; o., Crum & Grant; a., Schwartz & Gross.

E. Fifth St., No. 437, six-sty' bk. tenement with store, 25' x 84'; \$25,000; o., C. Friedman; a., Bernstein & Bernstein.

WAREHOUSES.

New York, N. Y. — Charlton St., Nos. 130-134, seven-sty' bk. loft building, 54' x 69'; \$65,000; o., Lizzie L.

BUILDING INTELLIGENCE.

(Warehouses Continued.)

Chamberlin, 156 Broadway; a., Ervin Gollner, 156 Broadway.

Willow Ave., cor. 135th St., six-sty' bk. warehouse, 50' x 100'; \$35,000; o., Good Manufacturing Co.; a., Chappell & Bowditch.

William St., No. 257, seven-sty' bk. lofts, 62' 2" x 50,000; o., Union Construction Co.; a., Bernstein & Bernstein.

PROPOSALS.

ADDITION TO SCHOOL.

[At Mayville, N. D.] Bids will be received April 4 by Joseph Carhart, Secretary Board of Management of State Normal School, for erecting a three-story brick and stone addition to the Normal School. 1421

BOILER AND PUMP.

[At Fort Greble, R. I.] Office Constructing Quartermaster, 209 Thames St., Newport, R. I. Sealed proposals will be received here until April 1, 1903, for furnishing and installing additional boiler and pump in pump-house, Fort Greble, R. I. Information furnished on application. CAPT. THOMAS H. SLAVENS, Qr. Mr. 1421

DRAINS AND SEWERS.

[At South Bethlehem, Pa.] Sealed proposals for building storm drains and pipe sewers in accordance with the contract and specifications to be furnished by the Borough of South Bethlehem, Pa., will be received at the Council Chamber, Municipal Building, 3d and Birch Sts., South Bethlehem, Pa., on March 30, 1903. Bids will be received for the construction of these drains and sewers with brick, concrete, concrete-steel, vitrified pipe or other construction. By order of the Sewerage Committee, R. K. BERKEMEYER, chairman. Thomas Gancy, secretary. R. E. Neumeyer, engineer. 1421

TENDERS FOR STEEL WORK.

[In Canada.] Offers will be received by the undersigned until April 1st for furnishing materials for and erecting three steel water tanks, for Municipal Water Works purposes: (1) Trestle and tank at Bridgeburg, Ont., opposite Buffalo, N. Y., on the Niagara River. (2) Trestle and tank at Edmonton, Alberta, about 200 miles north of Calgary, N. W. T., Canada. (3) Trestle

"BENEDICT-NICKEL"
Seamless Tubing
for high-class exposed
plumbing. "White metal
clear through."
BENEDICT & HURNHAM MFG. CO.
Waterbury, Conn.
New York, 253 Broadway
Boston
172 High Street

Artist and Artisan

is the title of an Artistic Brochure issued by the

Yale and Towne

Mfg. Company,
9-11-13 Murray St., New York City.

It deals with the origin of Ornamental Metal Work and its present development and uses. It will be sent to Architects on request.

\$350-19

BOOKS:

"Minor Fountains."

40 Gelatine Plates, on bond paper, 9" x 11".
In Envelope. Price, \$5.00.

AMERICAN ARCHITECT AND BUILDING NEWS CO.
Publishers.

PROPOSALS.

and tank at Strathroy, Ont. (near London, Ont.). Plans and specifications will be sent to responsible manufacturers upon application. Separate offers are to be given for each. Willis Chipman, Civil Engineer. Address 103 Bay St., Toronto, Ont., Can. 1421

SCHOOLS.

[At Cleveland, O.] Bids are wanted March 30 for furnishing material for erecting schools on Brandon and Harvard Sts., including ventilating, heating, plumbing, gas-fitting, iron and steel work, fireproofing, sewers, electric wiring, etc. STARR CADWALLADER, School Dir. Bd. Educ. 1421

COURT-HOUSE.

[At Billings, Mont.] Bids will be received by the Bd. of Co. Comrs. until March 31 for erecting a two-story and basement brick and stone court-house and an addition to jail. W. O. PARKER, Chmn. C. E. Bell, architect, Helena, Mont. 1421

WALKS AND PAVEMENTS.

[At Fort Riley, Kan.] Sealed proposals will be received here until April 6, 1903, for construction of vitrified brick walks and pavements. Information furnished upon application. CAPTAIN G. O. CRESS, Q. M. 1422

SUPERSTRUCTURE.

[At Louisville, Ky.] Bids will be received by Murphy Bros., architects, 205 Fifth Ave., until April 4, for superstructure work or completion of the County Jail, which will cost about \$150,000. 1422

HOTEL ANNEX.

[At Dayton, O.] Bids are wanted April 1 for constructing a \$300,000 ten-story annex to Hotel Algonquin. C. I. Williams, architect, Callahan Building. 1422

COTTAGES.

[At Columbus, O.] Bids will be received April 3 by the Board of Trustees of the Ohio Hospital for Epileptics for furnishing material and erecting cottages "A" to "F" inclusive, and farmhouse at the Ohio Hospital for Epileptics. Frank L. Packard, architect. A. P. OHLMACHER, M. D., Sec'y. 1422

ROADS.

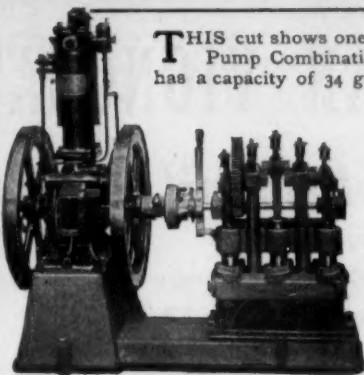
[At Fort Caswell, N. C.] Sealed proposals will be received here until April 6, 1903, for constructing roads, Fort Caswell, N. C. Information furnished on application. PHILIP YOST, A. A. Q. M. 1422

SCHOOL.

[At Cleveland, O.] Bids are wanted April 6 for furnishing material and erecting a school on Mill St., including ventilating, heating, plumbing, sewers, gas-fitting, fireproofing, cement floors, electric wiring, iron and steel work, etc. STARR CADWALLADER, School Dir. Bd. of Educ. 1422

COURT-HOUSE.

[At Corsicana, Tex.] Bids are wanted April 15 for erecting a three-story



THIS cut shows one of our smaller Gasolene Engine and Triplex Pump Combinations. The Engine is of 3 Hp. and the outfit has a capacity of 34 gallons a minute discharged at 146' elevation. We are consulting and contracting engineers for Complete Water Works Systems, using Windmills, Gasolene Engines, and Electric or Steam Pumps, and are prepared to give advice to anyone on proposed plants and to submit proposals and estimates for the whole or any part of same. Send for our special catalogue on this subject.

CHARLES J. JAGER COMPANY

174 HIGH ST., BOSTON

PROPOSALS.

brick and granite court-house in this city, to cost about \$130,000. J. E. Flanders, archt., Dallas. 1423

RIPRAP.

[At Occoquan Creek, Va.] U. S. Engineer Office, 201 1 St., N. W., Washington, D. C. Sealed proposals for furnishing and placing riprap stone in dikes in Occoquan Creek, Va., will be received here until April 14, 1903. Information furnished on application. CHAS. J. ALLEN, Lt. Col., Engrs. 1423

PAVING BRICK.

[At Traverse City, Mich.] Sealed proposals will be received at the City Clerk's office until April 15, 1903, for furnishing to the City of Traverse City, Mich., 8,800 square yards of paving brick and about 1,200 cubic yards of crushed stone. Specifications on file in the office of the City Clerk, Traverse City, Mich., and at the engineer's office at Bay City, Mich. Bloomfield & McCloy, engineers. CHAS. M. BEERS, City Clerk. 1423

CEMENT.

[At Marquette, Mich.] U. S. Engineer Office, Duluth, Minn. Sealed proposals for furnishing 5,000 barrels Portland cement for concrete superstructure to breakwater at Marquette, Mich., will be received here until April 11, 1903. Information on application. D. D. GAILLARD, Capt., Engrs. 1423

SCHOOL.

[At Cleveland, O.] Bids are wanted March 30 for furnishing material for erecting a school on Sumner St., including plumbing, gasfiting, sewers, etc. STARR CADWALLADER, School Dir. Bd. of Educ. 1421

SCHOOL.

[At Grand Forks, N. D.] It is stated that bids are wanted April 1 for erecting a school. J. B. DE REMER, Herald Building. 1421

WALKS AND ROADS.

[At New Bedford, Mass.] Office Constructing Quartermaster, 209 Thames St., Newport, R. I. Sealed proposals will be received here until April 6, 1903, for constructing granolithic walks and macadam roads at Fort Rodman, New Bedford, Mass. Information furnished on application. CAPT. THOMAS H. SLAVENS, Qr. Mr. 1421

HOTEL.

[At Bemidji, Minn.] H. E. Brinkman will receive bids until April 2 for the erection of a three-story brick hotel from plans by J. Friedlander, architect, of Grand Forks, N. D. 1421

PROPOSALS.

BUILDINGS.

[At Alexandria, La.] Bids are wanted March 31 for erecting 2 three-story main brick buildings, 36' x 180', and several one, two, three-story brick buildings for the Colored Insane Asylum. W. W. WHITTINGTON, JR., Sec'y Bd. of Administrators of the Insane Asylum for the Colored People of State of Louisiana. 1421

PUMPS, CONDENSER, ETC.

[At Xenia, O.] Bids will be received April 9 by the Trustees of Ohio Soldiers' and Sailors' Orphans' Home for furnishing, erecting and installing hot water circulating pumps, condenser, expansion tank, vacuum pumps, pipe and fittings, pipe covering, etc. ORIN C. BAKER, Financial Officer. 1422

BUILDING.

[At Charleston, S. C.] Sealed proposals will be received at the Bureau of Yards and Docks, Navy Department, Washington, until April 4, 1903, for constructing a brick and steel building for machine, boiler and blacksmith shops, Navy Yard, Charleston, S. C. Appropriation, \$342,000. Plans and specifications can be seen at the Bureau or the navy yard named, or will be furnished by the Bureau upon deposit of \$50 to secure their return. MORDECAI T. ENDICOTT, chief of bureau. 1421

BUILDING.

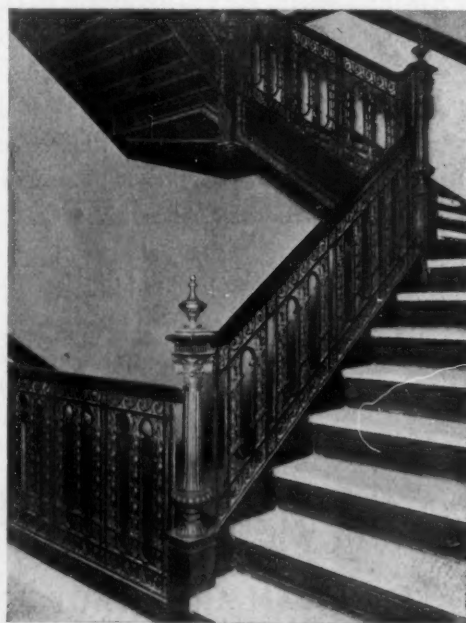
[At New York, N. Y.] Sealed proposals will be received at the Bureau of Yards and Docks, Navy Department, Washington, until March 28, 1903, for constructing an addition to building No. 41 at the Navy Yard, New York. Estimated cost, \$25,000. Plans and specifications can be seen at the Bureau, or will be furnished by the Commandant of the navy yard named upon deposit of \$15 to secure their return. MORDECAI T. ENDICOTT, chief of bureau. 1421

BRIDGE.

[At Washington, D. C.] U. S. Engineer Office, 2001 1 St., N. W., Washington, D. C. Sealed proposals for construction of a highway bridge across Potomac River at Washington, D. C., will be received here until March 27, 1903. Information furnished intending bidders on application. CHAS. J. ALLEN, Lt. Col., Engrs. 1421

POWER HOUSE.

[At Merrill, Pa.] U. S. Engineer Office, Wheeling, W. Va. Sealed proposals for building a power house, except foundation, at Dam No. 6, Ohio River, near Merrill, Pa., will be received here until March 27, 1903. Information furnished on application. W. E. CRAIGHILL, capt., engr. 1421



Staircase, Atlantic Mutual Building, N. Y. City, Clinton & Russell, Architects.

RICHEY BROWNE & DONALD

IRON AND BRONZE

Stairs
Elevator Enclosures
Entrance Doors
Bank Counter Railings
Grilles, etc.

Borden and Review Aves.
Long Island City, N. Y.

"THE AMERICAN VIGNOLA"

The Five Orders of Architecture

By WILLIAM R. WARE

Professor of Architecture, Columbia University

Text and Plates, 86 pp., 9" x 12"

Price, \$3.00

AMERICAN ARCHITECT & BUILDING NEWS CO.
PUBLISHERS

"MINOR FOUNTAINS,"

Being No. 3 of a Series of "Architectural Odds and Ends,"

40 GELATINE PRINTS - - \$5.00 PER COPY.

American Architect and Building News Co.



Perfect Passenger Service
Fast Freight Service

CHICAGO & ALTON RAILWAY

THE ALTON ROAD
KANSAS CITY

"Of all inventions, the alphabet and the printing press alone excepted, those inventions which abridge distance have done most for the civilization of our species."—MACAULEY

PERFECTION IN TRANSPORTATION
IS FURNISHED BY THE
CHICAGO & ALTON RAILWAY

The heaviest steel rails, laid on a roadbed of crushed rock, make its tracks the smoothest. Over this dustless highway are run the most palatial trains in the world—the acme of luxury and comfort.

AMERICA'S MOST POPULAR RAILWAY—JUSTLY TERMED
"THE ONLY WAY"
BETWEEN
Chicago, St. Louis, Kansas City and Peoria.
GEO. J. CHARLTON, Gen. Pas. Agt., Chicago, Ill.

Are You Going Abroad this Year?

If you are, you could not better prepare yourself to benefit fully by the opportunities than by reading the series of papers enumerated below, which have appeared in the American Architect from time to time. As these notes of travel have been written by architects and architectural students they are far better for your purpose than guide-books. They are full of hints as to how to travel at small cost; how to reach points of interest; how to avoid overlooking things worthy of observation.

"Hints on Travelling."—Four papers, beginning with No. 999.

"An Architectural Knockabout. I."—Seven papers [Illustrated], beginning with No. 706.
[This series is out of print.]

"An Architectural Knockabout. II."—Eight papers [Illustrated], beginning with No. 908.

"Everyday Italy."—Four papers [Illustrated], beginning with No. 1051.

"A Trip Abroad."—Five papers, beginning with No. 312.

"An Editor's Trip Abroad."—Fourteen papers, beginning with No. 548.

"A Run Through Spain."—Fourteen papers [Illustrated], beginning with No. 779.

"An Architect's Journey in Europe."—Nine papers [Illustrated], beginning with No. 50.

"An Architectural Summer School Abroad."—Ten papers [Illustrated], beginning with No. 1127.

"Spanish Architecture."—Thirteen papers [Illustrated], beginning with No. 407.

"A Corner of Old France."—Four papers [Illustrated], beginning with No. 1289.

"Italian Cities."—Thirteen papers [Illustrated], beginning with No. 637.

"A Splendid Trip," and "Sketches on the Wing."—Two papers [Illustrated]. Nos. 183 and 125.

We earnestly advise any intending traveller to read the above mentioned papers, most of which we can still supply.

AMERICAN ARCHITECT AND BUILDING NEWS CO.

MINERAL WOOL

FIRE, SOUND and VERMIN PROOF INSULATOR.

Samples and Circulars Free.

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

"Italian Renaissance Doorways"

104 PLATES, 10 x 14 1-2 inches

Uniform with the second Volume ["Door and Window Grilles"] of the Topical Architecture Library.

Price, bound in Cloth . . . \$7.50
" in Portfolio . . . 6.50

American Architect and Building News Co., Publishers
211 Tremont Street, Boston

Professional Ethics.

The following . . .

. . . CODE OF ETHICS . . .

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

ADOPTED BY THE SOCIETY, FEBRUARY 1, . . . 1895. . .

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

NEW ENGLAND MATERIAL-MEN AND CONTRACTORS.

BLUE PRINTING.

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

BUILDINGS TORN DOWN.

A. W. ELSTON & CO.,
166 Devonshire St., Boston, Mass.

CHURCH MEMORIAL WINDOWS.

REDDING, BAIRD & CO.,
83 Franklin St., Boston, Mass.

CONTRACTORS & BUILDERS.

McKAY & WOOLNER,
19 Harvard Place, Boston, Mass.
WILLIAM L. RUTAN,
1016 Tremont Bldg., Boston.

DOORS, WINDOWS, ETC.

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

ELECTRICAL CONTRACTORS.

ERICKSON ELECTRIC EQUIPMENT CO.,
280 Devonshire St., Boston.

FIRE-ESCAPES.

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

MARBLE DEALERS.

COLUMBIAN MARBLE QUARRYING CO.,
(L. M. Glover, Agent)
220 Devonshire St., Boston, Mass.

MASONS AND BUILDERS.

MORRILL & WHITON CONSTRUCTION CO.,
35 Federal St., Boston, Mass.

MODELLING AND ORNAMENTAL PLASTER.

SLEEP, ELLIOT & KING CO.,
351 Cambridge St., Boston.

ORNAMENTAL PLASTER-ING.

HERBERT FOWLE,
43 Bristol St., Boston, Mass.

PHOTOGRAPHY.

LEON E. DADMUN,
169 Tremont St., Boston, Mass.
N. L. STEBBINS,
132 Boylston St., Boston, Mass.

PLASTERERS.

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

PORTABLE OVENS.

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

ROOFING DUCK.

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

SASH CORD.

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

SEAM-FACE GRANITE.

GILBRETH SEAM-FACE GRANITE CO.,
Park Row Building, New York.
176 Federal St., Boston.

STABLE FIXTURES.

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

STONE CARVING AND MOD-ELLING.

HUGH CAIRNS,
48A Sudbury Street, Boston.

TELEPHONES.

S. H. COUCH CO.,
156 Pearl St., Boston, Mass.
(Send for Circular A.)

WATERPROOF CELLARS.

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



Otis
Elevators

Standard the world over.

Automatic Electric Elevators
with push-button control. Safe and simple in operation.

Electric Dumb Waiters
with push-button control.

**Hydraulic } Passenger or
Electric } Freight
Steam } Elevators
Belted } for every service**

OTIS ELEVATOR COMPANY
71 Broadway, New York
Branch offices throughout the country.

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

BINDING.

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

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

The REGULAR EDITION is bound in Semi-annual Volumes.

The INTERNATIONAL EDITION is bound in Quarterly Volumes.

The price for binding is \$2.00 per volume, Semi-Annual or Quarterly. Any variation from our standard practice will entail an increased charge.

In every case the Plates are bound all together at the back of the volume to which they belong—the Double Plates being mounted upon guards.

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

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

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

CHICAGO.

Estimates given on application. Send for Catalogue and Samples.

PERTH AMBOY
TERRA-COTTA COMPANY,

—OF—
PERTH AMBOY, NEW JERSEY.

OFFICE, 160 Fifth Ave., NEW YORK.

BOSTON AGENTS:

WALDO BROS., 102 MILK STREET.

New Joints

You will not be required to make changes, repairs or new joints in pipes if they have been sealed in the fitting by the use of

Wisconsin Graphite Pipe Joint Paste

Write for free sample and particulars.

WISCONSIN GRAPHITE CO.,
Address Box No. 23, North Side
PITTSBURG, PA.

[See Alphabetical Index on Cover 2 for Pagination.]

CLASSIFIED ADVERTISEMENTS.

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

ARCHITECTURAL METALWORK.
Mullins, W. H., Salem, O.....
ARCHITECT'L ORNAMENTATION.
Lombard & Co., A. P., Boston.....
ART METALWORK.
Art Metal Construction Co., James-
town, N. Y.....
ASPHALT.
Neuchatel Asphalt Co., New York...
ASPHALT ROOFING.
Warren Chemical & Mfg. Co., N. Y.
BLUE PRINTS.
Makepeace, B. L., Boston.....
Moss, Chas. E., Boston.....
Spaulding Print Paper Co., Boston
.....(eow)
BRASS FINISHERS.
Marble Co., W. F., Boston.....
BRICKS (Red Oxide).
Wisconsin Graphite Co., Pittsb'g, Pa.
BRONZEWORX (Ornamental).
Richey, Browne & Donald, Long
Island City, N. Y.....
Tyler Co., The W. S., Cleveland, O...
Winslow Bros. Co., The, Chicago, Ill.
BUILDINGS TORN DOWN.
Elston & Co., A. W., Boston.....
CAPITALS.
Lombard & Co., A. P., Boston.....
CAPITALS (Carved).
C. T. Nelson Co., The, Columbus, Ohio

CARVING.
Lombard & Co., A. P., Boston.....
Waddell Mfg. Co., Grand Rapids, Mich.
CEMENT.
Alsen's Cement Works, N. Y.....(eow)
Atlas Cement Co., New York.....
CLEAN-OUT.
Craig, David, Boston.....
CLOCKS.
Howard Clock Co., The E., Boston...
COMPOSITION ORNAMENT.
Lombard & Co., A. P., Boston.....
CONSERVATORIES.
Lord & Burnham Co., Irvington-on-
Hudson, N. Y.....
CONTRACTING.
Flynt Building & Construction Co.,
Palmer, Mass.....
Rutan, William L., Boston.....
CONTRACTORS AND BUILDERS.
McKay & Woolner, Boston.....
Rutan, William L., Boston.....
CORDAGE.
Samson Cordage Works, Boston.....(eow)
CRANES.
Northern Engineering Works, De-
troit, Mich.....
CUPOLAS (Foundry).
Northern Engineering Works, De-
troit, Mich.....
CUTLER PAT. MAILING SYSTEM.
Cutler Mfg. Co., Rochester, N. Y.....

DEAFENING QUILT.
Samuel Cabot, Boston, Mass.....
DOORS (Steel Rolling).
Kinnear Mfg. Co., The, Columbus, O.
DOORS, WINDOWS, ETC.
Carlisle, Pope & Co., E. A., Boston...
DRAUGHTSMAN.
E. Eldon Deane, New York.....
ELECTRICAL CONTRACTORS.
Erickson Electric Equipment Co.,
Boston.....
ELECTRIC SIGNALS.
Elevator Supply & Repair Co., New
York.....
ELEVATORS, ETC.
Morse, Williams & Co., Philadelphia.
Otis Elevator Co., New York.....
Whittier Machine Co., Boston.....
ELEVATORS (Foundry).
Northern Engineering Works, De-
troit, Mich.....
ELEVATOR SIGNALS.
Hersog Teleseme Co., New York.....
ENGINEERS.
Jager Co., Charles J., Boston.....
ENGINES (Hot-Air).
Rider-Erickson Engine Co., New York.
FAN SYSTEM.
Sturtevant Co., B. F., Boston, Mass..

FILING DEVICES.
Art Metal Construction Co., James-
town, N. Y.....
FILTER.
Loomis-Manning Filter Co., Phila., Pa.
FIRE-ESCAPES.
Standard Fire-escape & Mfg. Co., Bos-
ton.....
FIRE EXTINGUISHER.
Yantacaw Mfg. Co., Philadelphia, Pa.
FIREPROOFING.
Associated Expanded Metal Co., New
York.....
National Fireproofing Co., Pittsburg,
Pa.....
FIREPROOF LATHING.
Hayes, Geo., New York.....
FIREPROOF SHUTTERS.
Kinnear Mfg. Co., The, Columbus, O.
FLOOR POLISH.
Butcher Polish Co., Boston.....
FOUNDRY EQUIPMENT.
Northern Engineering Works, De-
troit, Mich.....
GALVANIZED IRON.
American Sheet Steel Co., New York.
GATES.
Wm. R. Pitt, New York.....(most)
GRATES, ETC.
Wm. H. Jackson & Co., New York.
GREASE (Graphite).
Wisconsin Graphite Co., Pittsb'g, Pa.