PRICE 15 CENTS

Public Library

JANUARY 2, 1904

THE AMERICAN ARCHITECT AND BUILDING NEWS

VOL. LXXXIII

* REGULAR EDITION *

NO. 1462

ARCHITECTVRE

ENGINEERING

DECORATION

CONSTRVCTION

238 TREMONT ST.

BOSTON MASS.

CONTENTS.

TEXT: pp. 1—8.

EDITORIAL SUMMARY.
A COMPARISON OF ENGLISH AND AMERICAN METHODS IN THE ERECTION OF BUILDINGS.—II.
BACTERIAL TREATMENT OF WATER AND SEWAGE.
THE CONSISTENCY OF CONCRETE AND THE FATIGUE OF CEMENT PRODUCTS.
BOOKS AND PAPERS.
NOTES AND CLIPPINGS.

ILLUSTRATIONS.

COMPETITIVE DESIGN FOR THE CATHEDRAL CHURCH OF ST JOHN IN THE WILDERNESS, DENVER, COL.
FRONT ELEVATION OF THE SAME.
CATHOLIC CHAPEL, DUBLIN, N. H.
STREET RAILWAY SHELTER, WEST SPRINGFIELD, MASS.
CHURCHES AT PLEYBEN, BRITTANY.

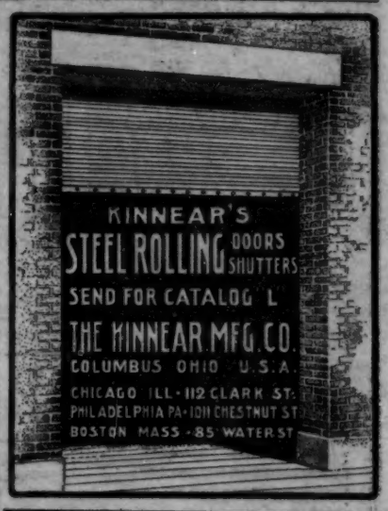
[Additional Illustrations in the International Edition.]

THE GEORGE DEWEY SCHOOL, CHICAGO, ILL.
FRONT VIEW OF THE SAME.
CHAPEL AT ISLESBOROUGH, ME.
PUBLIC LIBRARY, DANVILLE, ILL.
HOUSE OF O. M. BEACH, JR., RYE, N. Y.: TWO PLATES.

Ornamental

as well as useful properly describes the hardware trimmings made by Sargent & Co. They combine beauty, utility and durability. ∴ ∴ Sargent's Easy Spring Locks are constructed to last while the building stands. The trimmings are made in a great variety of handsome designs. The cut shows the K Design.

Sargent & Company,
Makers of Fine Locks
and Artistic Hardware,
New York; and New Haven, Conn.



GOOD STOCK

needs good lighting. The ideal light should light the goods and not be seen while doing so. The Frink Reflector fills every requirement for perfect window lighting.

I. P. FRINK, 551 PEARL ST., NEW YORK

[*For Classified List see Cover* 3.]

Alphabetical List of Advertisers.

A

American Mason Safety Tread Co....vii
American Painting & Decorating Co., ...xiii
American Tin Plate Co....v
Architect and Contract Reporter, The....ii
Art Metal Construction Co....xiii
Associated Expanded Metal Co....xii
Atlas Portland Cement Co....3

B

Bartlett Lumber Co....xi
Batchelder & Co., C. H....xv
Benedict & Burnham Mfg. Co....iii
Berger Mfg. Co....ii
Blodgett Clock Co....iv
Broad Gauge Iron Stall & Vane Works....xv
Brown Hoisting Machinery Co., The..xv
Building News, The....(Cov.) 4
Burditt & Williams Co....viii
Butcher Polish Co....vii

C

Cabot, Samuel....viii
Cairns, Hugh....xv
Campbell, Walter M....x
Carlisle, Pope & Co., E. A....xv
Chicago & Alton Railway....E
Chicago Clothes Dryer Works....xv
Columbian Marble Quarrying Co....xv
Cornell University....i
Couch Co., S. H....xv
Craig, David....vii
Crane Co....viii, x
Crawley & Son, George E....xv
Cudell, F. E....E
Cutler Mfg. Co....ii

D

Dedmann, Leon E....xv
Denne, E. Eldon....viii
Dixon Crucible Co., Jos....vii

E

Edison Light....v
Elevator Supply and Repair Co....i
Elton, A. A....xv
Erickson Electric Equipment Co....xv

F

Fisher & Co., Robert C....i
Flynt Building & Construction Co....i
Folsom Snow Guard Co....viii
Fowle, Herbert....xv
French & Co., Samuel H....(Cov.) 3
Frink, I. P....(Cov.) 3, xiv

G

Gallagher & Munro....xv
Gilbreth, Frank B....xv
Gilbreth Seam-face Granite Co....xv
Globe Ventilator Co....(Cov.) 3
Goodhue, Harry Eldredge....xv
Gurney Heater Mfg. Co....(Cov.) 4

H

Hartmann Bros. Mfg. Co....ix
Harvard University....i
Hayes, Geo....vii
Hecla Iron Works....ix
Heliotype Printing Co....xiv, (Cov.) 4
Herzog Telesceme Co....i
Hitchings & Co....vii

I

Introstile & Novelty Co., The....viii

J

Jackson & Co., Wm. H....(Cov.) 4
Jager Co., Charles J....E
Jenkins Bros....viii
Johnson & Co., H. A....xv
Jones, T. W....iii
Jorath....E

K

Keasbey & Mattison Company....E
Kimball Bros. Co....vii
Kinnear & Gager Co., The....iv
Kinnear-Hood Steel Co....v
Kinnear Mfg. Co., The....(Cov.) 2

L

Lafayette Mill and Lumber Co., The....(Cov.) 3
Lawrence Scientific School....i
Ledder, G. G....xv
Loomis-Manning Filter Co....i
Lord & Burnham Co....viii

M

Makepeace, B. L....xv
Marble Co., W. P....x
Mass. Institute of Technology....i
McKay & Woolner....xv
Means & Thacher....vii
Merchant & Co., Inc....xiii
Merritt & Co....xii
Morrill & Whiton Construction Co....xv
Morris-Ireland Safe Co....xii
Morse, Williams & Co....E
Morse & Whyte....xv
Moss, Chas. E....xv
Motoroff Exhauster Co....xiv
Mott, J. L....x
Mullins, W. H....xii

N

Narragansett Machine Co....iv
National Fireproofing Co....iii
Nelson Co., The C. T....xvi
Neuchatel Asphalt Co....viii
New Jersey Zinc Co....iii
New York Belting & Packing Co....ix
New York Metal Ceiling Co....viii
Northern Engineering Works....E
Northwestern Terra-Cotta Co....xvi

O

Ohio State University....i
Okonite Co. (Ltd.)....vii
Olive, E. Percy....xv
Ostrander, W. M....E

P

Parks & Jeeves....xv
Passaic Steel Co....xii
Pearson Co., J. C....E
Perry, W. J....iii
Perth Amboy Terra-Cotta Co....xvi
Pitt, W. E....vi

Q

Quimby, William E. (Ins.)....viii

R

Redding, Baird & Co....xv
Richey, Browne & Donald....viii
Rider-Ericsson Engine Co....vii
Robey-French Co....xv
Rockland-Rockport Lime Co....xi
Rutan, W. L....xv
Ryan, William Curtis....viii

S

Samson Cordage Works....viii
Sargent & Co....(Cov.) 2
Shultz Belting Co....xv
Silver Lake Co....xv
Simpson Bros. Corporation....xv
Sleep, Elliot & King Co....xv
Smith & Co., Edward....i
Smith Co., H. B....ii
Society of Beaux-Arts Architects, The..i
Spaulding Print Paper Co....x
Standard Fire-escape & Mfg. Co....xv
Standard Sanitary Mfg. Co....E
Stebbins, N. L....xv
Sturtevant Co., B. F....ix

T

Taylor Co., N. & G....ii
Taylor, J. W....x
Thorn, J. S., Co....E
Troy Laundry Machine Co....(Cov.) 4
Truss Metal Lath Co....iii
Tyler Co., The W. S....iv

U

University of Pennsylvania....i
U. S. Mineral Wool Co....ii

V

Vaile & Young....(Cov.) 4
Van Noorden Co., E....vii

W

Warren Chemical Mfg. Co....viii
Washington University School of Engineering and Architecture....i
Whittier Machine Co....i
Williams, John....x
Winslow Bros. Co., The....i

Y

Yale & Towne Mfg. Co....xvi

73896
DISTRICT OF COLUMBIA PROPERTY
TRANSFERRED FROM PUBLIC LIBRARY

THE AMERICAN ARCHITECT AND BUILDING NEWS

VOL. LXXXIII SATURDAY, JANUARY 2, 1904 No. 1462

CONTENTS.

SUMMARY: —
The "Gentleman's Agreement" among Sub-contractors. — Private Collectors and the proposed National Gallery at Washington. — Suggested damming of the Thames at Gravesend. — Professor Langley's unsuccessful and Lebaudy's successful Experiments in Aërial Navigation — Discovery of a Sub-basement to the Louvre. — Competition for the Cologne Handels-Hochschule. 1
A COMPARISON OF ENGLISH AND AMERICAN METHODS IN THE ERECTION OF BUILDINGS. — II. 3
BACTERIAL TREATMENT OF WATER AND SEWAGE. 6
THE CONSISTENCY OF CONCRETE AND THE FATIGUE OF CEMENT PRODUCTS. 6
BOOKS AND PAPERS. 7
ILLUSTRATIONS: —
Competitive Design for the Cathedral Church of St. John in the Wilderness, Denver, Col. — Front Elevation of the Same. — Catholic Chapel, Dublin, N. H. — Street Railway Shelter, West Springfield, Mass. — Churches at Pleyben, Brittany.
Additional: The George Dewey School, Chicago, Ill. — Front View of the Same. — Chapel at Islesborough, Me. — Public Library, Danville, Ill. — House of O. M. Beach, Jr., Rye, N. Y.: Two Plates. 7
NOTES AND CLIPPINGS. 8

A SPECIMEN of the methods by which the building public is fleeced by the combinations of sub-contractors is given in the New York *Evening Post*. The directors of a certain corporation, proposing to erect a large building, applied to a general contractor for estimates. He applied, in his turn, to various sub-contractors. One of these was a contracting steam-fitter whom he knew to be honest and reliable. The steam-fitter prepared his figures from the plans and specifications, and told the general contractor that the work could be well and properly done for forty thousand dollars, and that he would undertake to do it for that sum. It happens, however, that there is a "gentlemen's agreement" among the New York steam-fitters, which does not countenance private understandings between owners and contractors, and it was found necessary to invite bids for the work. When this was done the lowest bid was found to be ninety-nine thousand dollars, for the same work that an expert steam-fitting contractor had offered to do for forty thousand. It must be remembered that under these "gentlemen's agreements" the bidding is a mere farce, the work being given to the nominal lowest bidder, if he wishes for it, and paid for at the union rates, while the contract price is turned over to the treasurer of the pool, and the profit above expenses divided among the members, reserving an ample slice for the walking-delegates, whose part in the affair will be inferred from what follows. Naturally, the general contractor, preferring to pay forty thousand dollars for the steam-fitting work on the building, instead of ninety-nine thousand, turned again to his friend, but found the latter in some embarrassment. He acknowledged that the work could be done at a profit for forty thousand dollars, but said that the other "gentlemen" in the combination, to which he himself belonged, would make trouble if they found that he was doing work at a reasonable price, without giving them a share of the plunder. As to the manner in which they would trouble him, he said that they were on terms of perfect understanding with the walking-delegates of the steam-fitters' union, and that only a word from them was needed to keep his men on perpetual strike. He was so certain that this would be the consequence of any attempt on his part to do what he had agreed to do, and was willing to do except for the peculiar circumstances, that a compromise was finally affected, by which sixty thousand dollars was paid for the work, leaving a profit, or plunder, if we choose to call it so, of twenty thousand dollars to be divided among the conspirators. As this was thirty-nine thousand dollars less than they had counted upon, the general contractor thought that he had done well for the owners.

THE organization of the stone trade in New York and Brooklyn in the same manner, and for the same purposes, is familiar to all who read the newspapers; but the general public does not understand, as architects and builders do, that almost every trade connected with building in the large cities is now organized in the same way. In most cases the movement dates back only a year or two, the date of the completion of the organization, or conspiracy, as some may prefer to call it, being marked, usually, by an enormous advance in the price of the work controlled by the conspirators. Often, a hundred per cent has been added at once to the prices previously ruling, and not only walking-delegates, but other influential persons are sometimes admitted to a private understanding with the pool. Undoubtedly, the effect of the system has been to check building-operations, and, as it is brought more clearly to the attention of the public, it is likely to check them still more until the pools themselves break up by the inability of the members to maintain their system of extortion, and the secession or bankruptcy of the weaker ones. When this happens, a sharp contest with the unions may be expected. A system of plunder, in which they share largely, is too agreeable to the walking-delegates, to say nothing of the unions, to be given up easily; and an attempt will, in all probability, be made to keep it by force.

A GOOD deal is said just now about Mr. Morgan's collection of pictures and other works of art which is kept in London, much of it on public exhibition, because Mr. Morgan does not wish to pay a fine of a million dollars for bringing it into his own country; and it is suggested that some one should build a National Gallery in Washington, and that Mr. Morgan should present his whole collection to it, in order to escape payment of the duty. Whether he will heed the suggestion remains to be seen, but, for our part, we hope that he will pay no attention to it, but will keep his pictures to himself, or bequeath them to foreign museums, as a rebuke to the barbarian policy of his own countrymen. We are too much disposed to forget that the acts of the Government of this country are the acts of its citizens, and that every voting citizen is responsible for the conduct of those for whom he votes. The tariff on works of art is kept on the statute-book by the votes of both Democratic and Republican Congressmen, and the Democratic and Republican voters who put these men in office are equally accountable for the conduct of their representatives. As these representatives are chosen by a majority of the voters in the Congressional districts, the obvious inference is that, whatever the newspapers and artists may say, a majority of the voters of this country do not want works of art brought into it; and it would be mere sickly sentimentalism on the part of Mr. Morgan, or any one else, to buy pictures, at enormous prices, and present them to people who have over and over again testified, by their deliberate votes, that they do not want such objects imported into the United States. Mr. Morgan has many relatives and friends in England, who enjoy seeing his pictures and statues, and he has an opportunity, on his annual visits, of looking at them as much as he wishes, and with less annoyance than would be the case if they were hung in a gallery in Washington; so that there seems to be no reason, so far as he is concerned, for making a present of them to any one here, least of all to those people who do their best to prevent him from having any enjoyment of them.

APART from the question of throwing pearls before swine, if we may apply so harsh a name to the project of establishing a gallery in Washington, in which Mr. Morgan may present his pictures to the view of Congressmen, we doubt very much whether works of art do as much good in public galleries as they do in private houses. No doubt, a rich man who has no real love for art can collect valuable works, and shut them up where they are of no benefit to any one; but there are, fortunately, very few rich men of that sort in America, and such beautiful objects as are owned here are shown to those who may be interested in them more willingly here than anywhere else in the world. Independent of that, however, one beautiful work of art in a house does more to civilize the people who inhabit that house than the proximity of the most richly endowed public museum, and the influence of a family, refined by beautiful surroundings, itself refines those with whom its members come in contact; so that a single good picture or statue, constantly before the eyes of people whose sense of ownership encourages them to study and appreciate it, may have an effect for good proportionately much more powerful than that which is exercised by the collections of a public gallery upon the gaping throng that passes before them.

Copyright, 1904, by AMERICAN ARCHITECT COMPANY, Boston, Mass.
Entered at the Post-Office at Boston as second-class matter.

THE project for the Charles River Dam, in Boston, by which the tidal river is to be converted into a lake, with fixed water-level, overflowing into the sea, seems to have inspired certain English engineers with a scheme for a similar dam, to be built across the Thames, at Gravesend. As the Thames is, above all, a navigable river, it seems as if the obstruction of the stream would be a fatal objection to such a scheme; but it is pointed out that, as in Boston, a reserved channel, provided with lock gates, will afford a passage to ships, while there will be great advantage to navigation in the constant level of the water. Not only will there be a permanent depth of thirty-two feet at London Bridge, so that the largest steamers can ascend and descend the river without waiting for the tide, but the convenience and economy of having the relative level of the water and the piers constant will be of immense importance. The management of the London and India Docks Company alone pays out nearly a thousand dollars a day for opening and closing the gates of these docks. All this would be saved if the water-level in the river were constant, while, as the gates would be removed, so that steamers could sail directly to their berths, a great deal of time would be saved to ship-owners, and the profits of the Dock Company would be increased in proportion to the larger number of vessels accommodated. In addition to these benefits, the authors of the plan suggest that the conversion of the Thames into a placid lake, forty-five miles long, with a slow, uniform flow, in place of the present furious tidal currents, and so unvarying in level that boats could be entered directly from the bank without the intervention of a float, would greatly encourage boating for pleasure, and open to the people of London a valuable resource for exercise and amusement. Although there is not much probability that so great an innovation will make its way rapidly into favor in conservative England, it will, we imagine, please the people of Boston to find that their undertaking should have commended itself so highly to English engineers, and for the same reasons which led to their own adoption of it.

THE disastrous result of Professor Langley's trial of his costly flying-machine has, probably, given a serious check to the development of what it seems to be the fashion to call aviation, and has turned the eyes of the curious back to the navigable balloon pure and simple, which, whatever its defects, has attained practical results of great importance. The famous Lebaudy balloon, which was taken out last month for further trials, showed even better qualities than ever before, until its movements were brought to an end by accident. Our readers will remember that this balloon, the strongest and most powerful machine of the kind yet built, when tried near Paris last spring, sailed against a brisk wind, showing itself perfectly manageable, and returning to its starting-place. Experiments were interrupted during the early autumn, but in the middle of last month the machine was brought out again, carefully examined, to see if there were any thin places in the envelope, and patched where necessary. Although some patching was considered advisable, the aërostat was still tight, having held its charge of gas for six months. On being again inflated after the patching, two preliminary trips were taken, one of them in a strong wind, to try the resistance of the new envelope, and then, on the twelfth of November, it was decided to attempt the extraordinary feat of sailing to Paris, flying into the Machinery Hall of the Exposition, alighting there, and then coming out again and flying back to its starting place. The wind was blowing at the rate of about fifteen miles an hour, at right angles with the course, but the balloon started, steering nearly in a straight line, and reached its destination in an hour and forty-one minutes, after a journey of about forty miles. The Machinery Hall was in process of demolition, and a part of the roof had been removed, so that it was expected that the balloon could fly directly in. It appeared, however, that a cross-gallery had been left, which would interfere with the movement of the balloon, and it was necessary to descend to the ground beside the building, and detach the car, bringing this and the aërostat in separately, one finding room above the gallery, while the other took its place underneath. The suspension-ropes were then again attached, and the Parisian public was admitted for a few days to see the machine complete. On the eighteenth of November preparations were made for the return trip. The owners of the balloon were given permission to remove the gallery, on condition of restoring it later, so that the balloon could emerge without being taken to pieces; and, this having been done, the machine rose without difficulty into the air. The anemometer on the Eiffel Tower, close by, indicated a wind of about twenty miles an hour, but, notwithstanding this, the balloon circled about for a few minutes, steering perfectly, and then started for the Government aëronautical station at Chalais, where it was proposed to spend the night. Just before reaching Chalais, a violent current of air was encountered, against which the balloon struggled for a quarter of an hour, and it was finally necessary to remove the safety-brakes from the steel propellers, and run them at thirteen hundred revolutions a minute, to overcome the wind. This difficulty being disposed of, nothing remained but to descend in the park of Chalais, where a party of men was waiting. The descent was made safely, the motor stopped, and the ropes thrown out, but the men on the ground, not understanding, perhaps, just what was to be done, did not seize them at once. As the engines had been stopped, there was no way of controlling the balloon, and the high wind blew it against the only tree in the park, tearing the envelope. As this is sustained by an interior skeleton, the aërostat did not collapse, and the dangerous escape of floods of hydrogen, which usually accompanies the tearing of a balloon, was avoided; but the injury was serious enough to make it necessary to take the machine to pieces, and ship it to the place where it was constructed. Here it is to be thoroughly examined, the shape changed a little, to enable it to make better headway against the wind, and a new envelope made, so that it will, as is expected, be ready for new experiments in the spring. Meanwhile, the Lebaudy balloon can claim the honor of having made thirty-three trips, some of them of considerable length, in almost all conditions of wind, without injury to its passengers, and without previous accident of any kind, while it has shown steering and balancing qualities never exhibited before by any air-ship.

MUCH interest has been excited in Paris by the discovery that the present elevation of the Louvre is only a portion of that originally designed, and that a fine battered basement, about twenty-one feet high, still exists below the level of the surrounding streets. Something has been known of this basement from ancient drawings, but, although architects agreed, from the appearance of the building, that a portion must be buried underground, no one seems to have thought of investigating further, until M. Redon, the architect of the Louvre, took the matter in hand. No one imagines that the ground has risen twenty-one feet around the building in three hundred years, and it is supposed that the new Louvre, like the old one, was surrounded by a moat, and that the elevations included the whole visible wall, from the bottom of the moat to the roof. In time, the moat was undoubtedly found to be an inconvenience, and was filled, burying the lower story. There is a general demand, not only from architects but from the Parisian public, that the walls shall be cleared, so as to show the building in its original proportions, and it is probable that this may be done, unless some unexpected difficulty is met with.

THE City of Cologne, which shares in the general prosperity of Germany, is about to spend a large sum of money in building a Mercantile High School, if we may so translate the German "Handels-Hochschule," and the competition for designs has just terminated in the award of the first prize to Dr. Vetterlein of Darmstadt, an engineer, and "Privatdozent," or private tutor, presumably connected with the University at Darmstadt. Although a trained engineer, Dr. Vetterlein seems to have submitted a highly artistic design, adding to a compact plan of the buildings required for the school a suggestion for adjoining colonnades and fountains in the Römer Park, on which the school is to front. As it is much to be desired that the great mercantile schools, which are now somewhat numerous in Germany, and are helping to carry German trade and German colonization all over the world, might be imitated in this country, it may be interesting to note the disposition of the new Cologne institution. As usual in Germany, economy of space and money is the first consideration, but the plan comprises a large library and reading-room, an "aula" or general assembly-room, lecture-rooms, class-rooms, all abundantly lighted, after the unvarying German rule, and a gymnasium. In all these schools much attention is paid to modern languages, and many different ones are taught, so that there is, necessarily, rather a multiplication of small class-rooms; chemistry and physics, which also form a part of the curriculum, being taught in larger rooms, to which laboratories are attached.

A COMPARISON OF ENGLISH AND AMERICAN METHODS IN THE ERECTION OF BUILDINGS.[1] — II.

THERE has been much talk about the number of bricks that can be laid per day. At the Westinghouse Works, Manchester, where I was associated architect with Mr. Rodd, one of the first engineers of America, it has been said that on a part of the work 1,600 bricks were laid per man per day. It is quite correct. We have had this number laid in a two-brick wall at a very different kind of building to a big works, Parr's Bank, Manchester, to wit, with ordinary bond set by trowel in firm mortar made with Warmsworth Cliff lime. This was without paying extra wages either. But 1,600 bricks were not the average, and I know of no building where such has been the average. But you may learn something from the Westinghouse Works, although the conditions were not those of an ordinary building, let under one contract to one builder. No contractor was ever asked to undertake the whole contract. All heavy work was let per ton, per cube foot, per square yard. The excavating was let to one firm, the steel to another, the slating to another, and so on — all English firms. On one side of the site were brick kilns, and whilst the excavations were in progress some 4,000,000 bricks were made and stored, the site was levelled, and about eight miles of railway tracks laid down, connecting all parts of the works together, and proceeding from a main track from the Ship Canal docks and the principal railway systems. Timber was stored adjoining the rails, the large machine-shop foundations were in, the steel-work well commenced — in fact, there was a quarter of a million pounds' worth of work done or material delivered on the site before an American contractor came to employ bricklayers, carpenters, etc. He did not come as a contractor with a contract price for doing certain work, but was an official of the Company's. Therefore there is no comparison of this work with that of a general contract. But he got the work pushed on rapidly, and, by saving time, saved the Company interest on their money, and, being empowered by an enlightened Board to employ as many men as could be utilized, he accomplished the speedy work. And please note that the architects had every drawing ready. There was no delay of five minutes for instructions. There was nothing to wait for, and extra wages were given to men, enabling the best to be picked out and retained on the job.

If you want brickwork executed very quickly, do it at a great rate, have heaps of material ready, and put on every man you can. Pick out and keep the best men; discharge the others, and to entice the best men to your work, and to spin out all they know, make it worth their while to stop by paying ten per cent more wages, give bonuses for work executed against time, and have plenty of superintendents and foremen. It may not be the best finished, for perhaps it is not necessary, but we are talking of speed and how to obtain it. A great feature in the speed of bricklaying is the kind of foreman employed. If he be a man of ability, understanding his work, and with sufficient will power to have the work carried out as it should be, and retaining only the competent workers, the work progresses properly. There can be no criterion of how many bricks should be laid in, say, backing up stonework, erecting buildings partly stone and partly brick, but in an ordinary building, faced with stocks, with stone dressings, general internal walls with the usual doorways, arches, fireplaces, flues, beam-filling and such like, if a bricklayer averages throughout 700 English bricks of common brickwork per day of ten hours, he is doing a fair day's work for 8*s.* 4*d.* An American friend of mine, Professor John Gray, of the Northwestern University, Illinois, to whom I have been of service in giving data regarding British labor for his returns to the American Government, wrote to me in the spring of this year about bricklayers' wages in America. The Chicago *Tribune* of February 14, 1903, contained reference to this subject. It says: "Some 4,000 members of the Bricklayers and Stonemasons' Union have been granted a wage increase. The bricklayers have been getting $4.40 a day for eight hours' work, and they asked $4.80. This was given them as a set scale, and to be in force for three years. The men also demanded a half-holiday on Saturdays for six months in the year, and it was granted." This increase without a strike was equivalent to a rise of 10*s.* per week. Professor Gray added the following very expressive remark: "It seems to me that, notwithstanding the numerous strikes in this country, our employers are more likely to grant demands, especially for increase of wages, than the English employer is, and to try to speed up to the new scale. I believe it costs less per 1,000 to get bricks laid now in Chicago than when men were paid $2.40 for ten hours' work, instead of the before-mentioned $4.80 for eight hours' work." This price is 2*s.* 6*d.* an hour! This would be an incentive to labor-saving machinery, one would think. America is not free from labor difficulties.

In connection with this matter, I have been at some trouble to obtain data of English bricklaying under English superintendence. I will cite a few, all of which have been vouched for to me: Great Northern Railway extension, Manchester — Foundations 3 feet thick, hydraulic lime-mortar, English bond; average, 1,760 bricks per man in nine hours. The same building — Stanchion foundations, blue bricks in cement, 1,056 bricks per man in nine hours. The same building — 3-foot wall, both faces finished with blue picked bricks in cement; 704 bricks per man in nine hours. The same building — Wall 18 inches thick, common brick in hydraulic lime-mortar, English bond; wall faced one side in picked bricks; 846 bricks per man in nine hours. On a job in Bolton — 18-inch wall, faced with selected bricks pointed up, 882 bricks per man in nine hours. At the same job, in an abutment 8 feet thick, faced one side with white glazed bricks in putty-mortar, 909 bricks per man in nine hours. All these bricks were laid by men on ordinary wages of 10*d.* per hour under trades-union rules, and without bonuses, etc.

Let me give you another fair instance of this class of work. We, my sons and myself, have recently erected a refrigerating store near the Market, Manchester. It has basement and sub-basement and nine other floors. It is faced on two sides with stock bricks, panelled with arches, and has terra-cotta mouldings, bands, cornices, etc. Taking basement walls, face-work, setting round terra-cotta, windows, openings, lift recesses, etc., the brickwork from first to last averaged 750 bricks per man per day of ten hours on ordinary wages.

The most speedy erection of an ordinarily finished building ever managed in Manchester was that of Peak's Warehouse, Portland Street, in that city. It was done by Robert Neill & Sons, builders, under us as architects. It will be of interest to you to know the methods adopted, especially as it was entirely initiated, organized, supervised and executed locally. The building is a seven-storied warehouse for the home trade. There are three hoists, the usual counting-house, private office, kitchen, fittings, etc. Every wall and ceiling plastered, and the building generally well fitted up with counters, electric-light, etc. It stands on 1,000 square yards of land, and faces into three streets.

The old building was gutted by fire on July 24, 1902. One side wall had to be taken down, one façade had the stonework of a floor to be replaced, and the back had to be half rebuilt. In rebuilding it was decided to adopt more modern planning, which necessitated different lines of columns, increased height, and new work even to the column foundations. The clearance of the débris and insurance matters took until September 7. On that date the contract was signed. At the time of signature complete drawings and details were handed to the contractors, Messrs. Robert Neill & Sons, Manchester. We arranged that the steel-work should be erected by the steel engineering contractor, so that this part should not be dependent upon any one. We had arranged with a mill to commence rolling for us within twenty-four hours of receiving our instructions, and also with a foundry to work in three shifts of eight hours each to get the cast-work out. The whole work was under the immediate supervision and organization of Mr. Harold Heathcote, one of my partners, with a clerk-of-works to keep the progress-notes, etc. The result of organizing and looking ahead, spending 500*l.* for additional cost in pushed labor, and having a first-rate building firm to deal with, resulted in the whole warehouse being completed and business resumed on January 24, 1903, or twenty weeks from signing the contract. The cost was about 23,000*l.* From the date of the contract to the time the whole of the iron columns, beams and floor joists for seven floors, inclusive of ordering, making and erecting, was only seven weeks, showing what can be done if one sets about it the right way. It was the result of trained organization and preparedness.

I have mentioned the thought Americans have put into some lines of business to undercut our manufactures. Let us give one example in connection with our building trade.

Perhaps in America the extremes of weather make it more a necessity to very carefully consider the question of heating buildings than with us. But it is of sufficient importance to our comfort and general health that our system and our appliances be as perfect as we could devise. Yet we did not as carefully study the subject as we might have done, until American competition has forced our manufacturers to do so effectually. It is an industry closely connected with buildings, so may be taken as an instance of how we did not master the subject as we might have done, and should probably have continued in complacent satisfaction had not American competition forced our heating-apparatus makers to do so for their own protection, and with the usual result, for some of our manufacturers are to-day producing cast sectional boilers and radiators equal to either American or French in price, finish and efficiency, although not yet in as many varieties or of the largest capacity. If they will do this they will at least again command the market of their own country, and they may be trusted to then push forward the export of their wares. To obtain the best article, the American manufacturers concentrated their fullest thought, energy and scientific knowledge upon the character of the metals best adapted to meet the various requirements of softness, non-porosity, smooth clean finish and uniformity of thickness in casting. This was specially directed upon what are known as sectional boilers, where enormous heating surface is required, where the pressure is high. With them method and standardizing are enforced in fitting and erecting, and in having the template of each member numbered and indexed before leaving the works, so that in the event of any of the component parts requiring renewing they can easily be duplicated. Large quantities of radiators have been shipped to Europe within recent years. One firm, at all events, was quite prepared to have their work done in France, because it was found that the French workmen bestowed greater care and interest on the moulding and casting of radiators, producing a most reliable and beautifully-finished article. These improvements, as I have said, were so materially affecting the English trade that the necessary incentive was created, the incentive of self-interest, and we are again holding our own. We shall do more

[1] A paper on "English and American Methods of Building," read by Mr. Charles Heathcote, F.R.I.B.A., of Manchester, Eng., before the Institute of Builders, and printed in *The Builder*. Continued from No. 1461, page 101.

than this if our manufacturers will give up their conservatism altogether, and increase the varieties, and also the capacity, of the heating boilers, and not need more foreign competition to jog them up again. We were slow to adopt the telephone, electric-tramcar, the electric-light, the motor-car. We sometimes expect to compete successfully with those countries which adapt themselves to the quickly-changing conditions of life. It is our conservatism that is injuring us, and it might be added it is competition that is stirring us up. The young Englishman in this or any other business needs to devote more time to studying the technical details, learning the methods of other countries, and from that knowledge striving for high standard of workmanship, and enterprise in combination with originality. May I suggest that the Institute of Builders use their influence towards getting all apprentices to pass through building-construction classes in the technical schools.

In very large buildings, where there is much architectural treatment involved, the architect is generally very fully employed in quietly, earnestly considering and working out the details of his design, and will perform that duty more whole-mindedly if not constantly diverted by personal superintendence as well. It may be worth consideration if there might not be with advantage in, say, great Government contracts, an architect, associated with the designing architect, who will have the entire charge of superintendence.

And for each of these architectural positions the best man for English buildings is a trained, energetic, high-minded English gentleman. There are many men answering this description, and as capable as can be found in any land.

The question of labor is most difficult to answer. Quoting from a work by Mr. J. F. Fraser: "The raw material from which America produces its workers is the finest procurable in the world. America is not the dumping ground of the world's refuse. The immigrants into America are hardy Europeans discontented with the conditions in the old countries, but who have saved enough to set out and try their abilities in the new. Daring pluck and enterprise are necessary to break with family ties, and the men who have shown sufficient courage to do this are the very men likely to prosper wherever they settle. And this emigration is a great matter with us. In America, if a man does not work up to all that is in him he is discharged, for there are plenty coming by the next boat ready to take his place. With us our numbers of the best men are not thus increased, and the trades unions sometimes discourage the good man to do his best, but encourage him to slow down to the level of the poor one. It is often the best men who emigrate, and their places are to some extent filled with an unrestrained pauper refuse from any country wishing to get rid of them. Is this reciprocity? Do we legislate, as I have said, in this, as in our Patent Laws, for our own country's benefit, and for the advantage of our own people? We are not as alive as we ought in common sense to be for our own interests. This immigration and emigration are serious items in the labor difficulty. It can only be restrained by our working men knowing they will have as much reward here as elsewhere in return for their best endeavors. Do you offer any rewards to your workmen for improvement of knowledge, for suggesting improvements, for specialized ability, thus giving them increased interest in their business? The American gets a real, honest joy out of his working. He likes it. His interest is in it. He is optimistic. He knows there are openings for his progress. He has a magnificent belief in his own abilities, and loves to read those papers which prove what a fine fellow he is, and how he overcomes the sleepy European. Enthusiasm is in the air. There is no do-nothing class supposed to be on a higher plane than business men. He sees the wealthy around him working as hard as he does.

His English fellow is taught by his Union that if an American lathe-turner works four lathes it is no reason he should be allowed to work more than two, caring not whether the trade thus leaves his employer, his country, or not. There is a greater readiness, generally, in the States to listen to the suggestions of the workpeople, and many of the labor-saving machines are the outcome of this better understanding, and if you look into it, you will find English brains well to the fore in inventions. The greater interest of the workman in his work, his endeavor to rise in the world, the better-schemed education he has received, and the readiness of the employer to listen to the suggestions of the improvements are all factors stronger in the States than in England. The sentiment in England that a man who belongs to an idle, leisured class is, for that reason, to be envied, forms a great drawback to progress and efficiency. The example to those less blessed with the world's goods does not tend to enthusiasm for diligent work. To see the wealthiest working hard in the business gives a solidarity of interests, a feeling of contentment to all engaged therein. An American's ambition for wealth and the power wealth gives is greater than ours. He will work longer hours, and when there is no need for it, in order to add wealth to wealth. Whether, in the one life we have, this is a true and worthy ambition, is another story, not falling within the lines of this paper. The American employer considers the health and comfort of his people conducive to his own interests, and endeavors to meet this end by considering their welfare in the dining-rooms and conveniences of the workshop. In many works each man has a locker for his clothes, and has ample arrangements for keeping himself respectable in cleanliness and appearance. It must be admitted that there has been no lack of our Government interference on behalf of the English workman. Innumerable Factory Acts, Special Rules, Compensation Bills, Board of Trade Regulations, are in force here that have no existence elsewhere.

I believe we shall adopt many American business methods here, altering many of our conditions, and bringing about a more mutual appreciation of the difficulties between employer and employed. This is very necessary to modify the actions of Trade Unions in those directions for curtailing the output of material and hampering a free working man in doing the utmost he can with his labor, which is his capital. It is the old story in England. The first brick making machines were invented in England, but the men working them were killed. The first building in Manchester where men dared carry bricks without the ordinary hod was the Town-hall, less than thirty years ago. Even then the contractors had to obtain the protection of the police. The whole fallacy of the Union's policy of allowing and encouraging a man to do less than a fair day's work in order that some other man may get a job, depends, it would seem, upon the false assumption that the amount of work to be done is a constant quantity. There is no limit to the work to be done here if we can do it quickly and economically, for there is no limit to human wants. I am indebted to Mr. Merttens, who says: — "Whilst unregulated and inorganized labor must be deprecated, the labor organizations must not block economic progress. The newest machines replacing costly labor must be adopted and be worked as cheaply and efficiently as possible, and the output increased wherever desired. To restrict the better-educated and more skilled workmen from doing the best and the most they can, is an economic fallacy, which, if persisted in, will utterly ruin the trade of England. With the adoption of machinery, wages have risen all over England; with the adoption of more modern labor-saving machinery American wages have risen still more. But the fault does not lie with the workers alone. Employers in England have yet to learn the economy and efficiency of high wages, and to acquire some of the intensity of application of their American competitors. The more they go and study their methods of combination and organization, especially in economizing labor, the better. There are, of course, many trades which are not as efficient in America as in England." And to a lecture by Sir William Bailey I am indebted for the following: — "Civilization is the economy of force, whether it be intellectual, moral, or spiritual, and if we can only persuade working men that the rewards are in proportion to the production, and that to get more work to do we must have the ability to produce more work in less time, because of the demand for cheap commodities, then something will have been achieved."

It would be very advisable for contractors to spend some time in the States closely and earnestly studying the methods of labor, combination, etc., mentioned. Americans are very hospitable, and will give you a genuine welcome. There is no hampering an American workman in his business. If he can set bricks he is taken on as a bricklayer, and the other workmen do not strike the job because he has not been a bound apprentice for four years. Here it is once a laborer always a laborer, but there you are a bricklayer, if you can lay bricks.

There is also a spice of adventure about the American working man. He will cease to be a watchmaker and take to farming; give up newspaper reporting to start a constructive engineering company, a patent roofing or a patent flooring company; a builder's pay-clerk will start in conjunction with a student for "electrical equipment in all its departments and permanent-way constructors." It is risky to himself and all who employ him, and shows nothing from which we can derive any benefit. The drink statistics show that the expenditure per unit here is just twice as much as in America. If our workmen would spend only one-half what they do in this line their wages would increase by their working on St. Monday, now an off day, and their savings result in scores of millions going into reproductive trade. We should not hear much then about the alteration of Fiscal policies, for we should be fully employed in one great boom of trade.

One way to lessen the difficulty with labor is to pay the best man the best wage you can afford him, so long as he gives you his best; make him to realize his best friend is his employer, and that it is his personal advantage to forward the employer's interests. In that manner you will retain the men you really need and give the natural incentive to the workman's progress and advancement. Have you ever tried employment by piecework in building?

It is desirable to guard myself from the supposition that I think the struggle to accumulate money should be engrossing, and that it should be a main object of life. I am aware of the danger of allowing the consideration of industrial problems to obscure those of a social character. The productive activity of the people depends on their physical, moral and intellectual qualities, and unless we improve these the industrial problem will hardly be solved. But I do maintain that whilst in business you should do it to the best of your ability, and if you can learn from your competitors any element of success and method it is a part of your duty to obtain it and act upon it with wisdom and with energy. And, further, business men should develop the power of initiation and improvement even upon those desirable elements that are to be gathered from others. We have not yet attained to the full perfection in anything, and the future is in the hands of the man with brains to think, self-reliance to carry out, and energy to complete. Many there are amongst us doing this now, making earnest, persevering efforts; but the wish to do it is far from universal, far from being the ambition that it should be, and, indeed,

THE AMERICAN ARCHITECT AND BUILDING NEWS

ADVERTISERS' TRADE SUPPLEMENT

No. 259 SATURDAY, JANUARY 2, 1904 VOLUME LXXXIII No. 1462

PEARSON COATED NAILS.

SOME time ago we published an article concerning coated wire nails, giving therewith a report of comparative tests made by the Ordnance Department, U. S. A., at the Watertown Arsenal. The facts there given, we are glad to note, have awakened considerable interest among architects and builders throughout the country, and have caused a largely increased demand for these nails for building purposes.

The following practical tests, made by such eminent authority as Mr. John B. Clermont, constructing engineer and superintendent of the Metropolitan Life Insurance Building, New York, more conclusively show the superiority of the coated steel wire flooring-nail over the steel cut flooring-nail, as developed by these tests.

To facilitate the understanding, the nail used in each successive test is described and numbered, as shown in illustration, and will be hereafter referred to by number: —

1. Regular 8^d standard steel cut flooring-nail.

2. Regular 8^d standard steel wire flooring-nail, coated, sharp point, countersunk head, No. $10\frac{1}{2}$ W. & M. gauge, .128 in diameter.

3. *Special* 8^d steel wire nail, coated, no point, with a special cone head, No. $10\frac{1}{2}$ W. & M. gauge.

4. *Special* 8^d steel wire nail, coated, blunt point, with special high cone head, No. $10\frac{1}{2}$ W. & M. gauge.

Test A. — Nail No. 1 being used, the following facts were noted: This nail enabled the operator to drive up the flooring tight to joint, on account of the great adhesive resistance by compression in driving the nail, it being larger at the head end; each blow imparted to the nail was partly transmitted to the flooring-board. Generally the nail could be driven safely within three inches of the end of the board without splitting the tongue. Finished flooring being mostly quarter-sawed, splits readily in the line of the angle at which the nail is driven.

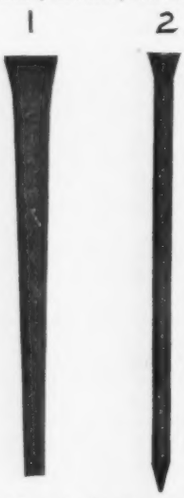
Some of the objectionable features of this nail are: 1. They have to be felt in the left hand of the operator, in order that the parallel sides may be driven on line with length of board. 2. When driven, they are liable to rotate and immediately split the tongue of the flooring-board. 3. They are so heavy that it is not safe to drive them near the end of the board. 4. Their adhesive resistance on the under board is less than fifty per cent of that in the upper board (this should be the reverse condition). 5. This nail must be set in order to allow the next board to go to joint. 6. Hardwood flooring must all be bored to prevent splitting.

Test B. — With Nail No. 2. The wedge point and countersunk head of this nail split the tongue of flooring-board in seventy-five per cent of the cases, and could not be driven safely within three inches of the end of board While the adhesive resistance was much greater in the under board than with the No. 1 nail, this nail would not help drive flooring to joint on account of the head, which, being countersunk or wedge-shaped, readily followed the body of the nail. It was observed that each blow of the hammer acted directly on the nail and thrust the nail and head through the board, transmitting little, if any, of its force to the upper or flooring-board in order to force it to joint. This nail, as No. 1, had also to be set in order to allow the next board to be driven to joint. Hardwood

House of O. H. Story, Chestnut Hill, Mass. Messrs. Frazer & Chapman, Architects.

flooring must be bored to prevent splitting.

Test C. — With Nail No. 3. In this test a special nail was used, it being exaggerated in form to better demonstrate the principles under consideration. It was pointless and sheared the fibre of the wood, thereby reducing its adhesive power, but preventing all splitting of the tongue. Hardwood does not require boring to prevent splitting in using this nail. This nail could be driven within ¾ inches of the end of the boards without splitting in ninety-eight per cent of the cases. Now, in order to overcome the great objection to No. 2 nail, the head of this nail was made cone-shaped, giving a broad surface under it in order to effect the compression of the flooring-board and under board. This was found to be the correct remedy to the defect in the head of No. 2 nail, and that the boards could be driven to joint. This head, however, was not high enough; but it was found that the last blow of the hammer set the head of the nail deep enough, so as not to interfere with the next board going to joint.



Test D. — With Nail No. 4. In this test the blunt-pointed nail was used, which was found to drive in without splitting the tongue of the board, and at the same time it did not diminish the adhesive power of the nail, as with No. 3 nail. This nail needs no boring when driven in hardwood. The head of this nail was a high cone, which compressed the flooring-board and readily forced it to joint. The head being high and coming to a point, permitting several blows to be struck, each driving the board to joint with additional force, and it was also found that while this head protruded a trifle above the tongue of the board after the last blow, it did not in any way interfere with the next board being driven to joint, on account of its particular shape.

By continued use this nail was found to have overcome all the objections to the steel cut flooring-nail, and meet all the requirements of a perfect wire flooring-nail.

The only difference in the size of the nail used was that No. 4 nail was 2¼ inches long instead of 2½ inches, the regular length of an 8d nail; but this is advisable. It has already been shown that the point of a nail should not traverse the wood into which it is driven through and through.

The time required to drive No. 1 nail being considered as seven, No. 2 and No. 3 as six, No. 4 as five, shows in ratio a saving of almost thirty per cent in time between No. 1 and No. 4 nail.

Each test was made a separate and prolonged operation in finished floor-laying, with all the actual conditions which govern this practice.

House of Alfred Marshall, Esq., Mamaroneck, N. Y.

Considering Test A with the regular steel cut flooring-nail and Test D with the Pearson coated steel wire flooring-nail, all conditions being equal, in the use of the coated steel wire flooring-nail, counted nail for nail with the steel cut flooring-nail, it proved more efficient in every way, and enabled the operator to lay about six per cent more flooring in the given time, the work in general proving superior.

Among the earliest of prominent buildings in which these nails, made by the J. C. Pearson Company, have been exclusively used, is the Waldorf-Astoria Hotel, New York, since which time they have been used in the construction of such buildings as the Collinwood Shops, L. S. & M. S. R. R., the largest carshops in the world; the Metropolitan Life Insurance Building, New York; two Armour Packing Co.'s plants and two Illinois Central R. R. elevators, Chicago; the Western Pennsylvania Exposition Building, Pittsburgh; Pittsburgh Union Switch and Signal Co.'s buildings, Swissvale, Pittsburgh; the Westinghouse Air-Brake Co.'s buildings, Wilmerding, Pittsburgh. The United States War Department, we also understand, are using these nails extensively in the arsenals and the Philippine Islands. In a majority of these instances the *Pearson coated nails have been exclusively used* throughout the construction.

Their general adoption also for residential work, especially of the higher class, is only a matter of time, as is shown by the favor with which they have been received by builders and architects. Among the newer residences may be mentioned that of Alfred Marshall, Esq., Mamaroneck, N. Y., just completed and a house in course of construction at Chestnut Hill, Mass., shown in our illustration.

More might be added concerning this subject, and at some future time we may wish to again refer to it, as we feel assured the matter is one of interest to our readers, and believe the facts given are of value to every architect and builder in the country.

A FLIGHT OF ARROWS.

The best Christmas wish we have for the architect, the builder and the tin roofer is that everything they get may be as good as "Taylor Old Style."

Paint on the roof will not strengthen the foundation, but, for that matter, neither will a good foundation keep the roof from leaking. A good roof on a well built house is the only combination that lives.

The new William McKinley School at Syracuse, N. Y., is being covered with "Taylor Old Style" roofing tin. It requires 200 squares to do it. The work is being done by D. B. Plaisted & Son. The new building will cost $4,300, and it will be well roofed.

We are growing just a little. At our mills in Cumberland we are now able to make just a few more black plates which, as you know, are the basis of tin. Our works in Philadelphia have been enlarged a little. We need more room to turn around in because we turn around more frequently in a given time than we used to.

In Parkman's "*History of Canada*," "Montcalm and Wolfe," Vol. I, page 43, is found this interesting sentence: —

"On reaching the Alleghany, Celoren de Bienville (appointed by the Governor of Canada, the Marquis de la Galissoniere) entered upon the work assigned him, and began by taking possession of the country. The men were drawn up in order; Louis XV was proclaimed lord of all that region, the arms of France, stamped *on a sheet of tin*, were nailed to a tree, a plate of lead was buried at its foot, and the Notary of the expedition drew up a formal act of the whole proceeding."

This, we believe, is the first evidence that sheet tin was used in western Pennsylvania, particularly in the neighborhood of Pittsburgh. While probably it was not a sheet of the "Taylor Old Style" roofing tin, still the fact remains that *tin* was used, as it would withstand the elements and ravages of time.

What became of this particular sheet of tin history does not record, but we have knowledge of tin being just as bright and good to-day as when put on roofs over seventy years ago. It pays to use the best.

It is particularly appropriate that some of our roofing tin should be upon some of the St. Louis Fair buildings. We were selling tin a long while before anybody thought of making the Louisiana Purchase. Our tin is an institution in itself.

Next to "Taylor Old Style" roofing tin comes the Columbia Brand. We think the Columbia Brand is a mighty good tin, but not as good as "Taylor Old Style." There are degrees to our admiration as there are degrees to the goodness of the tin. You remember the little boy who was asked to show the difference between the words "like" and "love." The little boy said:

"I like my mother, but I love pie."

We say that we like Columbia, but we love "Taylor Old Style."

N. & G. TAYLOR CO.,
PHILADELPHIA, PA.

Atlas PORTLAND CEMENT

The Standard American Brand.

Used Exclusively in the Following New York Buildings:

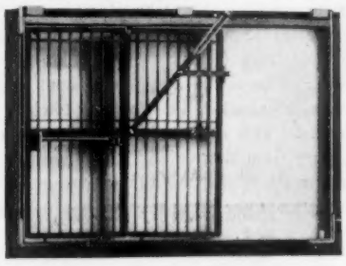
BROAD EXCHANGE
HANOVER BANK
ST. PAUL BUILDING
UNION CLUB
AMERICAN SURETY BUILDING
N. Y. LIFE INS. BUILDING
BANK OF COMMERCE
STANDARD OIL BUILDING
JOHNSTON and PRESBYTERIAN BUILDINGS
AND MANY OTHERS

Atlas Portland Cement Company

30 BROAD STREET
NEW YORK

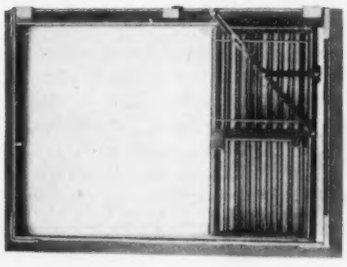
SIMPLICITAS DOOR-OPENER.

THE "Simplicitas" door-opener as illustrated is applied to the double sliding-doors of an elevator well.



The slotted lever is pivoted to the first door, and the slotted portion rides and swings on a pivot secured to the upper portion of the frame in which the door slides; the short lever is pivoted to the slotted lever and to a pin mounted on the second door.

When an opening movement is given to the first door the slotted portion of the long lever rides upward on its pivot, and this lever swings in the direction in which the door moves; at the same time the second



door is proportionately moved by the short-lever connection.

As soon as the lower end of the slotted lever moves past the line of its upper pivot, the weight and leverage of the long lever acts to complete the opening of both doors.

In the closing movement the long lever acts to complete the closing of both doors, so that after the first closing impulse is given to the first door, the doors close positively and automatically without attention from the elevator operator.

There are no springs, pumps or other complicated devices to get out of order, and the only action required is to move the first door slightly past the pivot on which the slotted portion of the long lever travels.

These door-closers are giving great satisfaction wherever they have been installed.

Mr. August Krause, 125 Albany Street, Boston, Mass., is the patentee and manufacturer, to whom all inquiries should be addressed.

FINAL SETTLEMENT OF THE SIPHON WATER-CLOSET LITIGATION.

INASMUCH as wide publicity was given to the recent decision of the United States Court of Appeals sustaining the Dececo Co.'s patents on siphon water-closets in their suit against the Trenton Potteries Co., now that a final disposition of the much-discussed question has been made, a short history of this case and the modern siphon closet will be of interest to architects and the building trade in general.

Prior to 1890 the various types of water-closets on the market were known as wash-outs, hoppers, long and short combination hoppers, etc. All of these closets were very unsatisfactory from a sanitary point-of-view, and a water-closet embodying the features of the modern siphon closet had long been looked for and hoped for by those interested in sanitary matters.

In 1890 the Dececo Co. perfected and placed upon the market a siphon water-closet known as the "Dececo," which embodied all the requirements so much sought for in a water-closet, including large area of standing water, great depth of seal, and self-siphoning action. This closet met with instant success, and its sales were phenomenal. Practically all the first-class hotels and office-buildings erected at this period, including the Capitol building at Washington, D. C., were equipped with Dececo closets, and in spite of the most active kind of invention along this line, its principle remains to-day the only successful one on which to build a siphon water-closet.

The success of the Dececo closet led to many imitations, which finally, about 1893, developed into some cases of actual infringement. Very soon after this occurred, the Dececo Co. commenced to take steps for the suppression of the infringement. Col. George E. Waring, Jr., of the Dececo Co., had charge of this matter, and action was advised against the Trenton Potteries Co., the largest infringers.

The Trenton Potteries Co., through their counsel, had practically agreed on a compromise when the death of Colonel Waring put an end to these negotiations. As soon thereafter as possible the present suit against the Trenton Potteries Co. (through the George E. Gilchrist Co.) was begun. Meanwhile every manufacturer in the country had adopted the device covered by the Dececo patent, until, up to the present time, a conservative estimate places the number of these infringing closets made and sold at 4,000,000.

The United States courts are slow, and the litigation dragged along through years, until Judge Lowell, in the Circuit Court, rendered a decision declaring the Dececo patent to be invalid, and to be anticipated by an old British patent of 1870, which was never made.

The Dececo Co. still stoutly maintained their rights and appealed. The case was finally heard by the United States Circuit Court of Appeals, and was argued by two of the greatest patent attorneys in the country, viz, Frederick P. Fish, of the Bell Telephone Co., for the Dececo Co., and John R. Bennett, of New York, for the Trenton Potteries Co. The decision was rendered by Judges Colt, Putnam and Aldrich on Sept. 29, 1903, and was a sweeping one in favor of the patent. By it every siphon and siphon-jet closet on the market was held to infringe the claims of the Dececo patent.

As soon as the decree was issued a permanent injunction was issued against the Gilchrist Co., and other injunctions were about to be issued against every dealer in New England when the Trenton Potteries Co. opened negotiations for a settlement. The terms of the Dececo Co. were accepted, and a new company was formed to take in the eighteen potteries manufacturing sanitary pottery in the United States, with an exclusive license under the Dececo patent. By this settlement all past and future royalties are provided for, and the title, validity and infringement of the patent is admitted by every manufacturer in the country.

The prestige this settlement gives to the Dececo Co. cannot be overestimated. Pioneers in the siphon water-closet business, they have been vindicated as such by the courts, and every manufacturer and dealer that hereafter sells a siphon closet, no matter under what name, sells a "Dececo," and pays tribute to the Dececo Co. for so doing.

INTERLOCKING RUBBER TILING

Is noiseless, non-slippery, waterproof and thoroughly sanitary, more durable than stone or earthen tiles, elegant in appearance, manufactured in a carefully selected variety of colors. Endorsed by the best architects and engineers. A perfect floor for business offices, banking-rooms, court-rooms, vestibules, halls, billiard-rooms, smoking rooms, cafés, libraries, churches, hospitals, hotels, private residences, etc. It is especially and peculiarly adapted for steamships, yachts, etc. It stands the constant straining and racking without cracking or separating, and its non-slippery feature is of high value.

Samples, estimates and special designs furnished upon application.

Write for our special illustrated catalogue.

NEW YORK BELTING & PACKING CO., LTD.,
NEW YORK, N. Y.

THE AGE OF STEEL.

AUTHORITIES on office systems concede the superiority of steel over wood in office equipment.

The steel filing appliance is rapidly superseding the clumsy wooden one, and it is but a question of time only when a full steel equipment will be found in every up-to-date office.

If you have never seen steel-constructed office furniture, you may perhaps have erringly conjured before your mind that it greatly resembles in appearance a bulky office safe or an unshapely kitchen-range.

When properly constructed, steel office furniture is more compact than wooden furniture, requiring less space. It is light in weight, exceedingly well finished and an ornament to any office.

Steel furniture is sanitary, fireproof, moisture-proof, water-proof, and impenetrable to rats, mice and vermin; neither warping nor shrinking, and is never out of order.

Steel is practically indestructible and outlasts wooden appliances many times over, and is far more economical in the end.

Every modern business office should be equipped with *steel* office furniture. It is the modern construction material.

We are leading manufacturers and specialists, as well as pioneers in steel production. We have always led in the construction of appliances substituting steel for wood. Our products have been and are now being sold all over the civilized world. We own the largest sheet-metal works in the world, equipped with costly modern machinery, and we employ only skilled mechanics in our many departments. We can fashion any design in steel.

We are recognized as experts in steel production. Our products are finished with processes of our own invention and solely controlled by us. Thus we can put on the market a line of steel office furniture and equipment that is *superior* in construction and finish to all others.

We are the largest manufacturers of steel devices in the world and we have an eminent right to predict that within a decade of years hence all office equipment will be constructed entirely of steel.

Our steel furniture is constructed so as to give long service. Every known improvement for welding and joining the various parts of the metal are employed, many of these invented and controlled by ourselves. Our steel office furniture is actually indestructible through elemental action.

All drawers in our cases are provided with suspension-slides, making their withdrawal easily accomplished with one hand. Through the use of a suspension device the cards in the back part of the drawer are as easy of access as those in the front.

If you have a card-index system in your office are you not convinced that you need a *steel* index-case? The wooden cases which you use have probably been just as useful to you as steel ones. Their permanency and convenience, however, is questioned.

Wooden cases *may have* satisfied your requirements, but they will not satisfy you in the future.

We employ men who are experts on the steel office-equipment question. After a thorough consideration of these statements if you still have scruples or have doubts as to a change in your office furniture, we will consider it a favor to correspond with you, and, if necessary, give further enlightenment on this important subject.

THE BERGER MFG. CO.,
CANTON, O.

HOT-BLAST DRY KILN.

WE have lately installed a new "hot-blast" dry kiln at the plant of the H. C. Dexter Chair Co., of Black River, N. Y. The fact that the older and less efficient methods of drying lumber are rapidly being superseded by the fan and heater system renders this plant of considerable interest.

In the "hot-blast" system air from out-of-doors passes into the fan-house, thence through the heater wherein it is heated to any desired temperature, and finally by means of a fan it is positively forced into the kiln, where it comes in contact with the lumber, and, because of its high temperature and dryness, rapidly absorbs the moisture. It is then discharged to the atmosphere, or, if advisable, some of the warm air may be returned to the heater, thus regulating the degree of humidity in the kiln and preventing the too rapid drying of the exterior of the stock. With the "hot-blast" system far less steam pipe is required than by any system of direct heating and it is all massed in a fireproof casing in connection with the fan. The circulation of the air is independent of the weather and the ample space in the heater and the equal distribution of the air through the ducts beneath the kiln secure better and more readily controllable results than can be obtained in any other way.

In the progressive kiln arrangement, the lumber is laid upon cars which are run into the kiln upon two tracks. Two or more cars are added each day, all being slowly passed through against a constant current of warm air. In this way the lumber is subjected to an even draught of hot air constantly increasing in temperature and dryness as the cars gradually advance towards the hot end of the kiln. The difference in temperature between the two ends of the kiln varies in practice from 50 to 100 degrees F. The kiln is provided with curtains at the top, bottom and sides, arranged to fit closely the lumber on the cars so that the hot air will be forced through the lumber.

The apparatus installed by the H. C. Dexter Chair Co. consists of a steel-plate exhauster, direct-driven by a steam-engine and drawing air through a steam-pipe heater; also 200 feet of 12-pound rail, and 24 roller-bearing steel truck frames. An air condenser is interposed in the return duct through which the air is passed on its way from the kiln to the fan. This removes a large part of the moisture from the air and at the same time allows much of the heat to be recovered, thus effecting a saving of steam.

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

NOTE.

THE Chicago and Northwestern Railway give the traveller to the West and Northwest the perfection of train service with their *Six Fast Trains.* The "*Overland Limited*" in less than three days to California. The "*Chicago & Portland Special,*" three days to Oregon and Washington. The "*Colorado Special,*" one night to Denver. The "*Northwestern Limited*" to St. Paul and Minneapolis. The "*Duluth Fast Mail*" to the head of the Lakes. The "*Copper Country Express*" to Calumet, Marquette and Lake Superior points. Favorable rate and diversity of route round trip tickets to Pacific Coast on sale daily. For tickets, sleeping-car reservations, maps and full information, call or write J. E. Brittain, General Agent, 300 Washington St., Boston, Mass.

THE WORKS OF

EDGAR ALLEN POE

AND A SIX MONTHS' TRIAL SUBSCRIPTION TO

"TOPICAL ARCHITECTURE"

10 VOLUMES OF THE FIRST
6 VOLUMES OF THE SECOND } ALL FOR $3

On receipt of three dollars we will deliver, carriage paid, a ten-volume set of Poe's Works — cloth bound pocket-volume size — and will send "Topical Architecture" for six months from date of order.

AMERICAN ARCHITECT COMPANY, Publishers, 238 Tremont Street, Boston.

must be if we are to retain all along the line our position in the business world. And you may depend upon it there is great life and there are great possibilities for us all in our England, or we cannot otherwise account for the great love so many foreigners have for our land and their sensitive desire to share our good fortune and our trade. It is not necessary, either, to carry business to such excess as to make men into sleek and prosperous human animals and to lose the noblest qualities and prerogatives of life and manhood. All I suggest is the greater quickening inspiration in our methods, our intensity, our business life. The challenge is uttered in strong, clear, masterful tones to-day. Let us but answer it more fully than we are doing by the old British love of work and enterprise. This is the regenerating grace needed in our business world, and is the prophecy of prosperity.

DISCUSSION.

The Chairman, Mr. William F. King, President of the Institute of Builders, said he was glad to hear Mr. Heathcote's valuable and interesting paper, and to know that that gentleman thought that Englishmen, instead of being the most conceited people in the world, were apt to belittle themselves rather too much; but, in any case, builders were always ready to learn, and he should like to hear something as to American scaffolding, as to their methods of haulage, and as to cranes and lifts.

Mr. Henry Holloway (Messrs. Holloway Brothers) said he had recently had an opportunity of visiting America, and of studying on the spot some of the matters mentioned. As Mr. Heathcote had said, Englishmen had some things to learn from American methods, for in some respects Americans were a little ahead of us; but the result of his visit was, from the building trade point-of-view, disappointing. Perhaps he had been led to expect too much. At the same time, there were many things to admire in the American methods. What struck him most was the energy and brightness of the American — his audacity, almost — in tackling big schemes. American builders and contractors ran enormous risks — risks which English business men would never think of taking — and that was probably due to the fact that there was not the dishonor in failure in the States that there is here. If an American started a big venture and came to grief, he found friends to help him, and he started again with enthusiasm, still honored by others. He (the speaker) could corroborate what had been said as to the genial way in which Americans acted towards English visitors. His visit was a delightful one, because the Americans made it so. The great complaint Americans had against us is that we do not visit them as much as they would like. He greatly admired the splendid way in which Americans had developed the metal trades; in their bronze work, castings, etc. From the largest work down to the smallest detail, the work was beautifully done and reasonable in price. Any one interested in the metal trades here would learn more than would any one in any other branch of the building trade by going to America. But, having said so much, he could not say anything more that was favorable. The whole system of building in America — design, erection and effect — was showy, temporary and with a want of genuineness and permanency about it. Their skyscrapers were architectural monstrosities, and he was very glad that the law in this country prevented such buildings being erected, and he should be sorry if any public body in this country ever gave encouragement for the development of such buildings. Mr. Heathcote had referred to labor-saving machines. He (the speaker) went to America particularly in order to learn what America could teach in regard to labor-saving appliances, and after careful investigation in most of the large cities — New York, Philadelphia, Boston, Chicago, Pittsburgh, etc. — he found no machine that would be adaptable to English work that was an improvement on machinery in use in London. In some respects the American builders were behind us. Mr. Heathcote rather suggested that there was no difficulty with labor in regard to the adoption of machinery, but that was not quite correct. In the stone trades there was great difficulty with the men in regard to the use of machinery, and at the present time the rules regulating masons and employers provides that for every machine put in the shop the employer was to provide five men at the banker. Perhaps he ought to add that most of the masons working in America were either Scotsmen or Englishmen. He could emphasize what had been said as to supplying details. He found everywhere that it is an essential point in every job where speed was necessary, that every detail drawing that the contractor wanted was ready for him before he started the job. As to steel, it could be turned out and on to the job just as the American contractors wanted it — delivered on the job, morning after morning, as it was wanted. If English steel manufacturers would, or could, do the same, it would be a great advantage. The way the Americans were able to do this was as follows: — The steel was got ready and run out of the works onto the railways, and the railway companies ran it into sidings until it was wanted. Sometimes it was in a siding for three months, but the companies charged no demurrage. In large steel jobs, it was rarely that the architect designed the work; the contractor designed his own steel work, having his own engineers, and the architect was not even paid commission on the steel work. The contractor prepared his own drawings for the steel work in his own office, and the work was carried out under his direction. In addition to the staff of engineers in the contractor's office — he was speaking of large works — he had representatives with sets of drawings at Pittsburgh, Philadelphia and other places where the steel was manufactured, and these men saw the steelwork prepared for use. He quite agreed that Englishmen did not get credit for their work. He had an experience as to that. At a big hotel, he was admiring the glazed brickwork, which was some of the finest work he had ever seen. He took the trouble to inquire into the matter, when he found that the glazed bricks had come from Leeds. Everything was sacrificed to speed, and he was reminded of that in thinking about the glazed bricks. In a Boston building in the basement he noticed that the walls were faced with glazed bricks. There were no headers; they were all stretchers. He remarked to the architect: "You do not have bond in your brickwork." The reply was: "No; the walls are faced with the bricks simply as a decoration; we cannot stop to build it with the main wall." A two-brick wall was run up, and a workman came along later and treated the facework as decoration. Construction and beauty were sacrificed to speed, which was not what would satisfy here. As to the number of bricks laid per day, in some cases as many as 1,600 or 1,800 were laid per man per day in America, but it must not be forgotten that those bricks were smaller than ours, and were easier to handle. But such a high rate as he had mentioned had been obtained by constantly raising the men's wages, so that now they were receiving the equivalent of 2*s.* 3*d.* per hour. The employers were not prepared to go farther, and the effect was that the number of bricks laid was now diminishing. At a large power-station he visited, with an ordinary, 2-inch wall, with red brick facing, he found that the men were not laying anything like 1,600 bricks per day, but that the actual number was about 800. He found that the general average number laid was about 1,200, and that the number was gradually diminishing; the high rate was kept up by giving exceptional wages. He had taken the trouble to find out how many bricks men here were recently laying. He took ordinary jobs, and he found that the number varied considerably — from rather more than 900 down to 500 per day — the average was about 700. He found that exceptional circumstances altered the result. In a job of his own, similar to a job he visited in New York, he found that his men, working under ordinary rules, were laying 1,400 bricks per day, and his experience was that bricklayers here were not far behind the Americans. When one came to consider quality, there was no comparison, for the American work was very rough, and the quality of the English work was far beyond American. The American bricklayer did not work from side scaffolding. With their system of steel construction, the steel went up ahead of the brickwork. The boom jib crane was used much as it was used on board ship, and this was raised floor to floor as the steelwork went up. Scaffolding was put out of windows, and was very roughly made, and trestles were used, with boards upon them. Our men would not tolerate such a dangerous system, and it was surprising what risks the Americans were ready to run. He saw a man some 150 feet above the level of a road driving a rivet, standing on the flange of an iron girder without any protection. As to superintendence, on most of the jobs he visited, instead of a practical foreman such as we had, the superintendent or general foreman was a young man who had had a University training and had passed his civil-engineering course at the college. Sometimes the superintendent had had a little training in the office, but generally he went on to a job direct from college, and at twenty-five years of age he was a "full-blown" superintendent of works. His main duty was not to see that the work was done well, but to "hustle" the sub-contractors. The large buildings were erected on the sub-contracting system. The general contractor had no yard or works, but he did everything from his office. The general contractor rarely employed direct labor, excepting bricklayers and fixers of steelwork. That system did not make good work although it made for larger profits and less responsibility to the contractor. As to joiners' work, that again was divided; one man making nothing but doors, another sashes, etc.

Mr. H. H. Bartlett said that such a paper as they had listened to was calculated to enlarge their minds. As to the American system of steel construction, it was a simple matter to build that way. The steelwork was fitted together even to the last rivet before even it was brought on to a job, so that when the building was erected there was no doubt, no wondering, whether this or that would fit. Everyone knew where each part would go. English builders did not have these advantages. It was almost the universal practice here for the builder to have the details of a building supplied as he went along and as he was supposed to require them. If a contractor knew beforehand exactly what was to be done he could have his machines ready and could carry out the work rapidly. Not that buildings were any the better for being erected rapidly; slow building was generally lasting building. Building work of a most complicated and difficult character had been erected by English builders, and it had stood for ages. Not many years ago one of our leading architects, now dead, told him that work was done at such a rush that the pleasure of designing and carrying out a building had gone. That architect said that he liked to see a model of his building to see the effect of it; and he liked to see the building go up slowly, and to alter it, if necessary, for no man could tell what it would look like from seeing it on paper. By our present methods that was impossible.

Mr. Heathcote, in reply, said that, as to the labor-saving machinery, he though that Mr. Holloway had somewhat misunderstood him. He (the speaker) had alluded to labor-saving machinery, mainly in connection with other businesses than the building trade, to show that Americans were always preparing something to do away with that expensive item labor. But he had noticed that the machinery American builders had, if not better than ours, was employed

more generally. If we employed two machines for a particular purpose they would have half a dozen in order to get over the work more quickly. The Americans took greater risks, and Mr. Holloway agreed with him there. These risks were taken to push the work on more rapidly, but he (the speaker) thought they erred in doing this. The scaffolding put up in London and most parts of England was such as a man could trust himself on, with little danger to himself, but that could not be said of all the scaffolding in vogue in America. He agreed with what had been said as to American bronzework and castings; they had taken great trouble to get the best metals for these castings, but the work was not equal to the French. The metalwork in an American passenger-lift was very good, and it was necessary to examine it carefully in order to find out that it was simply a casting, without any cutting or embellishing or finishing off. Such things were beautifully made, and in that respect we had something to learn from America. But we had nothing to learn from them as to constructional steel. A well-known American gentleman, who has had great experience in building, said in regard to the Trafford Park building: "This is as beautiful a piece of steelwork as I have seen." The steel for that was supplied by Messrs. Dorman, Long & Co., of Yorkshire. As to speed, that firm had put up for him (the speaker) more than one hundred tons of steelwork per day. Few firms could do as well as that. [Mr. Holloway: The Midlanders are better off than the Londoners.] As to the expedition of building work, he thought it was almost certain that we should have to alter some of our laws affecting buildings. If one had to build quickly, it was necessary to use steel-construction; one could not build stone walls 4 feet or 5 feet thick as quickly as one could build walls by using steel stanchions. He understood that a steel building was to be put up in London on a site near St. James's Street, and the County Council insisted on having the walls as thick as though there were no steel in the building at all. That was not progress; the building would be stronger than if brick were used. In Manchester this point was appreciated, and architects were allowed to put up steel buildings with thinner walls than would be necessary without the steel, and the authorities there were helping in the matter of the speedy erection of buildings. As to the designing of the steelwork for the Westinghouse buildings at Manchester, the steel contractors had nothing to do with the design of it; it was designed for them by the engineer, down to the very rivet holes. He (the speaker) had for work now in hand in his office a staff of engineers, and they turned out every detail of the ironwork. Nothing was left for the contractor to design. He believed that that was what the Americans did. [Mr. Holloway: There are exceptions.] He thought that the Americans made too much of speed, while we might speed up a little more with advantage, but retaining our good work. We did not want to sacrifice our good work, but to "speed it up."

BACTERIAL TREATMENT OF WATER AND SEWAGE.

THE following short address was delivered in June by Professor P. Frankland, Ph.D., LL.D., F.R.S., before Section VI (Waterworks, Sewerage and Gas-works) of the Engineering Conference of the Institution of Civil Engineers: —

"THAT the purification of sewage invariably depends upon the agency of micro-organisms, either in a state of nature or under domestication, has been so generally recognized for some years past that a large amount of valuable experience bearing on bacterial treatment has now been gained by many persons working in different places and under different conditions. The present Engineering Conference would appear to be a fitting opportunity for the interchange of views on this important subject, as well as for a discussion of the conclusions which have so far been arrived at by the Commissioners appointed to inquire into the 'treating and disposing of sewage.' Perhaps the purposes of our Conference will be best served by my enumerating the several points on which it appears to be most desirable that the views of those who have had practical experience should be elicited. In this manner it is to be anticipated that diffuseness in discussion will be avoided, and that there should be a prospect of some tangible good resulting from our labors.

"1. Under what circumstances are the older methods of bacterial purification of land — *irrigation and intermittent downward filtration* — to be preferred to the more modern methods of *bacterial purification without land?* This requires the most careful consideration from the point-of-view of (*a*) efficiency, (*b*) cost. Under this heading we may appropriately discuss the much-vexed question as to the necessity of supplementing the modern bacterial methods by land treatment. The possible contamination of subsoil water, as well as other sources of danger or nuisance, arising from sewage works of different kinds, should also be considered.

"2. What are the relative merits of the different methods of preliminary treatment? Under this heading, information is sought for as to the value of chemical precipitation and septic-tank treatment, respectively. It is particularly desirable that evidence should be obtained as to what is actually accomplished in the *septic tank;* thus, as to whether the advantages of the tank go beyond subsidence, averaging the quality of the sewage, and liquefying more or less of the organic sludge, or whether even the dissolved matters in the sewage are so influenced as to be more effectively dealt with afterwards in the bacterial beds.

A very important matter for consideration, also, is the proportion which the tank-capacity should bear to the daily flow of sewage. The question of open *versus* closed tanks will also arise. The possible advantages of chemical treatment prior to admission of the sewage onto bacterial beds must not be lost sight of. We have also to consider whether in the septic or anaërobic treatment any substantial advantage is gained by the employment of contact-materials.

"3. *Contact-beds.*— Perhaps the greatest variety of questions must arise with regard to this portion of the modern sewage-works. Some of the most important points for consideration appear to me to be: (*a*) Cost of construction, necessary and unnecessary. (*b*) Single, double and multiple contact. Modes of operation, with special reference to the periods of work and rest assigned to the beds. Most advantageous depth of beds. (*c*) The mechanism of the purification process taking place in contact-beds. (*d*) Continuous contact-beds. (*e*) Distribution of sewage on contact-beds. (*f*) Materials suitable for contact-beds; capacity; cleaning and renewal of beds. (*g*) Volume of sewage dealt with per acre of beds.

"4. *Effluent.* — In connection with the effluent, we shall have to consider the efficiency of the purification which can be obtained by different modes of bacterial treatment. By what standards is the purity of an effluent to be judged? In this connection, it is of great importance that a clear understanding should be arrived at as to what the real object of sewage purification is, and as to how this purification should be controlled. The purity of the effluent must be considered also with reference to the stream or other body of water into which it is to be discharged. The relative importance of chemical and bacteriological standards also must be fully discussed, as these are at the present time a fertile source of confusion and misunderstanding. In this matter of purification and standards, above all, the practical and academic aspects must be carefully distinguished. The sterilization of effluents should also receive consideration. In discussing the efficiency of purification, I would emphasize the absolute necessity of being able to compare the chemical and bacteriological data for one and the same sewage before and after purification, and that such data for the effluent alone are of little or no value. Satisfactory comparisons of this kind, as in the case of land treatment, are rarely available, in consequence of frequent complications arising through admixture of subsoil water.

"5. *Storm Water.* — As is well known, the systematic purification of sewage is complicated by the enormous variation in the amount of liquid which has to be treated, and the practical impossibility of submitting to the same processes of purification those vast volumes of water which are carried by the sewers during heavy rainfall. This practical factor, of very great importance, is one which is so often lost sight of by those who approach the subject of sewage-purification with preconceived ideas, gained exclusively from the perusal of scientific literature and from observations made in the laboratory. If the object of sewage-purification is to minimize the pollution of our streams and to reduce the dangers and nuisance arising from such contamination, it is obviously of the first necessity to arrive at some conclusion as to what dilution of the sewage shall be regarded as warranting a relaxation, or even abandonment, of the regular purification processes. The impossibility of avoiding these irregularities will also have to be taken into account in a consideration of what are reasonable and what are unreasonable standards of purity in the operation of a sewage-works even under normal conditions.

"6. *Trade Effluents.* — The purification of sewage is frequently complicated by the admixture of considerable volumes of the refuse from manufacturing operations. It is probable that in many cases the difficulties attending the purification of such materials have been greatly and purposely exaggerated; but, on the other hand, there undoubtedly are certain waste products which, if present in sufficient proportion, add most seriously to the difficulties of sewage-purification.

"7. *Bacterial sewage-works at present in operation.* — It is so frequently asserted, generally, it is true, by interested parties, that the bacterial methods of sewage-purification are still in a purely experimental stage, that it would be well if, in the course of our Conference, we could place on record the number and magnitude of such works as are now in actual operation and of those which are under construction."

THE CONSISTENCY OF CONCRETE AND THE FATIGUE OF CEMENT PRODUCTS.

COMPARATIVELY few experiments have hitherto been made upon wet and dry concrete, and owing to the lack of data on the subject, a series of experiments have recently been conducted upon forty-five 6-inch cubes made with three percentages of water and broken in a testing-machine at the ages of seven days, one month and three months. The quantities of water used were: For dry concrete, 6 per cent; for medium concrete, 7.8 per cent; and for wet concrete, 9 4 per cent, and the proportions of material used were one part cement, three parts sand and six parts broken stone. The dry concrete was about as moist as damp earth; the medium concrete would not quake in handling, but when well tamped, water would flush to the surface, and the wet concrete quaked in handling, and would bear only slight tamping. At the age of three months or more wet concrete is stronger than either dry or medium concrete. When recently set, medium concrete gives the greatest strength, thus showing that wet concrete acquires its strength more slowly than

drier mixtures. In breaking the cubes it was found that the wet concrete was distorted more than the dry before failure occurred, thus proving the existence of greater elasticity. By using a rather wet mixture a compact mass could be obtained with comparatively little tamping, whereas a compact mass could not be formed with any amount of tamping upon a dry mixture. Summing up the conclusions to be drawn from the experiments, it appears to be clear that dry concrete should not be used under any circumstances; that medium concrete may be desirable in cases where immediate strength is required; and that wet concrete is stronger than either dry or medium concrete at any age over three months. In the course of some experiments undertaken to determine the behavior of Portland-cement mixtures when subjected to repeated loads of less intensity than would cause failure when once applied, it was found that there was every reason for thinking it probable that concrete was liable to fatigue under repetitions of stress, such as is experienced by iron and steel under similar conditions. The experiments were conducted upon 2-inch cubes composed of neat cement. Altogether some ninety-two blocks were tested by repetitions of compressive stress, and the average results are shown in the following table: —

Number of repetitions causing failure.	Load applied in terms of ultimate strength.
1	100 per cent.
75	90 " "
150	80 " "
400	70 " "
1,500	60 " "
5,500	55 " "

These figures indicate that failure occurs under repeated loadings of much less intensity than that necessary to cause failure when applied once, and that the number of repetitions necessary to cause failure, increases proportionately with the diminution of the load. Similar tests upon concrete have not been conducted upon a systematic scale, but eighteen tests on 7-inch cubes show that the same general law of gradual failure applies equally to concrete. — *Stone Trades Journal.*

BOOKS AND PAPERS.

WE are told in "*The Art of J. M. Whistler*"[1] that he treated "themes never before attempted — subjects which other painters have shirked." This is a hard saying, and doubtless were we to investigate, we should find in many an artist's portfolios similar "themes." It is not given to every painter to be able to advertise himself; nor do the mass of artists find, early in their career, appreciative purchasers. But Whistler was the possessor of the quality of self-advertisement, and he found rich men who were capable of higher things than money-grubbing. He was doubtless a genius; but we should like him more if he were less "divine" than some of his admirers affirm.

A good deal in the book has been said before, as, for instance, his contention that the saying, "Nature is always right," is not true; "she is usually wrong." Nature he likens to a "keyboard" upon which the artist plays, gathering his notes and weaving harmony out of chaos. It is, of course, true that art is the selection of the best in nature; but nature frequently presents a picture which is perfect in every way, and requires no arranging; and when she requires the artist's help, it is a totally different business from the formation of "glorious harmonies" out of a key-board. Nature, living Nature, cannot be likened to a row of black and white ivory keys, for she is always beautiful apart from art, although it is art which makes her into beautiful pictures.

Whistler's great merit was that he stood up steadfastly against the theory that a picture must necessarily have a subject — that mistake of the inartistic multitude. Pictures, like music, are pleasant harmonies — the subject is no more necessary than the descriptive programme is to a musical work. What does it matter whether they tell stories or not? Let every man weave his own meaning out of an artistic work. At the same time, to say that the artist's (we ought to say the "master's") nocturnes rouse the "same feelings as are excited by listening to a nocturne or a ballade of Chopin," is somewhat exaggerated criticism and possibly that of one to whom music is not a passion.

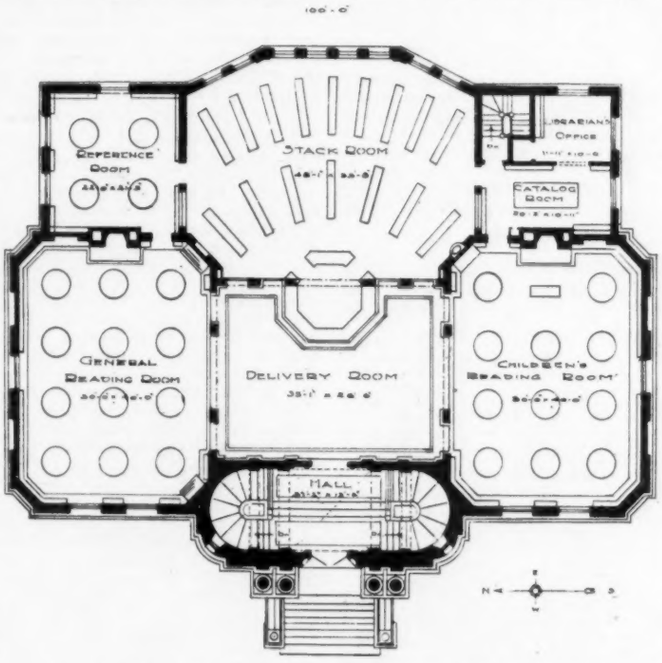
The illustrations in the book are charming, though of course the beauty of some of the nocturnes cannot be shown in black and white. But "The Thames in Ice," "Old Battersea Bridge," "Cremorne" and the "Venetian Studies" are delightful. Some of the landscapes would gain by losing an inch or two — it is impossible to see the distant houses and the near barges in some of the Thames series at the same time. To clap some figures standing, as it were, on the frame, must be wrong; you cannot see the opposite side of a river and the ground immediately at your feet at the same moment — your picture becomes two pictures.

Some of the figure-studies are excellent reproductions: "The Toilet," the artist's "Portrait in a Hat," the "Studies in Pastel," "La Princesse de pays de la porcelain," the portraits of "M. Théodore Duret" and of "Miss Corder."

"*LIGHT and Water*,"[2] by Sir Montague Pollock, is an attempt to teach, theoretically, the facts of reflection — spelled in this book as in many other modern works "reflexion." Reflex might pass, as our Johnson tells us its definition is reflection; but reflexion is not English.

The author's examples show great observation in one who is not an artist. Naturally, artists do not stop to theorize — the surface is their affair; and observation of reflections and shadows has taught them all this book can impart. Nevertheless, it is valuable as a book of reference and ought to find its way as a text-book into all public libraries, schools and colleges, as its perusal would save time to many art students and would give the amateur information which he is never likely to acquire by reason of his want of tenacity.

Sir Montagu gives as a reason for his arduous work the fact that, as anatomy and perspective are necessary to the painter, so is the theory of reflections. But he forgets that the latter is quite easy of acquisition by observation as reflections are upon the *surface* of water; whereas bones and muscles are under the surface of skin and clothes, and yet have to be indicated in the forms of the clothes. The illustrations, both photographs and diagrams, are excellent and the problems worked out in great clearness of language; and we can safely say, this is a good guide to all art students and amateurs.



Ground-floor Plan: Public Library, Danville, Ill. Messrs. Patton & Miller, Architects.

ILLUSTRATIONS.

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

COMPETITIVE DESIGN FOR THE CATHEDRAL CHURCH OF ST. JOHN IN THE WILDERNESS, DENVER, COL. MESSRS. FIELD & MEDARY, ARCHITECTS, PHILADELPHIA, PA.

FRONT ELEVATION OF THE SAME.

CATHOLIC CHAPEL, DUBLIN, N. H. MR. FRANK CHOUTEAU BROWN, ARCHITECT, BOSTON, MASS.

STREET RAILWAY SHELTER, WEST SPRINGFIELD, MASS. MESSRS. E. C. & G. C. GARDNER, ARCHITECTS, SPRINGFIELD, MASS.

CHURCHES AT PLEYBEN, BRITTANY.

This plate is copied from *Schweizerische Bauzeitung*.

Additional Illustrations in the International Edition.

THE GEORGE DEWEY SCHOOL, CHICAGO, ILL. MESSRS. PATTON & MILLER, ARCHITECTS, CHICAGO, ILL.

FRONT VIEW OF THE SAME.

[1] "*The Art of James McNeill Whistler.*" An appreciation by T. R. Way and G. R. Dennis. G. Bell & Sons. 10s. 6d. 1903.

[2] "*Light and Water.*" A study of reflexion and color in river, lake and sea. By Sir Montagu Pollack, Bart. G. Bell & Sons. 1903.

CHAPEL AT ISLESBOROUGH, ME. FRANCIS R. ALLEN & CHARLES COLLINS, ARCHITECTS, BOSTON, MASS.

PUBLIC LIBRARY, DANVILLE, ILL. MESSRS. PATTON & MILLER, ARCHITECTS, CHICAGO, ILL.

HOUSE OF O. M. BEACH, JR., RYE, N. Y.: TWO PLATES. MR. J. ACKER HAYS, ARCHITECT, NEW YORK, N. Y.

NOTES & CLIPPINGS

ARKANSAS SLATE QUARRIES. — The slate industry in Northwestern Arkansas is being developed on a rather extensive scale. H. P. Root, the expert slate and mining engineer from Pennsylvania, who has been in the field for the past few months, is of the opinion that the Arkansas slate will rank far ahead of the Pennsylvania product. The red slate is especially valuable, as it is used as a paint pigment, as well as for roofing and similar purposes. It is estimated that probably ninety per cent of the red slate in the country is in the Arkansas belt. There are also abundant quantities of black slate, which can be manufactured at a much smaller cost than in the East. The Ozark Slate Company, with which Mr. Root is connected, has ordered the latest equipment for a six-mill machine. By the end of January the company expects to be working at its full capacity. — *Boston Transcript.*

LIABILITY OF ST. PETERSBURG TO INUNDATION. — The latest overflow of the Neva is but another warning to the inhabitants of St. Petersburg of what may happen to them in the event of a long series of westerly gales in the Gulf of Finland. This flood (9 feet 6 inches) is the most serious that has occurred since 1877, when the Neva rose 10 feet 7 inches above its ordinary level. The great inundation of 1824 was the most disastrous on record. On that occasion the river rose 13 feet 8 inches above its normal level, and inundated the whole urban area of St. Petersburg. The Katharine, Ligovski and Obvodni canals all have basins for the reception of surplus waters, but they are of little practical value, as is shown in the present instance. There are two other canalized channels, the Moika and the Fontanka, but these are not furnished with overflow basins. All the islands, which are of alluvial origin, are very low. Their highest points do not rise more than 10 feet 6 inches above the average level of the Neva, and the mainland is very little higher than the islands. It is a common occurrence for the streets in parts of the Vasili Ostroff to be flooded during the winter. The branch of the Neva flowing southwest has a breadth of from 470 to 700 yards, and a maximum depth of 49 feet. The other branches are the Little Neva, which, with the Great Neva, forms the Vasili Ostroff, and the Great Neva, with the Little Neva, forms the Petersburgski Ostroff. Three other branches enclose the islands of Elaghin, Krestovski, Kamennyi and Aptekarski. Smaller branches of the Great and Little Nevas form the islands of Petrovski, Golodai and other smaller islands. The present inundation indicates that the construction of canals to carry off surplus water, and the raising of the seacoast, are not safeguards against floods in abnormal conditions. — *N. Y. Evening Post.*

THE WILLIAMSBURG BRIDGE, NEW YORK. — In the principal dimensions in which the new Williamsburg Bridge appears as a work of greater importance than the old Brooklyn Bridge, the two structures compare as follows. —

	Brooklyn Bridge. Ft.	In.	Williamsburg Bridge. Ft.	In.
Length of main span	1,595	6	1,600	
Length of land spans	930		596	6
Length of Brooklyn approach	971		1,865	
Length of Manhattan approach	1,562	6	2,606	2
Length of carriageway	5,980		7,264	2
Height above water at centre	135		140	4
Height of towers	278		335	7½
Width of bridge	85		118	
Diameter of cables		15⅝		18⅝
Wires in each cable	5,296		7,700	
Miles of wire in four cables	14,361		17,432	
Strength of each cable in tons	12,200		24,500	
Permanent weight suspended from main span cables, tons	6,780		13,740	

The Brooklyn Bridge has one foot-walk, 15 feet; two bridge cable-tracks, 22 feet; two trolley-tracks and two roadways, 36 feet, giving a total width of roadways equal to 73 feet. The Williamsburg Bridge has two foot-walks, 21 feet; two bicycle-paths, 14 feet; two elevated railroad tracks, 22 feet; four trolley-tracks, 40 feet; two roadways, 40 feet, giving a total width of roadways equal to 137 feet. — *N. Y. Times.*

LAWFUL AND UNLAWFUL ACTS BY UNIONS. — In disposing of a motion to dissolve an injunction restraining members of a union from interfering with an employer in the conduct of his business, by persuading or inducing others not to deal with him, Vice-Chancellor Pitney, of New Jersey, summarizes, in the following brief form, certain of the contentions between capital and labor, which he states are now quite well settled: First — That all sorts of laborers may lawfully combine and form unions for their mutual benefit, and that they may use all lawful means to promote their own interests, being careful in so doing not to infringe on the rights of others. Second — One lawful means to that end is the refusal to work on terms offered by the employer. Third — An unlawful means is to hinder or prevent others from working for an employer under such terms as they shall see fit. Fourth — One means of such hindering and preventing is in various ways to render it either difficult or uncomfortable for such willing workmen to to work. This is an unlawful means. Fifth — Another unlawful means in common use to hinder or prevent willing employés from working, and to compel employers to accede to terms which they would not otherwise adopt, is the boycott in its various forms. The defendants in the case, which is that of Martin *vs.* McFall (55 Atlantic Reporter, 465), denied that they were doing any of these unlawful acts and asked for the dissolution of the injunction, to which the Vice-Chancellor philosophically replies that if they do not intend to do the things forbidden by the restraining order, the order will do them no harm. — *Exchange.*

ALLEGED CHANGE IN FREMIET'S JOAN OF ARC. — All Americans who have visited Paris recollect the bronze equestrian statue of Jeanne d'Arc, in the Place de Rivoli, considered the masterpiece of Fremiet, the sculptor. The art world of Paris is now greatly excited over the revelation just made by Fremiet, who declares that he was so dissatisfied with his statue and so annoyed by newspaper criticisms in regard to it that he has surreptitiously substituted another statue in its place. The figure of the original statue was thought too small for the massive horse she was riding, an unjust criticism, for the artist, preferring truth to effect, had modelled a Percheron, the huge breed of horse so commonly used at that epoch for chargers. When the excavations for the Metropolitan Railroad were undertaken in 1899 it was found that the pedestal of this statue was sinking, and Fremiet took advantage of the fact to have the statue taken to his studio while the pedestal was being readjusted. He then had another statue, at which he had been secretly working for years and secretly cast in bronze, installed in place of the original, which was taken stealthily by night to the Barbedienne bronze foundry, broken in pieces and melted in the white flames. It seems the destiny of all Jeanne d'Arcs to be burned. Fremiet says he did this simply for *amour propre*, because he did not like his original statue. The singular part of it all is that none among the Government authorities, the art-critics or the public, discovered the substitution. Meanwhile this pious fraud is considered a most dangerous precedent, and M. Roger Ballu, former Inspector of Fine-arts and now deputy, has informed the Cabinet of an interpellation on the subject. M. Roger Ballu says he noticed the difference in the new from the old statue, and questioned M. Roujon, then Director of Fine-arts, saying: "Good Heavens! They have put up for us an entirely new Jeanne d'Arc." M. Roujon said: "Oh, nonsense, the statue has not been changed. Fremiet has only modified the breastplate, raised the head a bit, and put the tail of the charger higher up, that is all." The public was informed at the time of the removal for repairs of the pedestal in 1899 that the statue would be regilded, and ten days afterward the new statue, shining brilliantly in superb gold, was set up under cover. By this stratagem Fremiet was enabled secretly to accomplish his bold, artistic *coup d'état.* — *C. I. B., in New York Tribune.*

THE HYDROSCOPE. — It appears to be simple enough, this wonderful instrument as described by Dr. C. Libertacrio, in an article, "To Spy Out the Sea Bed," in the January *Pearson's.* "So far as one can see, it consists of a long tube, fitted with various optical instruments at the end. The secret of the instrument lies within — in the mechanism that gives it the power. When the instrument is fitted to a ship an image of the water and the things therein beneath the ship can be thrown onto a screen on deck, so that a number of people at one time can see what is going on in the water beneath them. So the hydroscope, among its minor benefits, will give a new amusement to ocean travellers. The instrument, moreover, can be so adjusted that it will reflect not only objects lying beneath it, but those around and above, thus enabling a captain to keep an eye on the keel of the ship, or to examine the keel in case of accident, while steaming at full speed. Cavaliere Pino is confident that his instrument is powerful enough to enable him to peer into the deepest depths of the sea. In case the water should prove too dense, however, and for use at night time, he has devised a new form of electric-lamp, which will throw shafts of light to practically any depth."

EXTENDING THE CHAMPS-ELYSEES. — The avenue in the Champs-Elysées is probably the finest example of its kind in Europe. The majority of visitors to Paris believe it terminates at the Arc de Triomphe, but it has been continued, although in a less grandiose form, to Courbevoie. It is now proposed to prolong the avenue to the Carrières-Saint-Denis, and ultimately to the terrace of Saint-Germain. It would, consequently, have a length of ten English miles, and would be the shortest distance between the Place de la Concorde and the terrace which Henry IV commenced and Louis XIV finished. The Chamber has voted a sum of 700,000 francs to enable the work to be embarked upon. It is needless to add that the sum will be only a fraction of the cost. It is expected that at least ten millions will be required. That amount will not appear excessive in view of the fact that it will be necessary to construct three bridges across the Seine. At present the usual way for those who have time to visit Saint-Germain is by one of the river steamboats, and the journey is repaid by the sight of the scenery passed through, as well as by the unrivalled view from the terrace. In the course of time Saint-Germain will be no more than one of the suburbs of Paris. — *The Architect.*

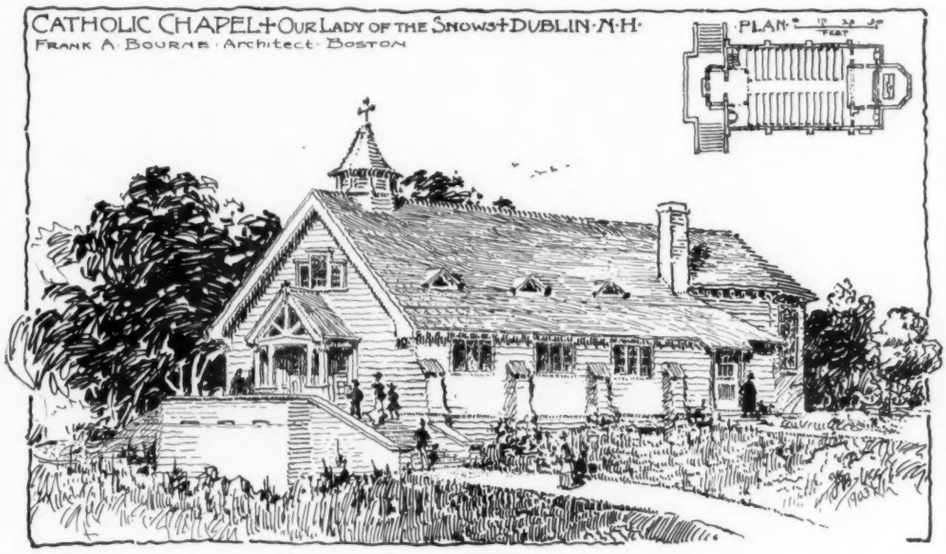
DALLIN'S "MEDICINE MAN." — Cyrus E. Dallin's well-known and excellent equestrian figure, "The Medicine Man," has been cast in bronze and presented to the city of Philadelphia, for Fairmount Park. — *Exchange.*

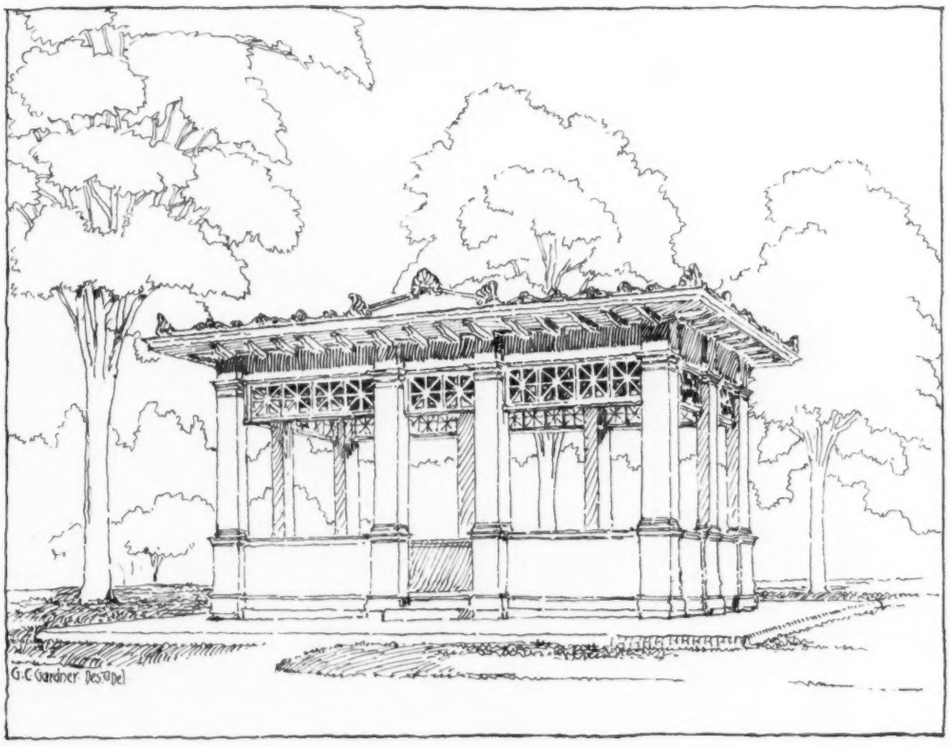
S. J. PARKHILL & CO., Printers, Boston, U. S. A.

Churches at Pleyben, Brittany, France

From Schweizerische Bauzeitung

Copyright, 1904, by the American Architect Co.

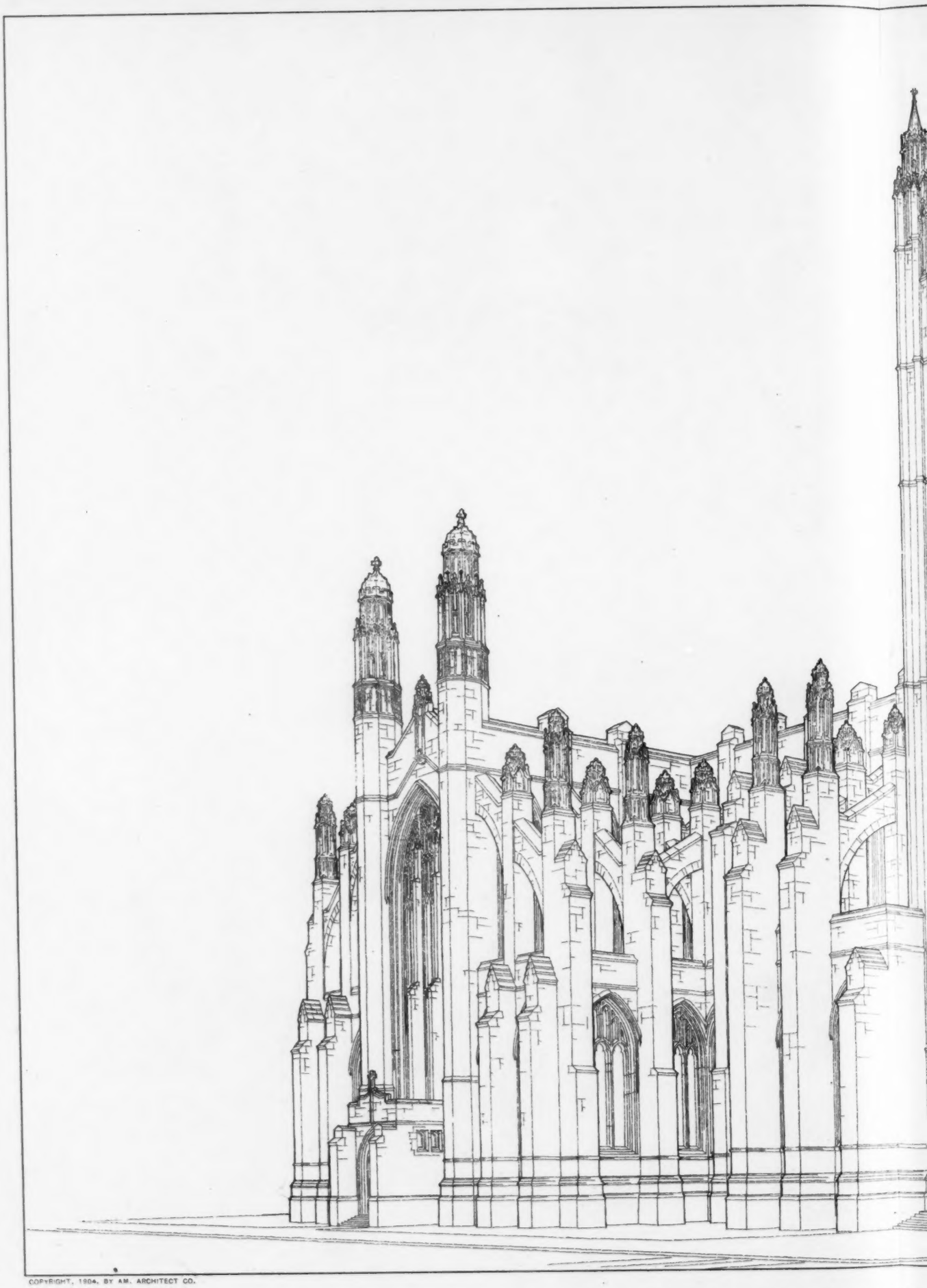




Street Railway Shelter, West Springfied, Mass.

E. C. & G. C. Gardner, Architects

Copyright, 1904, by the American Architect Co.



COPYRIGHT, 1904, BY AM. ARCHITECT CO.

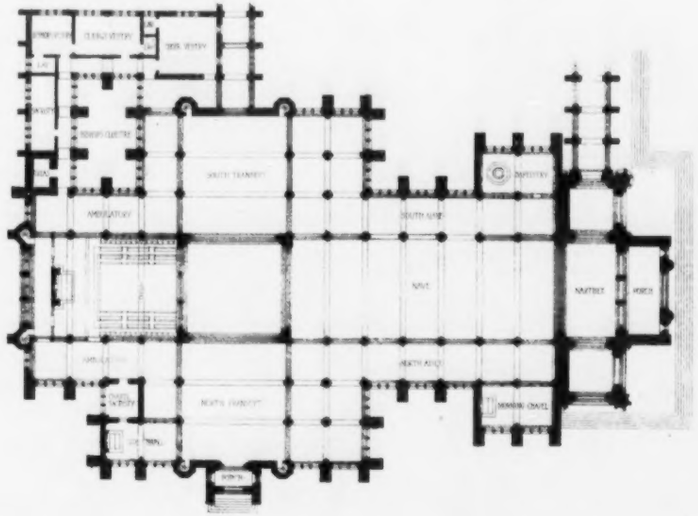
A COMPETITIVE DESIGN FOR CATHEDRAL OF ST.

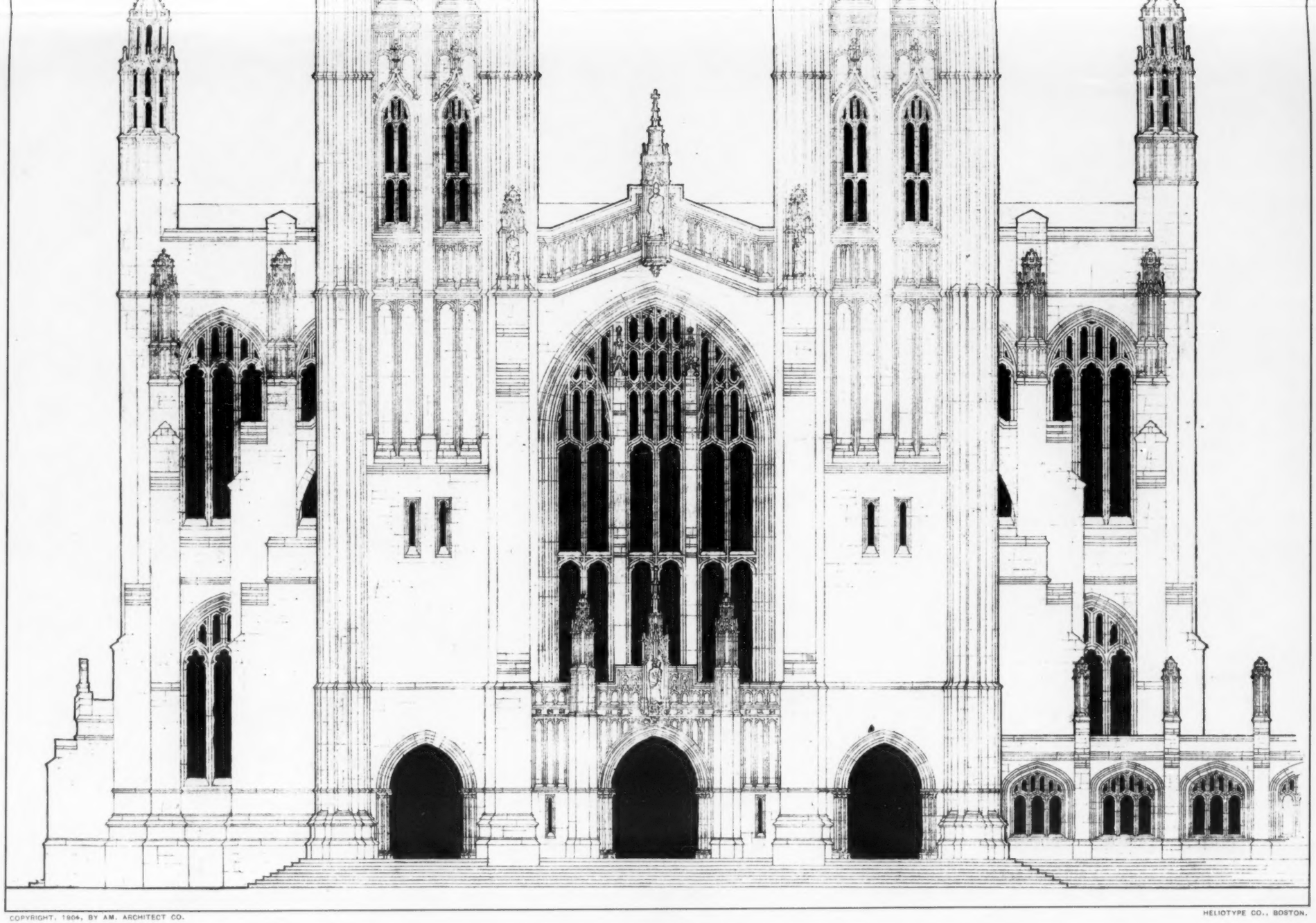
FIELD & MEDARY, A

HELIOTYPE CO., BOSTON.

OF ST. JOHN IN THE WILDERNESS, DENVER, COL.
DARY. ARCHITECTS.

The American Architect
Jan. 2, 1904.
No. 1462.





COPYRIGHT, 1904, BY AM. ARCHITECT CO.

HELIOTYPE CO., BOSTON.

FRONT ELEVATION: COMPETITIVE DESIGN FOR CATHEDRAL OF ST. JOHN IN THE WILDERNESS, DENVER, COL.

FIELD & MEDARY, ARCHITECTS.

The American Architect
Jan. 2, 1904.
No. 1462.

The American Architect and Building News

A WEEKLY JOURNAL OF CONSTRUCTIVE AND DECORATIVE ART

VOL. LXXXIII.—No. 1462.] SATURDAY, JANUARY 2, 1904. PRICE, { INTERNATIONAL ISSUE, 50 CTS. REGULAR " 15 "

Public Library
RECEIVED
JAN 9 - 1904
Washington, D.C.

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

ELECTRIC SIGNALS FOR PASSENGER ELEVATORS
ELEVATOR SUPPLY & REPAIR CO.
136 LIBERTY ST. NEW YORK 34 W. MONROE ST. CHICAGO

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

LOOMIS FILTERS.

ESTABLISHED 1880.

Improved System. Simple and Effective.

LOOMIS-MANNING FILTER CO.,

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

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.

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.

THE SOCIETY OF BEAUX-ARTS ARCHITECTS

has established

A FREE COURSE OF STUDY

open to draughtsmen and students of any city modelled on the general plan pursued at the Ecole des Beaux-Arts in Paris, and comprising frequent problems in Orders, Design, Archeology, etc.
For information apply to the Secretary of the Committee on Education, 3 East 33d St., New York City.

PHILADELPHIA, PA.

UNIVERSITY OF PENNSYLVANIA

SCHOOL OF ARCHITECTURE

FOUR-YEAR COURSE (Degree *B. S. in Arch.*).
GRADUATE YEAR (Degree *M. S. in Arch.*).
TWO-YEAR SPECIAL COURSE (*Certificate*).

College Graduates are granted advanced standing and qualified draughtsmen admitted to the Special Course.

The University offers also four-year courses in CIVIL, MECHANICAL, ELECTRICAL AND CHEMICAL ENGINEERING, leading to the Degrees of B. S. in their respective subjects.

For full information address: DR. J. H. PENNIMAN, Dean, College Hall, University of Pennsylvania, Philadelphia, Pa.

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.

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.

"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 COMPANY,
PUBLISHERS

BOOKS:

"Renaissance Fireplaces."

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

AMERICAN ARCHITECT COMPANY, Publishers.

BOOKS:

"The Library of Congress."

20 Plates, folio. Price, $5.00.

AMERICAN ARCHITECT COMPANY.

BOOKS:

"Door and Window Grilles."

104 Plates: 10" x 14½".
In Cloth, $7.50.
In Portfolio, $6.50.

AMERICAN ARCHITECT COMPANY, Publishers.

ROBERT C. FISHER & CO.

Successors to Fisher & Bird,

MARBLE AND GRANITE WORKS

97, 99, 101 and 103 EAST HOUSTON STREET,
Established 1830. NEW YORK

The Luster Will Last

PRESERVATIVE COATINGS E.S. 1827 & CO. TRADE MARK.

Only when the right kind of varnish is used. The best materials and nearly four score years' experience in manufacturing give permanent satisfaction when you specify

I. X. L. Preservative Coatings

For Varnish Catalogue write

EDWARD SMITH & CO.
Varnish Makers and Color Grinders
45 Broadway, New York

59 Market St., Chicago

CAPTAINS OF INDUSTRY
Surround Themselves With
"The Armor Plate Of Modern Business"

BERGER STEEL FURNITURE

It means perfect system—absolute protection. What avails a fireproof building with combustible furniture? Berger Steel Furniture is **Fireproof, Waterproof, Dustproof, Rat, Mice** and **Vermin Proof**—not affected by extremes of cold, heat, dryness or moisture—it is extremely light for its strength; economizes space. In finish and beauty it is simply superb.

BOOK FREE.—Ask for our new book No. 22.
It is bound to interest you.

THE BERGER MFG. CO., Canton, O.
Steel Specialties—Ceilings, Roofing, Siding, Fireproofing, Etc.

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.

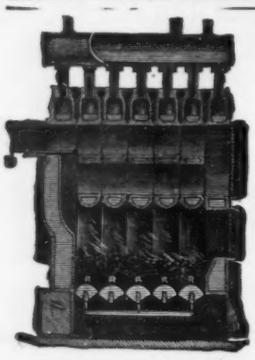
On receipt of $6.25 we will forward for 12 months.

MINERAL WOOL

FIRE, SOUND and VERMIN PROOF INSULATOR.

Samples and Circulars Free.

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



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

MANUFACTURERS.

Steam and Water

Heating Apparatus,

Factory: Westfield, Mass.

ESTABLISHED 1853.

Send for Catalogue.

NEW YORK, PROVIDENCE, PHILADELPHIA.

BOOKS:

"Norman Monuments of Palermo."
Illustrated with 50 Plates: 13" x 17½".
Price bound, $10.00. Unbound, $9.00.
AMERICAN ARCHITECT COMPANY, Publishers.

¶ The difference in cost between the best and worst roofing tin is too small to be considered in connection with the cost of taking off a bad roof or repairing it.

"Taylor Old Style" roofing tin lasts longer than the building itself, lasts longer than the memory of the man who put it on, and is to-day an actual evidence upon thousands of roofs. The brand is the metal worker's safeguard.

N. & G. TAYLOR CO.
Established 1810
PHILADELPHIA

"All I can say about these far-off, also-ran tins is that if they are good imitations, 'Taylor Old Style' must be rotten."—*Rufus the Roofer, in November Arrow.*

Fifteen Volumes
of
Rudyard Kipling's
WORKS
and
Twelve Issues of
"Topical Architecture"
for $5.00
AMERICAN ARCHITECT CO.
211 Tremont St., Boston

NATIONAL FIRE-PROOFING CO.

PITTSBURCH NEW YORK BOSTON
PHILADELPHIA CHICAGO

We own patents for the Johnson System of Fire-proofing. Residences and other buildings can be made fire-proof without the use of steel. Let us give you estimates.

CLEANING

whether given frequently by the careful housemaid or strenuously by the zealous janitor, does not destroy the original brightness of

BENEDICT-NICKEL
SEAMLESS TUBING

It is "white metal clear through" and there is no plated surface that can be worn away by rubbing

All products including Seamless Brass and Copper Tubing are described in our "Table Book."

BENEDICT & BURNHAM MFG. CO.
WATERBURY, CONN.

New York
253 Broadway,

Boston
172 High St.

80-Paged Illustrated Catalogue of over 250 Designs of Superior
WEATHER VANES, TOWER ORNAMENTS, CHURCH CROSSES, FINIALS, Etc., Etc.
Mailed to any address for 2-cent stamp—half the postage.
T. W. JONES, Manufacturer,
18 FLETCHER ST., NEW YORK.

The
W. J. PERRY
Dumb Waiter
FOR
Hotels, Restaurants
Stores, Libraries and
Private Residences

Installed very simply and at reasonable cost.
Manufactured by
W. J. PERRY
591 Atlantic Avenue, Boston, Mass.
Local agents wanted. Correspondence solicited.

Steel Concrete

Kuhne's Sheet Metal Structural Element for Fire-Proof Construction. Floors. Stairs, Partitions, Furrings, Outside Walls, Roofs, Sidewalks, Trunk Sewers, Tanks, etc.

TRUSS METAL LATH COMPANY, Mfrs.
15-25 Whitehall St., New York

Dyes that "run," colors that fade, paints that discolor

are avoided by those that know. The only paints that do not discolor, the only paints that will preserve the beauty and the materials of a house, the only paints that will add permanent beauty of color to beauty of design, are paints based on

ZINC WHITE

Read our Practical Pamphlets
"The Paint Question."
"Paints in Architecture."
"Specifications for Architects."
"French Government Decrees."
Free to any address.

The New Jersey Zinc Co.
71 Broadway
New York

We do not grind zinc in oil. A list of manufacturers of Zinc White Paints will be furnished on request.

BOOKS:

"Italian Renaissance Doorways."

104 Plates: 10" x 14½".
In Cloth, $7.50.
In Portfolio, $6.50.

AMERICAN ARCHITECT COMPANY, Publishers.

BOOKS:

"Minor Fountains."

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

AMERICAN ARCHITECT COMPANY, Publishers.

Topographical Index of Advertisers.

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

CONNECTICUT.

Stamford.
Yale & Towne Mfg. Co. ..... [*Locks*

Waterbury.
Benedict & Burnham Mfg. Co. ... ["*Benedict-Nickel*" *Seamless Tubing for Exposed Plumbing*]

ENGLAND.

London.
Architect and Contract Reporter, The. [*Magazine*]
Building News, The ..... [*Periodical*]

ILLINOIS.

Chicago.
Chicago & Alton Railway ..... [*Railroad*]
Crane Co. ..... [*Valves*]
Northwestern Terra-Cotta Co. ..... [*Terra-Cotta*]
Taylor, J. W. ..... [*Photographs*]
Winslow Bros. Co., The ..... [*Ornamental Iron and Bronze*]

IOWA.

Council Bluffs.
Kimball Bros. Co. ..... [*Elevators*]

MAINE.

Rockport.
Rockland-Rockport Lime Co. ..... [*Lime*]

MARYLAND.

Baltimore.
Lafayette Mill and Lumber Co., The. [*Lumber*]
Valle & Young ..... [*Skylights*]

MASSACHUSETTS.

Boston.
American Painting & Decorating Co. ..... [*Painting and Decorating*]
Amer. Mason Safety Tread Co. ... [*Stair Treads*]
Bartlett Lumber Co. ..... [*Redwood Lumber*]
Blodgett Clock Co. ..... [*Clocks*]
Broad Gauge Iron Stall & Vane Works ..... [*Stable Fixtures*]
Burditt & Williams Co. ..... [*Hardware*]
Butcher Polish Co. ..... [*Floor Polish*]
Cabot, Samuel ..... [*Deafening Quilt*]
Cairns, Hugh [*Stone Carving and Modelling*]
Campbell, Walter M. ..... [*Perspectives*]
Carlisle, Pope & Co., E. A. [*Doors, Windows, Etc.*]
Columbian Marble Quarrying Co. ..... [*Marble Dealer*]
Couch Co., S. H. ..... [*Telephones*]
Craig, David ..... [*Ornament*]
Crawley & Son, George E. [*Tiles and Fireplaces*]
Dadmun, Leon E. ..... [*Photography (Architectural and Commercial)*]

MASSACHUSETTS.

Boston.
Edison Light ..... [*Electric Apparatus*]
Elston & Co., A. A. ..... [*Buildings Torn Down*]
Erickson Electric Equipment Co. [*Electrical Contractors*]
Folsom Snow Guard Co. ..... [*Snow Guards*]
Fowle, Herbert ..... [*Ornamental Plastering*]
Gallagher & Munro Co. ..... [*Plasterers*]
Gurney Heater Mfg. Co. ..... [*Hot-water, etc.*]
Heliotype Printing Co. ..... [*Art Printing*]
Jager Co., Charles J ..... [*Engineers*]
Johnson & Co., H. A. ..... [*Portable Ovens*]
Ledder, G. G. ..... [*Drawing Instruments*]
Makepeace, B. L. ..... [*Blue Prints*]
Marble Co., W. P. ..... [*Brass Finishers*]
Massachusetts Institute of Technology ..... [*School*]
Means & Thacher ..... [*Paints*]
McKay & Woolner [*Contractors and Builders*]
Morrill & Whiton Construction Co. [*Masons and Builders*]
Morris-Ireland Safe Co. ..... [*Safes*]
Morse & Whyte [*Artistic Wire & Metal Work*]
Olive, E. Percy ..... [*Photography*]
Parks & Jeeves ..... [*Blue Printing*]
Pearson Co., J. C. ..... [*Wire Nails*]
Perry, W. J. ..... [*Dumb-waiter*]
Redding, Baird & Co. ..... [*Stained Glass*]
Robey-French Co. ..... [*Photographic Supplies*]
Ryan William Curtis ..... [*Insurance*]
Samson Cordage Works ..... [*Sash-Cord*]
Shultz Belting Co. ..... [*Leather Belting*]
Simpson Bros. Corporation ..... [*Asbestos*]
Sleep, Elliot & King Co. ..... [*Modeling and Ornamental Plaster*]
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. ..... [*Skylights, Metal*]
Whittier Machine Co. ..... [*Elevators*]

Cambridge.
Goodhue, Harry Eldredge [*Memorial Windows*]

Palmer.
Flynt Building & Construction Co. [*Building Contractors*]

MICHIGAN.

Detroit.
Northern Engineering Works ..... [*Cranes*]

MISSOURI.

St. Louis.
Washington University School of Engineering and Architecture ..... [*School*]

NEW JERSEY.

Jersey City.
Dixon Crucible Co., Jos. ..... [*Graphite*]

Paterson.
Passaic Steel Co. ..... [*Structural Iron*]

Perth Amboy.
Perth Amboy Terra-Cotta Co. ..... [*Terra-Cotta*]

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*]

Mount Vernon.
Hartmann Bros. Mfg. Co. ..... [*Stamped Columns*]

N. Y. City.
American Tin Plate Co. ..... [*Roofing Tin*]
Associated Expanded Metal Co. ..... [*Expanded Metal*]
Atlas Cement Co. ..... [*Cement*]
Brown Hoisting Machine Co., The ..... [*Fireproofing*]
Chicago Clothes Dryer Works ..... [*Laundry Drying Machinery*]
Deane, E. Eldon ..... [*Colorist*]
Elevator Supply and Repair Co. ..... [*Electric Signals*]
Fisher & Co., Robert C. ..... [*Marble*]
Frink, I. P. ..... [*Reflectors*]
Hayes, George ..... [*Metallic Lathing*]
Hecla Iron Works ..... [*Ornamental Iron and Bronze*]
Herzog Teleseme Co. ..... [*Elevator Signals*]
Hitchings & Co. ..... [*Greenhouses*]
Jackson & Co., Wm. H. ..... [*Grates*]
Jenkins Bros. ..... [*Valves*]
Jones, T. W. ..... [*Vases*]
Kinnear-Hood Steel Co. ..... [*Radiators*]
Motoroff Exhauster Co. ..... [*Ventilation*]
Mott Iron Works, The ..... [*Iron Work*]
Neuchatel Asphalte Co. ..... [*Asphalt*]
New Jersey Zinc Co. ..... [*Zinc White*]
New York Belting and Packing Co., Ltd. ..... [*Interlocking Rubber Tiling*]
N. Y. Metal Ceiling Co. ..... [*Metal Ceilings*]
Okonite Co. (Ltd.) ..... [*Insulated Wire*]
Pitt, W. B. ..... [*Folding-Gates*]
Quimby, W. E. (Inc.) ..... [*Electric Pumps*]
Rider-Ericsson Engine Co. [*Hot-Air Engines*]
Sargent & Co. ..... [*Builders' Hardware*]

NEW YORK.

N. Y. City.
Smith Co., H. B. ..... [*Steam Heat*]
Smith & Co., Edward ..... [*Varnishes*]
Society of Beaux-Arts Architects, The [*School*]
Truss Metal Lath Co. ..... [*Metal Lathing*]
U. S. Mineral Wool Co. ..... [*Mineral Wool*]
Warren Chemical & Mfg. Co. ..... [*Asphalt Roofing*]
Williams, John ..... [*Wrought Metal*]
Yale & Towne ..... [*Hardware (Art*]

Rochester.
Cutler 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*]
Kinnear Mfg. Co., The ..... [*Steel Rolling-doors*]
Nelson Co., The C. T. ..... [*Capitals (Carved)*]
Ohio State University ..... [*School*]

Marietta.
Introstile and Novelty Co. ..... [*Introstile*]

Salem.
Mullins, W. H. ..... [*Architectural Metalwork*]

West Cleveland.
Cudell, F. E. ..... [*Traps*]

PENNSYLVANIA.

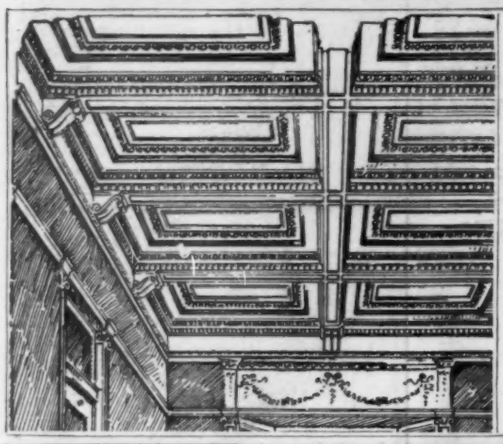
Ambler.
Keasbey & Mattison Co. ..... [*Magnesia Covering*]

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*]

Pittsburgh.
National Fireproofing Co. ..... [*Fireproofing*]
Standard Sanitary Mfg. Co. ..... [*Porcelain Enamelled Ware*]

RHODE ISLAND.

Providence.
Narragansett Machine Co. ..... [*Locker*]



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

CORRECT TIME

Fine Self-Winding Clocks for Office Buildings, Residences, Libraries, Churches, Etc.
Self-Winding Tower Clocks. No heavy weights. No stopping by storms.
Program Clocks and Time Systems for Schools, Public Buildings, Etc.

20,000 in Use — Write for Catalog

Blodgett Clock Co., 141 Franklin St., Boston

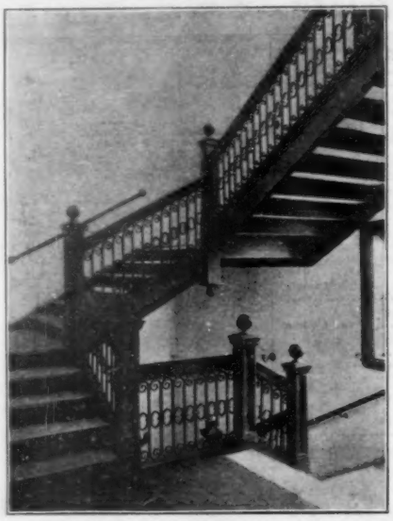
LOCKERS SEND FOR CATALOG NARRAGANSETT MACH. CO. BOX 24, PROVIDENCE, R. I. STEEL OR WOOD

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 CO.



Iron Stairs in the N. E. Conservatory of Music Building Boston, Mass.

Iron Stairs
Store Fronts
Balconies
Grilles
Railings
Elevator Cars
Elevator Enclosures
and
Ornamental Iron
Work for Buildings

Ornamental Iron Work in the above Building Furnished by

THE W. S. TYLER COMPANY

CLEVELAND, OHIO

CODE OF PRACTICE

FOR SUB-ESTIMATING AND SUB-CONTRACTING

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

ARTICLE I.

Obligation of Principal Contractor to Sub-Contractor.

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

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

* * * * * * * * * * *

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

ARTICLE II.

Award of Sub-Contracts.

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

ARTICLE III.

Penalty for not Awarding Contract to Lowest Sub-Bidder.

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

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

* * * * * * * * * * *

ARTICLE V.

Payments to Sub-Contractors.

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

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

* * * * * * * * * * *

ARTICLE VII.

Obligation of Sub-Contractor to Principal Contractor.

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

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

* * * * * * * * * * *

ARTICLE X.

Bids to Architects or Owners.

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

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

SUGGESTIONS.

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

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

A true copy.

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

How to Make a Weatherproof Roof

The manufacture of M F and U. S. Eagle N M (new method) Roofing Ternes is explained and described in our free booklet, **"A Fifty Year Roof,"** which we will send free to any address — even on a postcard request. This book also contains practical directions for making a weatherproof roof, and many formulas and tables of value to architects, roofers, builders and contractors.

MF Roofing Ternes

were more than half a century the best roofing material made in the world. Lately we have developed from it the wonderful

U. S. Eagle NM

(New Method)

a practically perfect terne, which will give even better service than M F. The free sample we send any architect, contractor, builder or roofer, will demonstrate the value of this new product

Our products are for sale by all first-class wholesale metal houses.

W. C. CRONEMEYER, Agent
Carnegie Building
Pittsburg, Pa.

AMERICAN TIN PLATE COMPANY
Battery Park Building
NEW YORK

American Architect Removed

TO 238 TREMONT ST., BOSTON

BRASS BRONZE COPPER STEEL **RADIATORS**

KINNEAR TRADE MARK HOOD

Kinnear Radiators

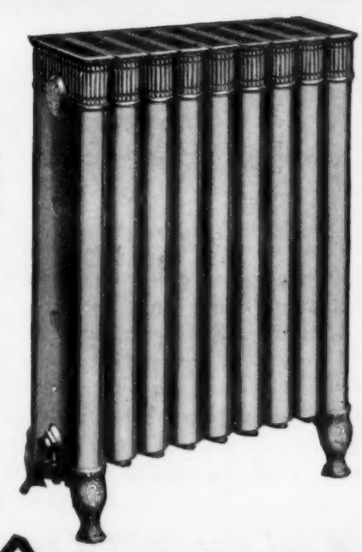
excel in artistic appearance, greatest heating surface in limited floor space, increased efficiency and decreased weight.

Durability Guaranteed

Beautifully finished to conform to any interior decoration.

Write for Catalogue No. 5

KINNEAR-HOOD STEEL CO.
141 Broadway, New York, N. Y.



EDISON LIGHT

The Edison Electric Illuminating Company of Boston has on view in its *EXHIBITION DEPARTMENT* at 1 and 2 Head Place, much novel, useful and interesting electrical apparatus.

This Department is open from 9 A. M. to 10 P. M., daily, during the Autumn months, and visitors are cordially welcome.

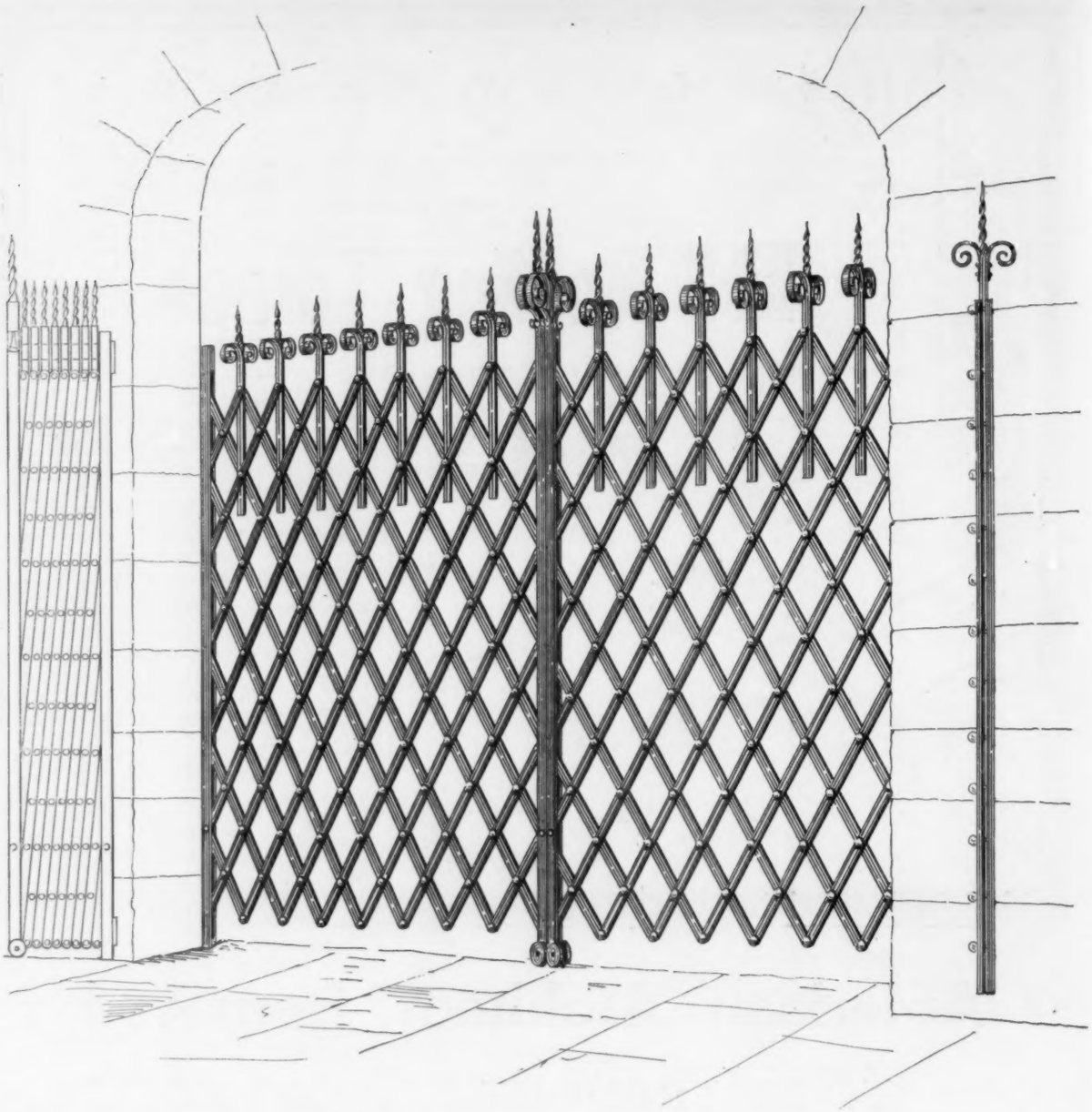
See the New Telautograph Machine for transmitting written messages to any distance.

See the New Edison Storage Battery

See the New Cooper-Hewitt Mercury Vapor Lamp

and many other illustrations of Electrical development

Enter from Boylston Street in rear of Masonic Temple



No. 1254 Pitt Folding Gate for Stores, Office Buildings, Theatres, etc.
Patent January 13, 1891.

The Wm. R. Pitt Composite Iron Works

111 Fifth Avenue

New York

We manufacture and make a specialty of all kinds of Folding Gates and Guards in Steel, Iron, Brass and Bronze for Store Fronts, Vestibules, Elevator Enclosures and Cars, Bank Vaults, Windows, Bridges, Ferryboats, Railway Cars, etc. Also Railings, Driveway and Entrance Gates, Window Grilles, Bank and Office Railings, Iron and Glass Vestibule and Storm Doors, Marquees, Wire Guards and Partitions, Iron Stairs, Shutters, Gratings, Lanterns, Brackets, Andirons, Special Hardware and all Artistic Wrought Work.

Estimates furnished upon receipt of particulars

STANDARD FOR RUBBER INSULATION.

OKONITE

TRADE MARK.

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

OKONITE INSULATED ELECTRIC LIGHT WIRES

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

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

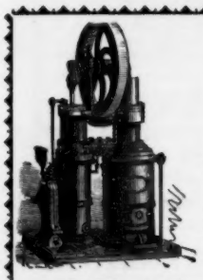
—SOLE MANUFACTURERS—

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

PAINT for Fences Bridges Roofs Smoke Stacks

WRITE FOR COLORS AND SPECIFICATIONS

Joseph Dixon Crucible Co., Jersey City, N.J.



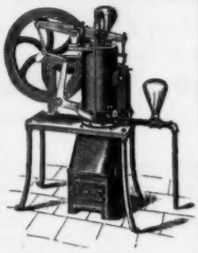
.. WATER ..

RIDER & ERICSSON HOT-AIR PUMPING ENGINES

If water is required for household use, lawns, flower beds or stable, no pump in the world will pump it so safely, cheaply and reliably. No danger, as from steam. No complication, as in gasolene engines. No uncertainty, as in windmills. Prices reduced. Catalogue "B" on application.

RIDER-ERICSSON ENGINE CO.

35 Warren Street, New York
239 Franklin Street, Boston
692 Craig Street, Montreal, P. Q.
40 Dearborn Street, Chicago
40 North 7th St., Philadelphia
Teniente-Rey 71, Havana, Cuba



ESTABLISHED 1868

THE "HAYES" METALLIC GLAZED STRUCTURES

SKYLIGHTS FIRE PROOF WIRE-GLASS WINDOWS

71-8TH AVE. NEW YORK.

·METAL LATHINGS ETC·

TRADE Everlasting MARK

READY MIXED RED PAINT

Guaranteed the cheapest, most durable and absolutely the best for Buildings, Structures and all work that needs paint.

MEANS & THACHER, 6-8 CUSTOM HOUSE ST., BOSTON

Sole Manufacturers. Sample and prices on request

QUICK AND EASY RISING HAND POWER, BELT POWER AND ELECTRIC

ELEVATORS

SEND FOR CATALOGUE

KIMBALL BROS. CO., 1014 9th St. Council Bluffs, Iowa.
KIMBALL ELEVATOR CO., 141 Vincent St., Cleveland, O.
New York Office, 120 Cedar St.

Mason Safety Treads

For STAIRS, WOOD, IRON, MARBLE or CEMENT, new or old

Hundreds of thousands in use

Am. Mason Safety Tread Co., Boston

Butcher's Boston Polish

Is the best finish made for FLOORS, Interior Woodwork and Furniture

Not brittle; will neither scratch nor deface like shellac or varnish. Is not soft and sticky like beeswax. Perfectly transparent, preserving the natural color and beauty of the wood. Without doubt the most economical and satisfactory POLISH known for HARD WOOD FLOORS.

For sale by dealers in Painters' Supplies.

Send for our FREE BOOKLET telling of the many advantages of BUTCHER'S BOSTON POLISH

The BUTCHER POLISH CO., 356 Atlantic Ave., Boston

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 CRAIG Cleanout and Dead-End Stopper

An Improvement in DRAINAGE CLEANOUTS

For Sale by all Jobbers

Manufactured by

DAVID CRAIG, 70 BROAD STREET BOSTON, MASS.

"HITCHINGS"

PERFECT SASH OPERATING APPARATUS

A line of heavy sash 100 feet in length can be easily operated from one point with our Patented WORM and GEAR. Used by the leading Railroads, Factories, Mills, Greenhouses, etc. Send four cts. for illustrated catalogue.

HITCHINGS & CO.

HORTICULTURAL DESIGNERS and BUILDERS

Established 1844

233 MERCER STREET - - NEW YORK

BOOKS:

"Monumental Staircases."

40 Gelatine Plates on bond paper, 9" x 11".
In Envelope. Price, $5.00.
AMERICAN ARCHITECT COMPANY, Publishers.

Metal Skylights

that positively will not leak, drip, sweat or burn; self-ventilating. All about them in our Illustrated Catalogue—free for the asking. Shall we mail it to you?

E. VAN NOORDEN CO.

944 Massachusetts Avenue

BOSTON, MASS.

JENKINS IMPROVED AUTOMATIC AIR VALVES

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

JENKINS BROTHERS, New York, Boston, Chicago, Philadelphia

Send for Samples

SAMSON SPOT CORD

is our Extra Quality SASH CORD

The colored spot is our trademark

Samson Cordage Works, Boston, Mass.

WARREN'S TRINIDAD ASPHALT

ROOFING **"ANCHOR BRAND"** PAVING

THE BEST MATERIAL FOR

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

CRANE VALVES

ESTABLISHED 1855

ELECTRIC HOUSE SERVICE PUMPS

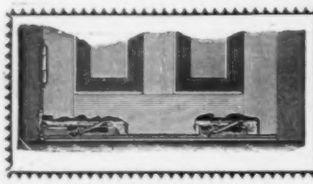
WILLIAM E. QUIMBY

[Incorporated]

141 Broadway, New York

CHICAGO
EDWARD YEOMANS
1141 MONADNOCK BLDG.

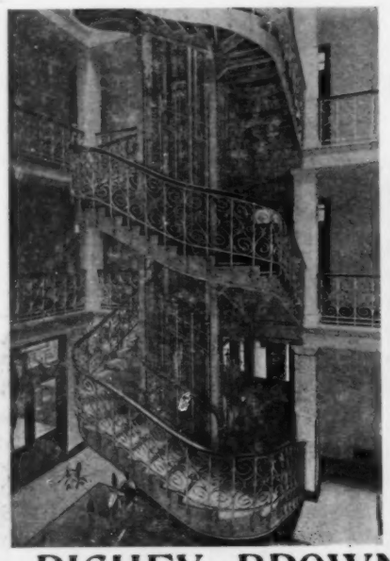
NEW ORLEANS
SAFETY ELECTRIC MFG. CO.
303 MAGAZINE ST.



Just Try the Introstile.

It never gets out of order. Keeps out draughts, rain, snow and dust. A great fuel economizer.
Send for circular.

The Introstile & Novelty Co.
Marietta, Ohio.



Architectural Cast and Wrought { **Iron, Bronze & Brass**

STAIRS
ELEVATOR ENCLOSURES
STORE FRONTS
GRILLES
ENTRANCE DOORS
BANK COUNTER SCREENS
MARQUEES
HAMMERED LEAF WORK
Etc., Etc.

Iron staircase and balcony railing, St. Luke's Hospital, Ernest Flagg, Architect.

RICHEY, BROWNE & DONALD

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

ASPHALT FLOORS, ROOFS,

SIDEWALKS AND CARRIAGE-WAYS

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

Laid with VAL de TRAVERS ROCK ASPHALT,

DURABLE, FIREPROOF AND IMPERVIOUS.

For estimates and list of works executed, apply to

THE NEUCHATEL ASPHALT CO., Limited

265 Broadway - - - - New York.

New York Metal Ceiling Co.

Interior Decorators

In Steel, Stucco and Enameled Metal Finishes

ASK TO SEE ENAMETILE

A perfect substitute for Encaustic Tiling at about *one-half the cost*

Main Factory and Show Rooms
537-541 WEST 24TH STREET, NEW YORK, N. Y.
Boston Office, 19 Pearl Street

"CONSERVO"

WOOD PRESERVATIVE

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

SAMUEL CABOT, Sole Manufacturer, BOSTON

E. ELDON DEANE,

Architectural Colorist and Draughtsman.

63 Seymour Building, Fifth Ave., cor. 42d St.
New York City.

Conservatories, Greenhouses, Vineries, Etc.

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

LORD & BURNHAM CO.,

1133 Broadway - - - New York City.

FOLSOM NEW MODEL SNOW GUARD

Specified by leading architects to hold the snow on all pitch roofs, entirely obviating all chance of injury to life or to the property it protects. The only perfect device for this purpose. For old and new roofs, slate, shingle, tile or metal.

THREE HISTORIC BUILDINGS
Faneuil Hall
Old South Church
King's Chapel
Boston

Are Fitted with this Snow Guard

FOLSOM SNOW GUARD CO.

143 Federal Street BOSTON, Mass.

Builders' Insurance

FIRE LIABILITY BOND

Broadest Forms. Lowest Rates

WILLIAM CURTIS RYAN
18 Central Street, Boston

Telephone, 4558 Main

BURDITT & WILLIAMS CO.

INVITE ATTENTION TO THE

FINE HARDWARE

On Exhibition in their

New and Spacious Hardware Store

4 High, cor. Summer St., Boston

Unique Reception and Sample Room for the use of Architects and their clients.

As laid by us in the Billiard-room of the Larchmont Yacht Club, Larchmont, N. Y.

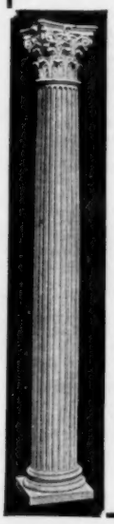
INTERLOCKING RUBBER TILING

Noiseless, non-slippery, waterproof, sanitary, durable. A perfect floor for offices, banking-rooms, court-rooms, school-rooms, libraries, hospital wards, cafés, bath-rooms, billiard-rooms, vestibules, halls, church aisles, piazzas, etc. Laid directly on wood, stone, concrete or iron. Call or write.

New York Belting & Packing Co., Ltd.

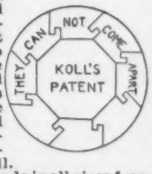
New York . . . . . 25 Park Place
Philadelphia . . . . . 724 Chestnut St.
Chicago . . . . . 150 Lake St.
St. Louis . . . . . 411 No. 3d St.
San Francisco . . . . . 603-7 Mission St.
London, Eng. . . The B. & S. Folding Gate Co., 19 to 21 Tower St., Upper St. Martin's Lane, W. C.
Baltimore . . . . . 41 South Liberty St.
Boston . . . . . 232 Summer St.
Indianapolis, Ind. . 229 South Meridian St.

Koll's Patent Lock Joint Staved Columns



are particularly well adapted for outdoor use. Many of the attractive residences shown in this and other publications are using columns furnished by us for Porch and Pergola Work.

Our well equipped cabinet department permits us to furnish these columns and pilasters made of the various hard woods for interior decoration as well.



They are made in all sizes from 5 in. to 42 in. diameter and proportionate length.

Send for illustrated Catalogue G, showing the various styles of columns, caps and bases manufactured by us.

HARTMANN BROS. MFG. CO.

Mt. Vernon, U. S. A.

New York Office: Townsend Building, 1123 Broadway
Western Factory: Henry Sanders Co., 77-85 Weed St., Chicago, Ill.

HECLA IRON WORKS

Driveway Gates and Railing
Residence of Bayard Thayer, Lancaster, Mass.
Guy Lowell, Architect

Ornamental Bronze and Iron Workers

STAIRS, RAILINGS GATES, ELEVATOR ENCLOSURES AND CARS LAMPS, MARQUEES ETC., ETC.

"Hecla Fire-proofing"

Combined Metal with Fire-proof Material for Windows, Doors Column Covers, Stair Treads, etc.

OFFICE AND WORKS
North 11th and Berry Streets
Brooklyn Borough
NEW YORK CITY

NEW ENGLAND OFFICE, 166 DEVONSHIRE ST., BOSTON, MASS.

The STURTEVANT SYSTEM of HEATING and VENTILATION

by a forced circulation of warm air is

ADAPTED TO ALL CLASSES OF BUILDINGS

Heats and Ventilates in Winter
Cools and Ventilates in Summer

The same apparatus does both

Send for Catalogue A 112 A

B. F. STURTEVANT CO., Boston, Mass.

NEW YORK PHILADELPHIA CHICAGO LONDON

Designers and Builders of Heating, Ventilating and Mechanical Draft Apparatus, Steam Engines and Electrical Machinery

342

The American Architect and Building News

IS PUBLISHED EVERY SATURDAY BY THE

AMERICAN ARCHITECT CO.,

238 Tremont St., Boston, Mass.

Advance Subscription Rates:

Regular Edition, $6.00 per year; six months, $ 3.50

[Foreign Postage, $2.00 Extra.]

International Edition, per year in advance 16.00
" " quarterly " 18.00

ALSO PUBLISHERS OF

Topical Architecture

(Monthly)

Subscription . . $3 per year

☞Payment should be made to American Architect Co. direct, either by draft or post-office order.

Address all business correspondence to the publishers direct.

Advertising Agents:

New York City: —
H. M. Carleton, Temple Court, 5 Beekman St.

Agents at Large: —
M. F. Dyer, 238 Tremont St., Boston, Mass.
F. P. Spokesfield, 238 Tremont St., Boston, Ma

Advertising Rates: For "wants" and "proposals," 15 cents per line [8 words to the line], each insertion. 50 cents the least charge. Other rates on application.

New Advertisements.

HECLA IRON WORKS (New York, N. Y.), Ornamental Bronze and Iron Workers. Page ix.
MOTOROFF EXHAUSTER CO. (New York, N. Y.), Ventilation. Page xiv.

See last or next issue for the following advertisements: —

Chicago & Alton Railway.
Cadell, F. E.
Charles J. Jager Co.
Joruth.
Keasbey & Mattison Co.
Morse, Williams & Co.
Northern Engineering Works.
W. M. Ostrander.
J. C. Pearson Company.
Standard Sanitary Mfg. Co.
Thorn Co., J. S.

ARCHITECTS' REMOVALS, Etc.

THE firm of Barker & Nourse, architects, announce that they will dissolve partnership by mutual consent December 31, 1903, and will continue in practice individually at the following addresses: Albert A. Barker, architect and solicitor of patents, 425 Main St., corner front, Worcester, Mass. Walter B. Nourse, architect, Room 316, 306 Main St., Day Building, Worcester, Mass. 1462

THE firm of Sprackling & Matzinger, architects, have dissolved. A. E. Sprackling will continue business at 520 Citizens Building, Cleveland, O. 1462

WANTED.

DRAUGHTSMAN. — Wanted, draughtsman fully competent to work out high-class designs for all classes of buildings, ranging in cost from $10,000 to $75,000, after being given requirements, also good on general office work. A. W. Fuller, W. B. Pitcher, architects, Albany, N. Y. 1462

WANTED.

POSITION. — Situation wanted as assistant or first-class draughtsman by architect graduate (29); 9 years' experience, mostly detailing, designing, estimating steel and trussed concrete work for buildings. Go anywhere. Address "Designer," care *American Architect*. 1462

WANTED.

DESIGNER. — Wanted, a first-class designer in ornamental iron and bronze. Permanent position to the right man. State salary expected, experience and by whom employed in this line of work. Address "Iron Designer," this office. 1463

WANTED.

POSITION. — Wanted, a position by a first-class draughtsman, designer, detailer and colorist. Address "Detailer," care of *American Architect*. 1462

FOR SALE.

A NEW Williams Typewriter, never been used, $100 machine, will sell for $70 cash. Address "Typo," *American Architect* office. t.f.

BUILDING INTELLIGENCE.

(Reported for the American Architect and Building News.)

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

ADVANCE RUMORS.

Alden, N. Y. — It is reported that English and American capitalists are to build a $500,000 sanitarium here. F. C. Caulkins, of Buffalo, is to be given the contract.

Altoona, Pa. — A large building to cost $100,000, which is to be used as an industrial department of the High School, will be erected at 6th Ave. and 15th St., which lot has just been purchased by the School Board for $25,000.

Beloit, Wis. — Schneidberger Bros. have secured the contract to erect the $50,000 Carnegie Library building.

Boston, Mass. — Property on Park Sq., running through to Carver St, has been sold, and it is reported that the present buildings will be supplanted with a handsome new building in the near future.

Alterations from plans by Loring & Phipps, will be made in the property at Nos. 606 to 610 Atlantic Ave., corner of Tileston St, owned by the Tileston estate.

Bridgeport, Conn. — The city-hall remodelling committee has authorized Architect Jos. W. Northrop to prepare working plans for the remodelling project. The plans call for a complete change of the interior and the addition of another floor. The first floor is to be lowered several feet, the second floor will also be lowered. The committee is planning to complete the remodelling and install the interior fixtures at a total cost of not more than $100,000.

Brookline, Mass. — Four more handsome brick and stone apartment-houses are to be erected here from plans by Architect W. H. Andrews, the owner being P. B. Wadsworth. Two of the houses are to be on the corner of Beacon and Winchester Sts., and contain 16 apartments, costing above the land about $60,000. The other two buildings will be constructed of brick and stone and will occupy the site on Beacon St., near the corner of Centre St. These will be four stories high each and containing 16 suites. The total cost above the land will be about $60,000. Work on the foundations of the above buildings has already been begun.

Buffalo, N. Y. — The Larkin Soap Co. will erect an eight-story brick building, 152′ x 200′, on Seneca St., near Larkin, costing $270,000.

Burlington, Ia. — It is reported that St. Cecilia's Academy will erect a three-story brick and stone academy building in the spring. Address Rev. Fr. McCormick.

Cedarburg, Wis. — An English Lutheran Church is to be erected here. A site has been selected.

Cedar Rapids, Ia. — Proposals for the erection of the Carnegie Library will be received in January. F. F. Dawley, Vice-president Library Board. Cost about $75,000.

Chicago, Ill. — It is said that the Case & Martin Co will enlarge its pie bakery at Wood and Walnut Sts. by a three-story fireproof addition, 100′ x 125′, to cost $50,000. The present plant is also to be remodelled.

The general contract for the new Chicago Savings Bank Building, to be erected on the Otis leasehold of the school-fund property at the southwest corner of State and Madison Sts., has been let to Wells Bros. for $500,000. The building will be twelve stories high. Work in demolishing the present buildings on the site will begin May 1.

Nelson Morris & Co. will start work at once on a big ice plant on the shore of Lake Calumet, near Pullman, to consist of 12 storage houses, each 30′ x 125′ in ground dimensions and 42 feet high, a two-story boarding-house, 32′ x 100′, and an engine and boiler shed, 40′ x 50′. The total cost is estimated at $50,000.

BUILDING INTELLIGENCE.

(*Advance Rumors Continued.*)

L. M. Mitchell has designed 2 three-story buildings, 70′ x 76′ and 40′ x 56′ respectively, which are to be built at 72-74 Forty-second St. for Mathias Walker at a total cost of $71,000. The same architect has designed a three-story building 66′ x 150′, to be built on the east side of Calumet Ave., north of 50th St., for James C. Cockburn for $60,000.

Swift & Co. intend to rebuild their fertilizer plant, which was recently burned. Details not decided.

Cincinnati, O. — All of the leading architects of the United States will be asked to submit plans for the proposed new million-dollar hospital for this city. The commissioners propose to employ two draughtsmen to prepare sketches of what they desire the new hospital to include, and copies of these sketches are to be sent to the principal architects of the country, with a request that they submit plans for the new hospital in accordance with them to the Commissioners. Prizes will be offered for the three best plans and they will be used by Architects Drach & Hake, of the commission, in preparing working plans for the hospital buildings.

Cleveland, O. — The county building commission met recently to consider the question of starting work on the new court-house at an early date. County Clerk Salen proposes that the building shall cost less than the original estimate. He thinks $1,000,000 to $2,000,000 is enough. The preliminary sketches of the architects were examined.

Colorado Springs, Col. — The plans presented by Calvin Keissling, of Boston, in competition for the $60,000 Carnegie Library Building have been accepted by the committee. This structure will be 75′ x 118′, one story high.

Dayton, O. — A new Y. M. C. A. building will soon be erected here, costing $350,000. It will be commenced as soon as the money is pledged.

Duluth, Minn. — Plans have just been completed whereby the local lodges will have a new home to cost $100,000 to be erected early next spring. The building committee has purchased a site at 2d Ave. east and 2d St.

Eddyville, Ky. — The Bedford-Bowling Green Stone Co., of Bowling Green, has the contract to furnish the stone for the new cell house to be erected at the branch penitentiary here, for $35,000.

Faribault, Minn. — A new wing will be built to the hospital at the State School for Feeble Minded, and a ward for tuberculosis pupils. The appropriation is $40,000.

Gardner, Mass. — A firm of Worcester builders have the contract to build the new administration building and hospital for women at the State Colony for the Insane. The proposed structures will be of brick and will cost $93,000.

Grand Forks, N. D. — It is stated that plans for the federal building will be out in a few weeks and bids will be taken during the winter.

Harrisburgh, Pa. — The Masonic lodges in the city are contemplating the erection of a $60,000 temple.

Jersey City, N. J. — Plans have been drawn by Fred Long, 91 Montgomery St., for the City Hospital according to the block system instead of the pavilion idea, as at first proposed. As soon as plans have been completed, bids will be asked; cost not to exceed $200,000.

Jewell Junction, Ia. — Jewell College was burned recently with a loss of $25,000. Will be rebuilt at once.

Lexington, Ky. — The Southern Stave & Tie Co. contemplates erecting a new plant at an early date.

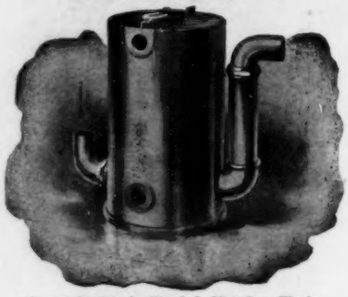
Removal to the largest and finest equipped Blue Print Establishment in the world.
SPAULDING PRINT PAPER CO.,
44 Federal St., Boston, Mass.

W. P. Marble & Co.
BRASS FINISHERS
15 Chardon St., Boston
Telephone Connection
Estimates furnished for all lines of Brass Work.

J. W. TAYLOR'S PHOTOGRAPH SERIES OF AMERICAN ARCHITECTURE
324 Dearborn Street, CHICAGO, ILL.

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

THE J. L. MOTT IRON WORKS
88 Beekman St., New York, N. Y.
The Tucker Improved Grease Trap
For use in Residences, Hotels, Clubs, etc.
Circulars may be had on application.



Copyright, 1902, by The J. L. Mott Iron Works.
BRANCHES
110 Fifth Ave., New York — 911 Locust St., St. Louis
378 Boylston St., Boston — Flood Bldg., San Francisco
1128 Walnut St., Philadelphia — 135 Adams St., Chicago

CRANE FITTINGS
ESTABLISHED 1855

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

Architects, Attention!

WE know your clients will be pleased and satisfied if you will recommend and specify **CALIFORNIA REDWOOD** for both **Exterior** and **Interior** Finish. Its **Beauty, Durability** and **Clearness** are forceful reasons why it should be used. It will last for centuries. When once in place stays put. The Lumber must be used in order to fully appreciate its wonderful, exclusive and matchless properties.

A large assortment always on hand. Stock right, quality right, prices right. What more can any one ask?

Bartlett Lumber Company

Room 409, 53 State St.
Telephone 1911 Main

BOSTON, MASS.

ROCKLAND-ROCKPORT LIME COMPANY

Plants Located at Rockland, Rockport and Thomaston, Maine

Manufacturers of the best grade of "State of Maine Lime." . . . . . .
Rail shipments made direct from works to any point desired . . . . . .
Prompt shipments also made in cargo lots to any port on the Atlantic coast . . . . . .

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

MAIN OFFICE . . . . . ROCKLAND, MAINE
New York Office . . . Greenpoint Avenue and Newtowne Creek, Brooklyn, N. Y.

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

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

Little Rock, Ark. — The School Board has adopted plans prepared by Herbert E. Hewett, of Peoria, Ill., for a 12-room brick school, to cost $25,000.

Los Angeles, Cal. — Contracts will be let January 1st for the erection of a five-story office-building at the corner of Spring and 6th sts. Max Goldschmidt, Fred A. Barman and John A. Pirtle are the owners. The building will cost upward of $85,000. Plans by Edward Neiser.

The German Hospital is stated to have received a bequest of $50,000, with which to erect a new building. Dr. Jos. Kurtz, Pres.

Mammoth Hot Springs, Wyo. — A gymnasium is to be erected at Fort Yellowstone. Bids will be taken early in the spring.

Minneapolis, Minn. — The State Board of Control will erect a new bacteriological laboratory at the State University, at a cost of $60,000, and will install heating and electric plants to cost $10,000.

Montreal, Que. — Work on the new Y. M. C. A. Building at McGill University will begin in the fall.

At a meeting held in Maisonneuve, the following gentlemen were elected trustees for the erection of the new church, which is to be built at a cost of $125,000; Mayor Blean, Aldermen W. Richer and H. Desjardin and M. J. Eerement.

Newton, Mass. — Arrangements have been completed for a block of 30 frame dwelling-houses to be erected in Boylston St., Newton, for M. C. Hayes of Boston. G. Prescott Connor, of Roxbury, has prepared the plans. The houses will be constructed of brick, with stone trimmings; will be two stories high, and will cost $90,000 above the land.

New York, N. Y. — The city has purchased from the trustees of St. John's College for $80,000 a site for the new Fordham Hospital, which will cost $600,000. The site fronts on Southern Boulevard and on Crotona Ave. Plans provide for a main building of Harvard brick, with limestone trimmings, with two wings four stories high, a dormitory for nurses north of the main pavilion, a power-house at the northwest corner of the grounds, and an ambulance house on the southwest corner. Work will begin next February.

The old Loomis mansion, at 10 W. 34th St., occupied by the City Club, will be vacated by that organization on January 1, and will be torn down to make way for a new eleven-story business building which has been leased for a term of 21 years to the firm of Revillon Frères, furriers.

Pawtucket, Mass. — Hale, Morse & Atherton, associate architects, have won the competition for the drawing of plans for a Y. M. C. A. building here. It will be a five-story stone and brick structure, to cost about $100,000.

Pittsburgh, Pa. — Everything is now in readiness for the erection of the new branch library building at Lang and Hamilton Aves., Homewood, which is to cost between $75,000 and $100,000.

Rhinelander, Wis — It is reported that a $50,000 hotel will be erected here in the spring.

Richmond, Va. — The House and Senate are stated to have passed a bill appropriating $31,000 for the purpose of erecting 2 additional wards at the University of Virginia Hospital.

Rockland, Mass. — The corner-stone of the memorial library building was laid recently. The work of construction will be pushed during the winter, and it is expected that the building will be completed by May.

San Francisco, Cal. — Eames & Young, of St. Louis, have been successful in the competition for the new federal building to be erected here. They are to receive 5 per cent of the amount appropriated for the work, which is $1,500,000.

Seattle, Wash. — It is stated that plans have been prepared for a larger building for Seattle Seminary than was provided in the original plans. It will be 62′ x 104′, two-story, attic and basement, of pressed brick, with all modern improvements. Cost, $30,000.

Sioux Falls, S. D. — C. Lepper, of Blue Earth, Minn., was awarded the contract to construct the store building for the Bee Hive Co., 44′ x 125′, four-story, of steel and brick. Cost, $40,000.

South Boston, Mass. — Charles P. Mooney has sold for the estate of Abbie Tileston the property numbered 419 and 421 W. 2d St. Samuel W. Johnson is the purchaser, at private terms. Mr. Johnson will erect two modern three-flat houses.

St. Cloud, Minn. — A large wing is to be added to the cell room at the State reformatory.

St. Peter, Minn. — The main building of the State Hospital is to be reconstructed. Cost, $40,000.

Syracuse, N. Y. — The County Commissioners will receive proposals in January for erecting a $1,000,000 court-house here.

Tacoma, Wash — The Northern Pacific Beneficial Association will erect a 50-room brick and stone hospital. Cost, $100,000.

Terre Haute, Ind — The Trustees of the Indiana Normal School have accepted plans of J. F. Alexander & Sons, of Lafayette, for a $60,000 training school, and it is stated bids will now be solicited, work to begin April 1.

Van Wert, O. — Plans have been drawn by E. O. Fallis, The Nasby, Toledo, for a five-story business and lodge hall for the Van Wert Home Guards of America; estimated cost, $60,000.

Wahpeton, N. D. — An Indian agricultural school is to be established near this city. An appropriation of $100,000 has been made for erection and equipment.

Washington, D. C. — It is reported that the Senate Committee on Public Buildings and Grounds has authorized Chairman Fairbanks to make a favorable report on the bill making an appropriation of $7,000,000 for the purchase of a site and erection of a building for the Department of State, Justice and Labor. The purchase of the old Corcoran Art Gallery site or any other suitable square in its vicinity is directed.

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
For Fireproofing and Concrete Construction
ASSOCIATED EXPANDED METAL COMPANIES Room 1205, 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, 31 State St. New York Office, 5 Nassau St.

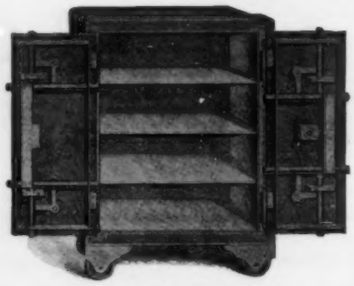
EXPANDED METAL LOCKERS

and wardrobes are far superior to wood because they are easy to clean. Plentiful use of water will not injure them as the meshes have no joints or crevices to retain moisture. They are open on all sides to admit light and air and are strong enough to resist any human pressure brought to bear.

For additional particulars write

MERRITT & CO.
1011 Ridge Avenue
PHILADELPHIA, PA.

MORRIS-IRELAND SAFE CO.
64 SUDBURY STREET, BOSTON



FIRE-PROOF SAFES
HOUSE SAFES
BURGLAR-PROOF SAFES
POST-OFFICE SAFES
RAILROAD SAFES
VAULT DOORS
BANK SAFES

SILVER SAFES FOR RESIDENCES

MORRIS-IRELAND SAFE CO.
64 SUDBURY ST., BOSTON
Telephone 557 Haymarket

"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 Company . . . . . Publishers

Books:

"Cathedral of St. John the Divine."
Designs submitted in the First Competition.
57 Plates, folio. Price, $5.00.
American Architect Company.

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

Whatcom, Wash.—The new Y. M. C. A building will be four-story, of brick and Chuckanut stone. There will be a swimming pool, shower baths, gymnasium, running track, auditorium, etc.

COMPETITIONS.

GOVERNMENT BUILDINGS. [At Montevideo.]
Prizes are offered for the best sets of plans for new Government Buildings here. For further particulars, apply to Henry S. Northrop, 40 Cherry St., New York City. 1463

PROPOSALS.

HOSPITAL. [At Fort Fremont, S. C.]
Fort Fremont, S. C. Sealed proposals will be received here **until January 14, 1904**, for construction, etc., of brick hospital building. Information furnished on application. QUARTERMASTER. 1462

BUILDING. [At Ord Barracks, Cal.]
San Francisco, Cal. Sealed proposals will be received here **until January 12, 1904**, for construction of frame gymnasium and post exchange building (including plumbing and electric wiring) at Ord Barracks, Cal. Information furnished on application to WM. S. PATTEN, A. Q. M. G., chief Q. M. 1462

LIBRARY. [At Shenandoah, Ia.]
Proposals will be received **until January 12** for erecting a library. THOMAS H. READ, President Public Library Board. 1462

PROPOSALS.

PAVING. [At Belleville, Ill.]
The Board of Local Improvements of the city of Belleville, Ill., will receive bids for paving with brick and setting stone curbing **on January 20, 1904**, for W. Main St. and S. Illinois St., also for paving with asphalt and constructing combined granitoid curb and gutter on Race St., 2d St. and 3d St. Plans and specifications can be seen at the office of the City Clerk of Belleville, Ill. FRED J. KERN, President B. L. I. 1463

SCHOOL. [At Narberth, Pa.]
Bids will be received **January 18** by the School Board for erecting a two-story brick school. Willis G. Hale, architect, 1524 Chestnut St., Philadelphia. DAVID J. HUNTER, Sec'y. 1463

STEEL WORK. [At Washington, D. C.]
Sealed proposals will be received at the Bureau of Yards and Docks, Navy Department, Washington, **until January 16, 1904**, for furnishing all and erecting part of steel work for building 116, navy yard, Washington, D. C. Approximate quantity,—pounds. Plans and specifications will be furnished by the chief of bureau upon deposit of $5 as security for their return. MORDECAI T. ENDICOTT, Chief of Bureau. 1463

PUMPING AND STORAGE PLANT. [At Fort McKinley, Me.]
Office of the Constructing Quartermaster, U. S. A., 185 Middle St., Portland, Me. Sealed proposals will be received at this office **until January 22, 1904**, for the construction of a pumping and storage plant at Fort McKinley, Me. Information, specifications and blanks furnished on application. CAPTAIN A. W. YATES, Quartermaster, U. S. A. 1463

PROPOSALS.

ELECTRICAL EQUIPMENT. [At Camden, N. J.]
Office of the Camden County Building Committee, Court-house, Camden, N. J., December 22, 1903. Sealed proposals will be received at the office of the Camden County Building Committee **until 2 o'clock P. M., on Monday, the 1st day of February, 1904**, and then opened, for the mechanical and electrical equipment, including boilers, heating and ventilating system, elevators, engines, electric generators, motors, electric wiring, conduits, etc., to be installed in the Camden County Court-house, at Camden, N. J., in accordance with the drawings and specifications, copies of which may be had on and after December 28, 1903, by application at the office of the architects, Rankin, Kellogg & Crane, 1012 Walnut St., Philadelphia, Pa. All applications must be accompanied by a certified check, in amount $100, which will be held by the architects until return of the drawings and specifications, upon receipt of which the amount of certified check will be returned less the sum of $15, which will be retained as a charge to cover cost of duplication and printing. Camden County Building Committee, IRVING BUCKLE, Chairman. 1463

STONE BUILDING. [At Chilocco School, O. T.]
Department of the Interior, Office of Indian Affairs, Washington, D. C. Sealed proposals will be received at the Indian office **until January 19, 1904**, for furnishing the necessary materials and labor required to construct and complete an addition to the boys' dormitory and a laundry, both of stone, and with plumbing, electric light and steam heat, at the Chilocco School, O. T., in strict accordance with the plans, specifications and instruction to bidders, which may be examined at this office, and at the school. For further information apply to S. M. McCowan, superintendent, Indian School, Chilocco, O. T. W. A. JONES, Commissioner. 1463

CHARCOAL IRON ROOFING PLATES

Guaranteed Pure Iron Base
Coated by Palm Oil Process
Sheets Stamped and Resquared

517 Arch St., Philadelphia
247 Water St., New York

MERCHANT & CO., Inc.
MANUFACTURERS

14 Michigan St., Chicago
584 Flushing Ave., Brooklyn

CONTRACTS TAKEN THROUGHOUT THE UNITED STATES

Estimates Rendered for all Kinds of Painting and Decorating
Original Designs and Colored Sketches Furnished for the Decoration of Residences Churches, Clubs Theatres Hotels, etc.

Telephone Main 3552

American Painting & Decorating Co.
A·P·D·Co.
BOSTON STONE 1737. TRADE MARK
PAUL WASHBURN, Proprietor.
126 & 128 MILK ST.
(ENTIRE BUILDING.)
BOSTON.

PROPOSALS.

Treasury Department, Office of the Supervising Architect, Washington, D. C., December 29, 1903. Sealed proposals will be received at this office until 3 o'clock P. M. on the 11th day of February, 1904, and then opened, for the construction (except heating apparatus) of the U. S. Post-office and Court-house, Waterloo, Iowa, in accordance with drawings and specification, copies of which may be had at this office or the office of the Postmaster at Waterloo, Iowa, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1463

HYDRO-ELECTRIC STATION. [At Walla Walla, Wash.]

Proposals will be received **until February 15** for the proposed $250,000 hydro electric station on Walla Walla River for the Northern Western Gas and Electric Company. SAMUEL STORROW, engineer, Douglas Building, Los Angeles, Cal. 1463

JAIL AND RESIDENCE. [At Towner, N. D.]

Proposals for erecting a jail and sheriff's residence, including steam-heating apparatus, steel and iron work, will be received **until January 25** by J. CHRISTIANSEN, county auditor. 1463

PORTLAND CEMENT. [At Fort Wool, Va.]

Engineer Office, U. S. Army, Room 2, Custom-house, Norfolk, Va. Sealed proposals for furnishing and delivering Portland cement, broken stone, sand and lumber, at Fort Wool, Va., will be received here **until January 16, 1904.** E. EVELETH WINSLOW, Capt. Engrs. 1463

CONSTRUCTIONAL IRONWORK. [At Fort Morgan, Ala.]

Fort Morgan, Ala. Sealed proposals will be received **until January 20, 1904,** for constructional ironwork, cages, cells, etc., for guard-house here. Specifications and plans furnished on application. A. D. RAYMOND, Q. M. 1463

LIBRARY. [At Old Town, Me.]

Sealed proposals will be received at this office **until the 1st day of February, 1904,** for the construction of a public library building, according to drawings and specifications made by Albert R. Ross, architect, 542 Fifth Ave., New York City, copies of which may be had on request to the President of the Trustees at his discretion and are on file at the office of the architect. 1464

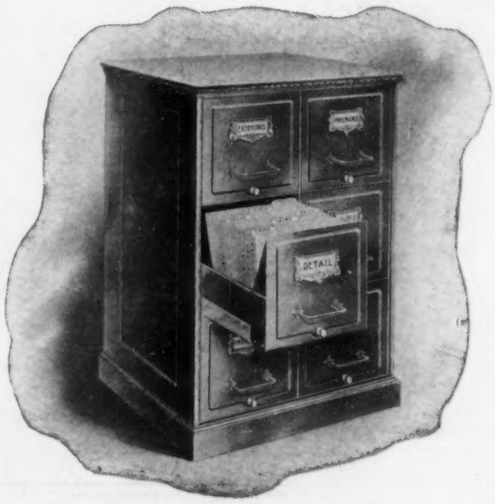
Treasury Department, Office of the Supervising Architect, Washington, D. C., December 17, 1903. Sealed proposals will be received at this office until 3 o'clock P. M. on the 7th day of January, 1904, and then opened, for the low pressure steam heating and ventilating apparatus, complete in place, for the U. S. Custom-house and Post-office building at Newport News, Virginia, in accordance with drawings and specification, copies of which may be had at this office or at the office of the Superintendent at Newport News, Virginia, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1462

"COHESIVE CONSTRUCTION."

An Essay on the Theory and History of Cohesive Construction.

By RAFAEL GUASTAVINO, Architect.

Price, $1.25.



STEEL FILES FOR ARCHITECTURAL PLATES
Incombustible, convenient, durable and finished.
Send for Booklet 542, illustrating new styles.

ART METAL CONSTRUCTION CO.
154 Gifford Ave., Jamestown, N. Y.

A NEW SYSTEM OF VENTILATION

THE MOTOROFF SYSTEM

In Europe over 5,000 of our skylight ventilators were sold last year and every other system was surpassed.

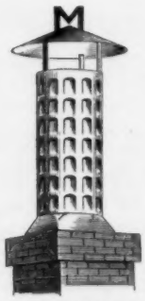
Patented in all Countries
TRADE MARK: "MOTOROFF."

MOTOROFF
Adjustable Skylight Ventilator.
The most suitable Ventilator for buildings, where light and efficient but adjustable ventilation with strong exhausting effect is required.

Either of these ventilators is applicable to any demand for ventilation.

Indispensable for all Industrial Buildings

Far Cheaper than any Other System



MOTOROFF
Tubular Ventilator
The most suitable Ventilator for smaller openings, where no light but effective ventilation and vigorous upward draught is required. Also for chimneys.

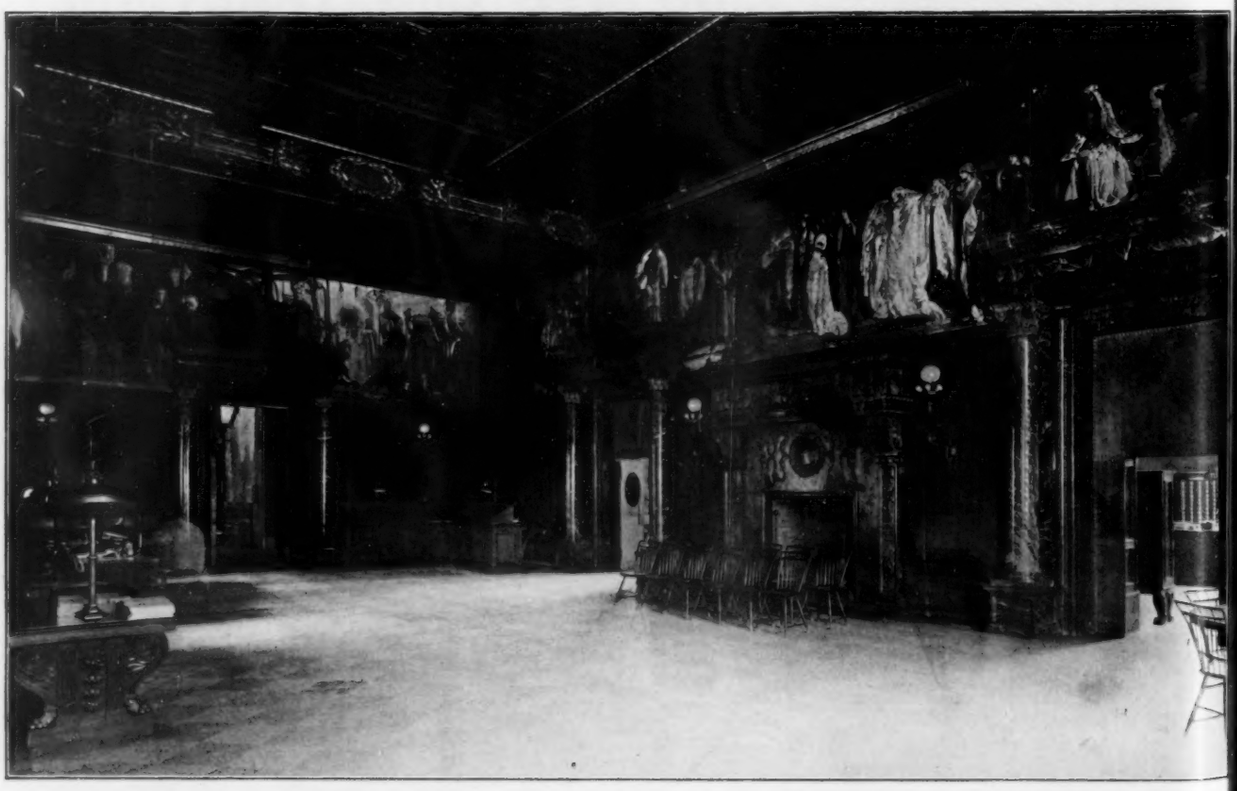
Self-acting in all winds
Unequaled Exhausting Effect
No back draught

THE BEST SYSTEM of VENTILATION in the WORLD

Write for Catalogue and Models

MOTOROFF EXHAUSTER CO., Park Row Bldg., New York

Agents desired in industrial centers



Delivery Room, Boston Public Library, showing Edwin A. Abbey's Decorative Paintings

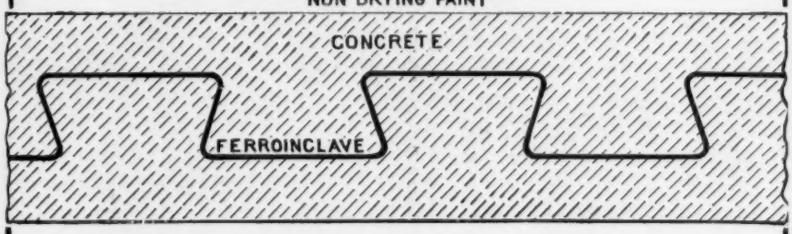
These paintings, the subject of which is "The Quest of the Holy Grail," have recently been lighted by I. P. FRINK of New York, who has lighted nearly every public and private art gallery in the United States, as well as a great many decorated ceilings, friezes, mosaics, etc. He invites correspondence concerning special effects of all kinds in electric lighting.

FERROINCLAVE

FIREPROOF

ROOFING

NON DRYING PAINT



Laid Like Ordinary Corrugated Iron
Then Cemented on Both Sides

LIGHT, CHEAP, MOISTURE AND ACID PROOF

The Brown Hoisting Machinery Co.

CLEVELAND, OHIO

NEW YORK **PITTSBURG**

NEW ENGLAND MATERIAL-MEN AND CONTRACTORS.

ARCHITECTS & DRAWING SUPPLIES (Repairing of Drawing Tool).

G. G. LEDDER,
9 Province Court, Boston, Mass.

ARTISTIC WIRE & METAL WORKS.

MORSS & WHYTE,
75-81 Cornhill, Boston, Mass.

ASBESTOLITH.

SIMPSON BROS. CORPORATION,
Room 58.
166 Devonshire St., Boston, Mass.

BLUE PRINTING.

B. L. MAKEPEACE,
345 Washington St., Boston, Mass.

CHAS. E. MOSS,
Rapid Printing Papers.
38 Broad St., Boston.

PARKS & JEEVES,
34 Merchants Row, Boston, Mass.

BUILDINGS TORN DOWN.

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

CONCRETE-STEEL CONSTRUCTION.

SIMPSON BROS. CORPORATION,
Room 58.
166 Devonshire 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.

LAUNDRY DRYING MACHINERY.

CHICAGO CLOTHES DRYER WORKS,
136-138 West 24th St., New York.

LEATHER BELTING.

SHULTZ BELTING CO.,
114 High St., Boston, Mass.

MARBLE DEALERS.

COLUMBIAN MARBLE QUARRYING CO.,
(Branch Office.)
186 Devonshire St., Boston, Mass.

MASONS AND BUILDERS.

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

MEMORIAL WINDOWS.

HARRY ELDREDGE GOODHUE,
23 Church St., Cambridge, Mass.

MODELLING AND ORNAMENTAL PLASTER.

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

ORNAMENTAL PLASTERING.

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

PHOTOGRAPHIC SUPPLIES.

ROBBY-FRENCH CO.,
34 Bromfield St., Boston, Mass.
Cameras.

PHOTOGRAPHY.

LEON E. DADMUN,
169 Tremont St., Boston, Mass.

E. PERCY OLIVE,
44 Washington St., Boston.
Tel. 1333-3 Richmond.

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.

STAINED GLASS.

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

STONE CARVING AND MODELLING.

HUGH CAIRNS,
48A Sudbury Street, Boston.

TELEPHONES.

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

TILES & FIREPLACES.

GEORGE E CRAWLEY & SON,
1 Somerset St., Boston, Mass.

WATERPROOF CELLARS.

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

Professional Ethics.

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

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

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

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

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

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

SECTION 5. It is unprofessional to offer 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.

FOR the convenience of customers in New York and the metropolitan district,

and especially of architects and their clients, the Exhibit Rooms and Contract Department heretofore connected with the General Offices, Numbers 9, 11 and 13 Murray Street, have been transferred by the

Yale & Towne

Mfg. Company

to 242 FIFTH AVENUE.

Customers are invited to avail of the improved facilities thus offered for the selection of locks and hardware for buildings of all classes.

Special provision is made for the inspection and selection of artistic hardware of the higher grades.

Hereafter all correspondence relating to Contract Work in the metropolitan district should be addressed as above.

The Northwestern Terra-Cotta Co.

Manufacturers of High Grade

Architectural Terra-Cotta

CHICAGO

PERTH AMBOY TERRA-COTTA COMPANY,

OF

PERTH AMBOY, NEW JERSEY.

OFFICE, 160 Fifth Ave., NEW YORK.

BOSTON AGENTS:

WALDO BROS., 102 MILK STREET.

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

The C·T·NELSON CO·

WHOLESALE MANUFACTURERS OF

VERANDA COLUMNS

(BORED OR BUILT-UP)
ANY SIZE - UP TO 36 INCH DIAMETER AND 24 FEET LONG

CARVED CAPITALS

DETAIL WORK A SPECIALTY

NEWELS · BALUSTERS
RAIL · ETC

WRITE FOR CATALOGUE AND PRICES

·COLUMBUS · OHIO·

Cathedral of St. John the Divine.

NEW YORK, N. Y.

Illustrations of the competitive designs for the great Protestant Episcopal Cathedral, now building on Bloomingdale Heights, New York

In all, fifty-seven plates [loose], 14 x 20 inches, printed on plate-paper.

PRICE, $2.50 PER SET.

American Architect Company,

BOSTON, MASS.

[*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.
ARTISTIC WIRE AND METAL WORKS.
Morss & Whyte, Boston
ART METALWORK.
Art Metal Construction Co., Jamestown, N. Y.
ASBESTOLITH.
Simpson Bros. Corporation, Boston
ASPHALT.
Neuchatel Asphalt Co., New York
ASPHALT ROOFING.
Warren Chemical & Mfg. Co., N. Y.
BLUE PRINTS.
Makepeace, B. L., Boston
Moss, Chas. E., Boston
Parks & Jeeves, Boston
Spaulding Print Paper Co., Boston (eow)
BRASS FINISHERS.
Marble Co., W. P., Boston
BRONZEWORK (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. A., Boston
CAPITALS (Carved).
C. T. Nelson Co., The, Columbus, Ohio
CARVING.
Waddell Mfg. Co., Grand Rapids, Mich.
CEMENT.
Atlas Cement Co., New York
CLEAN-OUT.
Craig, David, Boston
CLOCKS
Blodgett Clock Co., Boston
CONCRETE-STEEL CONSTRUCTION.
Simpson Bros. Corporation, 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, Detroit, Mich.
CUPOLAS (Foundry).
Northern Engineering Works, Detroit, 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
DRAWING INSTRUMENTS.
G. G. Ledder, Boston, Mass.
DUMB-WAITER.
Perry, W. J., Boston
ELECTRIC APPARATUS.
Edison Light, Boston
ELECTRICAL CONTRACTORS.
Erickson Electric Equipment Co., Boston
ELECTRIC SIGNALS.
Elevator Supply & Repair Co., New York
ELEVATORS, ETC.
Kimball Bros. Co., Council Bluffs, Ia.
Morse, Williams & Co., Philadelphia.
Whittier Machine Co., Boston
ELEVATORS (Foundry).
Northern Engineering Works, Detroit, Mich.
ELEVATOR SIGNALS.
Herzog Teleseme Co., New York
ENGINEERS.
Jager Co., Charles J., Boston
ENGINES (Hot-Air).
Rider-Ericsson Engine Co., New York.
FAN SYSTEM.
Sturtevant Co., B. F., Boston, Mass.
FILING DEVICES.
Art Metal Construction Co., Jamestown, N. Y.
FILTER.
Loomis-Manning Filter Co., Phila., Pa.
FIRE-ESCAPES.
Standard Fire-escape & Mfg. Co., Boston
FIREPROOFING.
Associated Expanded Metal Co., New York
Brown Hoisting Machinery Co., The, 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, Detroit, Mich.