

THE Western Architect

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NEW YORK OFFICE, 280 Broadway, Suite 289.

C. T. WAUGH, Manager.

EDITOR.

F. G. Corser, N. Y. Life Building Minneapolis

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MACHINE window glass is reaching the market and elicits most contradictory reports. Some lots are reported as very straight and clear, but thin; while others are said to be thin and anything but straight. A very high authority in the glass trade expresses entire confidence in the ultimate success of the process, and says that the thinness is now being remedied.



MEETINGS of the Twin City Architectural Club, which have of necessity been largely devoted to organization thus far, have been very successful in numbers attending and in the enthusiasm shown by members. The list of officers is given in another column. A regular meeting will be held on the 19th, at the rooms of the Minneapolis Building Exchange in the Kasota Block, at which the amended By-Laws will be presented for final adoption. The club will then be addressed by Mr. A. B. Chamberlain on the subject of theater construction. A cordial invitation is extended to all interested in the work, whether members or not, as the club especially desires at that time to present its plan of organization and work to architects and others interested who have not had an opportunity to become acquainted with the aims and purposes of the club.

THE drawings and designs of the late Harvey Ellis, made during the extended period of his residence in Missouri and Minnesota, came just a little short of influencing western work more strongly than that of any other designer, before or since his time. Had he been a little less brilliant and original he would have been more apt to work one vein until he had produced something that should stand as characteristic. Or had circumstances not conspired to prevent him from carrying out his designs under his own name, it is difficult to believe that a man of his genius, training and wide information might not have done things equally brilliant and more logical, more architectural. His West Point training, while of little value in equipping him with the traditions of the craft, might well have supplied the feeling for the rational limitations of projects, while his almost redundant artistic equipment could be drawn on for any requirement. No one else could do such striking things and yet avoid the bizarre



IN a prospectus of a third edition of the Directory of American Cement Industries it is stated that the list of cement manufacturers in the second edition reached 206, and that the forthcoming edition will extend the list fully 50 per cent. It is also stated that a great increase in importation of foreign cements took place last year. People who have kept an eye out for the cement situation have been predicting a similar showing for a year past, and, furthermore, that the time is not far off when only the thoroughly modern plant can stay in the game. Thus far demand has kept well abreast of supply. But there are things that threaten the industry apart from features common to the business world. Not only is it easy for a contractor to cheat in concrete work if he wants to, but if he is not so inclined he cannot get good work without considerable effort unless he be fortunate enough to get an exceptional lot of workmen. Concrete work is not yet so well understood by the majority of people who take to it, but that many a mishap comes through nothing worse than ignorance. Frequent reference has been made in this department to the loss of trade sure to follow the ventures of the great designers of new and impossible concrete schemes, the ultimate fate of which is pretty sure to give the material a bad name. Then there is the maker of bad cement—nothing is being done to effectively quell him, yet so long as his wares are allowed at large in the market, so long will the trade at large suffer for his sins and shortcomings.

REPORTS of the late notable dinner of flying machine men and their friends indicate that pretty good things must have been served. No such prophecies were ever collected in a like space as in the report of the gathering. Perhaps the least startling of these was the prediction that the flying machine will soon be the cheapest and commonest way of going about. Yet when it came to the only one who had ever flown, it is noticeable that he did not prophesy.



IN a curious codicil to a curious will, the late Herbert Spencer gives his main reasons for opposing the metric system and provides that if its adoption by parliament is again agitated, his pamphlet on the subject shall be reprinted and distributed among the lords and commons. The inch and the foot have many partisans yet, and their cause is strengthened and justified by the great respect in which the dozen is held, so that they are liable to die hard. Counting having been originally learned on the fingers—and thumbs—it is the misfortune of the race that the end of the arms branch as they do, for no other small number is so awkward to divide as is ten. If we could only hold on to the inch and foot, and use two more numerals (digits)—a system in which the least number to be shown by three figures would equal our present 144—then we would have a change worth while. We might then keep our inch and foot, and make over larger denominations and our weights and measures a bit, and the laugh would be on the Latins. They don't presume to throw out the dozen from calculation of time as it is.



THE Coroner's jury called to investigate the Iroquois Theater disaster seem to have begun at the top and shied a missile at every grade of official on the way down. They spent a good deal of energy of a somewhat hysterical sort upon the mayor, declaring that "he has shown a lamentable lack of force in his effort to shirk responsibility." After much more hardly coherent comment on the mayor, they recommended that he, with the building commissioner, an inspector, the fire marshal, the theater fireman, the electric light operator, the stage carpenter and the president and general manager of the Iroquois company be held to the grand jury. While there is no question that this theater management was lax in provisions for safety, it is not to be lightly assumed that they were so very exceptional among Chicago theater managers, or those of nearly any other large city. How the charge of criminal negligence can be made to attach to people outside of the management is also difficult to see. An exceptional building inspector might, by an occasional prosecution, do much to help toward a better observance of building regulations, and a better observance will everywhere be required for a time; but, if followed by a considerable period of immunity, the next great holocaust will find things just as lax as now. Human nature will not be changed by this calamity. The people who go to theaters will always go to be amused—not to be safe. They will not demand less than is spectacular from the mechanical side of the show, nor will they go through fire drills as school children do against a time of need. Publi-

officials will continue to be selected from an easy-going public. Greatly improved building codes will, however, succeed the present regulations, and there will be no copying of the famous clause in the present Minneapolis code "providing that these regulations shall not be construed as applying to existing buildings or to those in course of construction." If new codes were to provide for special inspectors, whose duties shall be to inspect, report on and enforce regulations pertaining to audience rooms, the shifting of responsibility would be largely removed, which would perhaps do more for permanence of reform than any other one thing.



A ST PAUL gentleman had an experience the other day that may have led to views on the subject of home industries. The house hot water heater—luckily during the January thaw—gave out by the cracking of a cast iron section. It was found that the broken part could only be replaced by sending to the maker in New England, and not daring to take chances on the delay he ordered a new heater, which was installed just in time for the "cold snap." The bill was a little over \$300.00. St. Paul makers are producing what are quite likely better heaters than the one that failed, and had the mishap occurred to a heater of local make, it could very likely have been repaired at one-fifth the expense.



THE plethoric condition of the general coffers has been so much vaunted of late that sessions of congress become the Mecca of all manner of pass-the-hat experts. Public buildings could be had for almost any place were it not that loans to expositions are coming to be so common as almost to take turns with the appropriations for public buildings. These expenditures are easier to defend than many other classes. Yet they depend for their existence upon successful begging. But when we come to think of the proposal that the general government shall come to the rescue of the California big trees, it will be admitted that the begging limit has been reached. The government has been doing much of late years for the mountain states in the way of saving them from themselves—laying out forest reserves in suitable portions of the public lands and patrolling these so as to prevent their destruction by the precious populace. But now comes California, which owes more to the advertising she has had from the big trees than to all else she has, trying to get the general government to save these trees from the lumberman. Not only that, but she asks sentimental people of other states to help her get an appropriation for the purpose. It is to be hoped the answer of congress to California will be, "If you don't think enough of those trees to preserve them, pray leave a few stumps as a comment on your civic pride."

Cities are becoming a trifle ashamed of begging libraries, and the offer of a kerosene king to chip in and help a state university has raised debate, but there is nothing which we may not ask of the general government. It was different when New York parked Niagara and when New York and New Jersey set about to preserve the Palisades.

THE good promises that have been made in the name of what may yet christen itself the new science are not followed very closely by accomplishment. The liquid air man was to build a quart of it, and that quart was to generate a gallon or two without outside help, and that would make the operation of lifting oneself by the boot straps look cheap. The radium people tell about "emanations" that come—without loss to the source—from their metal, and in the course of some hours or days—they prove it by the spectroscope—become another metal. Why are they not busy turning lead into gold? Then to think how time has sped since the kerosene college professor found that procreation was only a question of chemicals, and no practical use has been made of the discovery.



WHEN, in a late issue of this journal, we took what seemed likely to prove and did prove to be efficient means to call the attention of those interested to very objectionable features of the cement business—especially the relation of the present systems of official inspection to building interests—we had no idea of exciting any prejudice against natural cements; and, lest there be anything in the fears of some makers of natural cements as to the effects of the article referred to, we wish to state here that there are brands of natural cement on this market in which we have full confidence, because we believe these cements are made by men fully alive to the value of good reputation in this business, and who intend to stay in the game. Furthermore, we have no sympathy with the position of the architect or engineer who cannot, or will not, recognize the suitability of natural cements for purposes within their range. The man who proposes to place a structure upon a soil that will safely support but four tons per square foot, and begins his footings with a Portland cement concrete that may be safely loaded to sixteen tons per square foot, when he can use a cheaper natural cement concrete that may be safely loaded to eight or ten tons per square foot, does not appeal to us as much of a designer. The only justification this man may have for such a course is proof of greater reliability of one class of cements over the other. This journal is working for the adoption of a system that shall give fair assurance of the reliability of all cements placed on the market. As it is now, building interests may be reasonably sure that they are offered all the cements that city authorities reject for their own use.



DISCIPLES of Henry George are more persistent in propoganda than any other group of believers to be met with. Whatever the merits of their main contention, they are doing much to bring to light facts that are likely to call for the most serious consideration of economists in the near future. The perfecting of machinery, of means of intercourse over great distances, and the manipulating of capitalization that have been so noticeable within the past few years, have led to most spectacular business combines, many of them monopolistic in their nature, and to attempts by workmen's unions to monopolize labor as well. These have so taken the attention of the thoughtful that the profound change in the land situation which has been pro-

ceeding meanwhile is lost sight of to a large extent. This change is so startling that it cannot fail to receive more attention in the near future. The rapid shifting of rural population to the cities of late has been noticed by all and has been variously accounted for, but when in this connection it is found that in England, for instance, farm laborers decreased in number some 25 per cent. in the period from 1891 to 1901, and that gamekeepers increased in almost exactly the same proportion, an element is introduced that will not add to the complacency of the student of events; certainly not of those who recall the prediction made by prominent economists not twenty-five years ago, that the new lands becoming available would soon so far eliminate landlordism that there would be nothing in agriculture for anyone but the tiller of the soil.

But the exhibit that has a more direct bearing on building interests is that of site values in cities. Most of us have expended so much sympathy upon good friends who have been gently but surely pushed off the earth—financially—in attempting to monopolize a part of it in the shape of city real estate, that we have been disposed to believe that real estate speculation was a form of sin followed promptly by its own punishment. Some of the figures are not calculated to support this view. A retail store in Chicago pays ground rent of a quarter of a million. It is not stated what conditions are attached to this, but usually these rents are with the tenant paying all taxes as well as making the improvements. This would indicate a market value for the site of four or five millions. The separate assessment of land and buildings is now completed in New York, and the value of all buildings is placed at a trifle less than one-fourth of the whole. Some of the items are of interest. The Fifth Avenue hotel and the Waldorf-Astoria each occupy land worth \$4,000,000, the former building being assessed at \$500,000 and the latter at \$5,000,000. R. H. Macy & Co.'s building is assessed at \$2,800,000 and the land at \$3,500,000. The Herald building is assessed at \$200,000 and the land at nine and one-half times as much. Only a few of the latest sky scrapers are valued at more than the land they occupy.

A similar system of assessments in Detroit shows less discrepancy between values of land and improvements, the lands being valued at only twice as much as buildings.

One need not know much about the general subject of taxation to reach the conviction that something in the nature of an enormous tax on building enterprise is but scantily concealed here. If a landless man, or group, essay to build a great office building, for instance, the owner of a favored site is able to take the major part of the net income of the enterprise for nothing more than permission to build on his land. Were this owner to found a college, or at least to endow a "chair" with his share of the proceeds, we would be taught that the landlord's share, being ultimately borne by the tenant anyway, does not detract from the share of the builders, or discourage building. By the same reasoning in a city which licenses saloons at \$100 and proposes a change to \$1,000, saloon keepers or brewers should not oppose the change on grounds of self-interest. But a western city once made this change in its license fees, and two-thirds of its saloons went out of business.

A DRAFTSMAN'S RECOLLECTION OF BOSTON.

BY E. P. OVERMIRE.

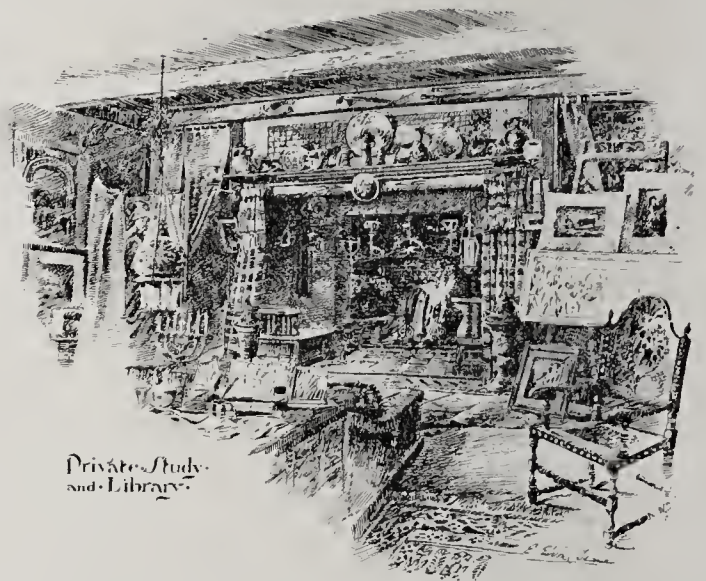
It was with considerable trepidation that the writer severed the ties which bound him to Minneapolis and set out in the fall of 1887 for that Mecca of architectural students, Boston, where are located the Institute of Technology, Harvard University and so much that is mingled inseparably with the early and vital history of our beloved country. With the assistance of home friends who knew personally what lay ahead, I was enabled to select before starting a boarding place which proved eminently satisfactory, it being conveniently situated to the Back Bay, where are located Trinity Church, the Museum of Fine Arts, Public Library and the finer portion of the residence district. A letter of introduction to the firm of Andrews & Jaques opened their doors, and through their good offices the writer stepped at once into a position with Shepley, Rutan & Coolidge, who had but recently succeeded to the business of the great H. H. Richardson, whose name and works were on every tongue, and whose influence had been felt across our entire land. Naturally one could not but feel especially favored in getting so quickly and easily into an office where the environments and atmosphere were so thoroughly good, and, although it was some eight or ten miles from the city to this country office in Brookline, the trip was patiently made by some twelve or fifteen men twice a day, each feeling amply repaid with their experiences en route.

fame in the practice of architecture, some have turned to other vocations and some have retrograded; altogether

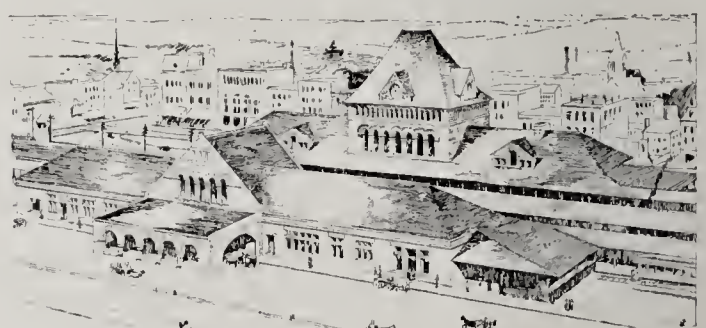


OFFICE FORCE, SHEPLEY, RUTAN & COOLIDGE, 1887.

the old photo is of considerable interest and value to those in the group. Having heard and seen so much of the work of H. H. Richardson, with so many evidences on all sides of his genius one could not but be inspired, and with free access to his superb library one could make the most of spare half-hours in familiarizing himself with the best kind of work, both at home and abroad.



Amongst others, this firm then had under way the Gratwick residence at Buffalo, the Howard Library at New Orleans, the great Leland Stanford University in California, the Nickerson House at Dedham, Mass., and the Boston and Albany railway stations at Springfield, Mass., many of which the writer was privileged to work upon, and several of which are illustrated herewith.



BOSTON & ALBANY RY. STATION, SPRINGFIELD, MASS.

To one whose previous experience had been in the cooped-up offices of the noisy, dirty city, this change to the sweet smells and pleasant sights of the country was a constant delight and an inspiration to best endeavor. The sketch by Mr. Eldon Deane in an old number of the American Architect gives an excellent idea of this office and its environment; inasmuch as the old office has been torn down these sixteen years or more, this view may be of special interest to any who have heard of but have been denied the pleasure of seeing for themselves the unusually favorable surroundings in which we were so well pleased to work. The accompanying photo, taken by myself, shows the office force as it then existed. Several have gone the way of all flesh, several have achieved

While still with this firm, their offices were removed to Boston at Exchange street, near State street, where they occupied the entire upper story of a large, old building fitted up with working alcoves, fireproof library and private offices. Here they remained for several years until the erection of the tall Ames building, which was built from their designs, the upper floor of this building being arranged for their own use, and there they are to this day. This is on historic ground, within a stone's throw of the old State House and Faneuil Hall, the place of the first bloodshed of the Revolution, and many other important and interesting events in American history.



OLD STATE HOUSE. — AMES BUILDING.

Excepting a few months' trip home, the writer spent upwards of five years in Boston, gathering a large store of experience from such offices as Shepley, Rutan & Coolidge, McKim, Mead & White and Andrews, Jaques & Rantoul. Generally the noon hours were used to good purpose in visiting points of historic interest such as Faneuil Hall, the State House, the common, Back Bay district, Bunker Hill, Harvard College and the markets, docks, etc. Much heavy building was going forward during this time, which added further to the points of interest to be visited. Holidays were spent profitably visiting such suburbs as Cambridge, Brookline, Charlestown, Dorchester and Milton, Jamaica Plain, the Newtons and the old North End, which was of double interest, both historic and artistic. Here is located the old North Church, from whose spire Paul Revere hung the signal lights on that famous night, made memorable in verse by Longfellow. The greatest interest here, as elsewhere, was in the people, rather than in the buildings. No. 149



Plan of Service Offices & Studios and pleasing connection with House.

Salem street is pointed out as the house immortalized in "Solomon Levi," and the surroundings accord with the song. All this was in the days before the present "L" road and tunnels were thought out, hence the surface appearance is considerably changed from those days of sixteen years ago.

Beacon street was the Mecca of architects in those days, one of the principal shrines being at No. 6, where such people as C. Howard Walker, Chamberlin & Whidden, Andrews & Jaques, Longfellow and Alden & Harlow "hung out." This property is now covered by a tall modern skyscraper, and even the old Athenæum property adjacent, has gone the way of all such, moved further out into a new modern building, and yielded the place to modern improvements. At 53 Beacon street was the Boston office of McKim, Mead & White, where the Boston Public Library was designed and carried out.

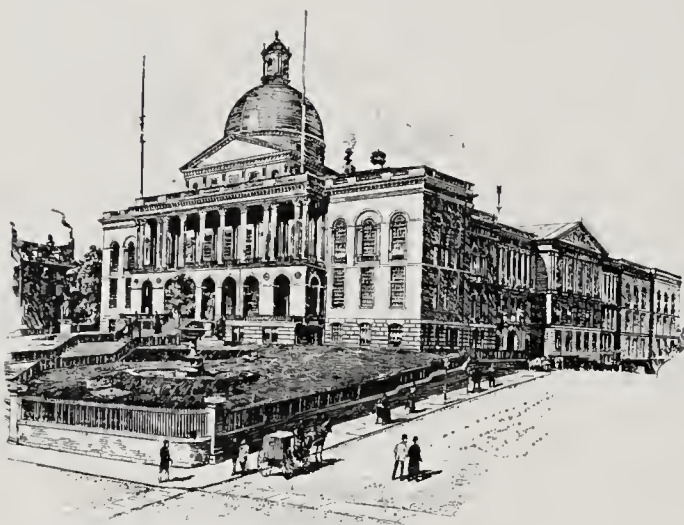
In 1888 the Boston Architectural Club was formed, with headquarters hard by the old Music Hall, on Hamilton Place. Here transpired many interesting events which will never fade from the memory, including life and modelling classes, water color and pen and ink classes, etc., with such teachers as D. A. Gregg in the latter,



THE DRAFTING ROOM.

Dwight Blaney in water color and Blackall & Newton in design. At this time were published those fine works on the best colonial architecture, by Corner & Soderholtz and

by J. E. Chandler, all of whom belonged to the club. Lectures by leading lights, exhibitions of work of the members, and semi-occasionally the B. A. C. minstrels held forth to the great delight of all those fortunate enough to be admitted, and amongst other treasures the writer cherishes the program of the first of these minstrel shows. The club has quieted down into quite a decorous body now, but a safety-valve is provided in the "P. D's," abbreviation for "Poor draftsmen," which refers to their financial condition rather than to their artistic abilities. They meet regularly on Saturday nights in a room of their own for self-improvement and jollity, free from rules and order, a law unto themselves. Having among their number skilled musicians and every member being an artist in some special line, they are never at a loss for entertainment.



NEW STATE HOUSE.

The trips to Newport and Old Salem, already described in this series, grew out of this club and its fellowship. Other events remain to be chronicled in due season, covering sketching trips to Dedham, Cambridge and the rest. It will be necessary to bear in mind that it is the Boston of 1887 to 1892, which is under discussion, because great physical changes have occurred in the past ten years. The "L" roads, tunnels and stations, North and South railway stations, Emergency Hospital in Haymarket Square, in place of the old B. and M. depot, the new theatre in place of the old Public Library, the State House extension, the disappearance of the old Tremont House and Athenæum, the great improvements at Old Harvard, are but a few of the great changes that have occurred.

In addition, there has been developed one of the most ambitious and comprehensive park schemes in the world, the author of which (Frederick Law Olmstead) died only recently. Mr. Olmstead's office and residence were hard by the home and office of H. H. Richardson, the men from the two offices mingling quite frequently at tennis during the noon hour.

From the foregoing it must be apparent that the new and territories and more than that number of foreign experiences, the hospitable environment and the rich associations of the past, work together to mould and form im-



"OLD NORTH CHURCH."

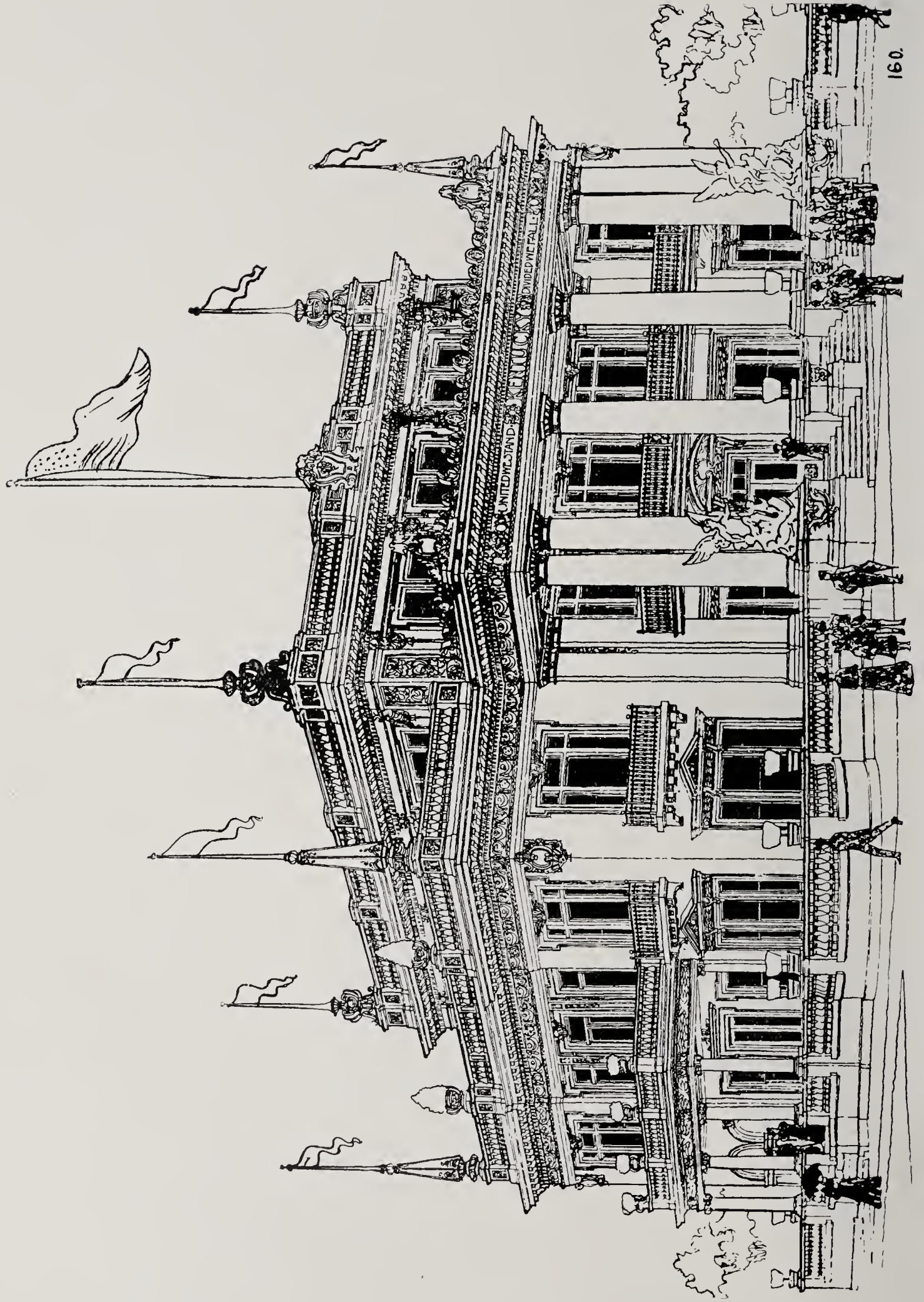
pressionable minds into such as could never have occurred under the old order of things out west, where such associations are entirely lacking. One is constantly reminded of Mrs. Hemans' lines:

"Lives of great men oft remind us
We can make our lives sublime,
And, departing, leave behind us
Footprints on the sands of time."



THE LIBRARY.

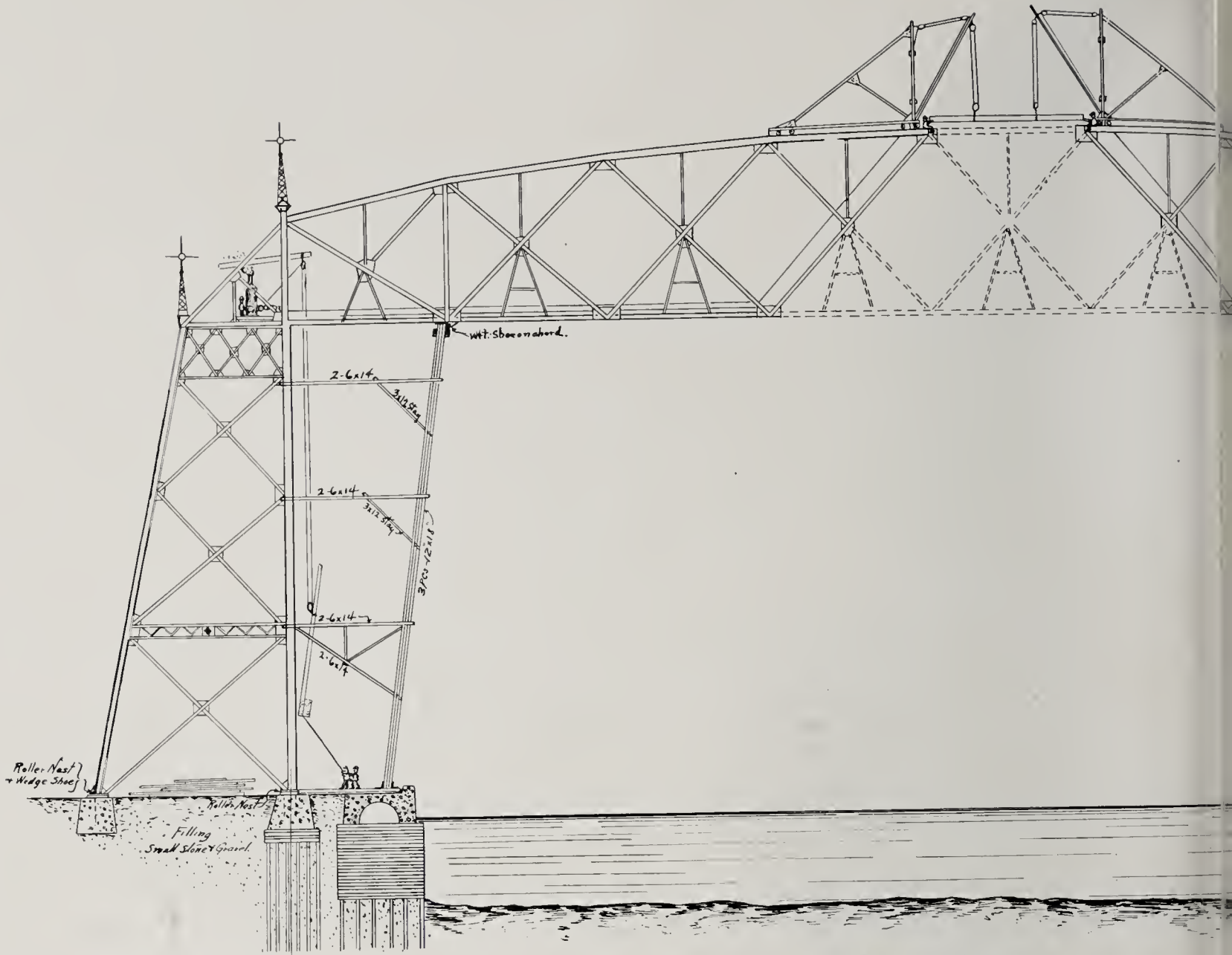
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PERSPECTIVE OF PROPOSED KENTUCKY BUILDING, ST. LOUIS WORLD'S FAIR, ST. LOUIS, MO.

Supplement to
The Western Architect.

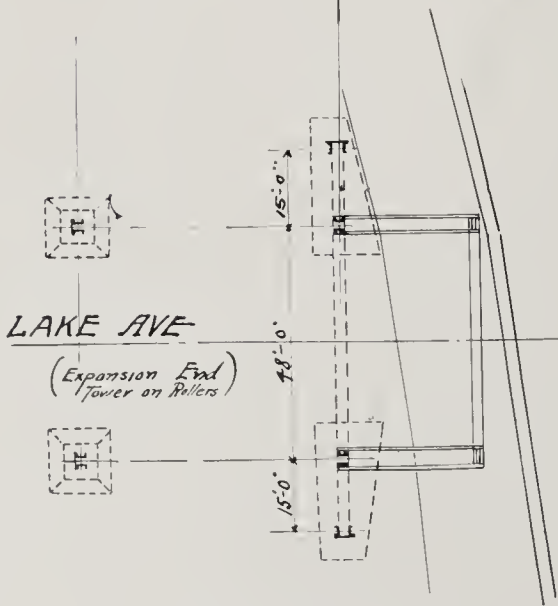
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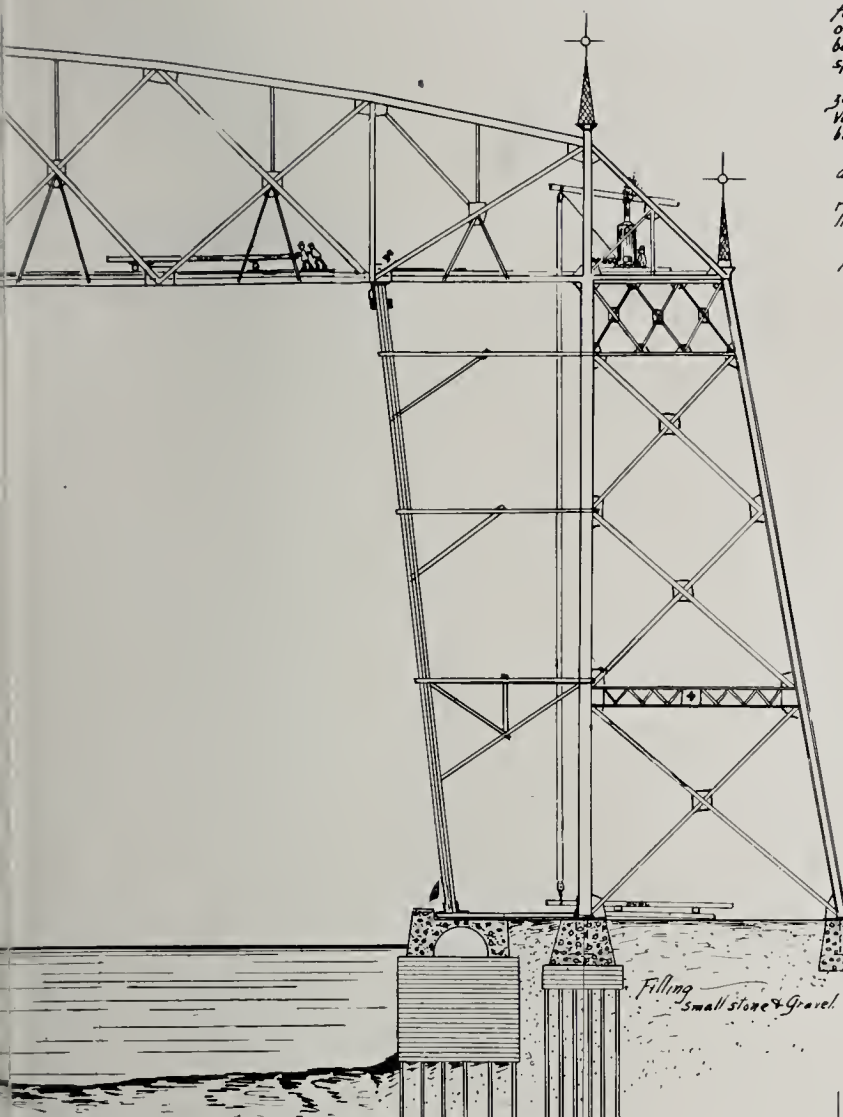
General Elevation

54'-0"

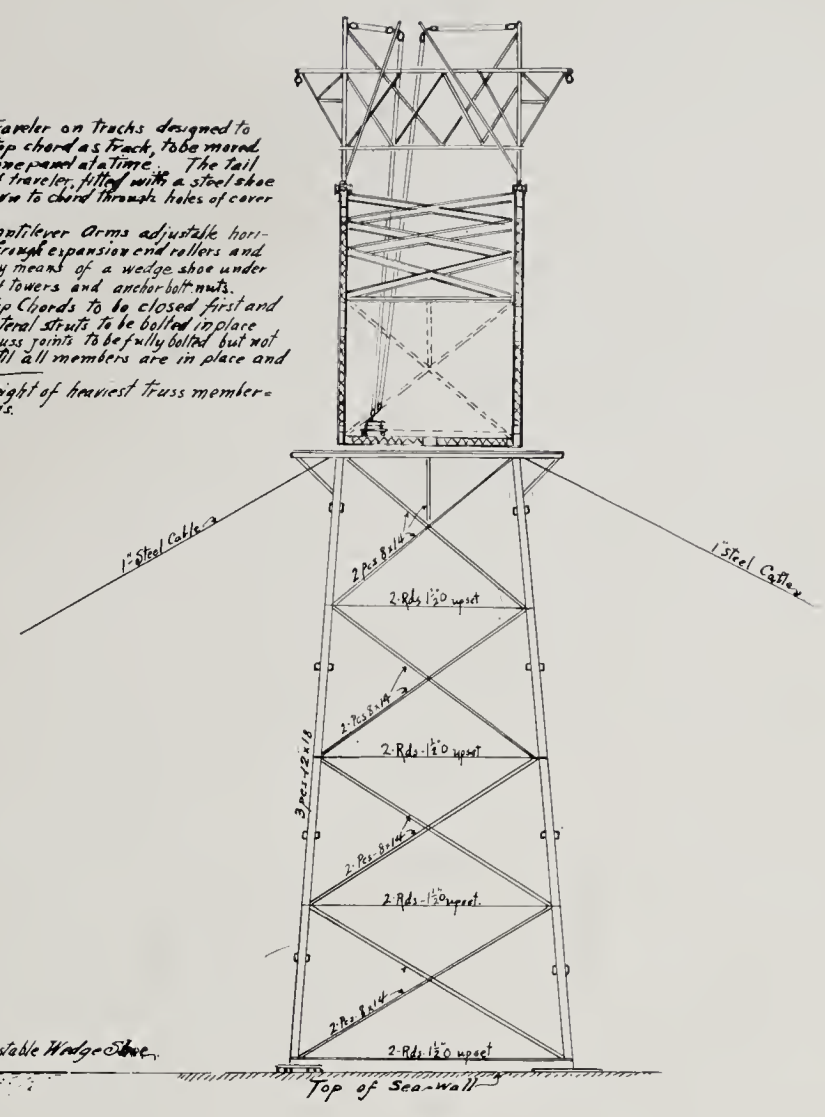
393'-9"



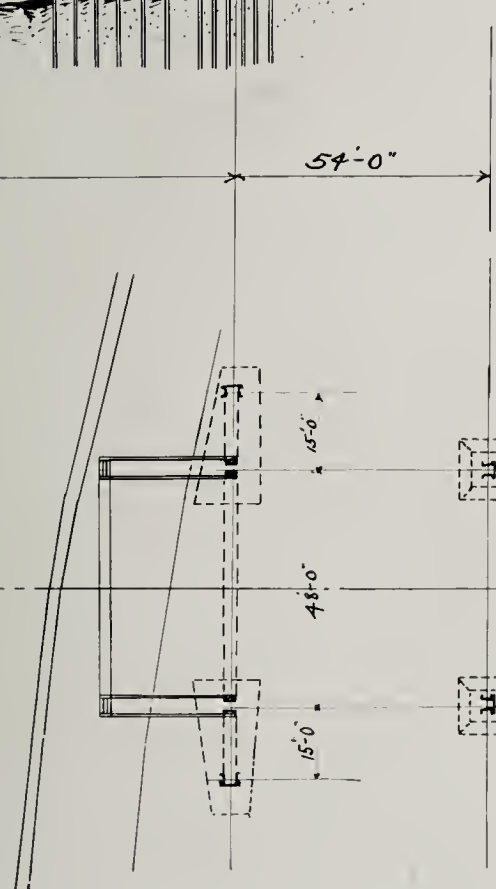
PLAN



Notes
 Traveler on tracks designed to run on top chord as track, to be moved forward one panel at a time. The tail or end of traveler, fitted with a steel shoe bolting down to chord through holes of cover splice.
 Cantilever Arms adjustable horizontally through expansion end rollers and vertically by means of a wedge shoe under back legs of towers and anchor-bolt nuts.
 Top Chords to be closed first and all top lateral struts to be bolted in place. Truss joints to be fully bolted but not riveted until all members are in place and lined up.
 Weight of heaviest truss member = four tons.



Elevation of Traveler & Falsework

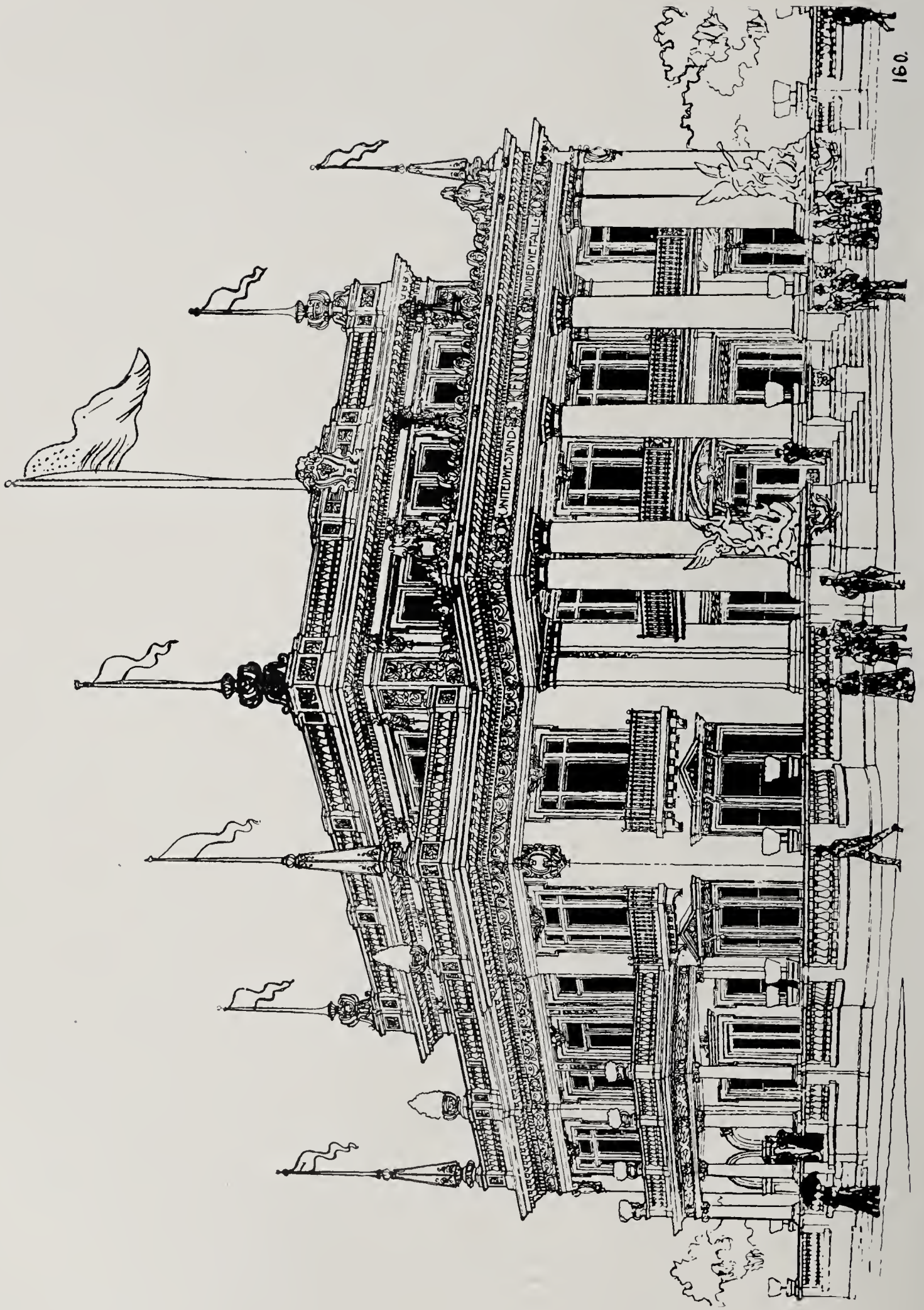


Proposed false Work
 for Erection of
SUSPENDED GIR TRANSFER
 OVER
 SHIP CANAL ——— DULUTH, MINN.
 C.A.P. Turner, Engr.
 816 Phoenix Bldg Minneapolis, Minn.

Scale - 20' = 1 inch.

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160.

PERSPECTIVE OF PROPOSED KENTUCKY BUILDING, ST. LOUIS WORLD'S FAIR, ST. LOUIS, MO.

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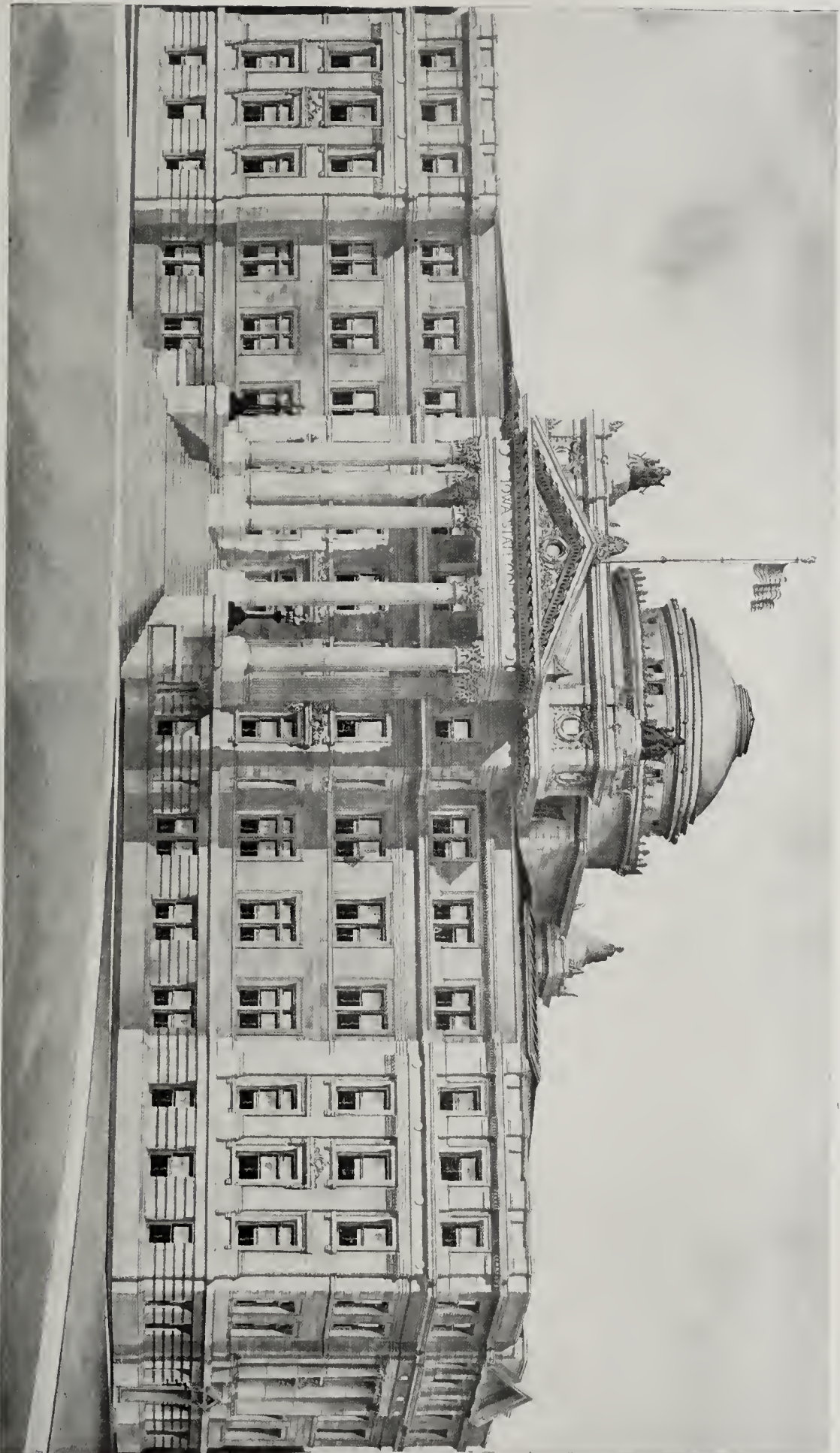
SKETCH FOR RESIDENCE by the late HARVEY ELLIS.
J. W. Stevens, Architect, St. Paul, Minn.



ST. JAMES' MEMORIAL CHURCH (EPISCOPAL) HOMEWOOD, PITTSBURG, PA.
Carpenter & Crocker, Architects, Pittsburg, Pa.

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CENTRAL BUILDING, IOWA STATE COLLEGE, AMES, IA.
Broudfoot & Bird, Architects, Des Moines, Ia.

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'SIX HUNDRED APARTMENT BUILDING, CLEVELAND, OHIO.
Searles & Hirsh, Architects Cleveland.

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STABLES OF J. H. BROWN, CLEVELAND, O.
Alfred Granger, Architect, Chicago.

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RESIDENCE OF J. H. BROWN, CLEVELAND, OHIO.
Alfred Granger, Architect, Chicago.

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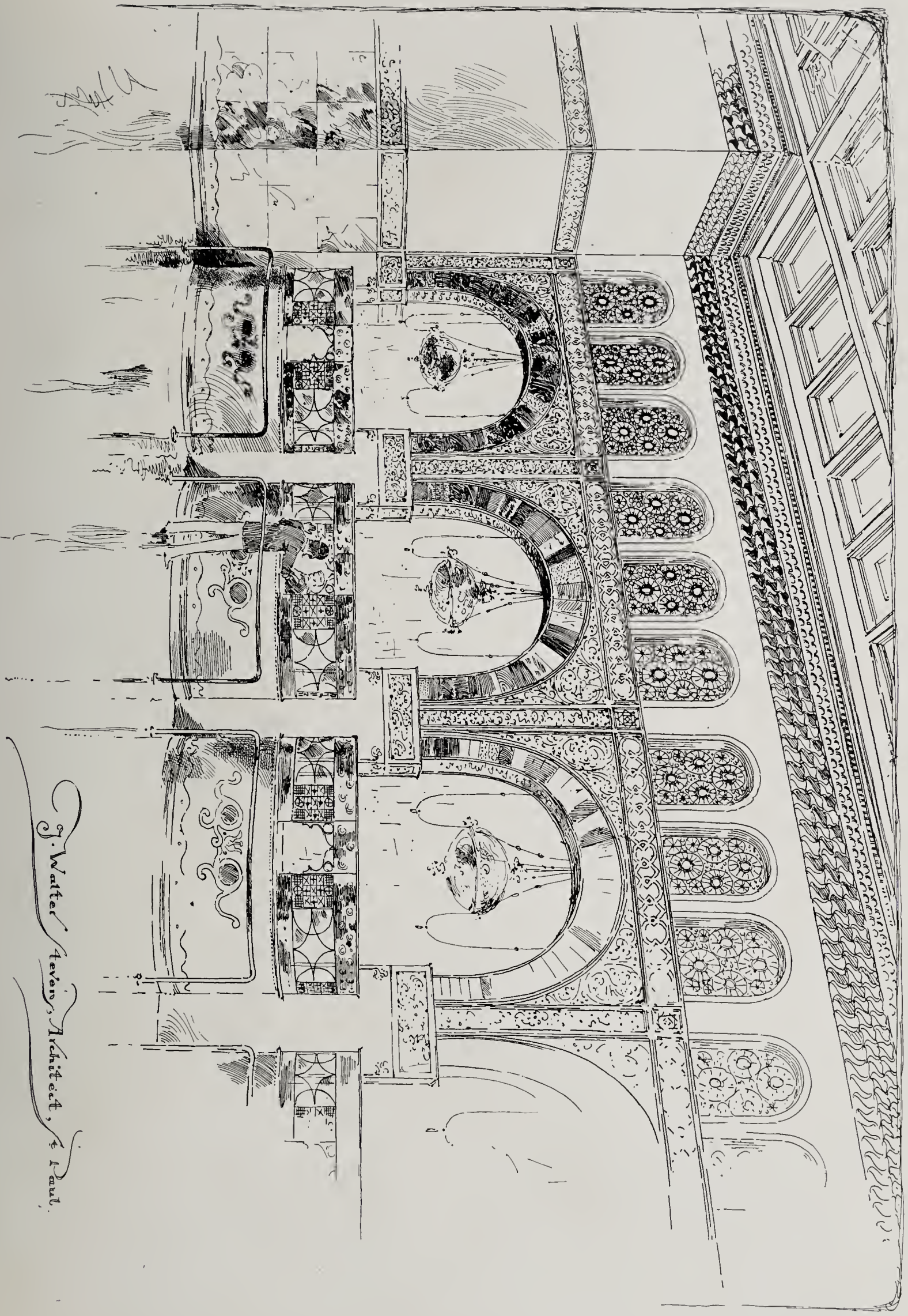


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RESIDENCE OF J. R. TRUE, (Treasurer of the Northwestern Terra-Cotta Co.,) CHICAGO, ILL.
Huehl & Schmid, Architects, Chicago.

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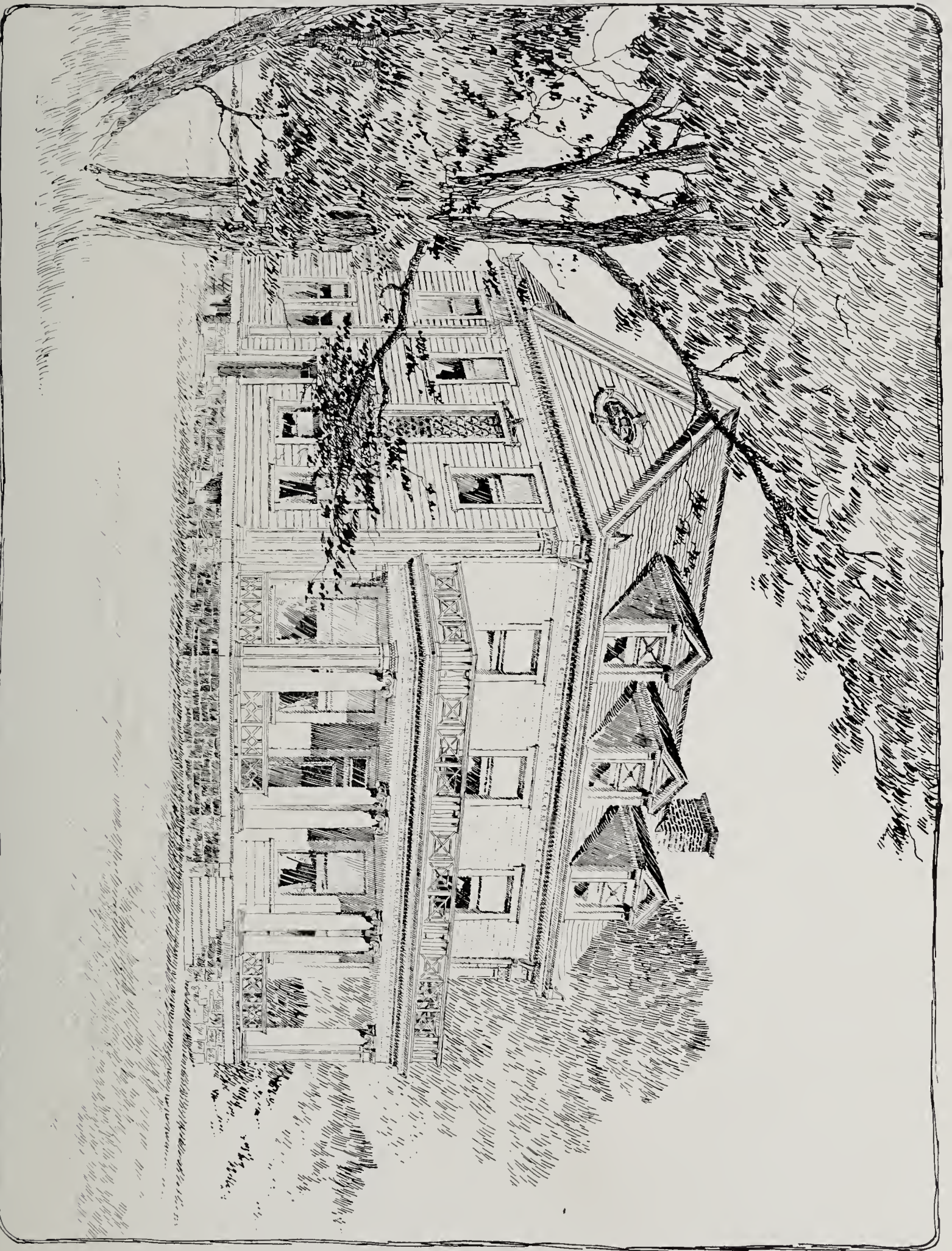


Supplement to
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SKETCH FOR INTERIOR OF BANK by the late HARVEY ELLIS.
J. W. Stevens, Architect, St. Paul, Minn.

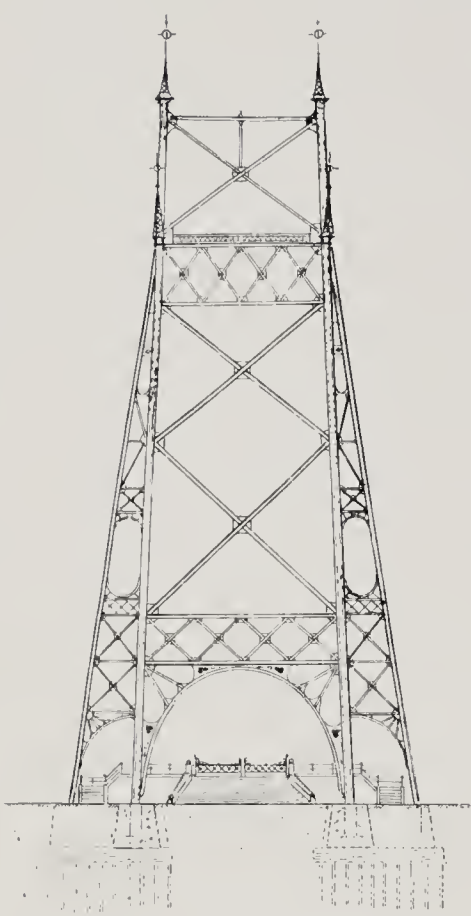
J. Walter Stevens, Architect, St. Paul.

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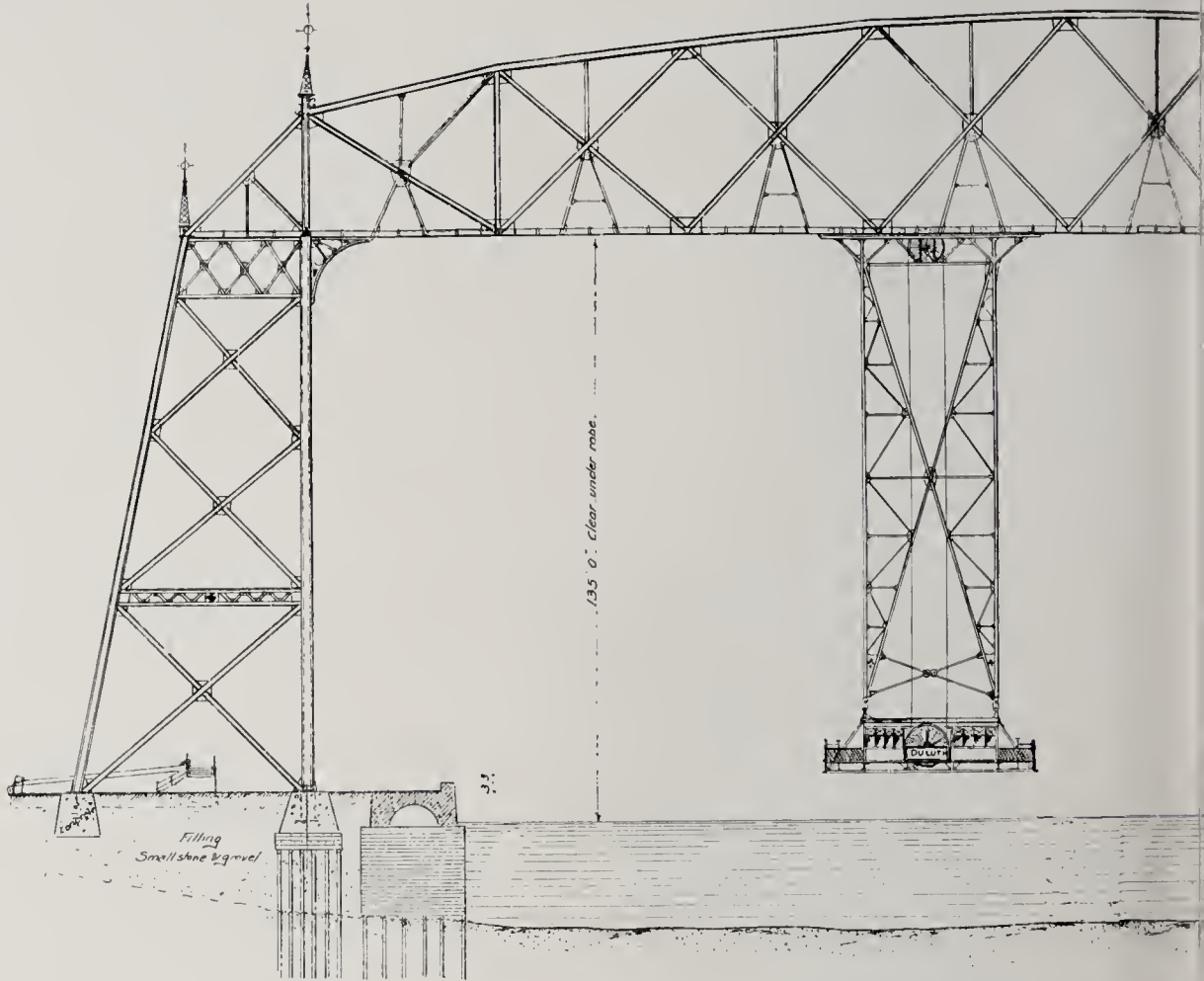


SKETCH FOR A RESIDENCE.
Bertrand & Chamberlin, Architects, Minneapolis.

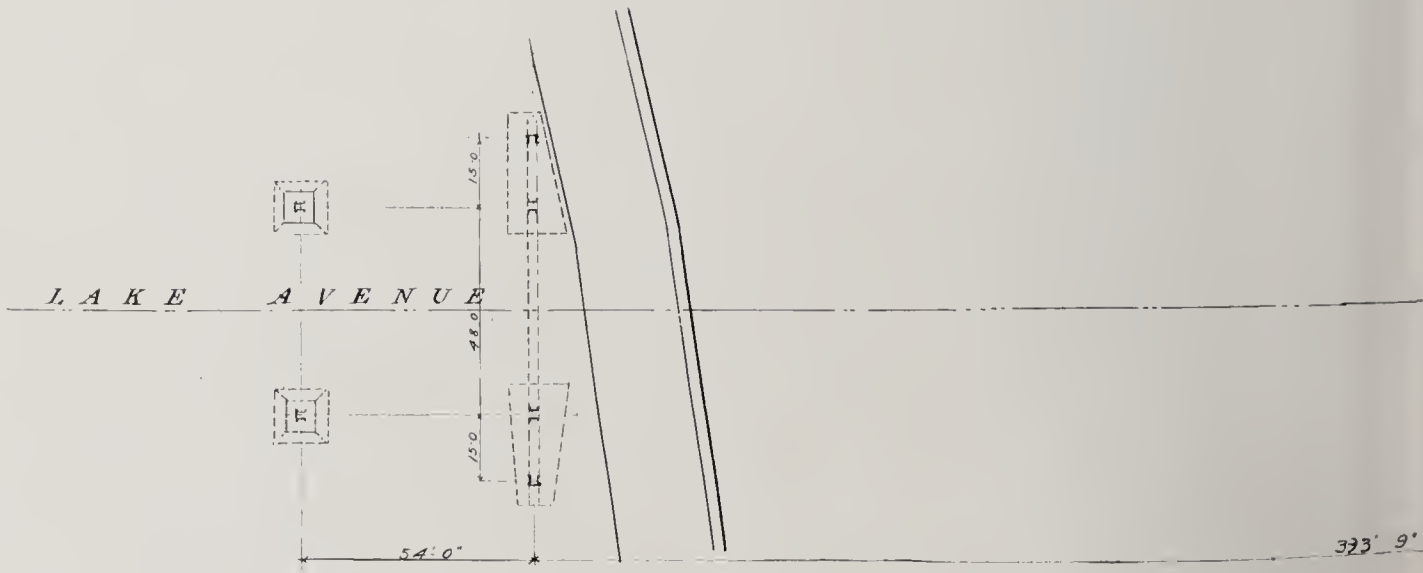
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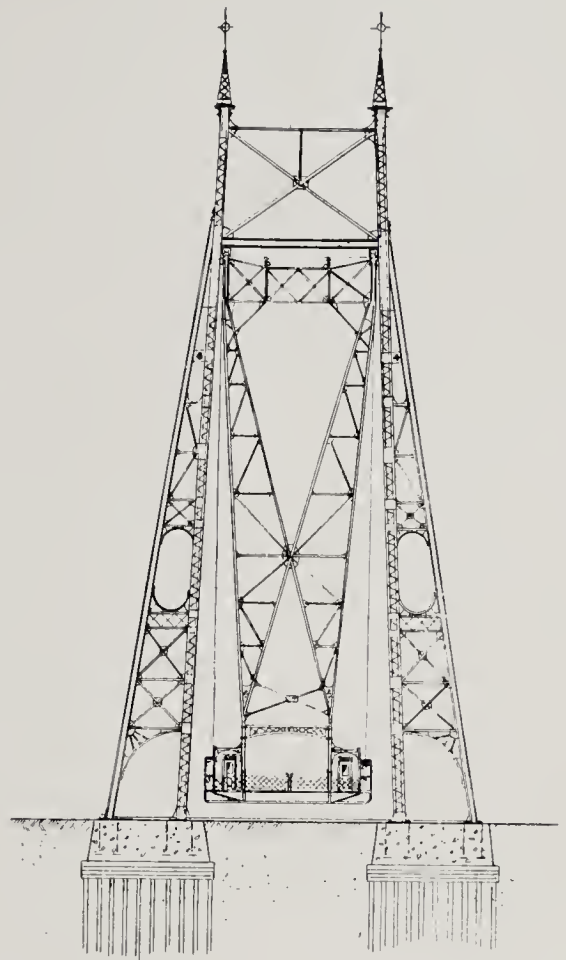
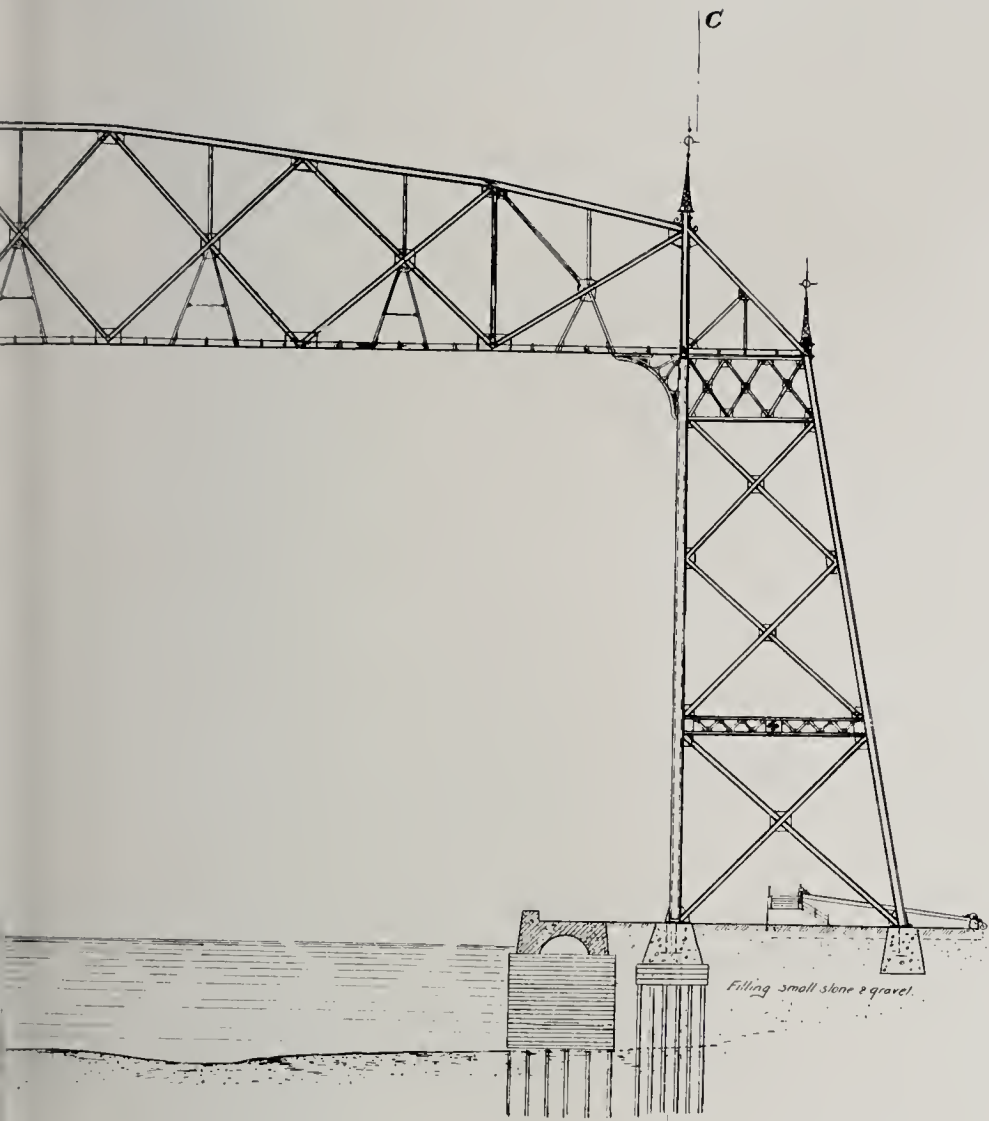


—+— *End View* —+—

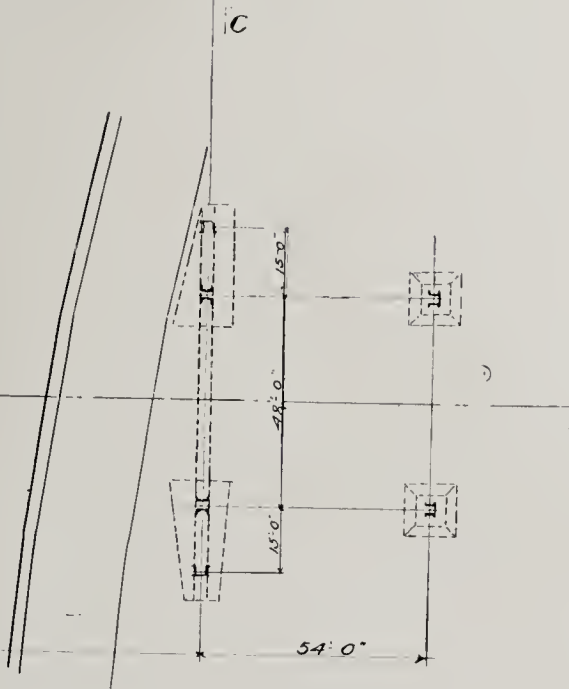


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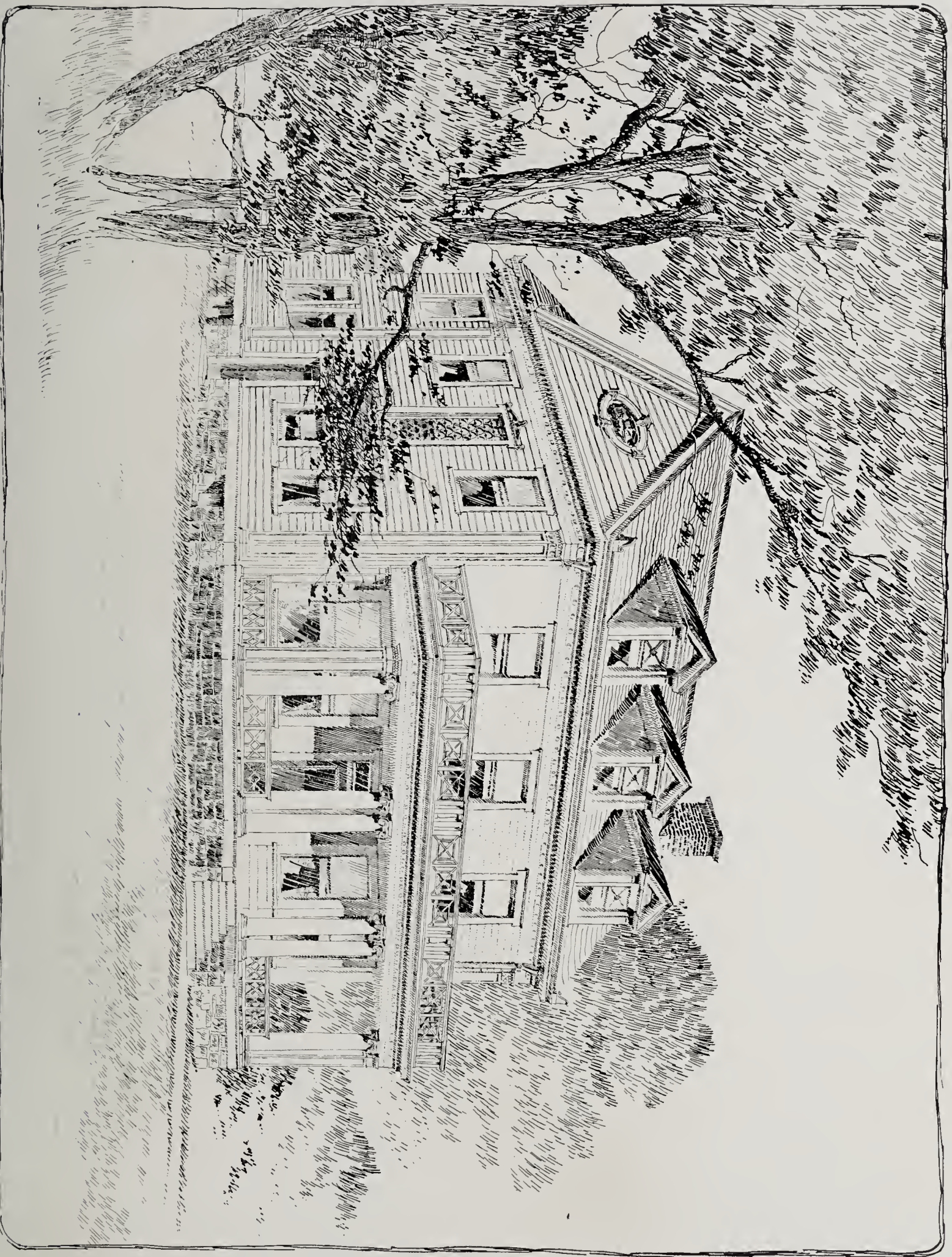


PROPOSED
 SUSPENDED CAR TRANSFER
 over SHIP CANAL AT DULUTH MINN.

CAP. Turner Eng'r
 316 Phoenix Bldg
 Minneapolis, Minn.

OVER SHIP CANAL, AT DULUTH, MINN.
 Minneapolis, Minn.

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SKETCH FOR A RESIDENCE.
Bertrand & Chamberlin, Architects, Minneapolis.

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NEW FERRY BRIDGE AT DULUTH, MINN.

W. B. Patton, City Engineer of Duluth, writing for the *Engineering News*, March, 1902, says: Minnesota Point, the natural breakwater which separates the waters of Lake Superior from the harbor of Duluth, extends in a southeasterly direction, with a width from 300 to 800 feet, for a distance of six and six-tenths miles from the Minnesota shore. At its outer end it is separated from the Wisconsin Point by the "natural entry," through which formerly flowed all the water of the St. Louis and Nemadji rivers, and which was the only means of access to the harbor.

The city of Duluth was originally laid out on the northerly half of Minnesota Point, but this location was soon abandoned for the mainland, about the base of the point. As no deep water channel in the harbor connected the natural entry with the new city, an effort was made to establish an artificial harbor in the lake. This harbor was found to be inadequate and unsatisfactory, and in the fall of 1870 the city began the excavation of a ship canal across Minnesota Point, about a half a mile from the mainland. The work was completed in the winter of '71. This canal was 250 feet wide. The six miles of Minnesota Point thus severed from the mainland was reached by boat, ice or an improvised suspension floor bridge.

The city of Duluth has looked with regret at the large amount of its most valuable dock frontage—the bay side of the point—which it is impossible to use on account of lack of means of access for railroads and teams, and for years efforts have been made to devise practical means of transportation across the canal, which would provide for the business development of the property on the Point.

The canal points directly into the teeth of the prevailing and most severe storms of the locality, and consequently vessels using it must have an absolutely unimpeded passageway. A central pier is an impossibility, and any structure designed to move across the canal must have a certainty of action approaching the perfect. It must be under complete control at all times, as 8,309 vessels arrived and departed, carrying 6,851,729 tons of freight and 88,833 passengers in 1901.

Any design for permanently spanning the canal must have a clear headroom of 135 feet above high water, as masts 120 feet high are carried by some of the vessels.

In November, 1891, a prize of \$1,000 was offered for the best design for a drawbridge and elicited twenty designs. The design considered best and most economical was rejected by the U. S. Government Board of Engineers. Special legislation was then secured to overcome some of the difficulties, and City Engineer Thos. F. McGilvery suggested a modification of the Rouen (France) bridge, built on the suspension plan.

Mr. C. A. P. Turner, M. Am. Soc. C. E. of Minneapolis, advised, drew and specified a stiff girder form of construction as more secure in Superior storms. The secretary of war approved this type, and granted a permit in September, 1903.

The plans as approved and contracted for, are for a stiff riveted girder design of 393 feet 9 inches span, sup-

ported on steel towers resting on pile and concrete foundations, with the bottom chord of the bridge 135 feet above high water.

Two towers 187 feet high will be built first, one on either side of the canal. To these will be attached temporary bents. Work on the connecting horizontal trusses will progress from either side after the manner of cantilever construction. When the ends are joined high over the middle of the canal the bents will be taken away.

The ferry car is suspended by stiff riveted hangers from trucks running on tracks placed within the bottom chords of the trusses. The car is proportioned to carry a loaded street car weighing twenty-one tons, and the remainder of the floor loaded with 100 pounds per square foot. The trusses are designed to carry, in addition to their dead weight of 330 tons, a live load of 120 tons, consisting of the trucks and machinery, the hangers and the loaded car. With the assumed wind load of fifty pounds per square foot against the car and hangers, the live load will be taken entirely off the leeward truss and concentrated on the windward side, so that each truss must be designed to carry the entire live load. The live load stresses are increased for impact as follows: Forty per cent. for chord members, 60 per cent. for posts and diagonals and 70 per cent. for hangers and sub-verticals.

The stresses due to suddenly starting or stopping the car, and to traction, are carefully considered in all affected parts of the structure. Temperature stresses due to a change of 150 degrees F. are provided for in the design.

All parts of the structure are calculated for the assumed wind pressure of fifty pounds per square foot on all exposed areas. The permissible working stress for soft steel is 15,000 pounds, and for medium steel 17,000 pounds per square inch for tension members.

The maximum stresses due to a combination of wind pressure and vertical loading are allowed at 19,000 pounds per square inch for soft steel and 21,000 pounds per square inch for medium steel. The shearing stress in rivets is fixed at 11,000 pounds per square inch. The trusses are of the double system Warren type, with rivetted connections throughout.

The hangers for supporting the ferry car are of stiff riveted construction, thoroughly braced in all directions, to reduce to a minimum the swaying by the wind. The motive power of the car will be electricity, as will also be the heating and lighting.

Owing to the location of the bridge, it is deemed desirable to have a large reserve power, so that if occasion should arise the car could be moved very rapidly. Duplicate fifty horse-power motors will be employed and so arranged that if one is out of order the other can operate the car. The power will be supplied from two independent sources, and a hand-power drive is also provided.

We illustrate the side view, end sections, and the erecting diagram which also was approved by the war department. Work to be completed November 1st, 1904, by the Modern Steel Structural Co., of Waukesha, Wis. The weight with machinery is 700 tons, and the completed work is to cost, exclusive of the foundations already in, \$100,000.

WATER POLLUTION FROM DRAINAGE.

The Board of Health of the state of Minnesota on July 9th, 1902, after having obtained from their attorney an opinion as to their powers under the laws of the state, passed the following resolutions:

"Resolved, That from this date all villages, cities and public institutions contemplating putting in new water plants, or repairing or extending old systems, shall submit to the State Board of Health a statement showing the source from which the water is to be taken, and the plans, if any, for purification or filtration of the water.

"Resolved, That from this date all villages, cities and public institutions contemplating putting in new sewerage systems, or repairing or extending old systems, shall submit to the State Board of Health a statement showing the source and place of discharge for all sewage from such systems, and the plans, if any, for the purification or filtration of the sewage."

Under date of July 16th, 1902, a circular letter was prepared giving the legal opinion and the resolutions already quoted, and sent to the parties interested. Not receiving the attention that the subject warranted in the opinion of the board, that body, at its regular meeting January 12th, 1904, passed the following preambles, resolutions and provisions:

"Whereas, The laws of the state provide for the protection of any cistern, well, pond, lake, stream or river in Minnesota against pollution from sewage, drainage or refuse; and,

"Whereas, With the growth of the state and the construction of sewers for villages and cities, there is a constant tendency towards the pollution of such sources of water supply; now, therefore,

"Be It Resolved, That the discharge of sewage by any village, city or other municipality, by means of artificial drains, or a sewage system, into any well, pond, lake, stream or river in Minnesota, is declared to be a public nuisance and hereby prohibited, unless such sewage is first passed through a septic tank or filter bed, or both, as the case may require, the plans for the construction of said septic tank or filter bed having been first approved by the Minnesota State Board of Health.;

"Provided, That this resolution shall not apply to any such discharge of sewage from any drain or sewerage system heretofore constructed, until after January 1st, 1905.

"Any person, village or city, or village or city officer, violating or assisting in the violation of the provisions of this resolution, shall be deemed guilty of a misdemeanor and punished by a fine of not less than fifty (50) dollars nor more than one hundred (100) dollars for every day such sewage is permitted to run into any such well, pond, lake, stream or river.

Unquestionably the board believes it has the power to enforce the order of January 12th or it would not have issued it. Notwithstanding the former order of a year and a half earlier, the latter has a certain suddenness about it—providing it is to be enforced. Many small towns of the state have considerable sewage systems—some of them quite a bit of paved street areas—while the Twin Cities cover something like 100 square miles after a fashion, and the storm water of considerable areas of each finds its way into sewers, as well as a vast amount of house drainage outside the area of paved streets. Probably neither of the (three) large cities of the state could any more than set in motion the proper legislation within the time allowed, to say nothing about raising the means and doing the work.

Nevertheless, the pollution of streams by sewage and objectionable refuse should be stopped, and there is no better time to begin to stop it than now, and if the board

has the power to stop it let us hope that they will apply it in a way to accomplish the end with the greatest degree of efficiency and economy. As it is, plenty of trouble is promised the board, but nothing less could be expected of so radical and Herculean an undertaking, and if the board obtain their object within a reasonable time they will have placed Minnesota well to the front of all the states in respect to water supply.

The board has caused to be reprinted a booklet prepared for the American Water Works Association, by Mr. Rome G. Brown, on "The Law Relating to Pollution of Waters of Lakes and Streams." Beginning with, "O, the One who acts according to his heart, gone out of Sahou! I did not soil the water"—from the Egyptian "Book of the Dead." It cites nearly a hundred authorities from all lands and times to establish the right of riparian owners to unpolluted waters.

Except for the great amount of water used by the modern urban resident, the reduction of sewage to a fairly innocuous condition would be a much less serious question than formerly. The use of chemicals is no longer considered among the essentials. The sub-surface irrigation method has been doing good service for a long time, and, although it involves quite an area of land, there are very likely situations where it should be considered. Sewage thus treated has a certain value as a fertilizer—a great value if some of the friends of the system are to be believed. Experiments on a small scale indicate that little or no trouble would be experienced with frost in a properly installed and operated system of this kind, but it would not be wise to assume that the best known European methods could be followed implicitly in the climate of Minnesota without danger. Septic tanks—preferably after the discharge has been through settling tanks to collect the heavier parts of street washings—do much toward ridding sewage of its objectionable features, and if the discharge from these is filtered through beds that are intermittent, the final discharge is found to have been so far changed from the original sewage that pollution is hardly discovered. Several filter beds in use in Wisconsin towns and suburbs are having no trouble from frost. Settlings in these tanks are much less than one would think, while the duration of the filters is beyond belief.

The following is a list of the officers of the Twin City Architectural Club, which were elected at their last meeting held in the Builders' Exchange Rooms at St. Paul, Minn.:

Hal. H. Eads—President, St. Paul, Minn.

A. R. Van Dyke—Vice-President, Minneapolis.

Geo. Blewett—Vice-President, St. Paul.

C. B. Chapman—Secretary, Minneapolis, 33 Loan and Trust building.

John H. Wheeler—Treasurer, St. Paul.

Members of Executive Committee—F. G. Corser, Minneapolis; Thos. A. Creswell, St. Paul.

The enormous 150-foot rotary kilns of the Edison Portland Cement plant in New Jersey—60 feet is about the standard length—are said to be working at a saving of fuel amounting to about 30 per cent. This would lop off perhaps 7 or 8 per cent of first cost.

THE WAY TO SUCCESS AS AN ARCHITECT.

BY THEO. C. LINK.

A generation ago in this country nearly all the men calling themselves architects were self-styled practical men, generally mechanics, a little above their fellow-carpenters in achievements with pencil and triangle. The people were satisfied with their ability to furnish them a house like another house in the next street. The pioneer needs little more than shelter.

It was small honor in those days to be an architect in America. There were no barriers to separate the educated from the uneducated. The ostentatious parade of the uneducated one as a would-be professional man, often resulted in his being himself accepted as the representative of his betters by the default of that honorable backwardness in the parade of their virtues, which has ever distinguished the upper orders of the craft.

The educated one undoubtedly was tainted by the company in which he found himself and he made pictures and told plausible lies in colored perspectives. Hence, in the fiction of those days we find the architect a sorry caricature always with the shady sides prevailing. I regret to acknowledge that a faint and hazy impression of this picture lingers to this day in the popular fancy.

Then came the great art wave of 1876, which spread over this country with the suddenness of a Kansas zephyr. Architects delighted in calling themselves artists—fantastic dreamers, men of emotions and inspirations, steeped in an intoxication of ornamental forms from which they struggled to evolve originality. They produced Queen Annes and horseshoe windows. It was openly asserted that ability in design and capacity for business were impossible in friendly association in the same brain. Architecture, it was insisted, is not a business, but an art. The public took them at their own valuation, but where are the foremost men of that day now?

All this has changed in the last twenty years. Architecture, as to-day practiced, is a new occupation in America. A new order has arisen to meet a new demand, and the architects of the new school, like other quick-witted men, have equipped themselves to meet this new demand.

It is of the qualifications for the man who attempts to fill this new demand that I would speak to the young men on the threshold of active life, particularly to him who is allured to architecture as his future mistress by reason of the flattering long-distance view, which seems to him to offer the most honorable intellectual career in the whole curriculum of professional pursuits.

Truly it is a difficult task to analyze the qualities that lead to success in the practice of architecture. No doubt, it is human nature to imagine that one's own profession involves more difficulties and more complexities than any other; and so I feel about architecture. Still, no one will deny the fact that the architect, in order to become eminent in his calling, must be at least competent in an amazing number and diversity of subjects.

To describe the ideal modern architect is to picture the acme of creative perfection. The client expects no less.

This versatile intellectual giant (the architect, not the client) should know all about mathematics, physics, chemistry, decoration, mechanics, painting, electricity, applied art, sculpture, the liberal arts, all the building trades, arboriculture, landscape gardening, law, philosophy, business, ecclesiastical history, hygiene, sanitation, hydraulics, the five orders, the styles, zoology, social economy, civic improvements—in fact, all the arts, sciences and trades, with the possible exception or aerial navigation.

Mind you, I do not say that I am describing anybody within my acquaintance, nor do I draw upon history for a model. Michael Angelo was all right as far as he could go, but he knew absolutely nothing of plumbing, steam-fitting, electricity or sliding-door hangers. Pardon me, I am not frivolous.

I say in all seriousness that the modern architect is expected to know all these subjects which are of such different natures and which emanate from such different and even apparently opposite mental characteristics that it would appear, under the very superficial scrutiny with which we ordinarily examine such questions, almost an impossibility to encompass them all successfully.

Now, we may ask, why do men select a profession in which real success, or at least eminence, entails a life of constant serious study, three-fourths drudgery, no play and rarely a reward of full, unstinted appreciation? Why will men knowingly attempt the impossible?

The temptation is too great. It comes to me with the fragrance of a new thought that the real lodestone is the promise of immortal fame for which no other profession offers equal opportunities to the ambitious. Like the great poets and writers, whose works live forever, the architect can leave behind him monuments in stone and marble that will delight generations who will venerate his name and treasure his memory. To be sure, some paintings and sculptures live forever, but they are stored away in museums; they can never appeal to the masses of the people like a glorious building that stands among them as a friend will stand by you in sunshine and through storms, a close and friendly link between them and the generation of their fathers.

Therefore, so much is sure and indisputable, that a healthy ambition is one of the most important vehicles of success in architecture.

I am aware that it is a dangerous thing to disturb comfortable beliefs, but looking at the men who have been successful in architecture I find that under the existing social and economic conditions the modern architect must of necessity be a forceful business man first and an artist afterward.

The operation of building is undoubtedly the most complicated transaction in the modern business world. I know of no other business that presents the same complexity of interests and requires as much methodical detail, foresight, business tact, executive ability and eternal vigilance, with as small an organization for assistance as he is usually able to maintain. The best design badly executed, with the aftermath of legal entanglements, will affect the standing of an architect immeasurably more than will a veritable

architectural monstrosity executed in a clean, business-like manner. A man can outlive a bad design (are we not, all of us, persistently avoiding certain streets?), but he cannot easily recover from the reputation of having ignored every tenet of common sense and business propriety.

A clean reputation for sterling integrity is a great stronghold and absolutely essential for success in this profession. An architect has many duties almost judicial in their character, and he must enjoy the confidence of both client and contractors for justice and incorruptibility.

I have laid so much stress on the business qualifications and administrative talent necessary to conduct the routine of an architect's office that I may be suspected of considering it merely a commercial science. I do not belittle its aspect as a fine art. I take it for granted that every architect is delighted beyond measure when once in a while he finds himself absorbed in some study of real architecture. I say once in a while, for the architect's usual month is simply thirty days of figures, specifications and plan problems. I know that most people, including some architects, have delusions on this subject. They suppose him in an exalted and noble occupation all the time; he is supposed to have visions and to have his inspiration always on tap.

Architectural inspiration differs from the artistic so radically that a number of sober and solid workmen with the T square and triangle disclaim its very possibility as a spontaneous mental operation. They say that when you have to harness and discipline it to the extent that its results must fit into certain exact dimensions and limitations it loses cast and is debased into a simple process of logical deductions and adjustments within certain laws of harmony and proportion.

However, this is debatable ground. No matter which way you decide it, it is of vital importance that an architect must be an artist at least within the meaning of the modern elasticity of the term. He must have the keen appreciation and innate love of the beautiful—with the longing for the artistic ideal which he himself has carefully set far beyond his own reach, in order that it may indeed be and remain an ideal toward which he may constantly turn and which shall be to him as a religion—with all its hopes and its beliefs and its yearnings for higher and better things. As an artist he should have the creative impulse of his own individuality, together with the strong desire for achievement, working mainly for the purely intellectual satisfaction which comes with the consciousness of a task well accomplished.

Regarding the artistic temperament of which I have spoken, I do not believe that it is, in its normal exemplification, incompatible with good business management. Why cannot a man express his emotional nature and still be the possessor of well-balanced judgment in things material? Are not these merely different manifestations of an idea passing through the mind in this or that manner—much as a physical fact is revealed to us through the agency of this one or that one of our senses? We find no contradiction in our senses, why should we in the process which sets forth an idea?

As in all human efforts, even in art work, concentra-

tion of thought is essential to all successful achievement.

As the architect is rarely allowed to modify conditions, let alone make them, he has always to be resourceful, ever desirous to obtain the right or the best solution to a problem. Strive to be logical. A logical mind will beget a logical building, perversity will bring forth perversity, and beware lest you reveal your true character in your buildings. It is truly said that the children of the mind will reveal the parent.

The architect must be an enthusiast over his own calling—mere assent and willingness to work for a living will count for nothing. He should commence actual work early in life—the longer his experience the better he is equipped.

Although architectural colleges are of quite recent date in this country, and although some of our successful practitioners did not enjoy the advantages of technical and artistic training in schools, the finishing of a course in an architectural school must now be laid down as an essential factor for success. The fatal "taste for drawing" and the dilettante acquaintance with art without a liberal education have brought too many recruits to the drafting rooms and kept them there—an army of disappointed and disgruntled draftsmen of the third order.

The deduction which I therefore make is that the ordinary belief of a successful modern architect's composition as being that of befogged dreamer is a delusion, and that business capacity under the present organization of modern society is a prerequisite to his success, because we find the number of those architects who have achieved success by artistic qualities alone, a minority so small as to become relatively a negligible quantity. The fact remains that the architectural opportunities fall to those who are pre-eminent for business rather than artistic ability.

This is not the place to debate whether this condition is beneficial to the progress of architectural art or otherwise.—St. Louis Republican.

A writer in the Minneapolis Journal states that the Iowa state house was paid for as absolutely fireproof and the state officers are going to overhaul the fireproof contracts that were let to see where the trouble was. There is only one way to make a building really fireproof and that is to have only fireproof material put in it, and then to watch the contractor while he does it. Contractors and architects used to have a little joke among themselves called "The Slow Burning Construction Building." After a few of these structures had burned up like a set of dry goods boxes in hades, the idea fell into disuse and in a big city to-day it is generally acknowledged that there are only two varieties of structures, viz.: fireproof buildings and tinder boxes. The tinder boxes we know will burn; the fireproof buildings we are not quite so sure about. When the fire starts we prefer to be very, very close to the front door and not to have any rheumatism in our left hind leg.



THE DALLAS COUNTY COURT HOUSE AT ADEL, IOWA.

Mark Twain has his share of the spirit of the collector. One day last summer he ran across a fine, old veneered mahogany writing-desk in a New York second-hand store. He had heard that veneering is becoming a lost art, and snapped up the desk and shipped it to Riverdale in triumph.

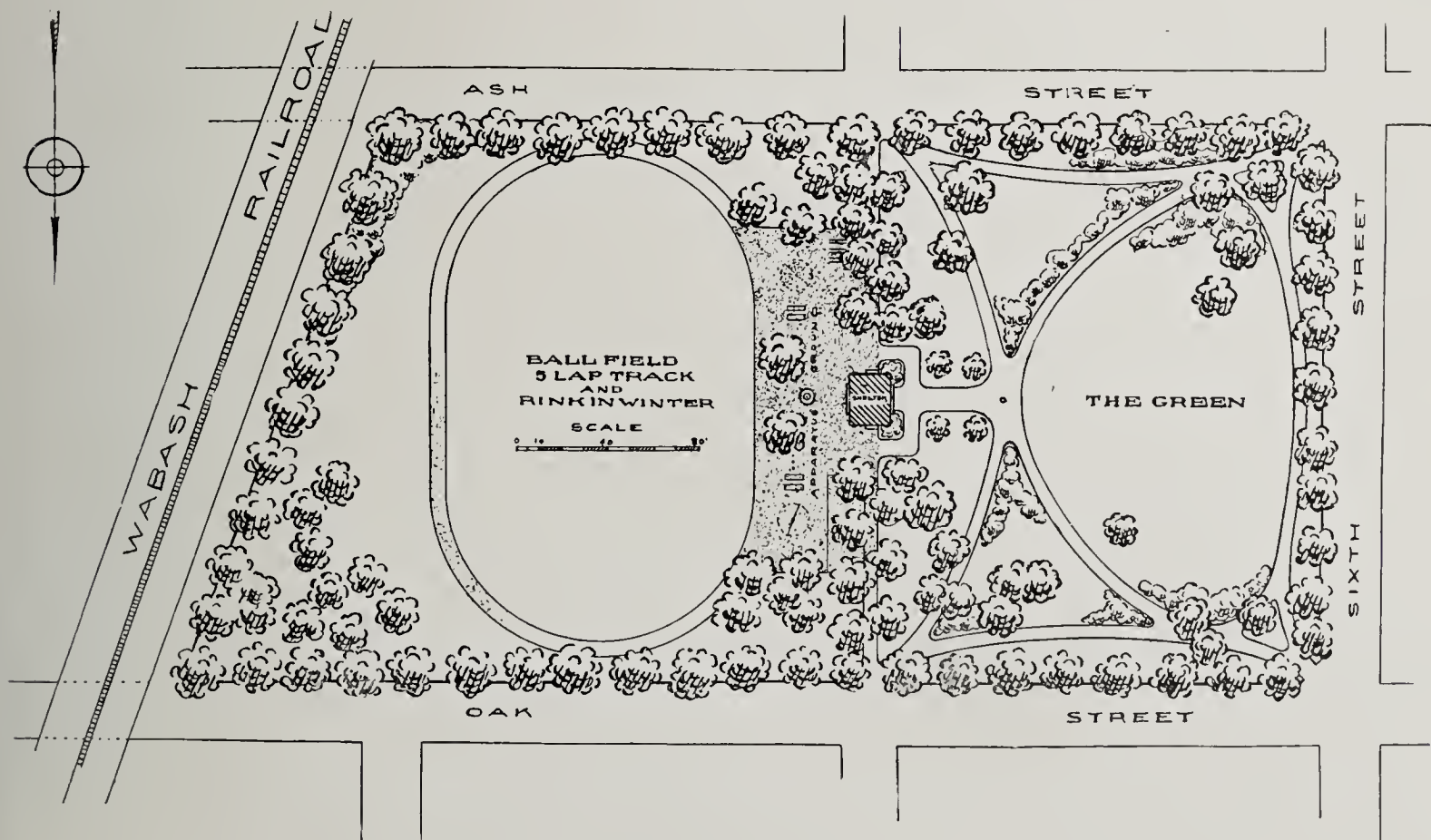
Unfortunately the former Philistine owner had covered it with a thick coat of shiny varnish. The new owner saw that this must be scraped off. As he likes to "putter" he decided to do it himself and then rub in a coat of a certain remarkable oil-finish, the receipt for which he had got in Budapest. But it was a warm day, and the scraping of all the curve and corners of the desk seemed like a better job for the man-of-all-work, the application of the marvelous polish being reserved for his own artistic hand. So he called in the man and told him to take the desk out to the barn and do a thorough job.

Some days elapsed, and to Twain's several inquiries the man gave the same reply—that the work was not yet completed. At last Mark said:

"See here, Terrence; you ought to have that desk done by this time."

"It's coming on, sor, coming on," replied the man. "I was after finishing getting the bark paled off this morning, and I'll have it rubbed up by afternoon."

Mr. Twain went out to the barn. Sure enough, the "bark" was off; and veneering a lost art!—Saturday Evening Post.



ACCEPTED DESIGN FOR ISLE PARK, SPRINGFIELD, ILL.
G. C. Cone, Landscape Architect, Minneapolis, Minn.

**REPORT OF INSURANCE ENGINEERING
EXPERIMENT STATION.**

The Western Architect has referred from time to time to the work of the Insurance Engineering Experiment Station in charge of Prof. Charles L. Norton, under the direction of Mr. Edward Atkinson. The report to the contributors for the year 1903 reached us just too late for the January issue. As an exhibit in accomplishment at small cost the work of the station must be given the palm.

REPORT FOR THE YEAR 1903.

Boston, December 12, 1903.

To the Contributors to the Insurance Engineering Experiment Station:—

GENTLEMEN—We have sent or shall send out twelve reports before January 1, 1904, on the various subjects which may be treated in the laboratory. Our contributions have been mainly from the members of the Factory Mutual Fire Insurance Companies, to which have been added several contributions of considerable amount from the representatives of fire-resistant materials, who have desired tests to be made by Professor Norton, and who have either put up the buildings or established the apparatus at their own expense in order that these tests might be made. In some instances the tests have not been favorable, and, as they had been made at the request of the promoters, it has not been incumbent upon us to make any report as we should have made if we had undertaken the tests on our own motion. In other cases the results of the tests have been so favorable that the promoters have supplied additional funds for printing large editions, thus enabling us to make a general distribution of our documents. We have made a complete distribution of some other reports among the members of the Associated Factory Mutual Fire Insurance Companies, as they dealt with matters of general interest to them all; and we have hoped that the circulation of these reports might lead to additional contributions; in some cases that hope has been justified.

We have also offered and have received subscriptions of ten dollars each from individual engineers, insurance inspectors, and others interested in the prevention of loss by fire, for which contributions we agreed to send all reports that might be made before October 1, 1903. But many of our reports that we had expected to send out before that date have been delayed. We have, therefore, extended these subscriptions to January 1, 1904, supplying to these subscribers reports of all the work completed to date.

We now offer to these individual subscribers the opportunity to renew their subscriptions of ten dollars, in consideration of which they will receive all the reports that may be made in the year 1904, unless our work is previously transferred to the Massachusetts Institute of Technology, which we do not expect during that year. The Institute is not yet prepared to take over the work without an endowment, and we are not yet prepared to lay out a complete and suitable course of instruction in Insurance Engineering.

We have had unexpected delay in getting land at a price within our means, within easy reach of the city. We had made an agreement to purchase an ideal parcel exactly suited to our needs, provided a good title could be given; but the owner, holding under a tax title, could not give one that our counsel would warrant us in accepting. We are still without land for the necessary buildings for testing fire-resistant construction on an adequate scale, and we must wait until we can be supplied with a piece of land at low cost, or until those who may have become interested in this undertaking voluntarily contribute the necessary money to enable us not only to continue our work, but to buy the land on which we may do it in the best manner. I do not ask any contribution on any personal ground. My own services are rendered for what they

may be worth in giving direction to this work, as a part of my professional duty to the members of the Factory Mutual System. By consent of the Institute of Technology, Professor Norton devotes time and energy to this work on very small compensation. He has a greater faculty for performing most valuable investigations at the least cost than any other man of science I have ever known.

I think that use of the money thus far expended will have been fully justified. All the more important expenditures proposed have been passed upon by the Committee whom I have asked to advise in this matter, Messrs. Arthur T. Lyman, Howard Stockton and Theophilus Parsons.

The investigation of bog fuel was not one contemplated in the original project. A small amount of money, not exceeding three hundred dollars, was assigned to this incidental work by consent of some of the original contributors, with the approval of my Advisory Committee. The subsequent expenses, perhaps to the same amount or a little more, have been covered by special contributions for this specific purpose.

The total amount of money contributed to date from all sources has been.....\$17,689.32
The expenditures for apparatus, compensation of experts, printing and circulating reports, and sundries to date, have been..... 5,574.19

Balance on deposit in the State Steel Trust Company.\$12,115.13
Apparatus of considerable cost is now in our possession for future use.

Any suggestion in regard to the future conduct of this undertaking will be gratefully received by the Director and by the Professor in charge. I append a list of our reports to date.

Respectfully submitted,

EDWARD ATKINSON,

INSURANCE ENGINEERING EXPERIMENT STATION.

List of reports issued (or to be issued) in the year 1903:—

- No. I.—Fire-proof Wood—so-called.
- No. II.—Sound-proof Partitions
- No. III.—Wired Glass—Diffusion of Light.
- No. IV.—Corrosion of Steel.
- No. V.—Slow-burning or Mill Construction.
- No. VI.—Mud Fuel, Coke, Gas.
- No. VII.—Fire-resistant Roofs for Foundries and Machine Shops.
- No. VIII.—Diffusion of Light.
- No. IX.—Second Laboratory Report on Corrosion of Steel.
- No. X.—Test of Columbian Fire-proof Construction.
- No. XI.—Fire and Heat Resistance of Luxfer Prism Glass Electro-glazed.
- No. XII.—Bog Fuel, Coke, Gas and Secondary Products of Gas.

EDWARD ATKINSON,

The unanimous and commendable action of the Board of Education in permitting the use of our public school buildings as "neighborhood centers" makes them in a true sense the property of the people. To restrict these costly structures, built and maintained at public expense, to the comparatively few hours devoted to formal education is a policy which the intelligent citizen cannot approve. Wherever the people of a neighborhood are willing to meet the extra expense of opening a school building—outside of school hours—for a proper purpose, and also are ready to secure the board of education against either incidental or accidental wear and tear, the privilege of using such building should be open to them. This the board has now established, and it is hoped the innovation may become a settled and helpful custom.—Chicago Evening Post.

THE NEED OF MUNICIPAL ARCHITECTS.

BY E. P. OVERMIRE.

The recent appointment of Mr. Cass Gilbert as expert adviser in all proposed future improvements of a public nature at St. Paul, Minn., is a happy omen for the development of that city and a well-deserved tribute to a worthy son who has given to his home town a most worthy monument in the nearly completed State Capitol building.

That such advice is needed in all of our large cities, has been patent to all true lovers of art and beauty for a long time past, as is evidenced by the appointment of departments of municipal art, or their equivalents, at Chicago, Washington, Cleveland, New York, Minneapolis and elsewhere. It is probable that other leading municipalities will follow this illustrious leading, and that we shall soon have wholesome checks upon the future development of all schemes for public improvements. The pity of it all is, the absence, or inadvisability of the inclusion in the legitimate functions of such experts, of similar control over private improvements, particularly of such as affect adversely our advance along purely æsthetic lines.

We are sufficiently advanced in our civilization to fully warrant such supervision, and the absurd idea prevalent in many quarters that these matters are of minor importance is a reproach to our boasted culture. We need more breadth in our culture, and also in our individual ideas as to personal responsibility for general results. The idea that the individual is a law to himself when it concerns his home or his business has worked great injustice to the municipality at large, and, except in unusual instances, has caused great regret to those gifted with sufficient foresight to see how cramped and handicapped our descendants will become a generation or two hence, when they shall be fully awake to the possibilities that we had within easy reach and failed to appreciate or utilize.

No really good thing ever happened when it concerned the planning of a city or of a building. The noblest cities of the ancients were the result of deliberate and well-studied planning, and forethought on the part of trained artists who were given a free hand in carrying out approved ideas, just as our leading architects and landscape artists have had in the execution of elaborate municipal improvements to-day. What a city Washington would be to-day had the designs of the immortal George and Major L'Enfant been adhered to; after a century of growth they have returned to those designs with zest, and, best of all, they are going to be realized soon. Americans will not then be obliged to go abroad to see the most beautiful city in the world—it will be to our own national capital that we shall go for that vision—how appropriate!

Our great expositions, beginning with the Centennial in 1876 and coming on down to the World's Columbian Exposition, those at Omaha, Buffalo and Charleston, and the Louisiana Purchase Exposition so near at hand, have been the means of educating our people to the possibilities of architecture and landscape gardening, working together with the fine arts in the hands of competent artists; likewise such noble creations as our National Capitol and Con-

gressional Library at Washington, the great public library movement, our new Minnesota Capitol and that at Providence, R. I., the great university movement, etc., have all exercised a potent influence for the sake of art. This is the leavening process that is soon to permeate the entire mass, and, while it works slowly, is nevertheless working most surely.

The enormous increase of private wealth in recent years has opened doors of endeavor for the building of vast architectural piles for private estates, like those at Biltmore, N. C., at Newport, R. I., at Palm Beach and St. Augustine, Fla., and at San Francisco and Palo Alto and elsewhere in California, the like of which our ancestors but vaguely dreamed.

We cannot think of all this wealth without considering the immense service it has rendered to the world of art; the cold fact that it would have been an utter impossibility, except for almost boundless wealth, a large share of which has been used in this educating process for the general public. Whether or no the owners of great wealth have received adequate returns for the effort to acquire it does not concern us half as much as does the devotion of at least a fair share of it to purposes which shall contribute to our elevation in both a moral and an æsthetic sense. This is one of the great ends to be reasonably expected of wealth, which can be effected by no other means. Like many other agencies for good or evil, all depends upon a proper use of that agency whether it shall prove a curse or a blessing.

Looking at the matter, then, from as broad and liberal a point of view as is possible, we have cause to feel very greatly encouraged at the trend of events in our world of art, which means, if anything, the world of higher ideals, of purer ambitions, and of a more united and worthy achievement than has hitherto been possible. To just the extent that the individual is concerned for these things, to just that extent shall we make true and substantial progress in art.

"Let us, then, be up and doing;
With a heart for any fate;
Still achieving, still pursuing—
Learn to labor and to wait."

NEW STANDARD FOR WORLD'S FAIR.

All things appear to work to the end of making the 1904 Universal Exposition stand in a class by itself. In magnitude and scope there has never been anything like it. No enterprise of the kind was ever endowed with so great a working capital. The world's storehouses never before contained such treasures to draw from.

The Columbian Exposition at Chicago ten years ago, until the present enterprise was launched and its magnitude was apparent, was supposed to have fixed a standard for all time to come. That theory has been thoroughly exploded by the marvelous accomplishments of the Louisiana Purchase Exposition. The World's Fair at St. Louis covers 1,240 acres of ground. All of Chicago's exposition was contained in 633 acres. Not in mere size does that present enterprise surpass all others. The great exhibit palaces differ from any constructed for former exposi-

tions. They are all revelations in the architect's art. The big, rectangular buildings of the past have been superseded by a group of wonderfully beautiful and symmetrical structures, assembled in the form of a lady's open fan. Collectively they are many times larger than any other group, and for architectural beauty they immeasurably surpass anything the world has ever seen. The architects departed from beaten paths, and sought and found new features which they happily combined with the best examples of the architecture of other days.

When the plans and dimensions of the buildings were first made public the people were amazed at the daring of the exposition management. Even were such mammoth buildings erected, where would the exhibits necessary to fill them come from? Now that the buildings are all finished, and the work of installing the exhibits is under way, the question is answered. Even were the buildings three times as large, they could not contain all that has been offered. Inner courts have been roofed over, and where exhibitors have asked for thousands of feet of space they have had to content themselves with hundreds of feet.

Such being the case, the exhibitors and the exposition management have been enabled to exercise a discrimination that could not have been possible ten years ago. Official figures show that in the decade following the Columbian Exposition the value of the manufactured products has increased 50 per cent. Thus the world's storehouses contain treasures that were never before accessible. In the close discrimination that has been observed only the best and most worthy have been accepted, and each exhibit will represent the best in its class.

Life and demonstration have been the keynote in the exhibits division, and wherever practicable, processes are shown together with the finished product.

The exhibit of the Philippine Islands, which covers forty acres, and has been created at a cost of about \$1,000,000, is an exposition in itself. The foreign nations have never put forth such great exertions to make interesting exhibits. The keen rivalry that has been manifested between the most powerful nations is reflected in the exhibits from the newer and smaller countries. China is making such preparations as it was never deemed possible that exclusive nation would consider. Fifty-one states countries are working in unison to make the universal exposition complete in every detail.

At this writing, nearly four months before the opening, no doubt exists about the fair being finished in every particular. The show palaces are all ready and the exhibitors are installing their exhibits. The roadways are practically all made. The intramural railway, encircling the grounds, is ready for the rolling stock and the application of power. The landscape is so advanced that a few weeks in the early spring may see it perfect, even though all work should cease until that time. The weather at St. Louis has been so mild all fall, and thus far in the winter, that but few days have been so cold that work out of doors was impracticable.



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MODERN RAILWAY ARCHITECTURE.

The Chicago Great Western House Cars contain everything but the upper story that a house should have. These are the cars which were put on the Great Western day trains between Minneapolis and St. Paul and Chicago, Des Moines and Omaha December 13th.

They are 79 feet long, over all, which is not only longer than most cars, but longer than most houses. At one end is a wide, closed vestibule and at the other a piazza or observation platform. The exterior of the car is painted in olive green and decorated in gold, and is unusually attractive on account of the many wide windows and the small high windows in the kitchen and toilet rooms, instead of the oval windows which have been used in the ordinary parlor cars.

These cars are, of course, heated by steam, lighted with gas and provided with hot and cold water and all the modern improvements, including a white coated porter to answer your bell.

VENTILATION.

The modern tendency of men and women to crowd together in cities and in buildings, and the increased valuation per foot of city ground compelling the average family to crowd into small and closely constructed houses, have forced upon the attention of the great medico-sanitary specialists of the world, the study of the consequent dangers and how best to avert them. The subject of ventilation receives necessarily a large share of their thoughtful consideration.

In the act of breathing we perform the essential function in the process of sustaining physical life. There is no nutrition of the blood without air, and yet just in proportion as the air we breathe is vitiated by respiration so largely depends the falling or rising of the tone of health of the system. It is additionally evident, then, that we not only must have air, but that it must be so free from the presence of noxious properties that we are generally protected from the dangers to health and life to which we would otherwise be exposed.

The great desideratum is, that the air we breathe shall be fresh atmosphere in which the normal proportion of the pure vitalizing oxygen is present.

Whatever the science of physiology has taught us of parts and functions of the organs of the human body, man has known from the first that "the blood is the life of the body." What we have neglected and still continue to neglect concerning this universally known fact is the proper care we should observe to secure the best and healthiest condition of this life of the body—the blood. As a rule sick men and women make every effort to recover health. They spend money, they travel if they can, they seek the most skillful attention, and so desperate is the desire to live that sacrifices of precious heirlooms are made to obtain the money to prolong life. Rich and poor alike are thus anxiously concerned in the effort to throw off illness, that they may live.

Why is not a portion of this concern anxiously displayed in preventing disease or general impairment of health? Why are we not more concerned than, as a rule the best elements of the race show themselves to be, in preserving in purity the blood which is the foundation of the life of the body, by supplying it those properties or ingredients which nature, so abundantly and freely and perfectly, has provided for us?

As the essential food of the blood is the *oxygen* of the atmosphere, to be indifferent as to whether I am securing this food for my blood is deliberately to court loss of health, and if my indifference has been prolonged and my exposure to vitiated air been heedlessly going on for some time, then I am deliberately courting death.

Constituted as we are the one object of our breathing is to sustain the blood, and sustaining this we are sustaining our physical life. And yet, as one of the most eminent authorities on our subject has startlingly and none the less truly said, "Our own breath is our greatest enemy." Why? Because, while the air we breathe into the lungs has conveyed the vitalizing oxygen to the blood, so the blood having used this, changes it in the process, and returns it to be

breathed out of the body as now made noxious and so injurious by the presence of carbonic dioxide.

A man produces by breathing about ten cubic feet of carbon dioxide in twenty-four hours, thus if we suppose him to be confined in a room containing one thousand cubic feet of air—which a space ten feet square and ten feet high would afford—he would, in twenty-four hours, contaminate the atmosphere to the extent of one part of carbonic dioxide in one hundred parts of air. A certain amount of carbonic dioxide given off by the skin would have to be added to this. But suppose twelve persons to occupy the same room, then the like effect would be produced in two hours. Now air containing one per cent. of carbonic dioxide is highly injurious, and even half that quantity cannot be long breathed with immunity. Respiration can be continued only with difficulty in an atmosphere containing 5 per cent. of this gas, while 30 per cent. speedily destroys life.

Man's remedy for all these dangers lies in his securing proper and adequate ventilation.

In many of our modern houses the effect to have them almost air-tight in winter is so successfully accomplished that the bodies of the inmates thus stove-heated, and breathing such contaminated air, become as delicate as any exotic in a hot house, to which the pure healthful breath of heaven is death.—Architects' and Builders' Journal.

MOST VALUABLE MARBLE IN THE UNITED STATES.

The most valuable deposits of yellow marble in the United States, if not in the world, has lately been discovered five miles from Helena, Mont., by A. J. Dunton of Rutland, Vt.

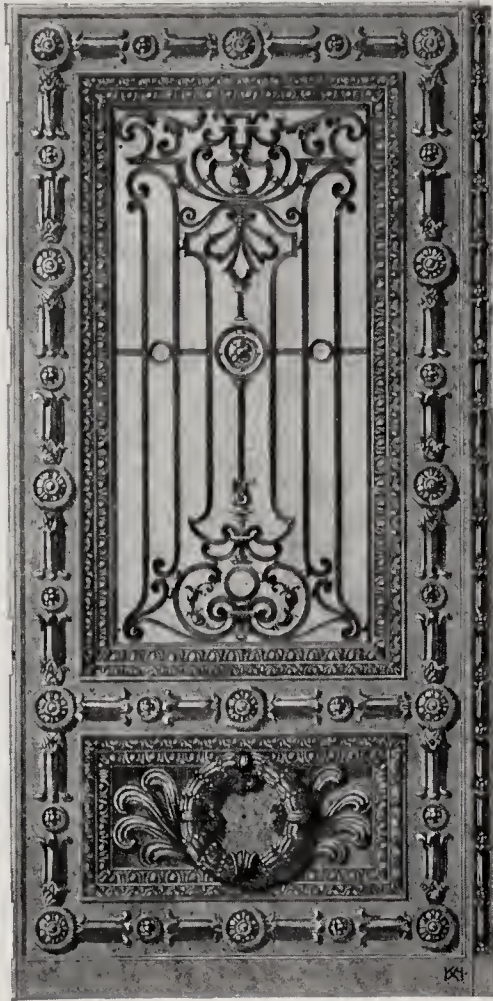
Mr. Dunton is a marble mining engineer of twenty-five years' experience. He has also been engaged in the wholesale marble business in his home town for about the same length of time. In October, 1903, he was sent to Helena by a party of Eastern capitalists to locate marble mines if there were any in that district.

Mr. Dunton says he had no doubt when he went west that there was marble there, but even he had no idea of the vast amount and the great value of it. Yellow marble, one of the most valuable grades, and greatly used for the interior decoration of public buildings is found in large quantities in the district. There is also white and blue marble in the mines.


The only place in the United States where yellow marble has been found previous to this is about ten miles south of San Francisco, and only in small quantities there. There are mines of yellow marble in Italy, and the people of this country have been compelled to rely on them when they wished to purchase any.

It is said that the discovery of these mines will have a great effect on the market price of marble, and hereafter it will not be necessary for purchasers to pay the exorbitant prices demanded by the Italian shippers.

There are other marble mines farther west, according to Mr. Dunton, but they contain mostly white marble. This is a very valuable grade, but not as valuable as yellow marble discovered by him.



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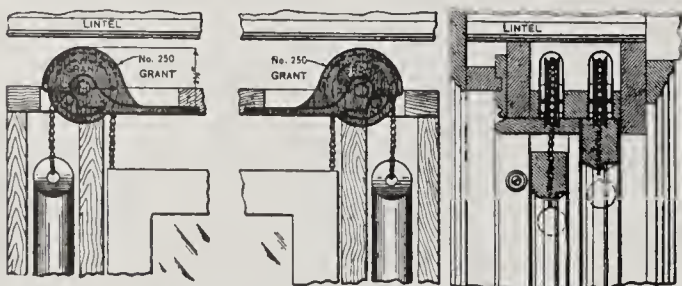
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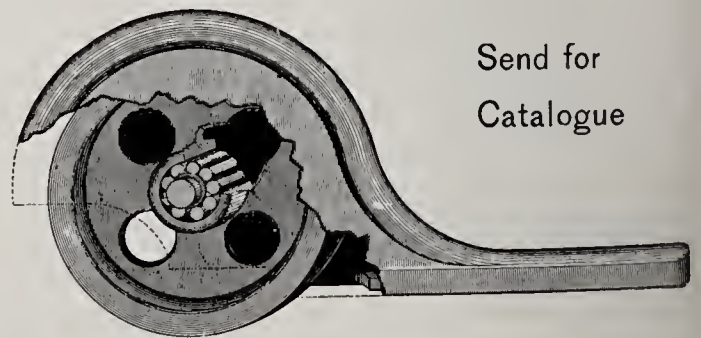
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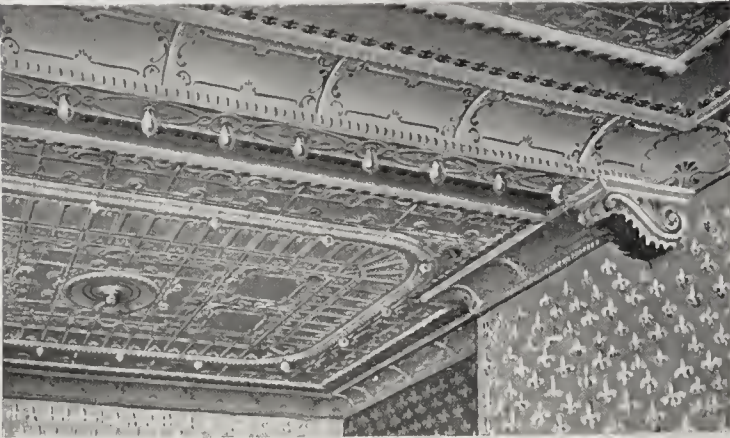
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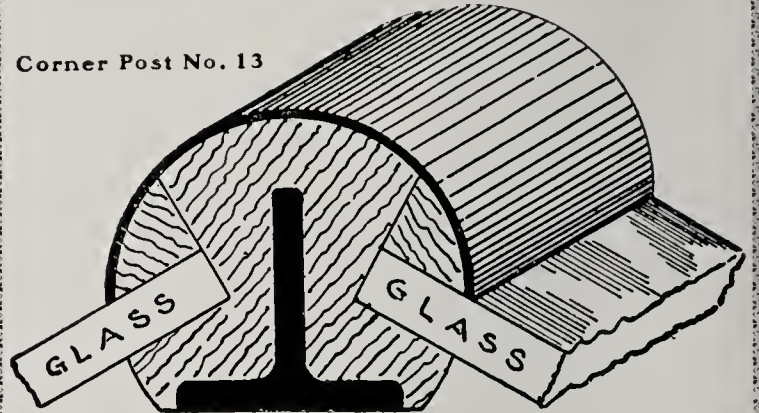
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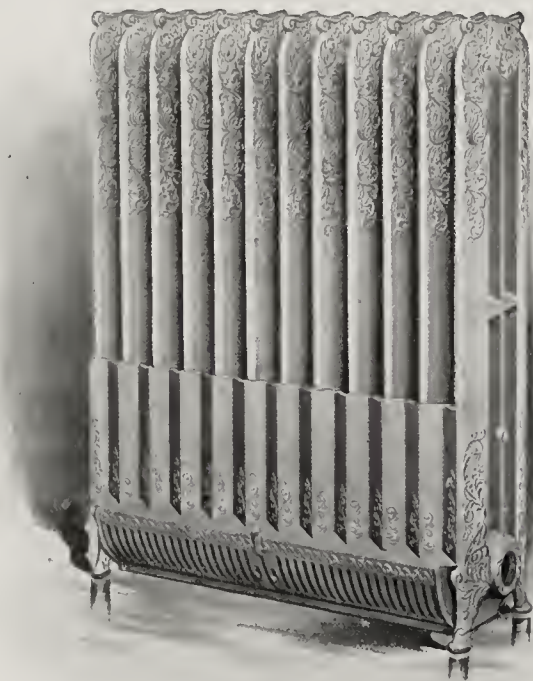
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Catalogue de luxe for 15c to cover postage.

IMPORTANT NOTICE.

THE great saving in both material and labor secured through our end-matched flooring invention, Patent No. 531,711, as well as the superior quality of the floors, has led to the general adoption of end-matched flooring all over the United States.

The Government engineers, after the usual careful and painstaking investigation, have also approved it and specify its use in Government Buildings.

While we expect to enforce our rights to the extreme limit of the law, we have made arrangements to **protect the public** and give builders and others an opportunity to procure the end-matched flooring **without danger of litigation**. This may be done through our licensees who, in order to identify the licensed flooring, will invariably mark it **Wilce Patent Jan. 1st, 1895**, together with their own **name or trademark**.

Rumors are afloat that the price of end-matched flooring will soon be advanced two or three dollars a thousand. We wish to say that there is no foundation for any such rumor, and in this connection we ask you to

REMEMBER

FIRST. That the United States Circuit Court has fully sustained our Patent,

SECOND. That we not only consented but joined in the request to reopen the case to permit further evidence to be submitted.

THIRD. That this action does not indicate any change in the **opinion of the Court**, as it was by consent of both parties.

FOURTH. That **end-matched flooring has not been advanced in price and will not** be at any time, any more than is warranted by the usual conditions governing the lumber trade.

FIFTH. That there is not an **inch of waste** in laying end-matched flooring, and besides this there is a **great reduction in the cost** of laying it.

SIXTH. That it makes a better floor.

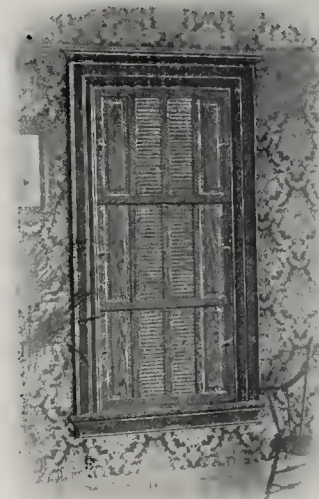
SEVENTH. That end-matched flooring will **always be sold** at a price that **insures the builder** a substantial **financial saving** over any other flooring in use of equal quality.

EIGHTH. That in using end-matched flooring an under or sub-floor is unnecessary, thereby saving the cost of material and of laying such under floor.

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Respectfully yours,
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We make them both Spring Balanced and Weight Balanced.

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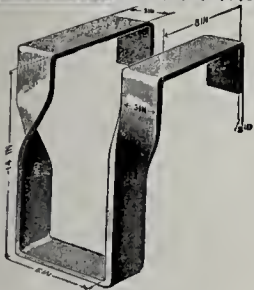
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ternes being so much superior to any other brand ever produced, we would like to place a sample in the hands of every architect, contractor, builder and roofer who is not acquainted with this great advance in roofing. Free, prepaid, on request. Our products are for sale by all first-class wholesale metal houses.

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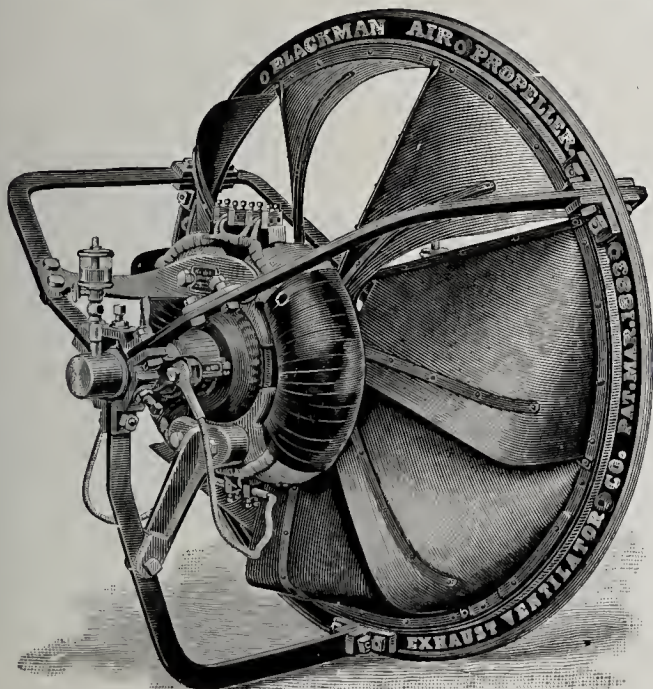
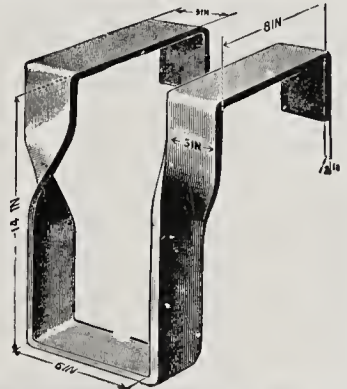
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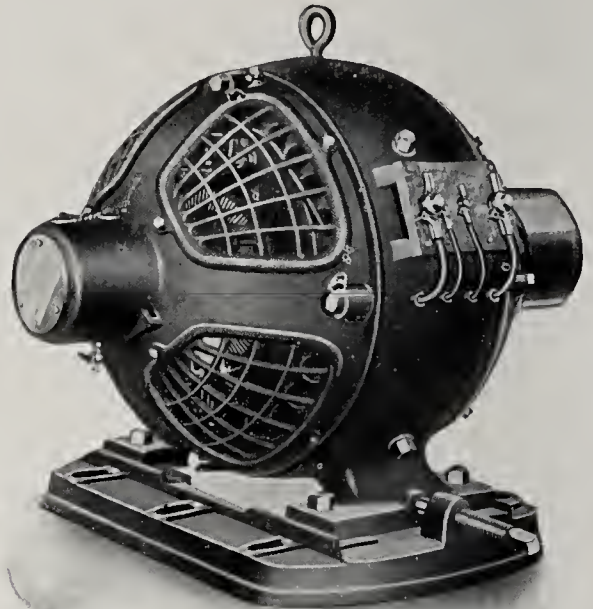
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Western Architect Pub. Co.,

Minneapolis, Minn.

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Enclosed you will find check for advertising for September, October and November. We are well pleased with the advertisement as we have already received quite a correspondence from the same. I have just returned from New York, and while there we organized a company to manufacture our stone. We interested some of the best known builders in the city.

Yours truly,

STEVENS CAST STONE CO

Per. *C. W. Stevens*

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THIS IS ACCOMPLISHED BY THE USE OF THE

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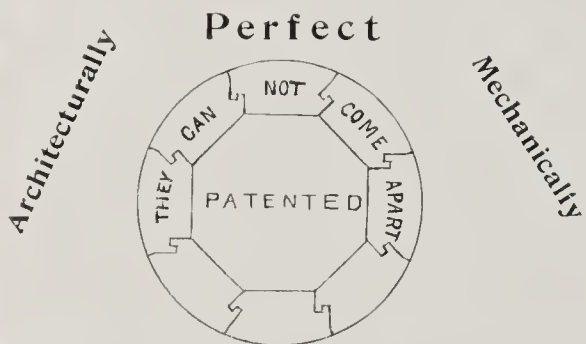


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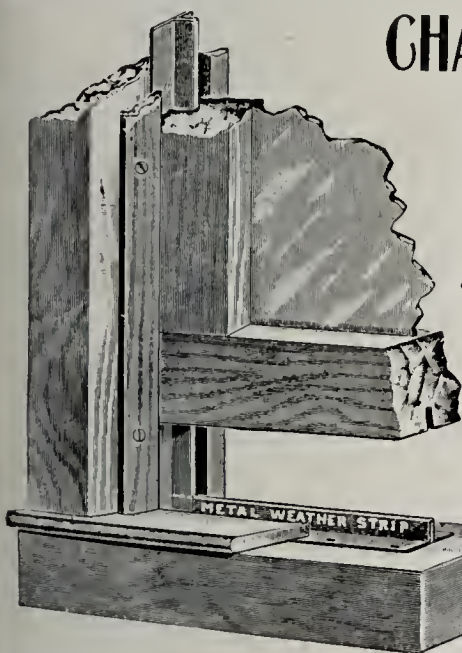
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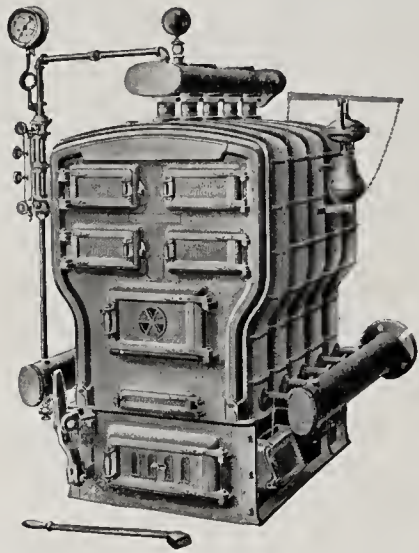
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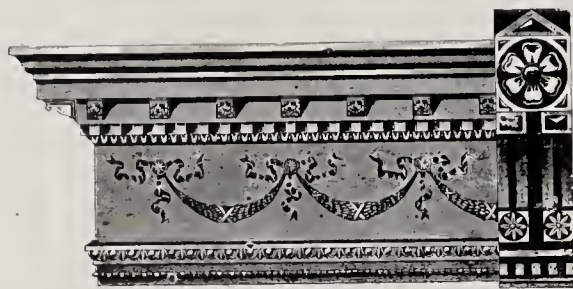
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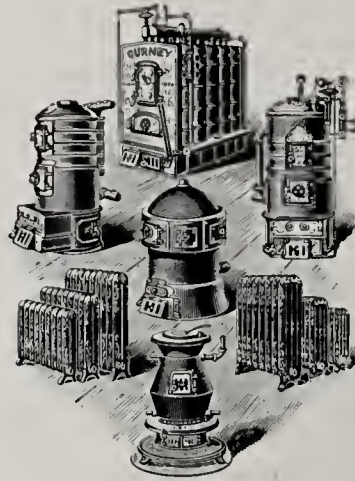
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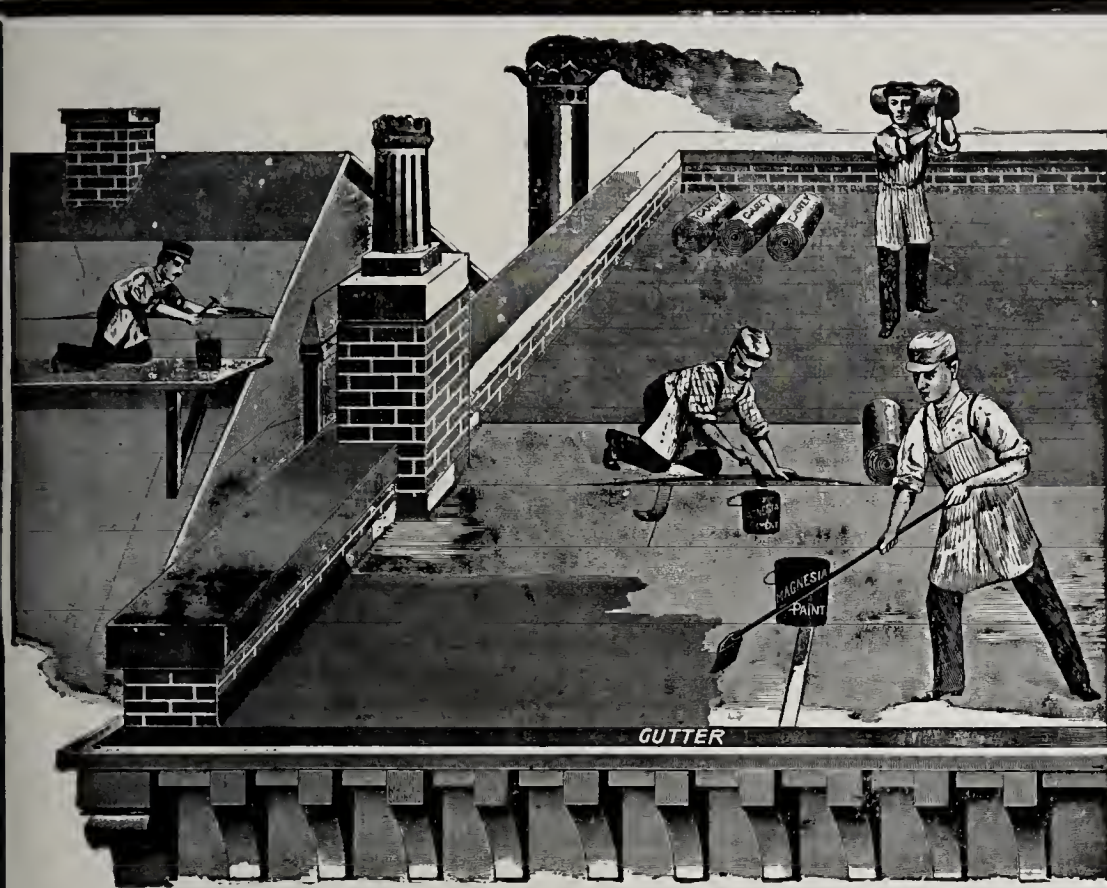
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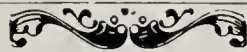
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Insurance Exchange Building, MINNEAPOLIS, MINN.
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D. H. Burnham & Co., Architects, will on March 15th, 1904, move their offices in Chicago from 1142 The Rookery, to 1417 Railway Exchange Building, corner of Jackson and Michigan Boulevards. Permanent telephone 4145 Harrison.

WANTED—Two responsible architectural firms want the WESTERN ARCHITECT to find a good draughtsman for them. Applications addressed to the Western Architect Pub. Co. will be forwarded to these firms without delay.

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It is very comfortable to have our offices and homes heated to a uniform temperature of 68 degrees or 70 degrees; but when this is attained at the expense of the moisture in the air, we have sacrificed health, and got only a small degree of comfort, for a too low degree of humidity is not comfortable, and is very unhealthful.

The Johnson Service Co., which devised the first successful thermostat, has at last invented a humidostat, which, in many respects is more important than the thermostat; but the truth is, each of these devices should be considered indispensable to every building intended for human occupation. The thermostat has come into almost universal use in new buildings, both because it soon pays for itself in the saving of fuel, and because it affords the comfort of a uniform temperature.

The humidostat is bound to make its way even more rapidly than the thermostat, because it soon saves its cost in fuel and robs indoor life of its discomfort and danger.

The principle of the humidostat is not unlike that of the thermostat. It controls valves which admit moisture from evaporating water, and is automatic.

Scientific writers, i. e., writers who intelligently observe common phenomena and interpret their meaning, have long pointed out the evil results of air robbed of its natural moisture, as it is in all of our offices and dwellings; and the most conservative estimate of these writers as to the results of such air upon health is indeed startling and almost past belief. We have endured these results because we knew no better; but to endure them longer and to refuse to investigate the claim of a company, of the high standing of the Johnson Service Co., that this evil can be avoided, is not to be thought of in the architectural profession. If this company will guarantee results, not another building for human habitation should be planned without a humidostat.

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Possibly there is no line of industry in the United States that has grown in such proportion in recent years as that of general advertising, which includes publicity in newspapers and magazines and outdoor display advertising, and through its tremendous force the entire basis of modern merchandising has been revolutionized.

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Mr. C. R. Erwin, the new vice-president, has been connected with the company for 20 years and is therefore a veteran in the field; associated with him and Mr. Thomas is Mr. A. D. Lasker, the secretary and treasurer.

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The main offices of Lord & Thomas are in the Trude Building, Chicago, and its eastern branch is in the American Tract Society Building, New York.

A SATISFACTORY HEATING PLANT.

Feb. 7th, 1902.

The Roberts Heating & Ventilating Co.,
City.

Dear Sirs:—We have not forgotten your request to report on the working of the heating plant you put in for us, but have been waiting for a test in the coldest weather. We are now prepared to say that we are exceedingly well pleased with it. The method of distributing heat was somewhat novel and we are prepared to re-enforce this plant with extra heat for the office. But we find the heat we have amply sufficient and well distributed. We are heating our ground floor to a suitable temperature for office work, the second floor is comfortable for the work carried on there, and the third floor is kept considerably above freezing point in coldest weather. The fourth floor only we do not need, or try to heat. We have not forced the furnace at any time, but could increase our heat if necessary by doing so. In short, we are perfectly satisfied, both for results and amount of fuel consumed. We put in your hot-air system for the sake of economy, but we would not care to exchange it at the same price for an elaborate steam or hot water plant.

Truly yours,

G. P. DERICKSON & CO.

The Variety Mfg. Co., of Chicago, have just installed at the Albert Dickinson Co.'s new warehouse in Minneapolis their Cross Horizontal folding doors for freight and warehouse use. Their representative, Mr. W. M. McGillicuddy, 415 Sixth Avenue South, would be pleased to show these doors to any architect or engineer who would like to see them operate.

CEMENT COMPANY IS IN A GROUCH.

Bids are Lowest, But Detroit's Commissioners Will Probably Not Award Them the Contract.

Angered over its loss of a once profitable trade in Detroit the Milwaukee Cement Co. is planning a bitter fight before the council committee on streets on Commissioner Maybury's contract with the Western Cement Co., of Louisville, for the coming year's supply of natural cement for paving and sewer use.

In the bids opened by the commissioner last Monday, the Milwaukee people put in a net price of 58 cents a barrel, 5 cents lower than its own price of last year, and 4 cents lower than the Louisville price for this year. But the low price inducement did not land the contract, so far as the commissioner was concerned.

In rejecting the Milwaukee bid he was acting on the judgment of the council committee on streets of last year and on tests made by Cement Inspector Kinner. Milwaukee cement was being used on Michigan avenue and other jobs last summer, when Ald. Magee, Black and other members of the committee peremptorily ordered its use discontinued, basing their action on tests made from samples gathered by Ald. Black. Since then the commissioner had his cement inspector make very thorough tests of both brands, and finds the comparison bears out the judgment of the aldermen, the Louisville cement showing up considerably stronger. The personnel of the council committee has changed somewhat since last year, Ald. Koch and Reinhardt being new members. The Maybury contract must be passed on by the committee, and the only hope of the Milwaukee people is in convincing the new members that the judgment of the old committee, the commissioner and the cement inspector was wrong.—Detroit Evening News, Feb. 1st, 1904.

In strong contrast to the above are the testimonials we publish herewith regarding the Mankato cement, a natural Minnesota product, which, according to the opinions of those high in authority, is recognized as a leader of all natural cements for concrete foundations, underground work, concrete street pavements, heavy bridge masonry, sewers, etc., as follows:

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(Signed) W. R. McLAUGHLAN,
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(Signed) GEO. R. CHATBURN,
Adj. Prof. Civil Engineering,
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Dec. 22, 1902.

79-85 Wall Street, New York.

New York, Dec. 24, 1903.

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Minneapolis, Minn., Dec. 12, 1903.

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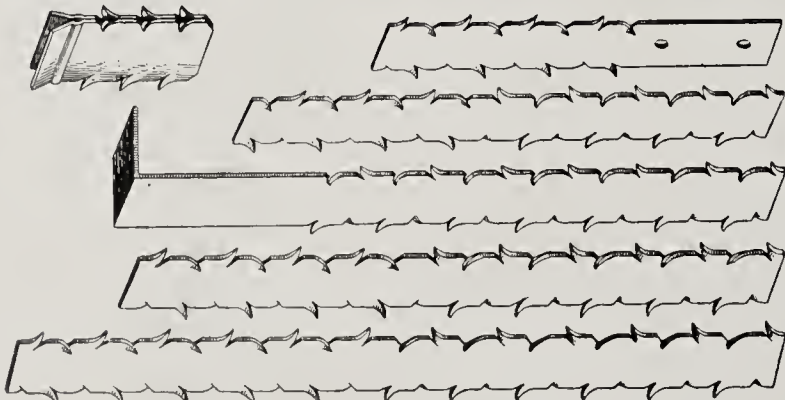
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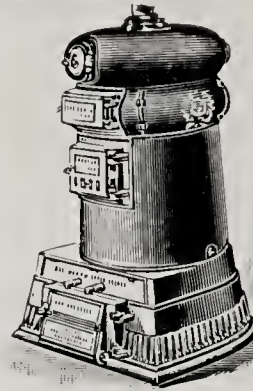
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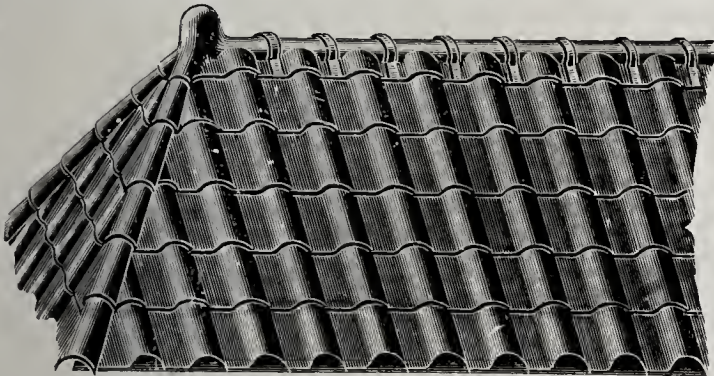
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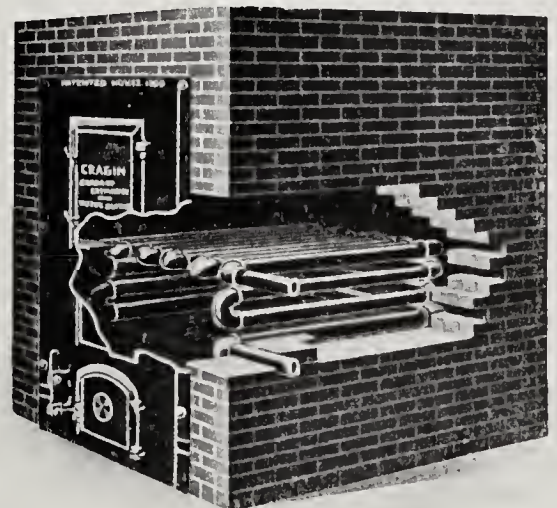
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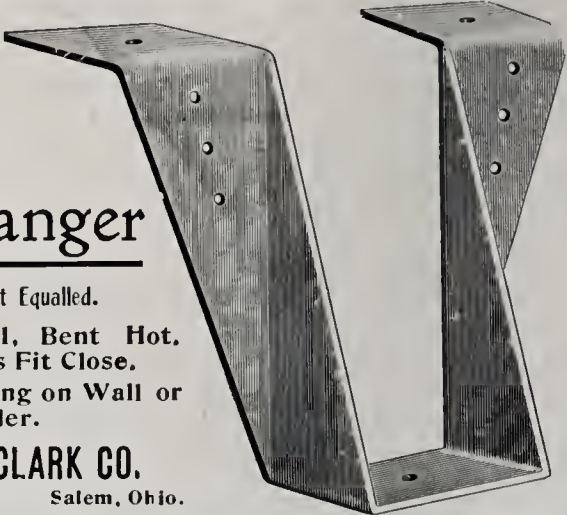
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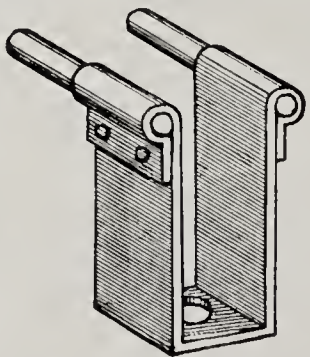
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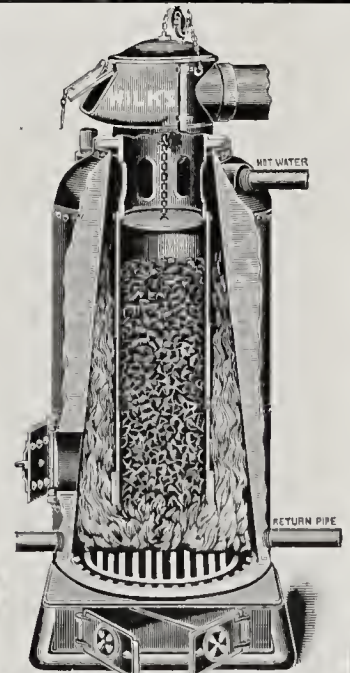
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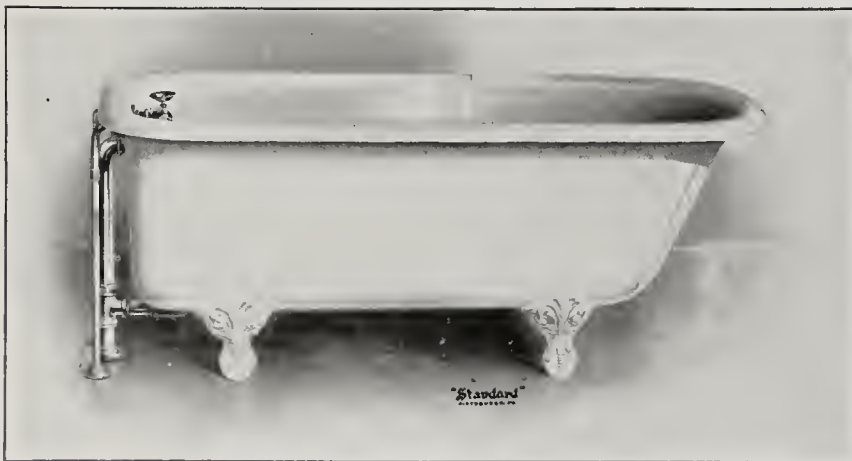
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