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HERCULES WIRE ROPE.

A. Leschen & Sons Rope Co., 920-22 First street, St. Louis, Mo., received three grand prizes at the World's Fair—the very highest awards—for their wire rope products. Their "Hercules" wire rope of flattened strands (patented) has 150 per cent more wearing surface than ordinary ropes, is exceedingly flexible, and, which is of great importance where used in hoisting from deep shafts, the flattened strand ropes do not spin or kink. Their smooth surface saves wear of pulleys and sheaves, which is a matter of consequence in both the life of the rope and that of the sheave or pulley. In the manufacture of the "Hercules' the wire is carefully drawn from a patent steel made especially for this brand of rope, and is tempered to perfection in oil. It is a "safety" rope in every particular. Owing to the number of wires that are at all times exposed for wear in the flattened strand rope, a comparatively smooth surface is presented even while the rope is new; and the wear is, therefore, light upon any one individual wire, thus decreasing any tendency to become brittle.

The "Hercules" has become standard in all markets for all purposes for which wire ropes are used.

FINISHING TOOLS FOR CONCRETE.

Now that concrete, artificial stone and cement products generally are everywhere attracting the attention of architects and builders, anything which pertains to improvement in the use of these products is of special interest. At the recent concrete convention the Gardner Hardware Co., 304 Hennepin avenue, Minneapolis, Minn., had a display of finishing tools which met with great favor among the practical workers in cement. The exhibit comprised a large assortment of the "Craft Improved Finishing Tools," for which the Gardner company are agents, and embraced every standard type of jointers, edgers, groovers, pounders, line and dot rollers, trowels, levels, etc., all finely finished in steel or bronze. In addition to the regular stock of tools carried, the concern is prepared to make any kind of special tool to order. As the work of the artisan depends for its quality largely upon the efficiency of the tools with which he labors every person interested in concrete and cement construction should visit the Gardner company and examine the unequaled stock which the concern is now carrying, and which constitutes the only supplies for this work to be had in the Northwest.

Thomas A. Cresswell, for the past three years in the employ of St. Paul architects, has, as indicated by his advertisement in another column, decided to enter the field of special architectural drawing.

Mr. Cresswell's ability in competition drawing and rendering is well known in the Twin Cities, and he is able to give the very best of references.

NOVEL AID TO FIRE-PROOF CONSTRUCTION.

Exery architect and every capitalist who is interested in the building of an edifice for commercial or for auditorium purposes will learn something to his advantage if he will investigate the novel theories and methods of construction which have originated with Mr. John Scully, of Minneapolis, and upon which he has received letters patent. Every insurance man, architect and builder is aware that the stairways and elevator shafts in modern commercial buildings become actual fire-flues when even an incipient fire is started anywhere in the structure; that, indeed, every building containing a continuous open stairway or elevator shaft, becomes a veritable smelter stack the moment a conflagration is started in any part of the building; and that these same open stairways and elevator shafts are the best possible aids to quick and absolute destruction by fire.

Now comes a man with a new idea in construction; and it is well worth every architect's attention to carefully consider and understand Mr. Scully's common-sense plans for obviating the paramount difficulty in making modern buildings really fire-proof. Mr. Scully's system is simplicity itself, and really consists in confining every connection between various stories or floors in a building in an absolutely fire-proof enclosed elevator and stairway tower or shaft; a shaft which is only open to floor space temporarily, and which may be instantly and effectively closed. Every architect knows that in cases of fire that is started upon the lower stories of a building any opening whatever between floors is the best possible aid to combustion—such an opening being equivalent to the chimney of an iron smelter, the smoke-stack of a locomotive, or the dampers to a furnace. In fact, ordinary elevator shafts become veritable blow-pipes in which air combustion takes place and which no building material can withstand.

If those architects and builders who desire to take advantage of every possible precaution against great conflagrations in cities, will study Mr. Scully's patented plans, they will certainly be convinced that he has perfected ideas of decided value, and the time is probably not far distant when municipal authorities will compel, through ordinance, the use of these ideas in all large buildings.

Every person who has ever seen a large manufacturing or commercial building bruned, is aware that if a conflagration gefs started upon any floor below the top story, that, in what seems to be almost unappreciable time, the flames and smoke spread upward to the very roof, and there is neither time nor conditions which will enable persons upon any floor above that upon which the fire has originated, to make any effort towards subduing the flames; no matter how costly and theoretically adequate the appliances may be for quickly turning a volume of water into any part of the edifice. Panic-stricken employes, indeed, rightly think only of an attempt at personal escape. In fact, if any of our modern factories or commercial buildings happen to have a conflagration started upon a lower floor, it is merely a matter of moments when every part of the structure is choked with smoke, even if actual flames have not reached every floor; rendering it simply impossible for any but the most thoroughly trained firemen to make attempt at fire fighting. And the firemen themselves —though they have arrived quickly—will fight the fire from the outside.

With Mr. Scully's plans adopted, a fire started upon any floor of the structure is confined absolutely to that floor—both as regards flames and smoke—just as effectively as is the damage to any compartment of a steamship confined to that particular part of the ship. In other words, no matter how fierce or intense the conflagration may be upon a certain floor, it can be absolutely confined to that particular part of the building until it has slowly burned its way through to a floor above—just as effectively, in fact, as though it was a one-story structure; and with Mr. Scully's system of water

supply any conflagration should be easily confined to the floor upon which it originates. Rapid spread of the flames and smoke would be impossible, panics could not prevail among employes, and the result would be the immediate and effective fighting of the flames to the best possible advantage.

The plan, briefly, is to have no communication or opening from floor to floor in a structure, except as is provided by means of an absolutely fireproof tower or shaft (or as many such towers or shafts as may be needed in proportion to the size of the edifice and the business carried on), extending from the basement of the building to at least one story above the roof. Within this fireproof tower are to be placed all elevators, stairways, water system, ventilating flues and smokestacks of the structure. At each floor of the building, the door-way and elevator entrances to the tower are provided with fireproof doors, which are always closed save upon egress or entrance by persons at that particular floor; the elevator doors being automatic. In other words, there is no time when there is any opening from a floor to the shaft, except when the elevator stops at that floor, or some person seeks entrance to the stairway; and, therefore, there can be no sudden sweeping of flames and smoke from one floor to another in case a conflagration is started.

The tower itself is divided into stories equal in height and number to the stories of the building, and these stories of the tower may appropriately be termed safety rooms. The main entrance to the building is, of course, the ground floor entrance to the tower, and large buildings may require as many towers as there are main entrances and elevator shafts; the towers being built within the building proper, or annexed to it.

There are a good many details in connection with the entrances, the elevators, the ventilators, the water supply pipes and the smokestacks, which cannot be adequately described in the limits of this article, and the merits of which can only be understood and appreciated by an examination of Mr. Scully's illustrated catalogues, or by personal consultation with him. But from what is here presented, every architect and every person who contemplates the erection of a large building for either commercial or manufacturing purposes, must certainly see the importance of Mr. Scully's plan for preventing rapid spread of fire. In fact, it cannot but be of service to any architect to arrive at a perfect knowledge of this new idea in construction; and it should be the duty of building inspectors in every city to familiarize themselves with Mr. Scully's patented plan or system. The inventor will be pleased to give full and explicit description of his system and ideas to all applying by mail to Mr. John Scully, 2802 Second street north, Minneapolis.

He has also patented what is styled "A Fire-proof Theater," novel features of which are well worth investigation by architects generally.

MANKATO CEMENT.

The Mankato Cement Works are to be congratulated upon recent improvements which will enable them to greatly increase the average output of previous years, and still more are to be congratulated upon the opening of new quarries which will afford an inexhaustible supply of material which tests prove to be superior to any which the company has yet worked.

Mr. N. G. Rhodes, city cement inspector of St. Paul, reported under date of Nov. 12, 1904: "Twenty-four hours, 141 pounds; seven days, 240 pounds; thirty days, 272 pounds; sixty days, 337 pounds. I consider this a very fine test."

For more than twenty years Mankato Cement has been demonstrating its exceptional excellence in heavy bridge masonry, sewers, conduits, fire-proofing and concrete for street pavements, and in many of the most important buildings of the West. Its use in the new state capitol building at St. Paul is sufficient guarantee that the foremost architects of the country indorse the superior qualities of Mankato cement.

In many cases where old work has had to be torn out, the Mankato cement mortar has been found harder than the stone itself, and could only be removed by the use of the finest picks and chisels.

In a great many classes of work there is economy in the use of Mankato cement in place of Portlands; and now that the "Concrete Age" is at hand, the Mankato product is certain to attract attention all over the country. Its quality has been proved by the greatest of all tests, time, and it is, therefore, standard in every respect.

The following letter needs no comment:

New York, December 24, 1903.
79-85 Wall Street

Mankato Cement Works,
Mankato, Minn.

Gentlemen:—In view of the excellent quality of cement which you have furnished for the Minnesota capitol building, I vary from my usual strict rule in regard to testimonials. A very large quantity of your cement was used in this building, and proved entirely satisfactory. It gives me pleasure to commend the excellent quality of cement which has been made by your company.

Respectfully,
CASS GILBERT, Architect.

A PRACTICAL SCHOOL OF PLUMBING AND HEATING.

Mr. H. W. Jimerson, of Minneapolis, who is not only a practical journeyman and master plumber of twenty-five years' experience, but is also a gentleman of progressive ideas and education, has established at 3639 Nicollet avenue a unique institution under the title "Practical School of Plumbing and Heating," which he proposes to develop into an institution where young men may quickly acquire a thorough, practical and scientific training in the best of modern methods for proper sanitation, plumbing and heating of private or public buildings. Mr. Jimerson's favorite motto is, "Success follows knowledge," and he is now applying that theory to one of the best arts or trades that a young man can adopt who must depend upon the skill of an artisan for his livelihood. Mr. Jimerson also believes that the three long years of drudgery which an apprentice must now go through before he can become in the usual way a journeyman plumber, is greatly to the discouragement and detriment of most young men who really have any aptitude for the work. He proposes, therefore, to provide a course of twelve months which shall graduate and thoroughly fit any person of average ability to assume the position and pay of a capable junior journeyman plumber. Students are not required to buy either tools or materials, those items being furnished by the school; and there are no expenses whatever beyond the tuition fee. There is really no denial of the assertion that plumbing is one of the very best trades that a boy can learn. For instance, even a boy of sixteen years who enters Mr. Jimerson's school should be able, upon graduating at the end of twelve months, to at once secure $3 per day of eight hours' work.

In addition to the regular day school, Mr. Jimerson will, on March 1st, open a night school, which should certainly meet with large attendance. In order for young men to fully understand the genuine advantages which this new school presents, they should send for a catalog of the institution, which is mailed free to any address. This new school of manual training for specific purposes cannot fail to become an institution of great value to the young men of the Northwest. The reader cannot fail to become interested in the unique catalog which may be had on application to the "Practical School of Plumbing and Heating," 3639 Nicollet avenue, Minneapolis, Minn.

ARTISTIC FLOORS.

It often happens that persons of artistic tastes desire to make their home surroundings beautiful, and yet are prevented by lack of conditions from carrying out their desires in that regard. Again, we find these lovers of the beautiful, erring in judgment as to the means whereby their tastes may be gratified. For instance, in the effort to beautify the home it often occurs that the very height of artistic taste is shown in the selection of a costly rug as it is displayed with effect at the furnishing establishment, but when the rug is spread in the room at home, it at once loses much or most of its supposed richness and beauty because of environment and contrast with a plain or imperfect floor. Then the floor seems to appear more common than ever before, and the rug has lost all its attractiveness. Indeed, it is impossible to make any room in a modern house, equipped in modern effects, attractive as a whole, unless the floors are correspondingly as rich and artistic in their colorings and designs as are the walls and ceilings. To do this, requires the art and skill of the competent designer and the work of the manufacturer who has achieved reputation for the quality of materials used and process of construction. A parquet floor appropriately designed and properly constructed is one of the most necessary adjuncts to an artistically appointed room. It is gratifying to note that the superior work of the Northwestern Parquet Floor Co., 82 Ninth street south, Minneapolis, is now thoroughly recognized by architects, builders and laymen, and that in mansions like those of C. M. Harrington's, Thomas Lowry's and others of equal elegance, beautiful effects in floors have resulted from the work of that company under the direction of Mr. C. N. Crowther. The floors are within the means of the owner of every moderate-priced home, and are a measure of economy in household work.

"RICHARDSON" FIRE-PROOF DOORS.

About ten years ago the well known "Phoenix" building was erected in Minneapolis, and to this day it stands a noteworthy example of one of the most thoroughly fire-proof structures in the Northwest. At that time the Fire-Proof Door Company became established in Minneapolis; the first order the concern secured was for interior doors and fittings for the "Phoenix." Now, although a decade has passed, all of the metal doors, mouldings, etc., then put in by the Fire-Proof Door Company are just as perfect in form, color, and general conditions as they were the day that they were installed. This is a record which is being duplicated all over the country, and establishes beyond question the merits of the "Richardson" fire-proof doors.

In addition to the doors, the company is now turning out every detail of interior finish where metal can be used in place of wood—such as jambs, casings, mouldings, baseboards, mullions, wainscoting, panels, ceilings, etc., in artistic designs, and is also making fire-proof cabinets and other articles of room and office furniture. The reputation of the Fire-Proof Door Company is now so thoroughly established throughout the entire country, that not only is their product in place in hundreds of the largest, newest and most costly buildings in the United States, but even the rapid transit subway stations in New York have been equipped with these doors, both exterior and interior, exclusively.

A notable example of work done by the concern (which warrants local pride) is in the furnishing of the great Huntington building at Los Angeles, Cal., with 1,600 "Richardson" doors, with frames and casings, and 2,000 corridor windows. This order required 10 car-loads of material, and there were 200,000 feet of finish. From all over the country the Fire-Proof Door Company is daily receiving enthusiastic praise for work it has done, and the business of the concern is increasing with remarkable rapidity.

AMERICAN ESTATES AND GARDENS.

Mr. Barr Terree, editor of the Scientific American Building Monthly, and corresponding member of the American Intsitute of Architects and of the Royal Institute of British Architects, has just issued the most sumptuous volume, illustrating the palaces, estates and gardens of America's financial kings that has yet appeared from the press of Munn & Co., 361 Broadway, New York.

The volume, "American Estates and Gardens," contains 350 pages, 275 illustrations, is 11x13½ inches, with illustrated cover, and printed upon double coated paper with gilt edges. The illustrations consist of views (from photographs) of the richest and most costly American homes and their surroundings, such as Geo. W. Vanderbilt's "Biltmore"; Henry M. Flyter's "White Hall"; Clarance H. Mackay's "Harbor Hill"; and, in fact, all of the most noteworthy homes of that class in the United States.

The volume is sold at $10.00, although it is surprising that a genuine art treasure such as it is can be produced for that sum. It so faithfully presents the principal features and beauties of the palatial homes represented, that its study is almost as satisfactory as a personal visit to the magnificence which is portrayed. The volume will interest architects, builders and laymen generally, and cannot fail to be a most interesting addition to every private library.

The annual meeting of the H. W. Johns-Manville Co. was held in the company's offices in New York on January 16th, and the following officers elected: J. G. Cannon, chairman of board of directors; T. F. Manville, president; C. B. Manville, vice-president; Chas. Hathaway, vice-president; G. W. Gladwin, vice-president and treasurer; H. E. Manville, secretary. The directors are the officers and H. W. Johns, Wm. H. Porter and C. R. Manville.

AMERICAN SANITARY STALL SYSTEM.

Wherever Mr. Lindstrom, of Minneapolis, has put his sanitary stall system in either public or private stables, those who have had an opportunity to examine the unique and unequalled details of that system, have at once become impressed with the idea that boards of health in large cities should lend their influence to have the merits of the Lindstrom understood and appreciated, if, indeed, they would not be warranted in demanding legislation which would compel its use. Certainly no person who builds a costly stable would hesitate a moment in adopting the system, could they see it in operation. Architects all over the country should familiarize themselves with the system, and may easily do so by writing to Mr. S. F. Lindstrom, Minneapolis, Minn., for catalogues.

"Pipe and Boiler Coverings and Their Uses" is a small pamphlet from H. W. Johns-Manville Co., 100 William street, New York, describing various forms of Asbestos and 85% Magnesia Sectional Pipe Covering, their use and value, for both steam and hot water pipes and to protect pipes from freezing. The prices of covering, elbows, tees and valves are listed. Each page contains an illustration, the letter press is in red and black and the cover a Dixie gray, printed in blue and gold with an embossed design showing a Phoenix rising from the flames, making a very attractive booklet containing much valuable information.

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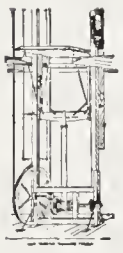

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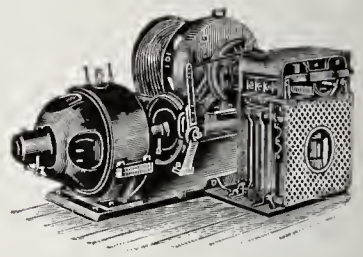

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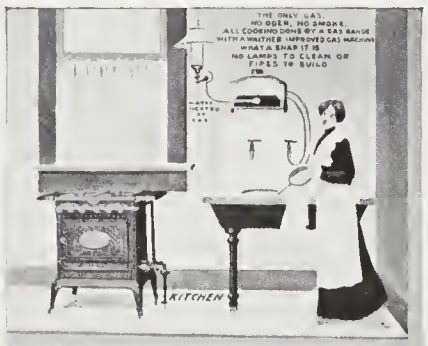

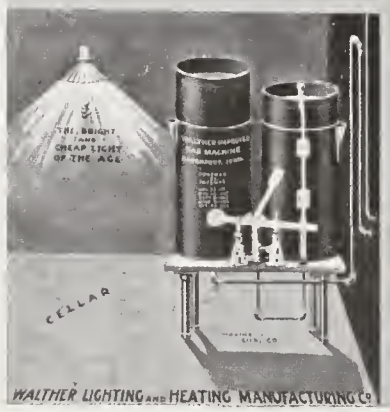

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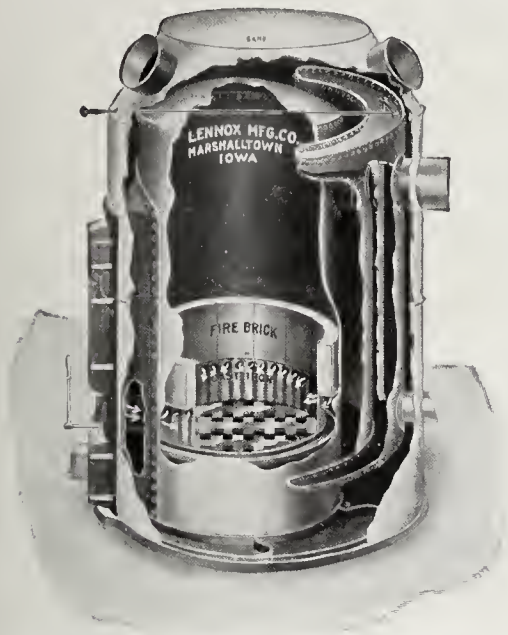

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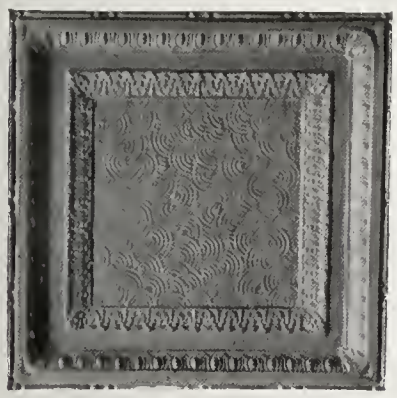

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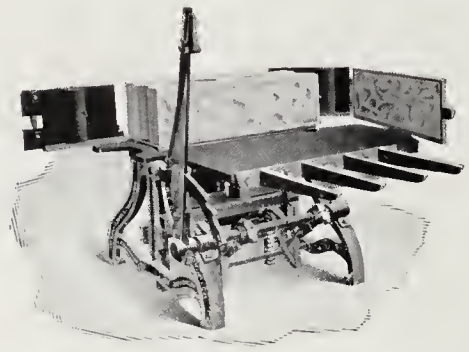

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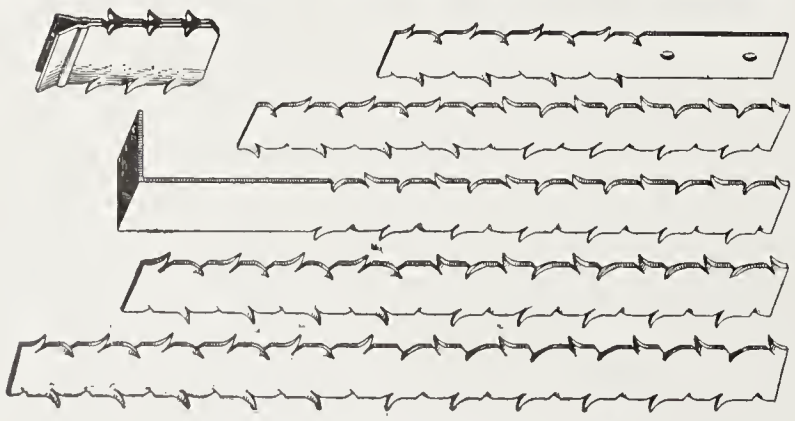

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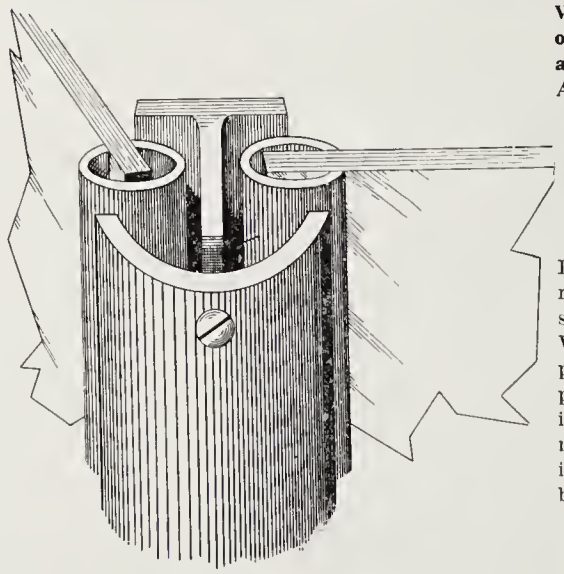

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IT is no longer easy to excite people by telling what is proposed to be done with cement; nor is it easy to cause surprise by telling some new thing that the Japanese are doing; but it may be of passing interest to learn that these people, who appeared to be devoting themselves so entirely to bringing about a hankering for peace in the Orient, have meanwhile put in a bid for furnishing the cement for a U. S. government building to be erected in Oregon.

VERY little is now heard of steel railway ties which were declared fifteen or twenty years ago to be liable to succeed ties of wood on our eastern roads. Instead we read that some railways are beginning seriously to plant trees for their future supply. The Public Ledger tells of a small beginning made by the Pennsylvania road and that it intends to plant 800,000 trees the coming season, but that an annual planting of that number would not nearly suffice to keep the road in ties when they reach maturity. The wood selected by the engineers of the road is the yellow locust, it being of rapid growth for so hard a wood and the claim being made that it will greatly outlast oak or chestnut.

THE Iroquois theater tragedy has had its anniversary. Have any of the people indicted for neglect of duty in connection with it come to trial?

PHILAE is to be still more submerged by the addition of nearly twenty feet to the height of the Assouan dam. By this means it is expected to impound a thousand million cubic meters of water more than at present, and to reclaim untold acres of land. Sight-seers go to the place at the season of the year when the dam is filled so that the island and the temples will have to be raised if they are to form much of an attraction for the future.

MINNESOTA has doubtless obtained a better capitol building for the money than any other state. The architect has done well by the state and the state has done well by the architect. A somewhat rash comment—that the building is too exotic in design and materials—contains perhaps as just criticism as has appeared to date. It is on the face of things rash to say that a design is too exotic for a locality that has no respectable architectural traditions—where building of any kind was not known a half century ago. Must not, then, the design and all its parts be exotic, and why not the better the more rare! Yet the state has traditions that it is supposed to cherish, traditions of government, that might have been better expressed in more simplicity and restraint. Dispute on this point is removed by the successes of the architect where the limitations in cost compelled the use of local materials, as in the rotunda, for it is in just these situations that the greatest successes are admitted. The simple strength and graciousness of ideal democratic government have perhaps not yet found themselves well expressed in architecture. The artist who sets out to give true expression to these things may find no one set of traditional forms, no one fashion of building, linked with them. This will be of small moment to him compared with the temptation to lavishness that may be pressed on him by democracy itself, which is inherently so tremendously productive that it finds it difficult not to be purse-proud. Minnesota has come so much nearer to getting value received than the other states, that one can but wish that the expenditure had been a million less and entrusted to the same hands.

Northwestern lumber manufacturers and dealers in their late convention protested powerfully against the bill now before the Minnesota legislature requiring sizes of dimension lumber sold in the state to be as listed. When the dairymen a few years since were required by law to put enough milk into their mixtures to bring them up to a certain standard, nothing like so strenuous protest was made. According to the reasoning of these lumbermen, the Minnesota groceryman who sells more than 12 or 13 oz. to the pound, avordupois, will be placed at a ruinous disadvantage in business. Meanwhile, as things are going, it will be but a short time before the architect who wants a 2x14 will have to specify a 3x14. As it is now the dealers have no scruples about delivering 1½-inch stuff in the place of 2-inch.

The destruction by fire of the old main building of the Minnesota University has given the Board of Regents a chance to neutralize, in a measure, the follies of the past in the arrangement of grounds and buildings, and if at this time the authorities fail to take advantage of the situation, it is unlikely that their successors will ever be able to correct present mistakes. It has been the habit of the regents that have been, to go about building in a hand-to-mouth sort of way—few of the present buildings have any great permanence—without any plans for the future, or expert advice worth mentioning. As things now stand, the buildings are grouped around a boiler house and coal pile poorly screened by a shop. The effort to remove these is to be commended, but to replace them with a new main building would be a folly. No move toward rebuilding should be made without the advice of a commission of experts.

If there is so much in the "extended surfaces" of heating apparatus as some of its vendors would have us believe, then surely the principle underlying it is making trouble for heating contractors in a direction which few of them suspect. Glass surface is so large a factor in determining the radiation required in rooms, particularly when no "storm sash" protects it, that the character of the glass might well be taken into account in this connection; whether thick or thin, rough or smooth. Glass is a slow conductor to be sure, yet it is so thin as used that it carries off heat very readily. There may be quite a difference between the waste of heat through plate glass and ordinary window glass. Again the prisms now so popular because so badly needed for some lighting, present about twice the inner surface for the absorption of heat that is done by plate glass of the same size. If extended surfaces on the inside of the firepot of a hot water heater are more efficient than smooth in absorbing heat and carrying it to the water surface, why does not the prismatic glass waste heat in like proportion when compared with plate glass? Such large surfaces are now being glazed with prisms as to make it well worth while for heating contractors to know about this. It is no uncommon thing to find a store with 500 square feet of prism glass, and if we were to measure the actual surface of this glass that is exposed to the warm air inside we would find say 1,000 square feet of it. A small percentage of this surface would be metal, conducting away heat more rapidly than glass of like thickness and in general the prisms would be thinner than plate glass. If to these disadvantages in retaining heat we add the greatly increased inner surface it would appear that the prisms bring a new factor into the heating question.

Municipal Engineering, after quoting a prominent architect as deploring the backwardness of architects generally in taking up concrete building blocks, says "Expert designers are to be found only in the ranks of the architects, so that the responsibility for the failure of architects to take up designing in the new material lies with themselves." Without raising the question of the novelty of the material—to state broadly wherein the present epidemic in concrete blocks differs, except in degree, from former outbreaks might call for some ingenuity—and without allowing the profession a modest protest against the notion that they have a monopoly of ability to design, it still seems possible to us that an architect may work on his old ruts and build very good and tasteful buildings, even avoiding the unpardonable sin, while not using concrete blocks. The quoted comment appears to carry with it the architects' excuse for not using what is offered, and it certainly is conceivable that an architect of skill might visit a display of the work of many makers of concrete blocks without carrying away either enthusiasm or inspiration, or greatly lowering his regard for the many things he knows about in clay. To many an architect it rarely occurs to make things appear other than what they are. He may paint his walls for purposes of preservation or to give pleasing color, but not to conceal that they are wood or plaster. If he found it desirable to mold blocks for building purposes, he would probably mold in some plain structural forms or in the highly ornate shapes to which such stuff as "staff" has been adapted. For the more commonplace buildings of small magnitude, units of sizes practicable for concrete blocks are adaptable, and some of the patented forms on the market are as desirable structurally as any that we are likely to see, but for buildings of character requiring expression in design, these units would be as difficult as anything to be thought of; while structurally, if one wants a cellular wall, there are beautiful possibilities in burnt clay at hand. Architects may, without untruthfulness, claim to have done much toward developing many features of modern building and if they show a want of interest in concrete blocks, it is quite likely less because they are disgusted with the things that are being done in that line, than because they do not look upon concrete blocks as available for expressing their ideas. Their thoughts are running strongly toward concrete in these days, but less in the form of building blocks than in others.

At the 38th annual meeting of the American Institute of Architects at Washington on January 13th, the following officers were elected for the ensuing year: W. E. Emes, St. Louis, president (re-elected); Alfred Stone, Providence, first vice-president; Cass Gilbert, St. Paul, Minn., second vice-president; Glenn Brown, Washington, D. C., secretary.

Papers were read by William B. Mundie, of Chicago; R. Clipson Sturgis, of Boston; W. H. Russell and Grosvenor Attebury of New York; Edgar V. Seeler and Frank Miles Day of Philadelphia.

Owing to pressure of other business, a very interesting case involving the architect's right to control, under the provision of the uniform contract, was not laid before the Washington convention for discussion. Mr. W. Albert Swasey, architect, of St. Louis, awarded a contract for the building of a theater in that city, one of whose provisions was that the contractors should keep a competent foreman in charge of the work. At various times in sundry ways, the foreman selected by these contractors so manifested his incompetence, that the architect thrice demanded his discharge and replacement by a competent man, demands which the contractors by one device or another succeeded in evading. At length a time came when the date of completion of the theater, already two months overpassed, the lessees announced that if the building were not delivered to them complete in some three weeks, they would at once enter suit for heavy damages. On this, the architect telegraphed and wrote peremptorily to the contractors demanding the instant discharge of the incompetent man, the removal of certain rejected work, and its proper replacement. Feeling that the way was at length cleared, the architect visited the job next day only to be confronted by the foreman armed with a telegram from his employers instructing him to go on with his work and finish it as he pleased. The architect thereupon personally discharged the man, and ordered him to keep off the premises. Loyal at least to his employers, the foreman appeared on the job next day, controlling operations at his pleasure as before. The architect, having meanwhile been advised that the man was unquestionably a trespasser, at once had the foreman arrested, but the precinct captain would not hold him, declaring that the proper method of procedure was through an injunction, under bonds from the circuit court. Before the architect could take any further action, the foreman brought suit against him in the sum of twenty-five thousand dollars for false arrest and imprisonment. On Mr. Swasey's statement of the case, he seems to have been quite within his rights, and the contractors, if they are substantial men, have placed themselves in a very precarious position in relation to the rights of the owners, the lessees and the architect, though we question whether the latter could collect from them the costs of defending the action for damages brought by the recalcitrant foreman.—The American Architect.

NEITHER the site nor the designer for Wisconsin's new capitol building is finally decided on. The award in the limited competition does not carry with it the commission to design and supervise the building until ratified by the legislature.

The Milwaukee Architects' Club at its recent annual meeting elected the following officers: President, Cornelius Leenhouts; vice-president, H. W. Buemming; secretary, E. O. Kuenzli; treasurer, H. J. Rotier; directors, H. P. Schnetzky, G. B. Ferry, and T. L. Rose.

At the annual meeting of the Montana Chapter A. I. A., which was held in Helena, January 28, steps were taken to draft a bill to be introduced into the legislature asking for the establishing of a board whose duty shall be to pass upon the qualifications of applicants for membership in the association, similar in effect to the state board of medical examiners.

The Minnesota Chapter, American Institute of Architects, held its regular monthly meeting at the Commercial Club, St. Paul, Monday evening, Feb. 13th, with a good representation from both Minneapolis and St. Paul, President Whitney in the chair. After dinner the future interests of the state university were informally discussed, the general sentiment being that the present is a crucial period in the history of that institution, and that some comprehensive and far-reaching plan should be prepared which shall give dignity and the university atmosphere to that institution, impossible of attainment under the methods now in vogue in the planning of extensions and additions to the buildings on the campus.

WATER TOWER FOR COL. MORRIS, CLEVELAND, OHIO
Meade & Garfield, Architects, Cleveland

THE TWIN CITY ARCHITECTURAL CLUB,

ORGANIZED JANUARY 22, 1904.

CECIL BAYLESS CHAPMAN.....President, Minneapolis
W. L. ALBAN.....First Vice President, St. Paul
JACOB STONE, JR.....Second Vice President, Minneapolis
T. A. CRESSWELL.....Secretary, St. Paul
A. R. VAN DYCK.....Treasurer, Minneapolis
RALPH MATHER.....Director, St. Paul
HAL. H. EADS.....Director, Minneapolis

The club will become a member of the Architectural League of America just as soon as the required formalities can be arranged. At the January meeting, held in St. Paul Friday, Jan. 27, the executive committee of the club was given full power to act in this matter.

Fifty-three names are now on the rolls of the T. C. A. C. and with the exception of six, these are resident and real live members.

Six new members were admitted at the January meeting.

The sketch competitions of the club will hereafter be governed by a competition committee, consisting of Messrs. J. A. MacLeod, chairman; W. L. Alban and A. R. Van Dyck.

The criticism of the December competition sketches will be given at the February meeting by Mr. Clarence H. Johnston, of St. Paul.

Subject of February competition, "A Band Stand in a Park."

The seal of the Twin City Architectural Club, which appears for the first time in print in this number, was designed by Thomas A. Cresswell, lately elected secretary of that organization. The design for the seal was the subject of the first competition held by the club, and resulted in the production of eighteen designs by the members. It was decided that ballots be cast by the members to decide upon the three most desirable, and that the designs receiving the greatest total of votes be referred to the secretary of the Architectural League of America for a final decision. Mr. Cresswell's design received the highest total in the club vote, and was also selected by the league secretary. The February meeting of the club will be held at the Builders' and Traders' Exchange rooms, Kasota Block, Minneapolis, Friday evening, February 24th.

The Club column will be a regular feature of the Western Architect from this date.

The matter of licensing architects in Minnesota is being quietly discussed in architectural circles, and it is understood that a bill to that end will be offered to the legislature now in session.

MEMBERSHIP LIST, TWIN CITY ARCHITECTURAL CLUB, ST. PAUL AND MINNEAPOLIS.

February, 1905.

1 Alban, W. L., St. Paul, 508 Chamber of Commerce Bldg.
2 Alden, J. M., St. Paul, 524 Endicott Bldg.
3 Aldrich, C. D., Minneapolis, 33 Loan & Trust Bldg.
4 Arnold, Hugo, St. Paul, 712 Manhatton Bldg.
5 Berger, C. A., Minneapolis, 87 Hoag Ave.
6 Blewett, G. A., St. Paul, 905 N. Y. Life Bldg.
7 Bummert, E., Minneapolis, 912 19th Ave. So.
8 Brayton, L. F., St. Paul, 1009 N. Y. Life Bldg.
*9 Cederberg, J., St. Paul, 905 N. Y. Life Bldg.
10 Chapman, C. B., Minneapolis, 33 Loan & Trust Bldg.
11 Clauson, A. C., Minneapolis, 102 13th St. So.
**12 Cone, G. C., Minneapolis.
13 Corser, F. G., Minneapolis, 907 N. Y. Life Bldg.
14 Cresswell, T. A., St. Paul, 649 Endicott Bldg.
15 Culver, H. K., St. Paul, 524 Endicott Bldg.
16 Downs, H. T., Minneapolis, 205 N. Y. Life Bldg.
17 Eads, H. H., Minneapolis, 205 N. Y. Life Bldg.
18 Fisher, J. E., St. Paul, 508 Chamber of Commerce Bldg.
19 Frey, H. C., Minneapolis, 442 Boston Blk.
20 Halden, H. E., Minneapolis, 209 Washington Ave. No.
21 Harrington, C. J., Minneapolis, 917 Hennepin Ave.
22 Haxby, R. V. L., Minneapolis, 442 Boston Blk.
*23 Helgerson, G., Minneapolis, 33 Loan & Trust Bldg.
**24 Hubbard, A. H., Minneapolis, 917 Hennepin Ave.
25 Jacobson, Maurice, Minneapolis, 1107 Lumber Exchange.
26 Jacobson, Silas, Minneapolis, 617 Bank of Commerce.
27 Keith, G. H., Minneapolis, 917 Hennepin Ave.
28 Linhoff, Peter, St. Paul, 503 Ger. Am. Bank Bldg.
**29 Lively, F. L., Minneapolis, 818 4th Ave. So.
30 MacLeod, J. A., St. Paul, 649 Endicott Bldg.
31 McElroy, C. T., Minneapolis, 442 Boston Blk.
32 Maine, M. T., Minneapolis, 603 Kasota Blk.
33 Magnusson, F., Minneapolis, 503 Bank of Minneapolis.
34 Mather, R., St. Paul, 601 Endicott Bldg.
**35 Melcher, G. B., Brooklyn, N. Y.
36 Mohn, E., Minneapolis, 907, N. Y. Life Bldg.
37 Nye, C. M., Minneapolis, 909 N. W. Bldg.
38 Ochme, K., Minneapolis, 1100 3rd Ave. So.
39 Rustad, J., Minneapolis, 2726 14th Ave. So.
40 Sheldon, J. J., St. Paul, 712 Manhattan Bldg.
**41 Smith, A. H., Washington, D. C., care Supervising Architect, Treasury Department.
42 Stahr, D. H., Minneapolis, 2104 30th Ave. So.
43 Stone, J., Jr., Minneapolis, 2611 Portland Ave.
44 Taylor, B. J., St. Paul, 17 W. 9th St.
45 Taylor, T. J., St. Paul, 601 Manhattan Bldg.
46 Van Booskirk, J. H., Minneapolis, 916 Lumber Exchange.
47 Van Dyck, A. R., Minneapolis, 916 Lumber Exchange.
48 Van Kirk, C. E., Minneapolis, 1111 Hennepin Ave.
**49 Volkman, C., Minneapolis.
50 Wallis, F. H., Minneapolis, 2637 27th Ave. S.
51 Wentworth, R. W., St. Paul, 417 Pioneer Press Bldg.
52 Wheeler, J. H., St. Paul, 1006 N. Y. Life Bldg.
53 Wilson, W. R., St. Paul, Q. M. Dept., U. S. Army Bldg.

* Junior members.
** Membership doubtful.

The builder's and trader's exchanges of Minneapolis, St. Paul, Duluth and other cities in Minnesota were given a banquet by the Duluth Exchange on the 28th of last month at which more than 150 members of the different exchanges were in attendance. Interesting addresses were made by J. F. McGuire, of St. Paul; President Murray of the Winnipeg Exchange; J. W. L. Corning, A. V. Williams, of St. Paul; Geo. W. Higgins and W. A. Elliott of Minneapolis, at which place it was decided to hold a state meeting at the exchange rooms on Tuesday, Feb. 28th. F. L. Young, of Duluth, gave an interesting talk on "Architects, Their Work and Influence Upon Civilization," that was greatly appreciated and brought forth rounds of applause.

MINNEAPOLIS, MINN., JAN. 31, 1905.

EDITOR WESTERN ARCHITECT.

DEAR SIR:—I comply with your request for notes on the Northwestern Concrete Convention.

The event has taught us considerable about Portland cement, and now that permanent organization is effected, committees soon will be collecting data, getting at facts, and dispelling doubts as to the nature and behavior of Portland cement, and its possibilities as a building material.

Like electricity, Portland cement was little known until a very few years since—but discoveries are coming so fast that after a little while we shall be familiar enough with the cement to form a working basis for the production of a first-rate commercial article. Even now good cement is made; but there is a degree of uncertainty as to what kind and grade of goods the approved formulas will turn out. This uncertainty will disappear as knowledge increases.

At the convention were scientists, professional men, practical workers and ordinary but interested citizens. There were numerous essays, illustrations and discussions, concerning Portland cement, its composition, and manufacture; concrete, in walls, bricks and blocks; and re-inforced concrete as used in bridges, buildings and other structures.

The essays will be published, but the important discussions were not recorded verbatim, and so will be lost as a part of the proceedings.

A listener found himself uncertain as to who was right, in many notable matters, for men of considerable repute were opposed to each other, and often on basic principles. One man thought it best to harden cement blocks under water, but another denied this, unless the water were quite pure and kept pure, since impure water would discolor the blocks.

It was stated also in discussion that cement was poor if it expanded under the lamp chimney test; but this statement was refuted, and the claim made that all cement expands a little, so that was no sign of inferiority.

Also it was said that a pat of neat cement, if poor, would crack at he thin edges; but it was said in reply that pats of good cement very often cracked.

In other things there was enough variation of statement to show how little we know as yet about cement, and to impress the delegates with the usefulness of such a convention.

The facts and theories about cement were well brought out at the meetings. There was the history of its origin and development, and a description of the processes that have made it a popular building material.

The rotary, continuous kiln has cheapened the cost of making, so as to put Portland cement within reach of the general public. Manufacturers are employing experts to discover processes and compounds in the hope of producing a cement that will behave the same at all times, and be satisfactory in every way.

Chemical formulas are used, but it appears that they do not produce a uniform result. It is thought that there is something besides chemical union needful to form the best cement. Possibly there is a mechanical interchange of particles, among the compounds of lime, silica and alumina, components of cement; something akin to the interchange taking place when some gases are brought together. This interchange is supposed to affect cement favorably.

The cement concrete block was the favorite at the convention. Several machines were shown, all doing about the same thing, but in different ways.

Everybody everywhere seems to be looking for cement building blocks.

The idea of such a block tickles the public fancy. Here are stones made to order, of any shape, size and contour, all to be had for little money. Some cement, a couple of laborers, a pile of sand, a pump and a cement block machine. These are all the requirements, so the public thinks. Where now is the brick man, furnishing a high priced product, because he has to own a clay bed, maintain a large plant and burn much fuel? Also his brick requires transportation, and skilled labor in laying. Of what use is it to patronize the stone man, who has to get a price from the consumer to pay for his quarry, quarrying, transportation, cutting, and laying? Cement blocks have to be laid, but the average man thinks he can get that done cheaply.

As the public looks at the matter there is much to gain and little to lose, by using Portland cement for a building material. No doubt the public is overdoing things, for upon sober second thought one must see that stone and clay products always will have a place in the list of good building stuff, especially for ornamental use. It is safe to say, however, that if cement makers and users look well to their interests, by improving material and workmanship, and by pushing their meritorious claims, the promoters of other building materials will be given a race for supremacy.

As to cement blocks, not all has been done that can be done to make them suitable and popular. Perfection of product as to composition, treatment, mechanical accuracy, sharpness of detail, elasticity of design, and durability will deservedly place them on the list of standard building materials. The opposite of these qualities will condemn them, and hence it is one of the things demanding immediate attention that only reliable manufacturers be allowed to operate.

Authorities must insist upon perfection or an approach to it, throughout every process connected with the Portland cement industry. Otherwise no high standard of excellence can be guaranteed. Cement and its products differ from other building materials. Strength is one of the requirements for a substance that is to form a wall or pier. Steel columns, stone piers, brick walls, and even wooden girders are apt to show their defects, but a concrete block, column, pier or girder, might be quite inferior and the fact be not very obvious, nor easily found out.

The personal factor has so much to do in the manipulation of cement and its products. A brick is a good

brick or else it shows its worthlessness, a cement block or a re-inforced column may be defective as the result of carelessness, neglect, or simple malice. Throughout the operation of making concrete for building, there is much chance for fraud and too little chance for detecting it.

The only way to maintain the standard for cement products is the rigid enforcement of good laws governing the industry. Reckless men, who throw a dash of cement into a yard of sand, wet it, press it in a mold, half cure it, and call it a concrete building block, should be forced out of business. They endanger life and ruin the trade.

Much was said and shown about the process of making blocks. The moist process was popular because it made a good block, and required but one mold; while the wet process required a hundred molds to make blocks at the same rate as by the moist process. The value of the wet process lies in the fact that excess of water guarantees enough water to form the cement crystals. The moist process would be all right if the blocks were hardened under water, or in a wet place, or in a steam bath; instead of as at present, often left to cure in the sun, with only intermittent sprinklings from a hose.

In such a case, rigid law should require proper curing or the condemnation of the whole lot. It would look as though a building inspector would be obliged to condemn such blocks if used in any important structure.

The concrete blocks shown, were the despair of the architect who would wish to accentuate and individualize his design. Perhaps this defect will be remedied. There is said to be a process whereby for good architectural work, not only blocks, but all kinds of bricks, and ornaments generally can be molded as they are in terra cotta. There is not space to speak of all that was to be seen and heard at the convention. It is certain that cement brick, both pressed and common, will have a place in the building line. Also lime brick will be a favorite no doubt, for with the modern process of quick hardening the oxide into a carbonate, instead of the slow process shown in our common lime plastered walls, the lime brick will be both cheap to make, and very durable.

Re-inforced concrete received much attention in the essays presented. It will occupy a large place in modern construction. For some reason, it is stronger than the sum of strength of the elements composing it, though there is a difference of opinion as to what the reason is.

Taken all in all, the facts about cement, cement concrete and steel, that were set forth at the convention are interesting, instructive and somewhat surprising.

Concrete is a good fire resistant. It protects steel from rust. It adheres to steel, forming a strengthening bond. Heat expands steel and concrete at about the same rate. So many useful qualities, are what will bring this new building material into a prominent place on the list and keep it there.

Portland cement, concrete, and re-inforced concrete mean much to the building world. We have had the stone and iron age, now for the cement age. We have quarried stone, mined iron ore and reduced it, and burned clay. It has remained until now to make chemical combinations and produce Portland cement.

For an adaptable material, easy to get, to work, and to combine with materials to be found in every gravel bed it is hard to equal.

Then it lasts. Fire does not destroy it. Rain and frost but very slowly disintegrate it. Portland cement adapts itself to all situations, and most conditions, likely to be met with in building. It hardens under water, in any shape desired, and gets ready for service in a few hours. If a mere hole is bored in the ground and filled with concrete an indestructible pile is produced, perhaps better than any other known, especially if re-inforced.

However, it must not be understood that Portland cement will be everything in the line of building material. It will have an honorable place, and that is enough to expect, at least for awhile. Very likely it will replace wood in dwellings, especially for the body of the house. Many heavy structures will be built of it, though it would seem unwise to depend upon it for the tallest buildings.

I believe that when it is developed, it will be a favorite with architectural designers; but it is not likely that it will replace other standard materials for this purpose.

It would be well for cement advocates, to be satisfied that some designing, not all, is in concrete. Public taste and public caprice will demand that whatever the internal construction of a building may be, the external part shall be treated with any ornamental material the client has a fancy for. Sometimes it will be cement; but more often brick, stone or terra cotta.

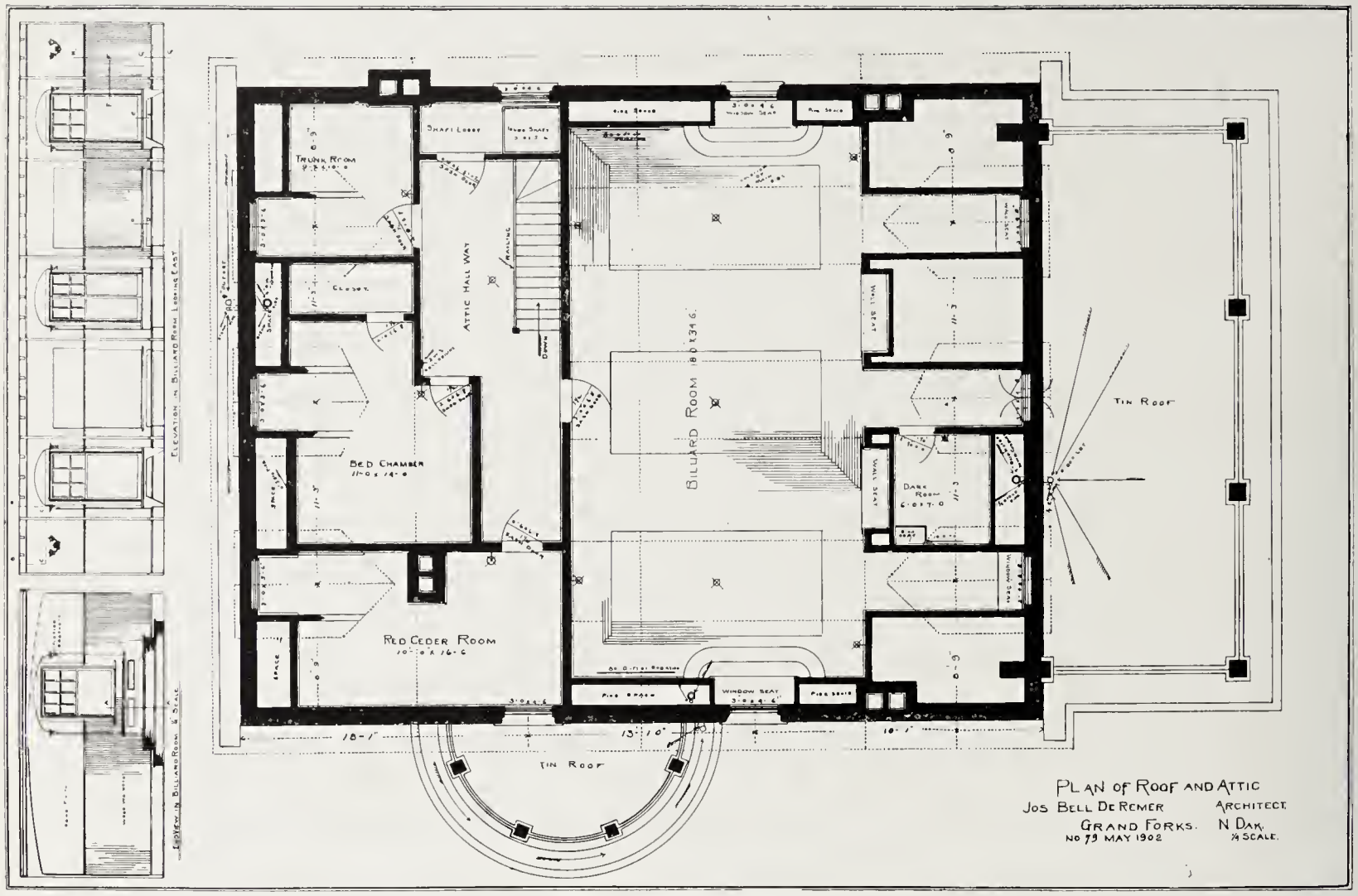
It would seem that the important office to be filled by Portland cement, is that of enduring core or frame work, which, re-inforced with steel, will make the best construction for the least money, and produce a structure, practically immune from destruction by ordinary natural forces.

Architects will include Portland cement in their list of materials adaptable for design, and probably they will emphasize its use when they realize how well it will stand fierce heat and cold water, ready destroyers of most stones.

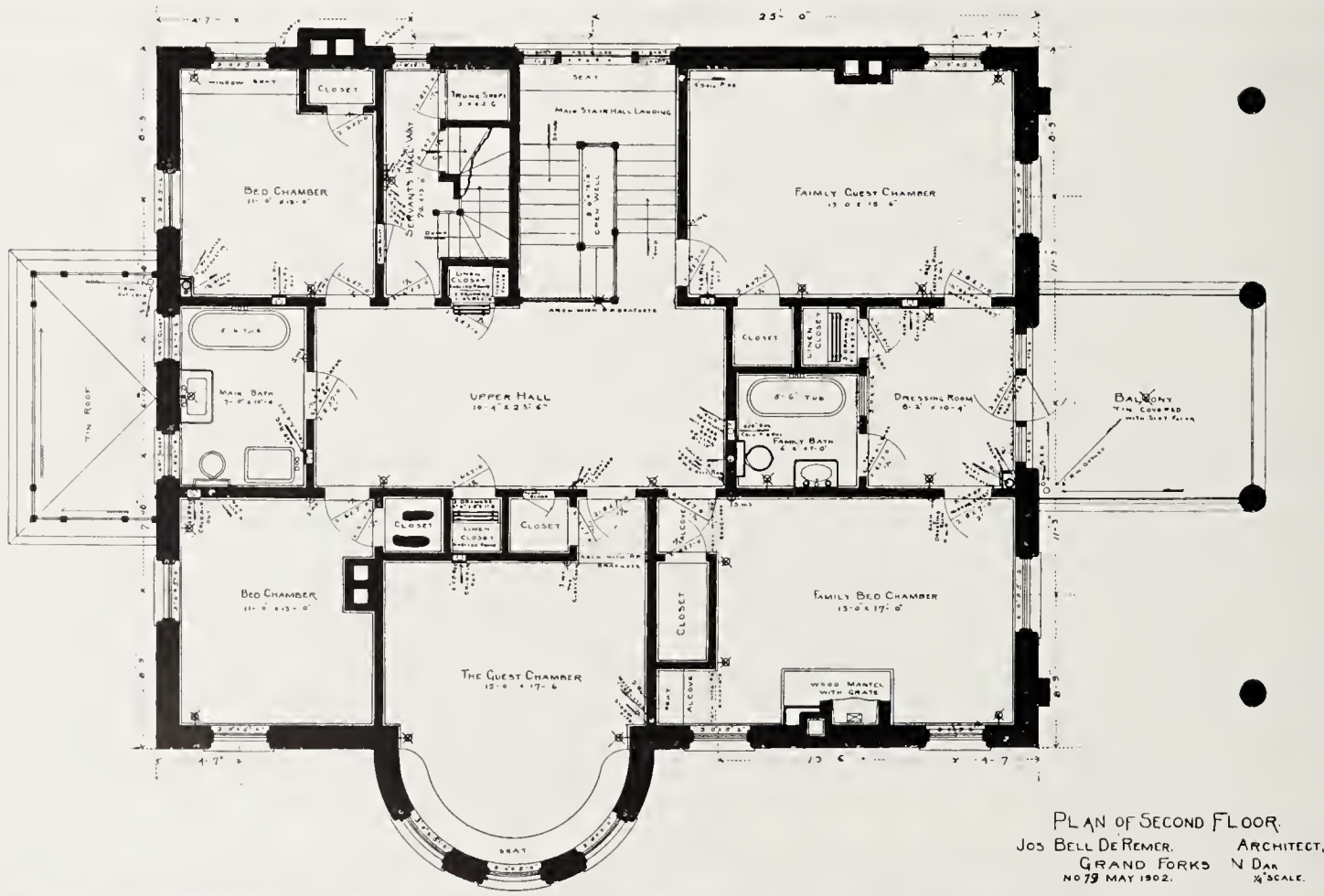
Portland cement has a future, most certainly. One can hardly see a limit to the growth of the industry. Men have little sentiment when they are choosing something that cost them money. They demand the cheapest good article to be had, and in this cement they are likely to get it. If some one will discover a self-hardening clay brick there might be some competition; but until then, it appears that Portland cement and perhaps other compounds containing lime, will lead everything else as a ready, cheap and durable building material.

Yours truly,

WALTER S. PARDEE, Architect.

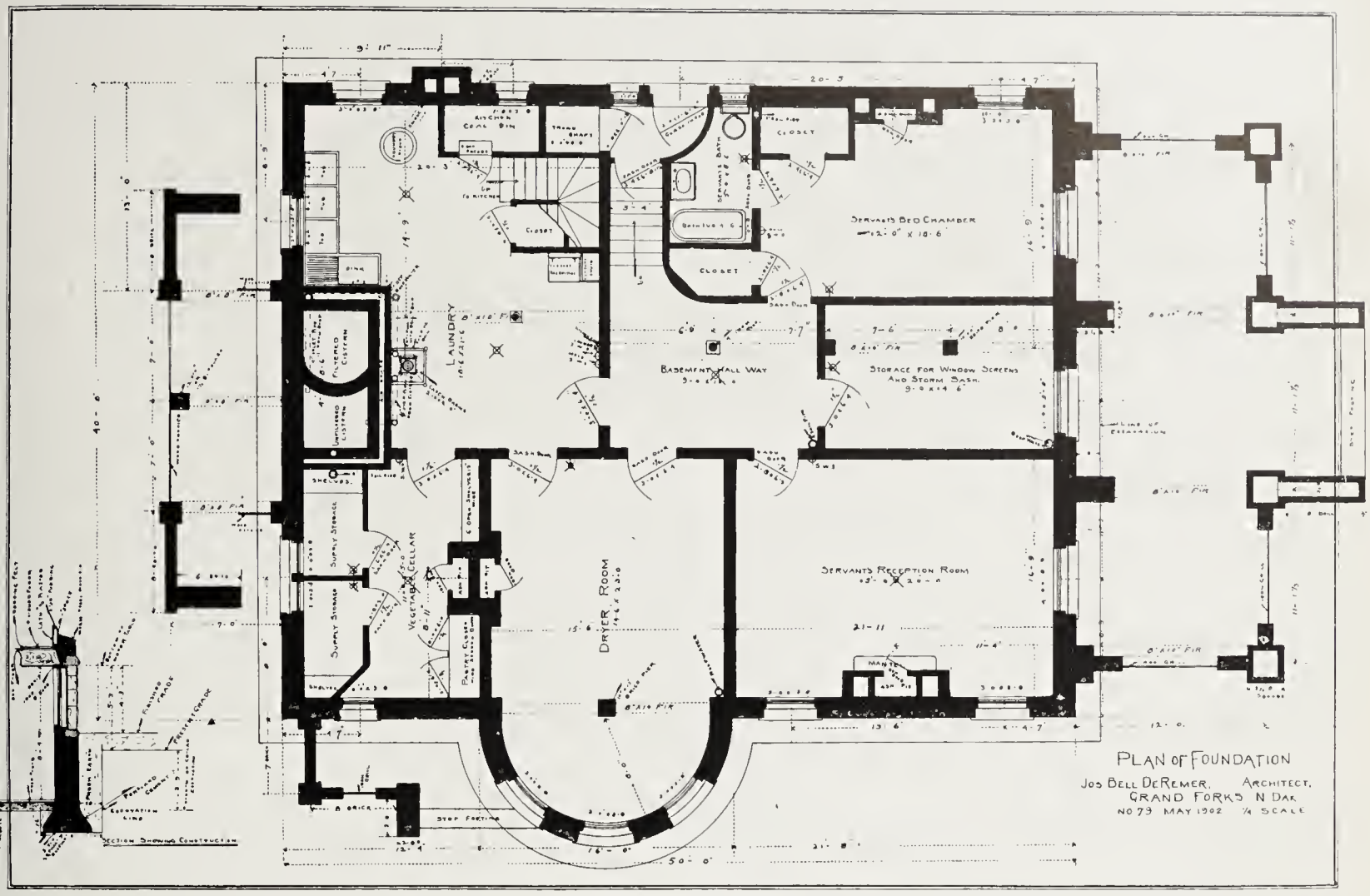


ROOF PLAN AND ATTIC

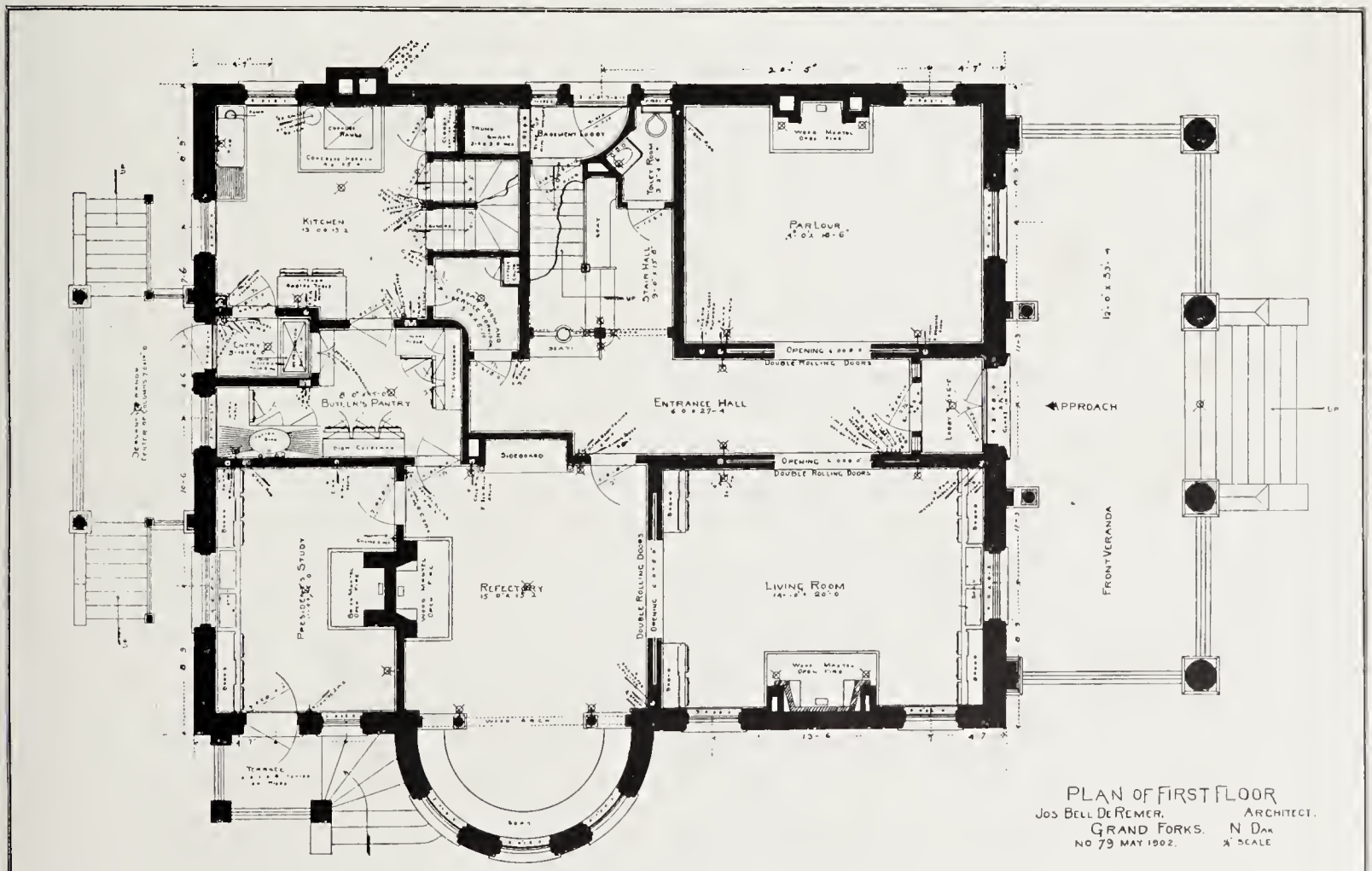


SECOND FLOOR PLAN PRESIDENT'S COTTAGE, UNIVERSITY OF NORTH DAKOTA, GRAND FORKS, N. D.

Jos. Bell De Remer, Architect, Grand Forks



PLAN OF FOUNDATION



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ADDRESS TO CEMENT CONVENTION ON REINFORCED CONCRETE.

By C. A. P. Turner, M. Am. Soc. C. E.

Minneapolis, Minn., Jan. 25, 1905.

Gentlemen:

In greeting you this evening I desire to express my hearty sympathy with the object of your convention, to disseminate popular information regarding the use of Portland cement. The industry and enterprise of the American Portland Cement Manufacturer has now placed at the disposal of the enterprising engineer or builder, a thoroughly reliable material when properly handled which bids fair to replace timber and structural steel in buildings and short span bridges.

In making this statement the writer will say frankly that the view expressed is the result of eighteen years' practical experience in building and structural work, as draughtsman, contractor and designing engineer. For the past ten years the writer has followed closely each and every structure in concrete steel that came to his attention, but it has been only of late that he has been in position to place the result of his study in the form of reinforced concrete structures, which later will be illustrated.

In treating the subject from the popular standpoint, the writer would first say a few words as to the reliability of the construction as compared with steel or timber. Ignorant abuse will render dangerous the best material which the engineer uses,—for example, some months ago the writer was called on to inspect some coupler pockets forged out of 1¼x4 inch bars made by a Pittsburg company. They were worthless, the writer was told, and going to the pile and selecting four, they were placed on the ground and struck a few sharp blows with a sledge, a single blow fractured 10 square inches of metal in two cases. In normal condition this area would carry 600,000 pounds in tension. Taking the shank to a steam hammer, the center was bent flat on itself without fracture, proving that the smith had burned the steel in forging, until it was worthless at the bend.

Similar inexcusable ignorance in working concrete will likewise result in inferior work, but by no means to such an extent as that instanced in the case of the steel.

The mistake that is made by many in fabricating reinforced concrete is the endeavor to get strength with a cheap concrete. A common proportion is 1 cement, 3 sand, 5 stone—a mixture much too poor to secure the best results, or the greatest strength for a minimum cost. A mixture of 1 cement to 2 of sand and 2 broken stone of size from a pea to that which will pass a three-quarter inch screen is to be preferred. The stone should be screened, if limestone, otherwise the dust such as that of trap rock or granite may be used in lieu of sand. By making this mixture wet enough to flow slowly and require no tamping whatever, the question of poor workmanship when the material is mixed by machine in exact proportions is entirely eliminated; any laborer you may employ who can dump the car and level off the cement will do as good work as can be done.

Such concrete three months old should give a value in compression of 2,500 pounds per inch, or more, without reinforcement. In the form of a column, if constrained laterally, Considere has shown that this crushing strength can be increased five-fold, or more, dependent on the reinforcement.

The principle of this reinforcement is this: If we take a light sheet metal cylinder and fill the same with sand, the cylinder will support a load on the sand much greater than it would empty, since the metal is in tension and the filling with the lateral restraint carries the load.

Now were the metal shell square, evidently the sides of the shell would bulge sidewise under the internal pressure—similarly any attempt to hoop a reinforced column with a square hoop is an amusing absurdity, the slightest lateral bending removing the necessary restraint.

At first thought it might seem that a continuous cylindrical shell would be the best means of reinforcement, but the vertical metal being more rigid than the concrete, would be strained to its limit before being brought into action in its capacity of lateral reinforcement, hence the undesirability of attempting to make the vertical reinforcement used continuous, *i. e.*, without some concrete between ends where this principle is to be employed, or making the reinforcement in form of a spiral coil as recommended by Considere.

The criticism that may be urged against some of these forms of reinforcement appears to the writer to lie in the failure to make a good connection to the beams. For that reason the reinforcement advocated by him is in the form of a grill of vertical rods banded at intervals by a strong riveted hoops with one of the rods bent outward into each beam, connected to and supported by the column, and the whole wrapped or hooped with netting.

As in this country the use of concrete construction is in its earlier stages, it is not surprising perhaps, that many of its advocates are imitating the methods of framing required for construction in entirely different materials, rather than forms and proportions peculiarly adapted to reinforced concrete. Mr. Humphreys in his excellent talk yesterday emphasized in connection with bridges the effort to bury a structural steel frame of sufficient strength for the load in concrete and term the clumsy conglomeration, reinforced concrete.

In the structural line we have attempts to reinforce structural steel with concrete, to put in beams as thick as required for the old fashioned wood framing, attempts to reinforce in one direction only, forgetting that in a monolithic mass of the size with which we are dealing, temperature stresses must be provided for in the reinforcement of the work so as to make it stand without cracking.

In designing reinforcement of beams, advantage should be taken of the principle of continuity, since with the constant section we have to provide only for 2-3 the moment of a simple beam and we have but one-fifth of the deflection, for the beam fixed at both ends that we would have for a simple beam.

This system of design calls for the major section of the metal for flange reinforcement over the support and furnishes ample provision for shear.

Plate 1

View Showing Floor Reinforcement

Plate 2

Concrete After Removal of Forms

Plate 3

Test 100 Tons on Panel 16-ft. Square - N-W. Knitting Mill Warehouse

Plate 4

Method of Erection - One Floor in Place

SHOWING FILLING OF COLUMNS

In constructing work in this line it is well to bear in mind that centering is a considerable item and that each additional beam is an extra expense. While we may not discard beams for heavy work for light loads, such as two to four hundred pounds per square foot, we may make a simple slab from column to column spacing 16 to 18 running main lines of reinforcement from column to column directly and transversely with lighter fabric between these lines, all buried in a slab of uniform thickness.

A few words regarding the interesting peculiarities of reinforced concrete. We will shortly illustrate a *panel which under 82 tons load showed absolutely no deflection whatever. Now the materials with which we deal in engineering work are elastic, why then such deportment of these beams? In setting up, the concrete shrinks and the rods reinforcing the bottom of the beam are actually in compression, also the top of the beam in tension due to internal stress. Until this condition is counterbalanced we could then expect no elastic deformation. This feature of the deportment of reinforced concrete is worthy of serious consideration by those who contemplate using shapes of irregular form as reinforcing members.

In crushing concrete usually shears at an angle approximately forty-five degrees to the direction of pressure, hence plain reinforcement, either parallel or at right angles to the line of pressure has a marked influence on its strength.

*See Plate 3

To return to the more popular phases of the question of reinforced concrete: Can it be figured with accuracy? And do we know enough about it to use it with safety? The answer is emphatically in the affirmative. The engineer can figure the strength with the same degree of precision certainly, that he can timber construction while if the tensile value of the concrete is disregarded as is the case in good practice, the error is invariably on the side of safety.

How does reinforced concrete compare in cost with older styles of construction? For heavy buildings we can compete with wood when the working load is 500 pounds per square foot or more.

For lighter loads we can compete at a good profit with any of the older forms of fireproof construction, saving the owner the cost of the entire steel skeleton.

For loads greater than 800 pounds per square foot it is cheaper than timber if both are made of equal strength.

As regards its fireproof properties there is nothing in use which equals it.

At the Paris Exposition the Hennebique Company erected a cement concrete building in which to test both the strength of the floors and their resistance to fire when loaded. The first floor was loaded to three thousand pounds per square yard. The upper floor to two thousand pounds. The deflection was barely 1-25 of an inch. A big fire of cord wood and oil was started on lower floors

VIEW SHOWING CENTERING AND COLUMN SKELETONS, NORTHWESTERN KNITTING CO.'S BUILDING

and kept at full intensity for an hour, and although the heat developed was 1,800 degrees F., yet the temperature on the floor above the fire only increased about four degrees, showing that merchandise would not have been injured in such a position. At the end of an hour the deflection of the heated ceiling had increased to one-half inch. Then the whole building was drenched with water, and two hours later the load was removed whereupon a rise of one-half inch took place showing no permanent deflection or injury to the construction.

The construction of reinforced concrete is supposed by many to be slow business while as a matter of fact in no system of construction can the materials be as promptly obtained or the work more rapidly pushed. The cement and rods can be obtained, if necessary, at a weeks notice and the rough timber for forms is a stock proposition. A single half yard mixer and suitable crew can readily erect a with floor of 16,000 square feet area including columns and beams in a week's time with fair weather.

To the contractor who has vainly tried in our cold climate in winter to conglomerate 16 parts of frozen sand and gravel with one part of cement—plus ice water, and produce smooth concrete work, the idea of putting in satisfactory reinforced concrete in winter seems an impossibility. He is respectfully referred to the paper of W. A. Rogers, read before the Western Society of Engineers, who concludes from the tests that exposing freshly mixed Portland cement to a freezing temperature seems to affect its rate of hardening making it slower, but eventually the concrete will be just as good as if it had not been exposed to the cold. A conclusion in accord with the writer's experience.

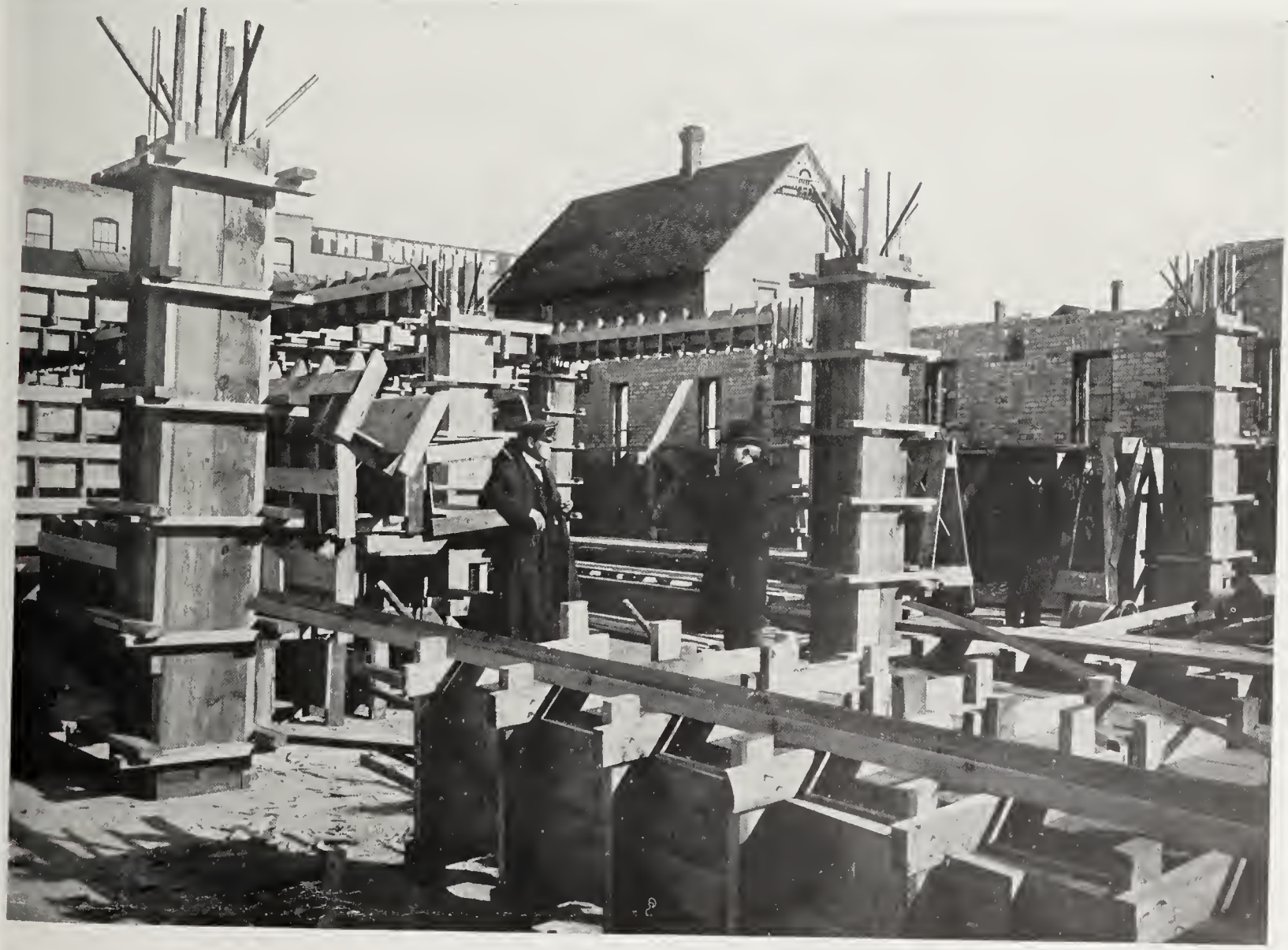
The question is frequently asked—will reinforced concrete stand the test of time? Will it or will it not crack and weaken? Buildings built by Hennebique have been in use for twenty years and are claimed to be stronger today than when first built.

As the object of this convention is the promotion of the cement industry, a few notes on experiences in promotion of a few concrete constructions may be of interest.

We call on our friend, the outspoken, honest old-fashioned architect and inquire if we may be favored with an opportunity to figure on his elegant five-story warehouse —well, he hadn't considered concrete—but what size would you make the columns? Fourteen to eighteen inches square as you prefer—you reply.

He glances at you curiously, apparently to see whether you have a few loose gears sticking through the epidermis covering your thinking machine, and wants to know—whether you concrete men are plumb crazy!

You next see an owner and after getting him interested and convinced of the merits of your construction and your ability to give a bond for the full amount of the con-



VIEW SHOWING CENTERING IN PROCESS OF ERECTION

VIEW SHOWING METHOD OF HANDLING CONCRETE

tract, he takes advice of some contractor who, with absolutely no experience in this line, wisely advises him that the work could not possibly be executed at this season in cement in order to carry out the work himself in wood—and so it goes.

This talk was followed by stereopticon views of the seventeen-story Ingalls building of Cincinnati, a building constructed throughout of reinforced concrete on the Ransome system—a structure all concrete men can well take pride in.

John Wunder,
Contractor

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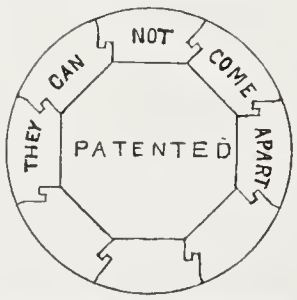

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