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Contractors, L. H. & P. W. Lovering

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THE DOVETAILED KEY "LOCKS THE PLASTER"
BISHOPRIC STUCCO AND PLASTER BOARD
TRADE MARK REGISTERED

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The Bishopric Manufacturing Co.

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A Few Other Bishopric Board Installations

University Park School for Boys, Arlington, Baltimore, Md. Architects, Smith & May, Baltimore; Contractors, Burnham & Co.

North Shore Golf Club, Chicago, Ills.

Exposition Building, Erie, Pa. Architect, Joseph Lee Contractor, William Siegrist

Grace Baptist Church, Binghamton, N.Y. Architect, E.H. Bartos; Contractor, William Ray.

Residence, Rear Admiral Chadwick, Twin Oaks, Newport, R. I.

Rensselaer County Hospital, Troy, N.Y. Architects, Pember & Camnaign.

The Practice of Architecture

MANY things give indications of changes in the making. Through conversation, correspondence or reading these signs are constantly recurring testimonies, and a tabulation is unconsciously made of them until the ideas become insistent in their presence. To verify the general impression, a systematic collation of all the evidence is in order.

In arriving at a conclusion by this mental process, it will be found that among the diverse problems demanding attention at this time, one of manifest importance is that of the attitude of the public toward the architect and of the architect in his relations to himself and others.

The practice of architecture is probably today, more than ever before, a matter of barter and trade. The monies invested in building structures demand a return service which represents full value. This value is measured in the adaptability of the structure to its use, its durability and its appearance. These three factors are the fundamentals of correct planning and to render adequate service it appears to be essential that the architect should fully qualify himself to meet these basic requirements.

An analysis has been made of a great amount of data pertaining to this subject and the majority opinion has been condensed into the following five paragraphs which embrace the most common of the points developed. This brief consensus of opinion is not intended to cover the multitude of conditions that exist in such relations, but it is thought that possibly it comprises the basic factors.

1. The business of architecture is inseparable from the profession of architecture. Together they comprehend the originating, promoting, designing, planning, directing and controlling the construction of buildings and their appurtenances.

2. To develop a general demand for architectural service—without which only limited opportunities for practice will be presented—the architect must, as an individual and collectively, employ proper and effective means to create a universal appreciation of its intrinsic value.

3. To fully perform his function, the architect must organize, equip and operate his business so as to render complete service in the production of plans and specifications for everything embraced in the construction, equipment and furnishing of buildings.

4. He must furnish complete and detailed supervision of construction and be closely identified with it. He must be responsible financially, as well as morally, for all of his acts, including the correctness of design, the completeness and accuracy of plans, specifications and details, and the construction of the building in accordance therewith; his responsibility to be contingent only on his being accorded freedom in deciding all matters of structural design, mechanical equipment and the selection of materials and workmen.

5. He must control and regulate the business affairs of the building operation so as to safeguard all interests. He
and impartial in deciding
within his jurisdiction, b
interests are involved h
controversy to arbitrati

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MAIN DOORWAY—CHURCH OF S. AMBROGIO, MILAN, ITALY

THE AMERICAN ARCHITECT

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PROSPECTIVE ALONG STREET NO. 2

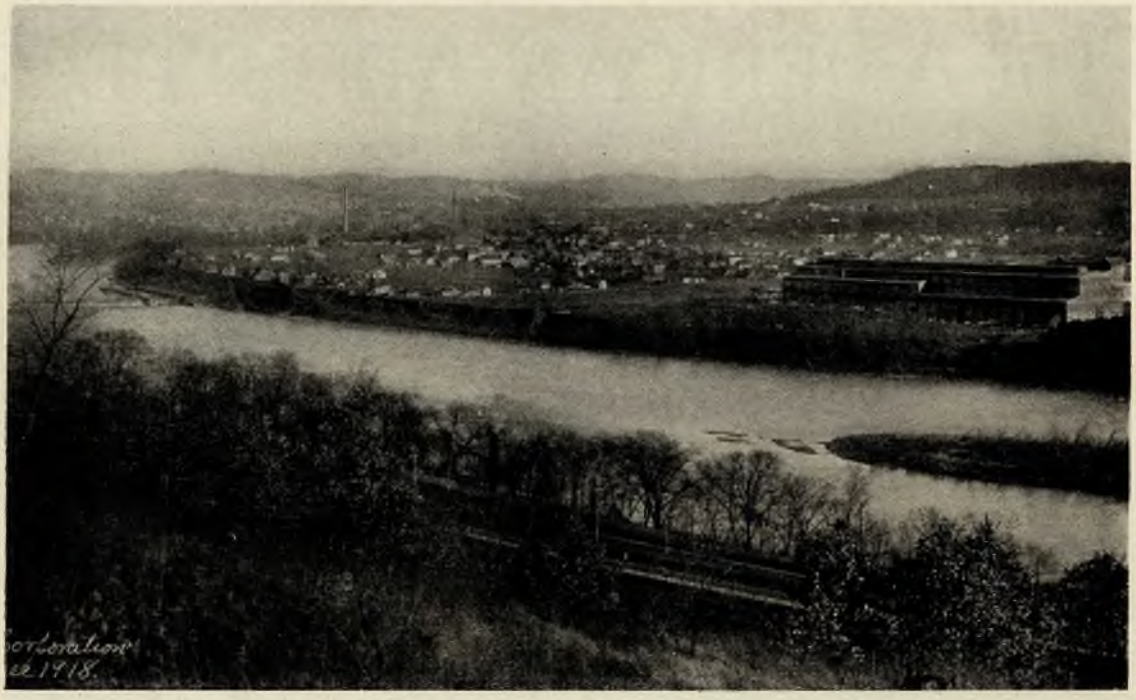
A Housing Development That Solves the Lodger Problem

The Naval Ordnance Housing Development, South Charleston, W. Va.

GODLEY, HASKELL & SEDGWICK, *Architects*

RENEWED interest in the many developments of the United States Housing Corporation, work on which was so suddenly stopped at the cessation of hostilities, has been awakened by the recent announcement from Washington that twenty-two of the larger housing projects will be completed. The excellent work of the corporation in directing the development of such a large number of schemes, each with its individual problems, has attracted wide interest, and much has been said and written regarding the workman's home and its influence upon plant production and labor turnover. This is of a highly beneficial effect, for now that the war is ended it has brought forcefully to the attention of the heads of large industrial organizations the necessity for closer study of the Government's methods of handling the housing situation in the late emergency as they pertain to their own individual needs. Industrial housing, both from a federal and private standpoint, has come to be recognized as one of the big problems of reconstruction.

From the architect's point of view the problem of design is one where economic and social rather than purely aesthetic requirements are of prime importance, but it is only in meeting all three that he can reach a satisfactory solution. This has been emphasized by the Corporation, and is illustrated in their projects. Many complex though decidedly interesting situations have arisen where, restricted by conditions and limited by appropriation, the architect has had skillfully to meet demands for ample-size living rooms for general use and sleeping rooms of sufficient number and size to assure



VIEW SHOWING SOUTH CHARLESTON, THE ORDNANCE PLANT AND

good standards of morals and health. The wishes of the housewife, and her national or local peculiarities must be carefully considered, for her contentment is of prime importance to the home. It is interesting to note how in various developments conditions which at the start were considered obstacles have by study often enhanced the artistic and practical solution. The success of the housing projects of the Corporation is directly traceable to the fact that they were built to suit the needs of the American workingman, and at the same time to educate him by their modern refinements to appreciate bettered home conditions.

STREET NO. 2, LOOKING WEST

An illustration of these points and of the successful solution of the lodger problem is shown in the development built for the United States Naval Ordnance Plant at South Charleston, West Virginia. This project was in charge of a committee of design of which Godley, Haskell & Sedgwick, architects, acting as chairmen, were associated with James L. Greenleaf as town planner and designing engineer, and Burgess and Long in charge of engineering work in the field.

The development was originally intended to consist of a twenty-five-acre allotment by the Government, to include a community center, but when this was reduced to fifteen acres the recreation features were the first to be eliminated from the plans. Situated on the south bank of the Kanawha River, forty-three feet above the water level, about a quarter of a mile from the main entrance of the Naval Ordnance Plant, and four and one-half miles from the city of Charleston, the site is an admirable one for a well-developed housing scheme. The natural features of the topography blend harmoniously with the treatment given them. Gullies and woods and other details of the land have been utilized most advantageously. The woods, for instance, suggested the laying out of two curved streets which have added to the informal appearance of the village's thoroughfares.

The eighty-five houses are of five types, each of individual interest though harmonizing in design.

THE LOCATION OF THE INDUSTRIAL HOUSING DEVELOPMENT

The buildings were to be as fire-resisting as possible, so stucco on hollow tile was used with composition slate roofing, substituted for slate as a matter of economy. To meet climatic conditions, each house has a summer kitchen as well as a large front porch. The houses of the four and five-room types are semi-detached, and to give each family the maximum of privacy, the porches are kept well apart instead of adjoining. The four-room house, the smallest unit, has a living room with a kitchen dining room on the ground floor and two bedrooms, each with two exposures, and a bath on the second, this on a ground area of 14 ft. 3 in. by 25 ft. 6 in. The five-room house has a dining alcove off the kitchen and an extra bedroom on the second floor. The eight-room houses have a separate side entrance which gives direct access to a lodger's suite of two bedrooms with a lavatory and toilet; the only connection of these rooms with the main portion of the house is through the lobby.

The housing corporation's requirements as to design have been closely followed. Living rooms for general use are all of an area not less than 10 ft. by 13 ft. 2 in., entirely separate from sleeping rooms. A cross ventilating system has been worked out in each home through windows of ample size. Each bedroom has at least 400 cu. ft. of air space per occupant, and every room has direct sunlight. Blinds were originally designed for the houses, and although economy dictated that they should not be put up, demand by some of the tenants for them has now caused their installation.

This problem of economy has been given a thorough study by the committee. They have made it their prime consideration, and as a result they have given the workingmen every comfort and convenience in a modern development, thus supplying their wants at a fair rental. The practice of economy has included the use of stock lengths of timber throughout. The trim is of the simplest design. In considering this project, it is shown that the difference in first cost between good con-

STREET NO. 1, LOOKING NORTH

FRONT ELEVATIONS, TYPE A

REAR ELEVATION, TYPE B

struction and poor construction is not great and is speedily amortized in reduction of repair bills.

Every phase of the development has been carefully handled by the architects. The street paving is concrete throughout. It was at first planned to build tar-bound slag roads, but as it was impossible to get enough tar for the work, concrete was substituted. The main thoroughfares of the community are 24 ft. wide, while the adjacent streets are laid out with a minimum of 20 ft. width. Three-foot-wide sidewalks are to be found, with a planting strip to an average width of six feet in which 220 plane trees have been set out.

The house lots average 100 ft. in depth and are from 25 to 40 ft. wide. Thirty-two hundred privet bushes were planted in hedge rows which mark each property line between the lots. The houses are so located on the lot that in every case there is room for a driveway should the tenants wish to put up garages at the rear of the property.

The houses are lighted by electricity, while natural gas is used for cooking and heating. Twenty-five of the houses are heated by hot water; the others having stoves, and a gas radiator placed in each bathroom. No cellars have been provided due to the fact that the Kanawha River often overflows its banks and considerable flooding of basements might have resulted. Just south of Eighth Avenue the plans show a contemplated athletic field, bandstand and shelter, and, as the project is further developed, additional features for the recreation of the workers and their families.

A distinct feature of the development lies in its proximity to the munition plant. It is but seven minutes' walk to work, and so handy that many return home for the midday meal. The failure of many housing projects, especially those erected to take care of shipyard employees, has been traced to the fact that the center was not only too far away from their work, but also too distant from the city, where they might care to go for an evening's diversion. But that is not the case at the Naval Ordnance Development, where the thriving city of Charleston can be reached in a very short

FRONT AND SIDE ELEVATIONS, TYPE B

FRONT AND SIDE ELEVATIONS, TYPES E AND I

time—it is only four and one-half miles distant—by trolley.

Due to the fact that the development is on Government property none of the houses can be sold. Consequently they have to be rented at an attractive figure. It is interesting to note that the detached dwellings of six and eight rooms are more popular than the semi-detached ones with fewer rooms.

FRONT ELEVATION, TYPES G AND K

This is explained by the fact that there are a great number of men who, because of their specialized ordnance qualifications, earn good wages at the plant, and these are the men who demand to live

STREET NO. 3, LOOKING NORTH

in the best possible style within their means. Some of them seem to feel that if they share a semi-detached house with a fellow-worker they will lose that sense of pride in what corresponds to individual ownership of their dwelling.

A distinct feature of the Charleston development is the adaptability of the houses to take care of the lodger situation. Some of the worst housing conditions in the country are to be found in old mansions stranded by the receding tide of fashion and now occupied by four or five families, all sharing the same toilet and water supply. In the Naval Ordnance Development the lodger is kept strictly to his own province. He has private toilet facilities and separate entrance to his rooms; in no way does he interfere with the privacy of his landlord.

PANORAMIC VIEW, LOOKING EAST

Specification Clauses

By Francis W. Grant

III.—Function of Specifications—Titles and Captions*

Specifications—Their Function

10. This specification is intended to supplement and explain the drawings in so far as said drawings fail to entirely express the full and true intent of the parties to the contract.

In case of discrepancy between the drawings and the specifications, except that due to omissions from the specifications, the requirements of the specifications shall be given precedence and be binding upon the parties to the contract to the exclusion of any conflicting requirement of the drawings.

THE true function of the specifications is expressed in the first clause of the above paragraph, and if architects who acquiesce in this view could be induced to proceed accordingly there would result a vast improvement in the writing of specifications. This is not advanced as a new and novel theory, for most architects hold this view as to what constitutes the mission of the specifications.

Frequently, specifications are fruitful of controversy and litigation by reason of the inclusion of requirements intended to be in duplicate of those plainly and more properly shown on the drawings but which, through some slight error of punctuation, typography or judgment, are not really identical.

Anything capable of delineation on the drawings should occur there and in no other contract document. There is rarely an instance requiring the statement of a dimension in the specifications when drawings are properly prepared. Dimensions should be rigorously excluded from the specifications except when it is impossible or impracticable to show them on the drawings.

Another mischievous error in specification writing is that of attempting to give "bills of quantities." Under the prevailing custom of bidding and contracting for architectural undertakings the scheduling of quantities in the specifications is unbusinesslike and as much to be condemned as the attempt to make dimensions more accurate by repetition. No intelligent contractor would trust a quantity estimate made by an architect except at the architect's risk, and architects are not paid for assuming such risks. Furthermore, architects are not, as a rule, competent to schedule quantities correctly and in language and form consistent with trade practices.

As to the matter of conflict between the drawings and the specifications, many architects prefer so to write their specifications as to reserve to themselves the sole right to determine which of two conflicting requirements shall be valid, defending such course as being an act of interpretation, and as such especially within the province of the author of the drawings and the specifications. Some even go so far as to provide that the instrument, the requirement of which represents advantages to the owner, shall prevail in case of conflict.

It is more equitable, however, to give the specifications, which are always prepared (or should be) after the completion of the drawings, an invariable precedence, and such is the established practice of the courts.

For those architects, however, who feel that they must have some better provision for escaping the consequences of their own blunders and who wish more power over the contractor than their own competency and the above suggested specification clause affords, the following clause from Wait's "Engineering and Architectural Jurisprudence" is suggested as being as near one sided as possible:

"In case of repetitions, variations or discrepancies in the terms of the contract, specifications and drawings, the interpretation and determination of which are doubtful, it is distinctly understood that the engineer (architect) may adopt that interpretation or construction which shall secure in all cases the most substantial and complete performance of the work, and be most favorable to the city, company or owner, and secure to it the most ample protection."

Conflict of more or less importance between the drawings and the specifications is a probability rather than a possibility, as any architect of large experience can testify, and provision in the specifications tending to establish a reasonable procedure is highly appropriate. The A. I. A. Code of General Conditions ignores the subject. The nearest approach to it is a clause in Article 2 of the Code, stating as follows: "It is not intended that materials or work not covered by or properly inferable from any heading, branch, class or trade of the specifications shall be supplied unless distinctively so noted on the drawings." This, of course, is mere surplusage, being self-evident to the merest novice in legal procedure. It is not, however, entirely harmless, for by inference if not in fact it makes the headings or titles in the specifications a part thereof

*For previous article see issue of July 3 (No. 2219), 1918.

and obligations "inferable" from a heading may be imposed on the parties, though in no other manner, on drawings or in specifications, shown or mentioned.

Titles and Captions

11. Titles to divisions and paragraphs in this specification and the index to same are introduced merely for convenience and are not to be taken as a part of the specification and are furthermore not to be taken as a correct or complete segregation of the several units of material and labor. No responsibility, either direct or implied, is assumed by the owner or architect for omissions or duplications by the contractor or his sub-contractors, due to real or alleged error in arrangement of matter in this specification.

Though the specification writer may fully intend to write in correct sequence and make appropriate segregation, it frequently occurs that items get into the wrong classification, whereby a sub-contractor is misled and makes omissions, or two sub-contractors are misled and identical items are included by both. In either event trouble of more or less serious nature results.

A case recently taken to court was that of a sheet metal sub-contractor who refused to furnish certain metal covered window frames to the general contractor under a contract to "furnish all sheet metal according to specification," his grounds for refusal being that these frames were specified under carpentry with the wood window frames, and were not mentioned in that part of the specifications designated as "Sheet Metal Work," and hence were properly of the carpentry sub-contract. The court held that the specifications were misleading, and sustained the sheet metal sub-contractor.

The practice of so using captions of paragraphs that they *must* be read as part of the subject matter is sometimes harmless, but it is always slovenly and should, on that score if no other, never be permitted.

GARAGE FOR POLICE DEPARTMENT, BOSTON, MASS.

COOLIDGE & CARLSON, *ARCHITECTS*

A Plea for a Classic Tradition

ARTHUR STRATTON, in the leading article in a recent issue of *The Architects' Journal* of London, reviews in a scholarly manner the conditions as affecting architecture in England at the present time, and sets up a plea for a classic tradition.

Mr. Stratton in reviewing the field of architectural design refers to a state of things almost identically analogous to those that exist in this country. He emphasizes the importance of the necessity for a complete recognition of pure form, and interestingly points out how the substitution of cheaper material and its intelligent adoption, may lead to the highest development of a new classic type.

We commend Mr. Stratton's article to careful consideration. It is as follows:—

With the cessation of hostilities comes a yearning for pent-up energies to be expended. Destructive intent is giving way before creative impulse, as naturally as day follows night. A long period of enforced inactivity in the realms of peaceful building will inevitably be followed by a still longer period during which activity will know no bounds, and during which enthusiasm will be rekindled even where it had almost seemed to be stifled beneath overwhelming stagnation. Events may prove that architecture, the first of the arts to suffer in any world-wide upheaval, will be the last to come into her full stride again, but already the air is full of projects; new vistas are opening up in all directions, and the universal longing is for a new and saner world to arise from the débris of a civilization that has been well-nigh pounded to bits. Never has such opportunity offered as now presents itself to survey the chaotic conditions under which architectural design was fostered in this country at the time when Armaggedon overtook it. A break with them has been made possible. The building arts have been cast into the melting pot; it is for architects to say whether dross shall come out or pure metal. It is for the nation to see that victory over armed aggression shall be followed by a renaissance of the arts of peace.

England during these years of strife has been brought into close touch with her numerous Allies. Tens of thousands of her sons have trod the soil of lands which might never have been more than mere names to them, but which will now have other memories than horrors of the battlefield. It would not be the first time that advancing armies have been in the van of movements that have changed the internal aspect of a country for lasting good. Exchange of ideas with men from other lands and sights of cities in many climes have helped in the past, and cannot fail to help again, in breaking down the fetters of insularity which, when dominant, have always had such numbing effect on the outlook of the untravelled British-born. This wider knowledge, this closer intimacy with men and things overseas will inevitably have widespread influence on the nation as a whole, no less than on the individuals who constitute so large a part of it, and from this contact will ensue a closer union of thought and a sense of universal brotherhood beneficial to mankind from whatever standpoint it is viewed.

Unity of purpose in combined action has knit nations together for generations to come; to architecture this should have real portent, just as inspiring and far-reaching in its results as the contrary effects of the Napoleonic war were deadening and narrowing. Cut off, then, from intercourse with the other side of the Channel, jealous of their neighbors, and intolerant of their sentiment, Englishmen prided themselves during a long period on their insularity, and scorned whatever could be construed into bearing a "foreign" impress. The banalities of the Victorian era were the due reward; architecture sank to the lowest depths, to be saved in a measure only by revivals one after another, as confidence was restored and as the teaching of the Romanticists called for a wider field of exploit than was afforded by the heritage of mediæval England. But the calamity brought by one war may very well be effaced by the blessings arising out of another and a greater war. History does not necessarily repeat itself in every detail. The pendulum has swung back; England not only enjoys a truer friendship with France than ever before, but she has become more cosmopolitan in the best sense of the word. The conditions are ripe for picking up the wonderful traditions which bound the arts of Europe together before they were so disastrously severed by the events of 1870. The same thread ran through the conception of design in architecture in France, Russia and Germany, too, that weaved many a masterpiece in Great Britain and Ireland. There was a tacit universal understanding of the first principles of design, as apparent in the work of Labrouste and Schinkel as in that of Chambers and Cockerell. The war has revealed the eternal truth of first principles in directions where they have been lost sight of, and nowhere had they been more obscured than in the art of design as practiced by a long succession of archi-

tects in this country. Confusion of thought had made the direct expression of a building the most rare achievement; the higher qualities of design had too long been sacrificed to ideals that are not of the best. Meaningless display of architectural features and worthless ornament, culled from a prolific past, have too often done service in hiding deficiencies that trained imaginations could never have tolerated.

General acceptance of a wider conception of design alone can bring architecture back to the main line of development along which progress was being made with the rest of Europe a century ago. To abandon side tracks is no indication of lack of real progress, for it has to be recognized that they lead by tortuous routes to no goal worth reaching, while the highway leads straight to the Capitol, no matter how steep the ascent may be. France has never lost sight of this, and America with steady purpose has resolutely pursued the same course. In England, the conservation of national prejudices and the jealous safeguarding of individual expression have helped to isolate architecture from the kindred arts, and more serious still, to curtail the comprehensive grasp of structural problems that alone could vest purely utilitarian works with æsthetic quality. Trained engineers were not slow to meet the requirements of industry; a breach once opened between architect and engineer rapidly widened as a result of the narrowing outlook of the one and the expanding vision of the other. The old order must change; the dimmest eyes can see a gleam of light that will penetrate far and wide unless apathy once more falls like a blinding curse to dim the vision of a future now made attainable through untold destruction of systems shown to be uninspiring and decadent. Rome was not built in a day; the classic tradition of the Italian school took centuries to reach its zenith. Architecture has ever been slow to reflect changes in the state of society, but that they have always been unmistakably recorded is such a truism that the Mistress Art is likened in common parlance to "history in stone."

Wherever the theory of academic design has already been accepted, it will be strengthened by the outstanding lessons taught in the prosecution of the war. Foremost among them are numbered concentration on matters of vital import; clearness of aim, and above all unity of purpose, all of which are as essential to design in architecture as to the successful prosecution of a campaign. But where the seed had not been sown, it is for the schools to sow it, and to watch its growth through the impressionable years of immaturity. Concentration on pure form should be a primary aim, and the direct expression of that form the keynote of all endeavor; while unity of thought with the traditions pursued to such good purpose in the schools of our Allies should bring our teaching into line with theirs, building up year by year links in the chain which should bind them together in lasting harmony. No sacrifice of national expression need result from this acceptance of principles which are no more foreign to the soil of this country than to that of any other. No country can claim a monopoly of them, for east and west, north and south they have remained constant since the Greeks first grasped them and the Romans applied them, not only in their own land, but wherever their victorious armies gave them fresh fields for building enterprise.

The importance of pure form needs to be recognized above all else in the coming year, for it is likely that with the resumption of building activity will come the demand for extreme simplicity of mass and dignity of outline, resources no longer permitting of the stock-in-trade of meaningless features and ornament which in the past have engendered a false criterion of public taste. The use of materials costly in normal times may have to be avoided, and architects will in all probability be faced with the problem that the builders of Imperial Rome solved with incomparable skill by the aid of an inferior material. But to concrete as the Romans used it, new possibilities have been foreshadowed by the science of reinforcement in steel; limitations of material no longer offer insuperable difficulties to the spanning of wide areas and the carrying of loads on supports far smaller than they conceived to be possible. There never was more urgent need for so-called "science" to be welded to so-called "art," for the gulf between engineer and architect to be bridged. The exposition of classic principles must once more become part of the vernacular language of this country if the tide of commonplace architecture is to be stemmed and if architects are ever to regain their lost supremacy.

It must not be supposed from this reasoning that a stereotyped version of design would result. Architectural progression depends upon the activities of a nation as a whole, and buildings of outstanding merit will mark its progress from time to time, almost unannounced, due to exceptional endeavor on the part of individuals more gifted than their confrères. During the last half century evidence of what can be achieved by expressing modern conditions in classic language can be seen in the work of American practitioners, who at first seized upon Colonial traditions—inspired originally by this country—and later envisaged the masterpieces of the European continent. In this way a national style develops, as far removed from the original source of inspiration as the poles are apart, and yet instinct with everlasting truths.

Recent Legal Decisions

Conclusiveness of Architect's Certificate

Although by the terms of a building contract the construction of the plans and specifications is left to the decision of the architect and he is made the arbiter of the character of the work done by the contractors, and the contract purports to make his certificate to the owner conclusive, his construction of the plans and specifications and his certificate are not binding and conclusive if it be shown that his acts were in bad faith, and were arbitrary and oppressive or malicious. Assuming that the architect in good faith believed that a proper construction of the plans and specifications required the contractors to fill the lot on which the building was to be erected, which the contractors did not do, this afforded no ground for acting arbitrarily and oppressively or maliciously with respect to other matters involved. It was incumbent upon him to settle that issue upon its merits. If the owners terminate the contract upon the architect's certificate that the work is not being done according to the plans and specifications, the fact that the architect acted arbitrarily, oppressively and not in good faith was held to preclude the owners from recovering damages from the contractors for breach of contract, although there was no actual fraud on the part of the owners.—*Lund v. McClinton (Mo.)*, 205 *S. W.* 240.

Surety's Liability

A surety under its bond guaranteed that the contractor would pay all claims for labor and materials furnished. The contractor failed to pay claims for material. It is held that the owner could maintain an action on the bond without actually satisfying such claims, since liability on the bond accrued when the contractor failed to pay the claims.—*Ceremony v. Drummond (Cal.)*, 174 *Pac.* 696.

Safe Scaffolding

A bricklayer in the employ of an independent contractor who had undertaken the construction of the wall of a building was killed as the result of a defective scaffold. In an action for his death it appeared that the owner and architect retained no right to control or direct the action of the contractor in the progress of the work, except in regard to the depth of the foundation, the material to be used, and generally to require a compliance with the contract. It was held that they were not liable in the absence of a statute imposing liability upon them. The Illinois statute of 1913 provides that all scaffolds erected or constructed by any person for use in erecting, repairing, altering, removing or painting any structure shall be erected and constructed so as to give proper and adequate protection to the employee using it. It is held that under this statute the duty to comply with its terms is placed upon those actually constructing the scaffolding and other appliances, and consequently not upon the owner or architect where they do not erect the scaffolds or appliances.—*Bretin v. Levinson*, 207 *Ill. App.* 406.

Bookkeeping Errors in Lien Claims

Errors in bookkeeping in regard to a lien claim, resulting in a delivery of more material than was reasonably necessary to complete the buildings and a failure to note certain credits for materials returned, made through honest mistake and not willfully, will not render the lien void. Though some of the items were nonlienable the subcontractors would be entitled to a lien for the lienable items after deducting the credits for returned materials. —*Columbia River Door Co. v. Todd, Oregon Supreme Court*, 175 *Pac.* 443.

Repairing Damaged Buildings

A section of the Atlantic City building ordinance provides that when a building within the fire limits shall be damaged to an amount not greater than one-half of its value, exclusive of the value of its foundations, it may be repaired or rebuilt; but, if damaged more than one-half that value, it shall not be repaired or rebuilt, but shall be taken down. The owner of a building partially destroyed by fire desired to repair it, and claimed that the building had been damaged less than one-half its value; the municipality claimed that the damage exceeded one-half the value, and desired the building to be taken down. It was held, in a suit for injunction by the owner against the city, that the owner's remedy at law was adequate, and he could not have injunction to restrain interference with the repair of the building. But it appeared that some rooms on the first floor could be used if temporary roof were provided. It was held that the owner was entitled to have interference with temporary repair restrained, since irreparable damage might otherwise result, and the city would in no wise be prejudiced if the injunction were granted.—*Atlantic City Fire Ins. Co. v. Board (N. J.)*, 103 *Atl.* 1044.

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WILLIAM H. CROCKER, Editor
ARTHUR T. NORTH, Engineering Editor

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VOL. CXV APRIL 23, 1919 No. 2261

"Democratizing the Institute"

MANY expressions of opinion have been received from fellows and members of the American Institute of Architects, based on the editorial "Democratizing the Institute," which appeared in THE AMERICAN ARCHITECT of April 9.

A compilation of this material is being prepared and when completed will be transmitted to the Post-War Committee on Architectural Practice, in accordance with the committee's request for constructive suggestions from the entire profession of architecture, and those interests affiliated with it, for "improvements which will affect the conditions and increase the efficiency of architectural practice throughout the United States."

Speed Up Building At Once!

The situation resulting from the lack of increased construction activity is growing more acute each day. One of the most gigantic problems to be dealt with in half a century is now being faced by this country. It affects the fortunes of millions of persons in various cities in the quest of homes that cannot be supplied. The immediate erection of additions to dwellings in communities where they are so badly needed is the only solution of the housing problem that is rapidly approaching a crisis. Present building activity is but a ripple on the surface.

In 1914 America built only 7 per cent of her quota. In 1915 and 1916 about 55 per cent—in 1917 and 1918 about 30 per cent. This country is over two years behind in its normal building program. We are facing a vast demand for buildings—and facing it without any reserve stocks. Conditions are proportionately similar all over the country.

New York City is today short 100,000 apartments. During the last four years the city has grown in population 500,000, excluding transients. In normal times this growth would have been kept pace with by the building industry, but as little or no building is being done to meet this increasing demand, the city is confronted with a serious situation. If the average yearly growth is at the rate of 4 to 5 per cent, this would require additional housing accommodations for at least 250,000 persons yearly—in view of the fact that people in New York City are on the average housed four to an apartment—this would approximate over sixty thousand new apartments yearly. New York is now paying tribute in the shape of increased rentals to the amount of $5,000,000 monthly.

The situation in New York City was discussed in an informal way last week by Leonard Schultze of the firm of Warren & Wetmore at a meeting of the New York Building Managers' Association. In the course of his remarks Mr. Schultze said:

> "Now is the time to build, not next year. In the first place, labor will never be cheaper than it is today. There may be some reduction in the price of steel and building material, but not enough to be worth while waiting for, considering the present demand.
>
> "As a matter of fact, there is not more than a 20 or 30 per cent increase in building costs, as compared with three or even four years ago.
>
> "We will see the greatest building boom this country has ever known if we can only get the big loaning institutions to release the required capital to finance the construction. It's coming and it's coming fast and prices of material will advance as soon as construction starts. The New York Central Railroad Company has every parcel of its property along Park Avenue and in the vicinity applied for, but it will not be able to do anything until Walter Stabler of the Metropolitan Life, or some other big loaning company, sees fit to loan the necessary money."

Only this week, at a meeting of the Philadelphia Operative Builders' Association, discussion as to the building of new dwellings discloses that there is a shortage of more than 20,000 houses in that city. Take Philadelphia's case as an example:

During the years 1910 to 1916 there was constructed in that city an average of 7500 dwelling houses each year, about 90 per cent of which were two-story brick dwellings in rows; and during the year 1917 this fell off to 2500 houses, and in 1918 to less than 1000 houses erected by private investors and approximately 1000 workmen's dwellings

erected by the United States Government agencies. Taking as a basis only the normal conditions that prevailed previous to 1917, there is a shortage at the present time of more than 10,000 houses in Philadelphia, and when the influx of workmen from other sections of the country is considered, it is no exaggeration to state that fully 20,000 houses are required at the present time to relieve the congestion.

Atlanta, Ga., reports that there are today in Atlanta approximately one thousand families seeking the rental of houses and apartments, with less than a dozen rentable houses in that city to supply the demand. It is conservatively estimated that Atlanta requires five thousand new homes to domicile the people who are now practically homeless there.

What is true in New York, Philadelphia and Atlanta holds good proportionately in practically every other growing city in the country. These conditions are wide-spread and are natural, post-war conditions. Will the cities provide these necessary new homes and meet the emergency by building now?

The Humanities in Educational Curricula

A WRITER in the current issue of *World's Work* refers to the curriculum at West Point. While directing attention to the great number of men who have since their graduation from the military academy gained high reputations, he is of the opinion that there is room for improvement in the courses of study as at present pursued. He states:

"Too much of the four-year course is wasted; too great effort is expended in an attempt to make the education general. Too little effort is made toward specialization. More efficient officers could be turned out if, after the first two years of general work, the cadet could select or be appointed to the branch of the service with which he is to work, and be taught specifically along those lines. But what is probably the greatest fault with the West Point curriculum is its failure to teach what might be called the humanities, the proper relation of man to man, the real democracy of service."

The experience gained since we entered into the war has taught many valuable lessons. Not the least of these is that our educational methods need revision along more practical lines. It is interesting to note that there is a disposition to regard the curriculum of an educational institution hitherto always believed to be nearing perfection, as one which might properly receive consideration toward the development of specialization along lines of fitness.

The recommendations for West Point, as above set forth, might well be taken as a basis in the program for a revision of architectural educational methods. In a recent issue there was discussed in these columns a movement set afoot at Columbia University which would provide a means of determination as to the exact fitness of students for a college training, and once this fitness was established a further determination as to just what specific branch the student might with best results study would follow. Such a system makes for the highest and most valuable results.

During a four-years' course opportunity is afforded to observe the special fitness of each student, and when this has been determined the procedure might be exactly as is proposed for West Point. By such a method we would be spared the misfits so common in most professions, and in none, perhaps, more than in architecture.

Let us, by all means, include in our educational methods a better teaching of the humanities. Perhaps the tendency during the past has been too largely to ignore this important element in architectural education, leaving it for the student to absorb whatever he might gain in a knowledge of his fellow men by contact during his student course.

Architects need a fuller realization of the humanities, or, more properly speaking, personal relationship in their practice, and when such a realization has been reached, and its attainment directed and encouraged by teaching methods, they will undoubtedly lose much of the aloofness that in the past has caused them to be regarded by the general public, and often mistakenly by themselves, as aristocrats.

Teaching such humanities would certainly lead to "a real democracy of service," and that is a consummation toward which the post-war committee might lend its efforts to a very good purpose.

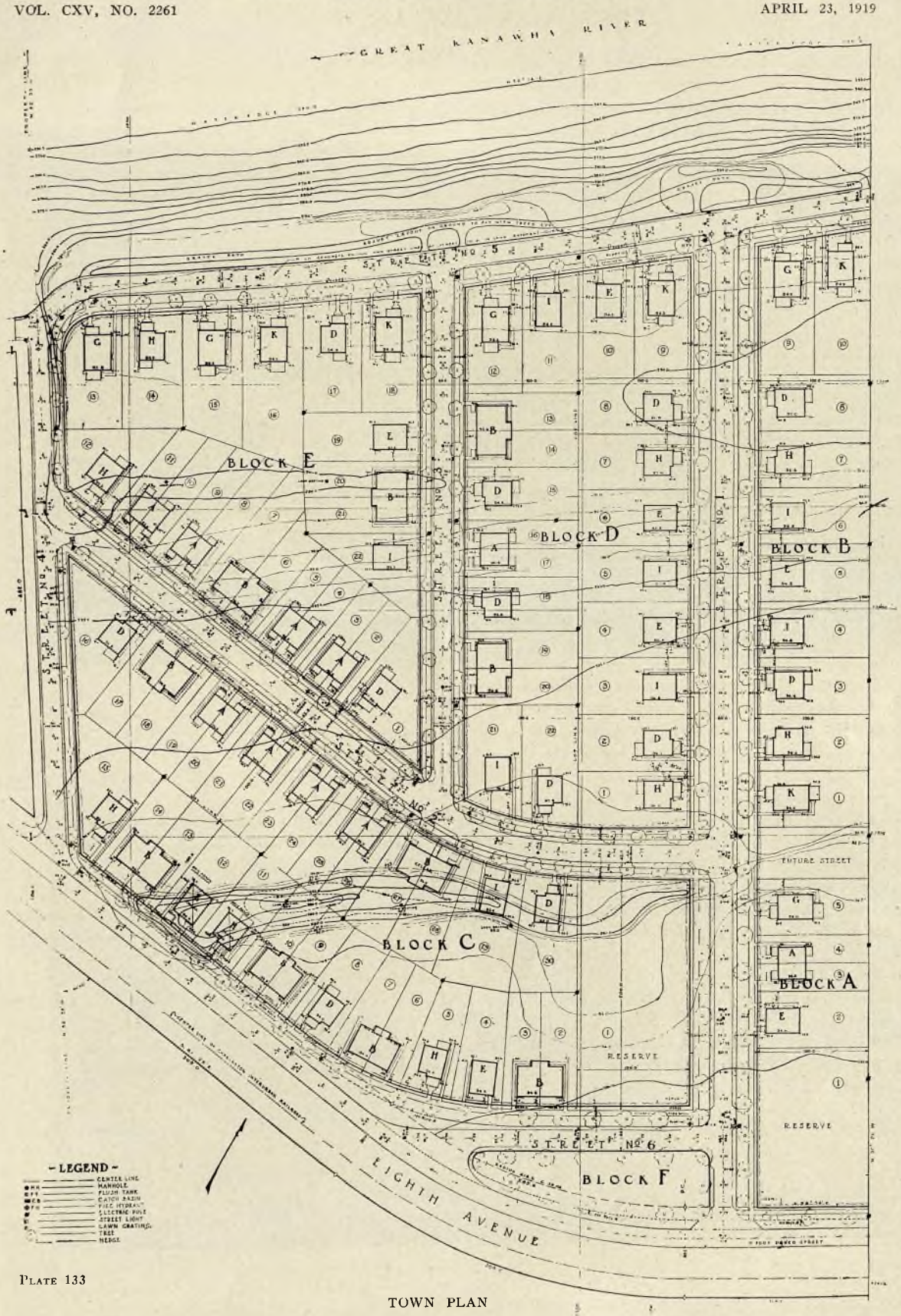


PLATE 133

TOWN PLAN

NAVAL ORDNANCE HOUSING DEVELOPMENT, SOUTH CHARLESTON, W. VA.

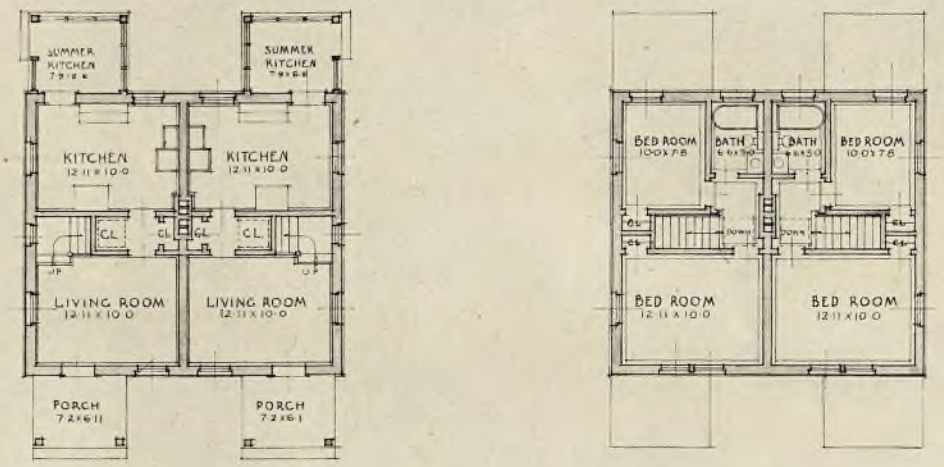
GODLEY, HASKELL & SEDGWICK, *ARCHITECTS*

REAR OF HOUSES ON STREET NO. 5

PLATE 134 HOUSES OF TYPES A AND B FRONTING ON STREET NO. 2

NAVAL ORDNANCE HOUSING DEVELOPMENT, SOUTH CHARLESTON, W. VA.

GODLEY, HASKELL & SEDGWICK, *ARCHITECTS*



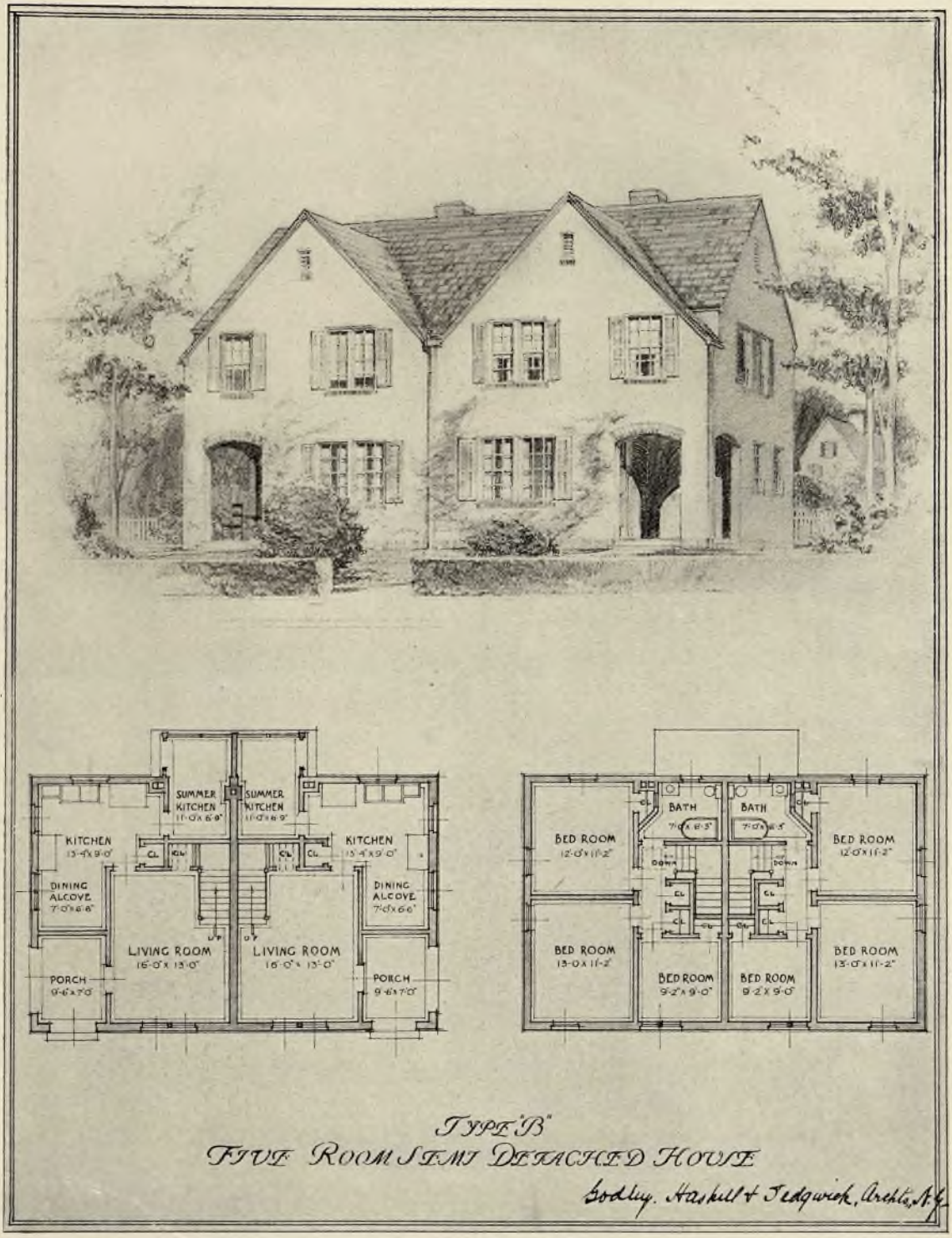
TYPE "A"

FOUR ROOM SEMI DETACHED HOUSE

Godley, Haskell & Sedgwick, Archts., N. Y.

PLATE 135

NAVAL ORDNANCE HOUSING DEVELOPMENT, SOUTH CHARLESTON, W. VA.



TYPE "B"
FIVE ROOM SEMI DETACHED HOUSE
Godley, Haskell & Tedgwick, Archts, N.Y.

PLATE 136

NAVAL ORDNANCE HOUSING DEVELOPMENT, SOUTH CHARLESTON, W. VA.

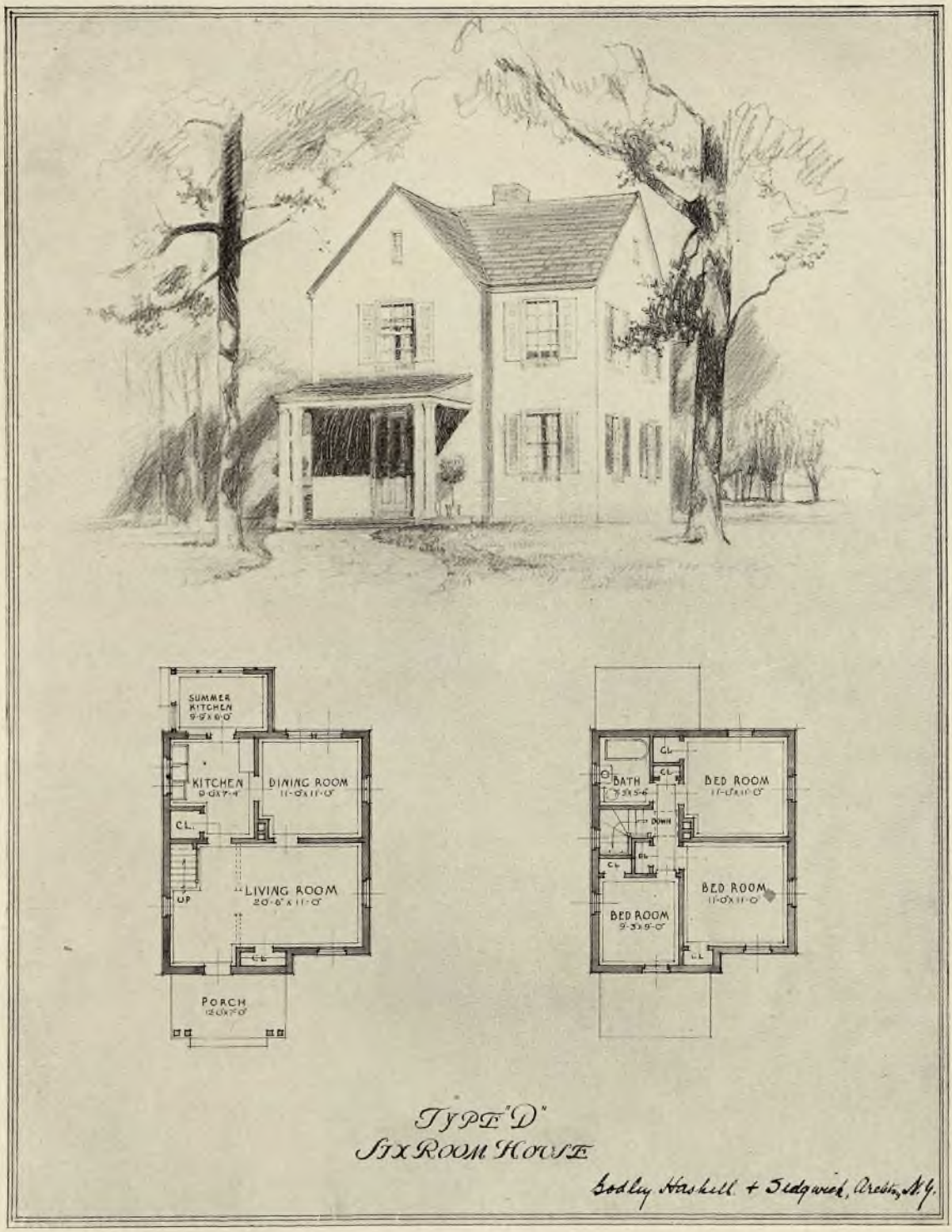


PLATE 137

NAVAL ORDNANCE HOUSING DEVELOPMENT, SOUTH CHARLESTON, W. VA.

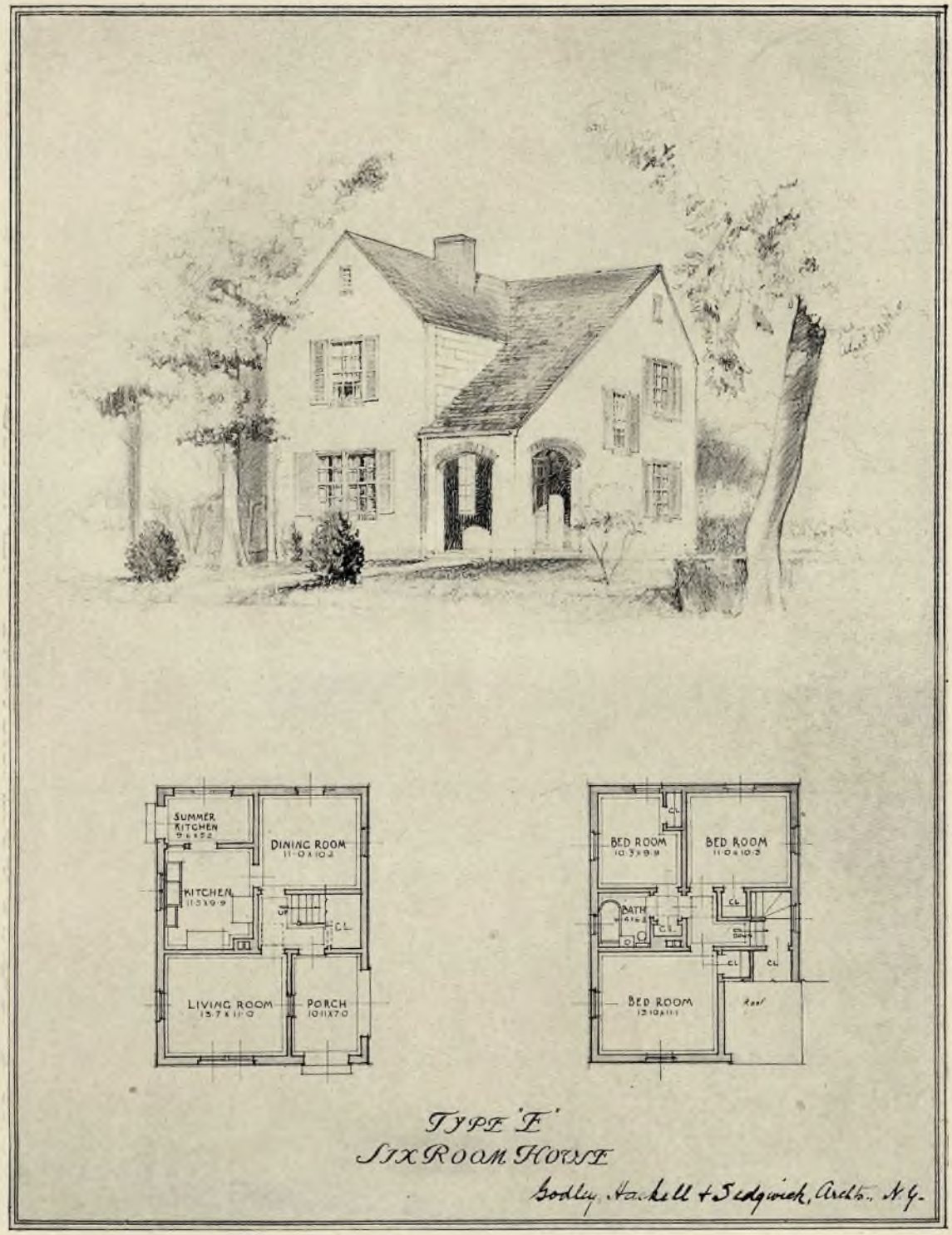


PLATE 138

NAVAL ORDNANCE HOUSING DEVELOPMENT, SOUTH CHARLESTON, W. VA.

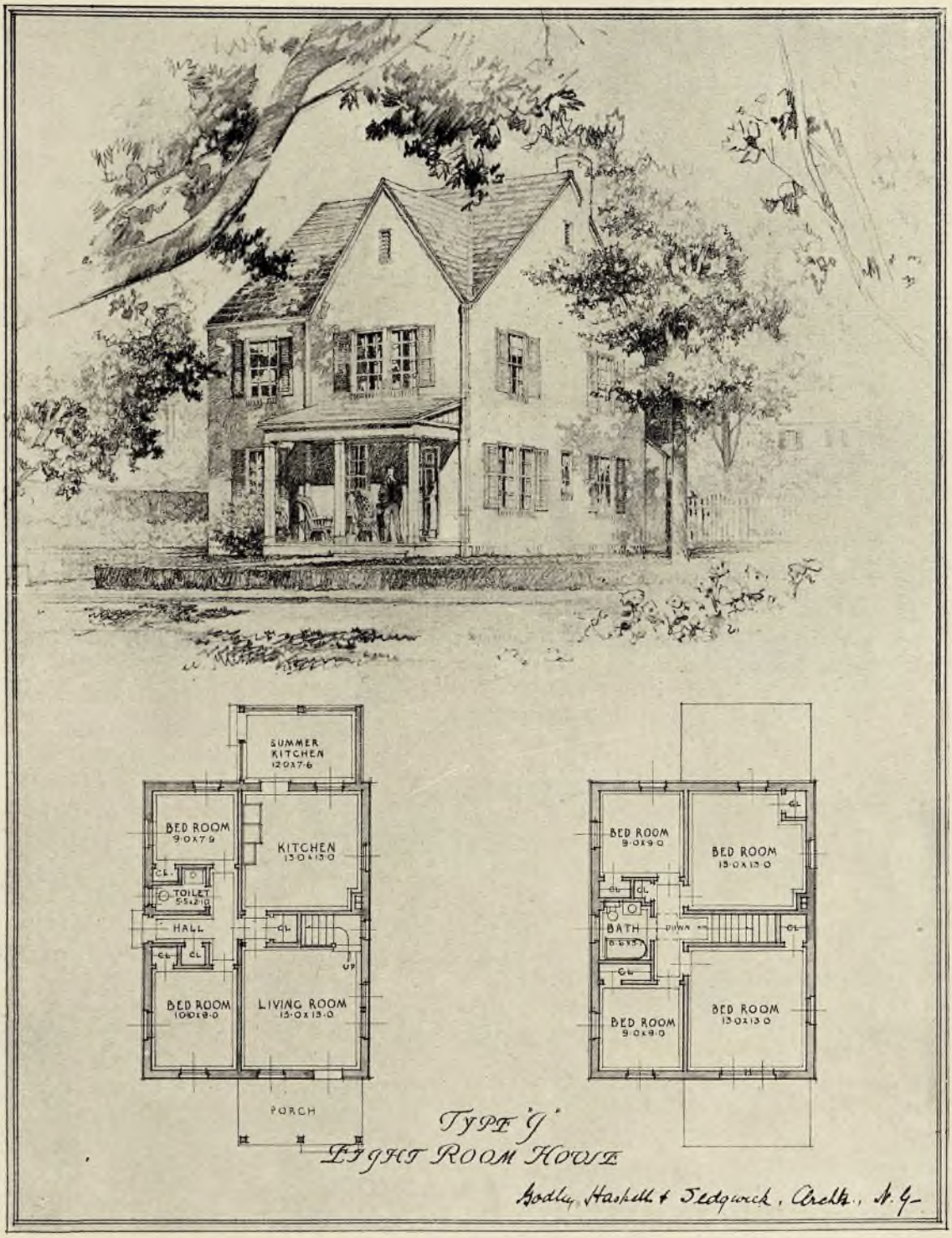


PLATE 139

NAVAL ORDNANCE HOUSING DEVELOPMENT, SOUTH CHARLESTON, W. VA.

Current News

City Built of Zinc

Bareira, in Portuguese East Africa, is the only zinc city in existence. Zinc is the only practicable material so far known, which is capable, states an exchange, of withstanding the peculiar climate. It took some thousands of people who make up the population only six months to build the place. Hospital, church, arsenal, and every dwelling is of zinc; and even most of the railway cars are of zinc throughout.

Building Work Increases

Records for the first three weeks of March, issued by the Department of Labor, show that contracts for building and construction aggregated $96,619,791. It is estimated that the total amount for the month will reach close to $150,000,000. These amounts exceed those for the same month in any former year. Contracts for about $51,000,000 were made in January, compared with $95,000,000 for February. The New York district reported 186 projects amounting to $8,372,682.

Forest Protection in Canada

The aeroplane as an aid in forest protection has not been tried out anywhere except for a short season in Wisconsin several years ago, but this Spring will probably see one or more aeroplanes patrolling timber areas in Canada, according to information just issued by the Canadian Forestry Association.

Great sums of money are spent each year in forest fire protection in Canada, the Province of Ontario alone now spending more than $500,000 yearly for that purpose.

South African Timber Markets

The high price of imported timber, due to the rise in freight and the difficulty in obtaining supplies has led to unusual attention being paid to South African woods, reports the American Vice Consul from the Transvaal. The match factories are running entirely on the locally grown material, and numerous box factories have sprung up in various places throughout the country. Reports indicate that the South African pine compares favorably with much that is imported.

The local demand has been the means of stimulating the interest of farmers and landowners in tree planting, and the government has shown some activity in meeting the needs for afforestation.

Keep Pavement Intact Five Years

It has been nothing new to find that no sooner than a city street has been well paved and the people have begun to take a personal pride in its improvement, said pavement is cut up to allow for the placing of a pipe line or service connection.

Attention is called to the solution of this problem in Cleveland, Ohio, by the *Engineering World*. In this city, some time before paving is undertaken, signs are posted conspicuously along the street, giving notice of the proposed work, and requiring that all underground connections be placed before the paving is done. Thereafter the pavement must not be cut for this purpose for a period of five years. The warning reads: "This street will be paved. All underground structures, gas and water pipes, etc., must be put in at once. After completion, no permit to cut will be granted for five years." It is signed by the mayor.

A restraining influence of this kind is one more incentive for civic pride, and might with good purpose be emulated in other instances.

Devises New Victory Emblem

Inspired by Col. McRae's poem, "In Flanders Fields," Miss Michael, a war worker with the Y. M. C. A., overseas conference headquarters, located at Columbia University, has designed an emblem entwining the Flanders poppy with the torch of Liberty, which she offers for adoption as a national victory memorial to be displayed throughout the country as America's continuous pledge that we shall keep in memory those who sleep in Flanders fields.

Reforestation in Europe

According to reliable information in Government quarters, the forests of France, so carefully protected and cultivated for centuries, saved the cause for the Allies. More than 40,000 trees a day were cut during the four years of the war to meet the demands of military leaders. Not only because of these demands, but from neglect and the rav-

ages of war, the forests of France have been depleted, the war having destroyed more than two billion board feet of lumber and caused the neglect of about 750,000 acres of valuable woodland.

Reforestation is one of the French post-war problems, and Norway has planned to help out in this restoration by planting a belt of Norwegian forest trees in the front zone. The plan comprises the planting of 250 acres a year for five years and the sending of a forestry party of 50 fully equipped Norwegians, even bringing their food supplies, so as to save France any expense in connection with their work.

England and Wales had three million acres of woodland before the war. Now it has been reduced to two million acres, and the Government is faced with a reforestation problem. Its plans include the use of acres of stag-headed oaks, which are on private estates, and the planting of many new areas.

Historic Property Sold

A residential development in connection with property in South Orange Township, N. J., is responsible for the transfer of ownership of the old Timothy Ball house in Ridgewood Road there. The Ball house was built in 1743 by Timothy Ball, a third cousin of General Washington, who frequently visited his relatives in this house during the Revolutionary War.

The house is located on the slope of the mountain between South Orange and Maplewood, in full view of several battlefields where British and American armies camped during the course of the conflict.

One interesting feature of the building is a small, square aperture in the front wall of the house which leads to an old-fashioned built-in bed, which for purposes of warmth, rather than economy of space, as now advocated, adjoins the huge chimney. The house is built of stone and occupies a four-acre site. Patriotic and historical societies are hoping it will be possible to preserve the old landmark intact.

Sacramento Capitol Extension Delayed

Word comes from California that a postponement of about two years is likely in the completion of the Capitol extension. State Architect G. B. McDougall is pessimistic at the situation. It seems to be one further example of having committed to paper some worth while ideas and of not following them out. The money was voted for this improvement in 1913 and it is said not a spadeful of earth has been turned. There are many excuses, but no one has undertaken any responsibility in the matter, and no solution is in prospect.

Immediate Building

Representing the United States Department of Labor, Leslie W. Sprague spoke before the Rotary Club in Passaic, N. J., on the subject of building with relation to immigration.

Mr. Sprague declares that if building operations are not immediately undertaken it will be impossible to build at all within the next few months, due to what he believes an inevitable exodus of labor from this country.

Thousands of laborers, he said, are seeking passports to go back to their native countries where work will be plentiful during reconstruction. It is probable that the United States will lose more from this cause than it will gain by the coming of emigrants from Europe. "Within two years," said Mr. Sprague, "America will be face to face with a labor shortage of large proportions, as there will be no labor coming into this country. There is only one way to overcome the situation and that is to build now while we have the opportunity. Build while the labor is still here and available."

Canadian Rail Construction

After-war construction on railroads in Western Canada, to begin at an early date in order to employ a large number of laborers, involving an expenditure of $60,000,000, and reachng out into 3,000,000 acres of land, is contained in the development program of the Dominion railroad interests. Coal lands in the vicinity of Regina will be opened by virtue of the next extensions and thus employ additional labor in the operation of the mines.

Expect Business Revival

Members of the New England Hardware Association, in annual convention in Boston, when queried as to the business outlook, remarked that it was "picking up considerably." They are the "outside men," so to speak, of the hardware industry, and they are looking forward to an early revival of big business. The whole matter of decided stimulus to the business, as sized up by the meeting, hinges upon what labor proposes to do.

Demand Will Tax Mills' Capacity

Europe's reconstruction requirements are expected to make the United States the leading lumber exporting nation of the world, according to J. E. Rhodes, secretary-manager of the Southern Pine Association.

"With every country on the globe entering a great building period, reports from foreign investigators received by the Association indicate a serious shortage of lumber in practically all centers of consumption abroad," said Mr. Rhodes.

"Cut off largely from their normal sources of main supply because of economic and political demoralization in Russia and Austria-Hungary, and the natural limitations of Sweden's production Great Britain and the rest of the continent are looking to America to make up the deficiency caused by the virtual elimination of these three nations, which before the war contributed more than half of the world's total lumber exports. Foreign buyers are already arriving in the United States in considerable numbers, not only from Europe, but from South America, Australia and Africa, which have been practically without lumber supplies for four years, due to curtailed ocean transportation facilities.

"Russia before the war held first place as a lumber exporting country, and in 1913, the last normal year, sold to foreign buyers 5,513,618,000 feet or 26 per cent of all lumber exports, according to figures compiled from a report of Dr. Edward Ewing Pratt for the Bureau of Foreign and Domestic Commerce. Second in importance at that time was Austria-Hungary, whose exports in 1913 aggregated 3,635,473,000 feet, 17.1 per cent of the whole. Sweden contributed 15 per cent with 3,167,549,000 feet while Canada supplied 13.3 per cent, or 2,833,546,000 feet. In spite of her immense forest resources and unequalled manufacturing equipment, the United States in 1913 ranked fifth in the list of important lumber-exporting nations, with only 12.7 per cent of the total exports to her credit. This amounted to 2,700,575,000 feet, only a little more than Finland's exportations, which were 2,531,281,000 feet.

Would Replant French Forests

A project for reforesting the battle areas of Europe has been advanced by Charles Lathrop Pack, ex-president of the World's Court League.

"About one and one-half million acres of forest land in France were destroyed by shellfire or cut down for war-time need," said Mr. Pack. "Practically all of Belgium's forests with any timber value have been felled by the Germans and sent to Germany or used for fuel. Great Britain made a great sacrifice for war work, for fully 450,000 acres of forests were felled to meet war-time needs. In Italy also great sacrifices were made to supply the army with trench timber and firewood.

"Many claims are made as to who won the war, but I am safe in saying one of the greatest agencies was the forests of France, for those forests held back the enemy time and again. The offer of the American Forestry Association to aid in reforesting work has been accepted by the forest authorities of France, Belgium and Great Britain, and the association will shortly call upon the American people to aid in this great undertaking."

Chicago School of Architecture

The Bulletin of the Chicago School of Architecture, illustrating students' work in architectural design, free-hand drawing and water color, has been received. The work illustrated is grouped by years. This method interestingly shows the progress of the student from the start to graduation, and permits opportunity to study the course of architectural education in design as conducted.

The work, naturally selected from the best available material, shows a wide range of subjects carefully and artistically treated, and discloses to a certain degree the system employed in instruction. It is an extremely creditable showing.

New Organization to Expand Trade

A committee has been organized by the Department of State to co-ordinate the work of all Government departments in building up and extending American interests in foreign trade. This activity means that much of the extensive research work done in the last years by various Government departments may now be utilized to promote the expansion of American commerce. It also means that official recognition will be given to the need for obtaining long credits and removing other obstacles which have heretofore hindered the accomplishment of that purpose.

The Department of Commerce has been investigating the opportunities awaiting American industries in South America, and international conferences have been held. Financial problems have been discussed and ways considered to enable the United States to compete on an equal basis with any other country. A period of great development is in sight in South America, which opens fields of the utmost importance to any nation which has

extensive interest in foreign trade. Similar efforts are being made in connection with European and Far Eastern fields.

The formal announcement of the Department of State says in part:

> The committee includes representatives of all the governmental offices which deal in any way with foreign trade matters. Its duty is to formulate conclusions and to harmonize and co-ordinate all governmental activities in any way connected with foreign trade, thus safeguarding the economic future of the nation.
>
> The committee will provide advisory and supervisory machinery of Government executives for unifying the work of further extending and developing the business interests of the United States in foreign channels.
>
> Prominent among the problems which will receive immediate attention are tonnage allocation and marine freights, cable and radio facilities, reconstruction loans and Latin-American loans, consortiums for buying in Europe, labor and immigration and the development of what are known as "key industries," such as the dye industry and strategic raw materials.

The chief purpose, however, is to compile data and promote co-operation with the various Government agencies represented in the organization, for the most expeditious fulfillment of beneficial foreign relations.

Meeting Industrial Unrest

The progress being made by employers in realizing the humanity of labor has again been exemplified by a performance of the International Harvester Co. This organization controls seventeen American and three Canadian plants, which comprise 30,000 employees.

The officers of the company have recently evolved an "industrial council" plan, which has for its purpose the representation of the employee in deciding matters pertaining to working conditions, health, safety, hours of labor, wages, recreation, education and other questions of mutual concern to employer and employed.

An election has been held in all twenty plants to determine how far creation of the "industrial council" had approval. All the Canadian and all but three of the American plants accepted it enthusiastically.

In each plant which approved the plan it is proposed to organize a "works council," details for which have been carefully worked out. In the three which did not, the company posted notices of the result of the vote, and stated that no further action would be taken in the matter except at the request of the employees. Two have already petitioned for another vote. The company made no effort to sway opinion. It attempted no campaign to induce the men to vote for the measure. They were simply asked to express their wishes with regard to an arrangement which officials of the company believe will make for a better understanding between themselves and their employees, and which promises to safeguard their interests and make possible a speedier adjustment of grievances.

Canadian Lumber Supply

The report that the government of Great Britain is to buy a billion feet of lumber in Canada this year has brought out the statement from prominent dealers here that if this order is received it will be the biggest boom to the industry that Canada has experienced in the past fifty years. It is claimed that there is not a billion feet of lumber in all Canada available for ready delivery, so that the order could not be met for the present at least. During the past two years labor has been very scarce, only old men and boys being available, and they demanding the highest wages.

In the province of New Brunswick there is little lumber cut awaiting shipment, this year's cut being about 60 per cent of normal—practically the same as last year. Influenza played havoc in the lumber camps the past winter, many having been compelled to close entirely because of it.

Newark Window Designed by R. A. Cram

A memorial window, designed and executed by Ralph Adams Cram, architect, is being installed back of the chancel in Trinity Episcopal Cathedral Church, Newark, N. J. The window is regarded as a most excellent example of modern stained glass, and is the gift of Mrs. Frances Parkman of Boston in honor of her parests, Mr. and Mrs. Cortlandt Parker, Jr., and her brother, Cortlandt Parker, Jr.

Cleveland Chapter, A. I. A.

The Cleveland Chapter of the American Institute of Architects held its monthly meeting on Thursday, April 3. There was no pre-arranged program, as arrangements in connection with the convention in Nashville had to be made.

At the March meeting of the Chapter an informal talk was given by Sergeant Carl S. Briggs, son of President Herbert Briggs. Sergeant Briggs had just returned from France, where he saw service in the camouflage section of Company B, Fortieth U. S. Engineers.

Will Raze Historic Philadelphia House

The Guernsey mansion, built in 1705, and one of the oldest houses in Philadelphia, will be demolished shortly to make way for the new home of the Frankford Trust Company. The house has been in the Guernsey family for more than 200 years. The foundations were laid when Frankford Road was known as the King's Highway, and the house was occupied by ancestors of Martin Van Buren, eighth President of the United States.

There were few houses north of Frankford Creek at that time, the principal ones being the summer homes of the Guernseys and the Smedleys, who came over with William Penn. The original title to the Guernsey mansion describes it as "situate on the King's Highway below Jolly Post Inn." In the heydey of its Colonial fame it far outshone any of the houses of the period for social activity. Washington and Jefferson, when Philadelphia was the capital of the United States, visited there.

One of the greatest days in the history of the Guernsey mansion was in September, 1824, when Lafayette visited Philadelphia in his tour of the United States. A triumphal arch was raised over Frankford Avenue from the front of the old mansion, and beneath it the great Frenchman and friend of America passed, amid the plaudits of a mighty throng.

The Marbles of Italy

Italy is one of the world's most famous sources of supply for both art and building marbles, and marble, granite, and building stones are the common materials used for buildings in that country. Venice is a fireproof city, built of stone of Istria and marble; and the foundations and first courses, at least, of all palaces, public and municipal buildings, government and business edifices are of these materials.

Venice is immediately adjacent to famous marble quarries with an inexhaustible supply of raw material, worked by cheap labor. The Istrian stone, which is quarried just across the Adriatic, reaches Venice by the cheapest forms of water transportation, being loaded on sailing barges at the quarries, and disembarked at the exact point where it is to be used.

The most important quarries in the Veneto are at and near Verona, the Veronese red and yellow marbles having been favorite building stones since the time when the Colisseum at Verona was constructed. For building they rank next to the stone of Istria in popularity, and are true marbles, while the stone of Istria is not a true marble, although a very hard limestone, that is much used in Venice because it resists the action of salt water.

Besides their value for construction, the Veronese marbles are in great demand for decorative work. Among the names of the several varieties of Veronese marbles are white nembro, coral pink, white peach, partridge eye, yellow snail, yellow azure, and paradise.—*Scientific American Supplement.*

Tells of Artists' War Achievements

Marcel Knecht, the chief of the Bureau of Public Information for the French Government in America, was recently entertained at dinner by the members of the Architectural League of New York. Mr. Knecht, who before the war was managing editor of the magazine *Art et Industrie,* published in Paris for the advancement of the arts allied to architecture, spoke to the members of the league on the subject of "Nature as Expressed in the Arts of Lorraine."

The conference was illustrated with lantern slides showing recent achievements by the great artists in the part of France nearest to the bloodiest battlefields of the great war.

Mr. Knecht was introduced by H. VanBuren Magonigle, president of the league. There were about sixty members of the society present at the dinner. The speaker showed the close connection between local industries and local art of Lorraine, Nancy and Luneville.

The natural resources of the country, such as the salt mines, sand, forests, etc., had encouraged and made easier, he said, masterpieces in glass, wood, and pottery. He spoke of the work of such modern French artists as Galle, Daum, Majorelle, Mougin, and Baccarat, all of whose work, he said, should be better known in this country. On the effect of the war regarding French art Mr. Knecht said:

"France needs to be protected not only against German art but even against German ambition. Some people believe that the revolution pacified the German spirit of domination, but there is still existing danger in this quarter."

A Timely and Valuable Pamphlet

Bulletin No. 17, for the first quarter of 1919, issued by the Municipal Art Society of New York, very thoroughly discusses the subject of war memorials and illustrates the best and most important examples that have been erected. This publication should be in the hands of every individual and

every committee that will be intimately connected with this subject.

The illustrations in this bulletin are of the most artistic expression in the form of memorials that has been made in this country. They show exactly what may be accomplished when these matters are carried forward in an artistic and painstaking manner. They offer, further, an object lesson by the illustration of a number of types of Post-Civil War memorials classified under the very proper heading of "What Not to Do." In addition to featuring St. Gaudens' beautiful Farragut memorial in New York, and the equally good Shaw memorial in Boston, there are presented fountains, bridges, exedras, doorways and stained glass, each one of which constitutes a part of our artistic heritage.

It is vitally necessary that the warnings and admonitions of a society of this important character should be carefully heeded and considered, and if this is done we need have no fear for the future of memorial art in this country.

Copies of this pamphlet, the price of which is twenty-five cents, may be had by addressing the Society of Municipal Art at 119 East 19th Street, New York. We cannot too strongly urge that this Bulletin be used as a reference and guide in important memorial undertakings.

Wants Material Prices Specified for Seasons

Roy G. Owens, general sales manager, Lakewood Engineering Company, Cleveland, Ohio, believes that if material prices were published for specified periods they would then become established in the minds of the public, a confidence established between buyer and seller would be created, and there would result little halting in the construction business. Mr. Owens says:

"If every producer who is not already doing so will adopt this plan, making his prices known to the public, I believe that confidence will be restored and that the present enormous potential demand will be brought into action. Perhaps the best examples of this plan are the retail dry goods business of the country, whose prices are known to every individual through publication in advertisements and through tags on the goods in the stores, and the automobile industry, which once every season names its price to the public for that season, so that every individual, possible customer, or not, is made familiar with the value of the article.

"These two industries are perhaps the only two large industries whose business has been and is now active since the armistice.

"If the manufacturers of cement, of steel, producers of lumber and other building materials, manufacturers of clothing, food products and machinery, had followed this method and the prices of these commodities were established in the minds of the public, there would not now be the marked halting in business.

"Help stabilize business promptly by adopting a plan of action with this slogan: 'Prices effective for specified periods or seasons will establish confidence between buyers and sellers.'"

Where Work is Waiting

While there is a tendency for architects to be attracted to large cities as the center of their activities, which is in many respects justified, there are reasons why the smaller towns might prove "mettle more attractive." There is the idea, among these, that an architect is practically without a rival in some of the smaller towns in the Middle West. Mr. O. R. Hardwell, secretary of the Freeport (Ill.) Chamber of Commerce, taking that city as an example, says:

"Here we are, right in the heart of the richest farming country in America, tapped by nine railway lines, three hours' ride from Chicago, and not a single architect in our city of 22,000 population. Can you beat it?

"This peculiar situation is common to many towns of our size in the Mississippi Valley. Moreover, it strikes home with a cold thud, when we begin guessing about our prospective work in this period of rebuilding and reconstruction—who is going to make our plans?"

Competition for Rebuilding French Towns

A society called *"Renaissance de Cimes,"* founded in 1915, has drawn up plans for the reconstruction of the war-torn districts in northern France. The city of Chauny has opened competition in which the Allies are invited to participate, for rebuilding the town and its suburbs in a manner to be modern and healthful in every respect. Before the war, Chauny was a prosperous city with a population over 10,000, but the last years have seen its almost complete destruction. In this competition the first prize is the sum of $2,000, and a number of smaller ones will also be awarded. Prize-winning plans are to be exhibited in Paris.

Lumber and the Box Industry

Based on production in 1912, 11.6 per cent of all lumber produced in the United States is converted into boxes. In fact, the manufacture of packing boxes and shooks, crates, fruit and vegetable packages and baskets is the second largest wood-consuming industry in the United States. More than four and a half billion feet of lumber annually, of which softwoods constitute about 69 per cent and hardwoods 31 per cent, are used by box makers in the United States.

To License Building Contractors

The results of a licensing law for contractors would doubtlessly be so valuable that any movement to encourage such a procedure must be of interest to architects. A movement for this purpose in line with the general tenor of the program of the Post-War Committee is one proposed by the Wisconsin Master Builders' Association and to be discussed at its next convention. An effort can properly be made to encourage legitimate members of that industry and protect them from the increasing number of incompetents.

Minnesota Proposes Registration of Architects

A bill providing for the examination and registration of architects has been reported upon favorably by both House and Senate legislative committees and is now before the legislature of Minnesota for final action.

The object of the bill is to stabilize the practice of designing and planning. While not prohibiting use of plans without state authorization, it places responsibility where it belongs and gives the people definite information as to the ability of the designer. It also gives the public an added security by the examination and certification of all applicants, permitting only those qualified to subscribe themselves "registered architect."

J. Cleveland Cady

J. Cleveland Cady, senior member of the firm of Cady & Gregory, architects, of 40 West Thirty-second Street, New York, died on Thursday, April 17, of heart disease, after an illness of two months at his home, 214 Riverside Drive.

Since 1870 Dr. Cady—he had received the honorary degree of LL.D. from Trinity College in 1905—had practiced his profession in New York, the associate member of the firm he established being William S. Gregory. Born at Providence, R. I., the son of Josiah and Lydia Cady, he received his early education at academies in New England, and was graduated from Trinity College with the class of 1860.

Dr. Cady was the designer of many of New York's most important buildings, notably the Metropolitan Opera House, the American Museum of Natural History, the later buildings of the Presbyterian Hospital, the Skin and Cancer Hospital, Bellevue Medical School and the Hudson Street Hospital. For Yale University he designed no less than fifteen buildings, including the Lamson, Fairweather, White, Berkeley and Pearson dormitories, Dwight Hall and the Chittenden Library. Examples of his work are also to be found at Williams, Trinity and Wesleyan.

Dr. Cady was president of the Skin and Cancer Hospital, a governor of the Presbyterian Hospital, a trustee of Berea College, vice-president of the New York City Mission, and president of the National Federation of Churches. His clubs included the Century, the Aldine, the Quill and the Delta Psi Fraternity.

Last autumn Dr. Cady presented to the library of Trinity College his collection of books and photographs relating to architecture. This collection comprised 375 volumes and more than 2000 photographs, and was considered one of the most complete of its kind in the country.

Personal

Architect Allen Logg has opened offices at 319 Hippodrome building, Cleveland, Ohio, and is desirous of securing catalogs.

Architect Jos. G. Ludgen has removed his office from Room 910 to 1633 Monadnock Building, Chicago, Ill.

Architect Norman T. Vorse, 911 S. & L. Building, Des Moines, Iowa, has consolidated with Kraetsch & Kraetsch.

C. L. Monnot, architect, who has been associated with Hawk & Parr, architects, has opened an office at 409 Empire Building, Oklahoma City, and is desirous of receiving catalogs and data.

W. H. Cameron, general manager of the National Safety Council, has resigned to become manager of industrial relations of the Eastman Kodak Company. His place will be taken by C. W. Price, formerly field secretary of the National Safety Council.

Late News from Architectural Fields

Special Correspondence to THE AMERICAN ARCHITECT

Government To Spend $305,369,464 On Public Improvements

WASHINGTON, D. C., April 21.—Construction work is being launched by the Government at a rapid rate.

By the end of the fiscal year 1921 there will be available for Federal aid for State road building more than $266,000,000. Congress passed the appropriation for $9,050,000 for new hospitals and improvements to old ones needed by the Public Health Service and this building activity is being rushed and will be under way by the end of the year. Some of these projects will be under construction by midsummer. More than $30,000,000 are involved in the maintenance and construction work set out in the rivers and harbors appropriation bill passed by the last Congress.

There is an appropriation of $1,500,000 for the building of a sanatorium at Dawson Springs, Ky., the survey is being made; and for the site and hospital plant at Norfolk, Virginia, $900,000 has been appropriated. An appropriation of $550,000 was made to take care of the hospital project in the District of Columbia and $190,000 were voted for improvements in the Marine Hospital at Stapleton, Staten Island, N. Y.

For most of these projects plans now are being prepared and it is safe to say work on all of them will begin within the year.

About 150 projects are being held up, for the most part post office buildings. Almost every State in the Union is represented in this list of deferred projects which involves the expenditure, on present construction prices, of more than $23,000,000.

Many of these projects were contemplated before the war and money appropriated to cover the construction costs on the then prevailing prices. Estimates at that time showed these buildings would cost approximately sixteen and a half millions. The present estimates are about six millions more and before the work can be undertaken Congress must appropriate enough money to take care of this increase in building costs.

Optimistic As To Building Prospects

Speaking of building conditions in the central west, Albert S. Owen, secretary of the Society of Architects, Kansas City, Mo., is of the opinion that residential construction should start later this year than usual, but that it will proceed normally when it becomes apparent that the general demand for homes will hold values up and insure against depreciation.

"The building of factories is already progressing generally in the central western states," he says, "larger interests being first at sensing the permanency of conditions.

"Material men, who see an assuredly and continuously active world market for their wares for the next ten years, believe that not only will it be impossible to duplicate later for less cost, homes that are constructed this year, but that the usual depreciation of a residence will be balanced in the next ten-year period by the general increase in real estate values."

"When the idea penetrates the public consciousness," one wholesale lumberman remarked, "and the fact that lumber never did take more than a quarter or a half as much of a rise as several other prime commodities in the war period, there will not be much hesitancy about building investments."

Architects Hear Lectures

A number of lectures of more than usual interest to architects have recently been given at the University of Michigan. The first of these was given on March 13 by Albert Kahn on French Chateaux. The illustrative slides were from sketches made abroad by Mr. Kahn and from photographs.

On March 16 and 17 Professor Wm. H. Goodyear, Curator of Fine Arts of the Brooklyn Museum, gave the following illustrated lectures: "Optical Illusions and Architectural Refinements in Mediæval Cathedrals"; "The Widening Refinement in French Gothic Churches and Cathedrals"; "Architectural Refinements in Greek Temples." Prof. Goodyear is the greatest living authority in this field.

Explain Chicago Building Hold Up

A letter from fourteen Chicago architects has been printed in the daily press of that city to the effect that building work, estimated at $93,000,000, plans for which have been prepared by these architects, has been held up by high prices. The firms and the amount of building they are to supervise were printed as follows:

Graham, Anderson, Probst & White	$20,000,000
Holabird & Roche	10,000,000
Marshall & Fox	13,000,000
Christian Eckstrom	8,000,000
Charles S. Frost	5,000,000
Richard E. Schmidt, Garden & Martin	5,000,000
F. E. Davidson	5,000,000
George C. Nimmons & Co.	1,000,000
Samuel N. Crowen	5,000,000
Henry J. Schlacks	1,000,000
Walter W. Ahlschlager	5,000,000
C. W. & G. L. Rapp	7,000,000
Alfred L. Alschuler	5,000,000
Board of Education: F. Hussander	3,000,000

Total, $93,000,000.

Build Now, Says Senator Underwood

United States Senator Oscar W. Underwood, speaking before the Birmingham, Ala., Real Estate Exchange, recently advised against the policy of postponing building activity and industrial development with the expectation of cheaper materials and labor later on. Said Mr. Underwood:

"Persons who will not build now because they have to pay more dollars for the material and the labor are taking the wrong view; they are measuring by the wrong standard, the wrong yard stick. We are not going to get back to 1914 for a long time."

Financial and Commercial Digest

As Affecting the Practice of Architecture

Banks Study Amortization of Loans

Periods of reconstruction are intensely satisfactory from the point of view of those who advocate methods as opposed to the inertia of custom. There is not the opportunity to discuss new methods for temporary building loans and long term real estate mortgages in connection with the campaign to stimulate activity in building. The American Bankers' Association is making real progress for the advancement of plans of institutional investors in real estate loans as opposed to custom.

Amortization of loans is the principle upon which emphasis is placed as a method which will: (1) Make available a greater turnover of funds for reinvestment in the renewed activities of the building industry. (2) Remove that element of speculation from the risk of investment that so often relies in vain upon an appreciation in the value of land to offset depreciation in the value of structures. (3) Replenish the reservoirs of financial capital, by encouraging thrift in the borrower, so that the supply of investment funds will flow uninterruptedly in response to requirements of the builders of national wealth.

Of marked significance is the fact that the American Bankers' Association Committee in charge of the campaign for amortization includes among its members a prominent representative of the United States League of Building and Loan Associations. This is as it should be, for the reason that the funds for investment in real estate loans provided by the building and loan associations of the United States, both in respect to the amount of capital contributed and in respect to its direct effect upon the prosperity of the building industry, is relatively as important as the amount contributed by the State banks and trust companies combined, or the insurance companies alone.

Rapid changes are developing in methods of banking technic that touch the public. Changes within the banking system itself, due to the tendency for banks of all types gradually to merge their activities into the style of the Federal Reserve System, give rise to the belief that funds destined for investment in mortgages no longer will follow old channels in their customary volume. These changes are said to be the cause of reduced investments by new member institutions in real estate loans.

Suggestions already have been advanced from more than one quarter, that the country needs to develop a new medium, similar to the Federal Farm Loan Board, that should devote its special attention to temporary building loans and long-time real estate mortgages in our cities. This clearly is the function of a mortgage bank.

The United States League of Building and Loan Associations has been particularly active in impressing upon the Government the need for home loan banks that will standardize mortgage collateral and create a broad market for the securities based thereon. Interest prevails between the American Bankers' Association and the United States League of Building and Loan Associations in the matter of amortization. There is a possibility that these two interests may agree on establishing a federal mortgage bank. The American Banking Association bulletin develops the history of long-term mortgages abroad down to the establishment of the Crédit Foncier de France, recording that before the war this institution was offering to lend on mortgage for 75 years at 4.3 per cent, plus an amortization premium. The law under which the Crédit Foncier was formed contains provisions which have been more or less closely followed as models in other European countries.

The Division of Public Works and Construction Development, since embarking upon its campaign for renewed activity in the building industry, from the start has realized the important influence that new facilities for discounting mortgage loans and for the sale of collateral trust and debenture bonds would prove to be. Now that certain financial interests are united in the selection of models that have been successfully followed elsewhere in the establishment of mortgage banks, there is reason to hope that the same institutions soon will be ready to unite upon an acceptable plan for a new medium in the United States to extend the proper and adequate facilities sorely needed to finance the increasing activity of the building industry.

Late Quotations in Building Material Markets

WITH the firm determination that nothing shall stand in the way of a free building market after the Victory Loan drive, building material manufacturers in eastern sections of the country are doing everything in their power to assure price stability for the rest of the year. By the establishment of maximum values for cement and barrel lime for the season the situation has taken on a decidedly brighter aspect, for the far sighted builder is not concerned as to how low the market will drop but as to how long it will remain at the low level.

Cement manufacturers took a most aggressive and logical step when they agreed to guarantee the market against any higher prices than $3.25 per bbl., delivered in New York City, for the balance of the year. In addition to the agreement that Portland cement quotations will not go higher until January 1, 1920, the ten companies representing the industry, decided that if there should be a price reduction in favor of the builder that these firms would each follow the reduction. Besides this, the building lime manufacturers, representing the entire industry, have determined to meet shortly and fix a maximum price that will hold good until September 1. This date was chosen so as to permit manufacturers to attain a still lower level in event that the demand is great enough to allow the revision of costs to what is termed a quantity basis, in which event there will be a further drop.

It is probable that action on the efforts of the cement and lime manufacturers to stabilize prices will be followed by similar guarantees from other material producers and that this big movement will have its reflection in the building revival convention to be held May 7-8 in Cleveland, Ohio, by the National Federation of Construction Industries.

The action of the cement and lime manufacturers has to a great extent counterbalanced the unsettled state in the steel market, which followed the controversy between the Industrial Board and the United States Railroad Administration. Dispatches from Washington are to the effect that the Director General must take the entire responsibility for the results that must follow the frustration of the purpose of the Industrial Board to stabilize prices and stimulate building because the administration refused to accept the prices thus determined. That was the statement made by Chairman Peek in reply to the notice issued by Director General Hines to the effect that the board had set prices without authority.

Before the board, blocked by the refusal of the Railroad Administration to accept steel prices, abandons the vital industrial policy which it represents, the board will lay the entire matter before the President for final decision.

Mr. Peek declared:

"The use by the Railroad Administration of its enormous buying power to reduce any price would necessitate one of the following courses, increasing the price to the public, throwing all railroad business into a monopoly of powerful producers or reducing wages.

"While the Director General is within his rights in insisting upon his technical prerogative to determine prices, he is also under an obligation to see to it that the governmental policy is abandoned by the same authority that announced it, and to assume full responsibility for the results."

A reduction in brick prices and the establishment of a maximum level has been thwarted by strike of the Tide Water Boatmen's Association in New York Harbor, which has greatly increased the cost of handling this commodity between the Hudson River brick yards and the wholesale docks. Sand is scarce with two leading companies in live competition for the business. Gravel, grit and crushed stone prices are consequently irregular.

At a meeting held last week in Washington, represented by members of the American Institute of Architects, banks and trust companies which aid in financing building operations, builders, real estate men and labor unions, it was decided to call a conference in the near future to discuss stabilization of prices. Every city is beginning to realize that some action must be taken immediately to insure a resumption of building activity, knowing that while prices of materials and wages are above the 1914 levels they are no longer prohibitive if confidence can be had in their general stability.

Charles S. Keith of Kansas City, President of the Southern Pine Association, told the Legislative Commission investigating the prices of building materials this week that the present price of lumber was lower than it would be at any time in five years. He said that the increased cost of production, depletion of raw material in this country, and the increased demand from Europe to rebuild the areas devastated by war were certain to mean higher prices for lumber. Mr. Keith submitted statistics in support of his statement.

(Special Building Report from our Chicago Correspondent)

CHICAGO, ILL., April 21.—The beginning of actual building operations is resulting in fairly good demand for practically all materials in this market. While most of the work started is for small houses and repairs on old structures, dealers now believe it is but a matter of short time before big projects will be under way. Architects are busy with plans, and the lumber and material dealers say there is more figuring with contractors now than at any time since this country engaged in the war.

Figures given out by Building Commissioner Charles Bostrom indicate building permits issued in March for new structures showed a total of $5,000,000 in value, an increase of 100 per cent over those issued during the same month of last year. Real estate men report a demand for small houses in the suburbs and outlying districts. Prices on most of the building items are holding exceptionally firm.

(Price quotations now current on building materials and supplies as quoted by dealers and jobbers for delivery in New York and Chicago, follow. The quotations set forth are placed before readers of THE AMERICAN ARCHITECT to afford an accurate review of market conditions, rather than for use as a basis for actual purchase. They will not only provide knowledge of the exact state of the market as to items quoted, but will also present a basis to judge conditions as affecting co-relating materials. Items marked (*) indicate an advance over last week, while those marked (†) record a decline. Other prices did not fluctuate during the week.)

	New York	Chicago
BRICK—		
Common (for Borough of Manhattan only), per thousand	$15.00*	$12.00
CEMENT—		
Per bbl. in 15 cent bags (Rebate 60c. per bbl. for bags	3.25	2.80
COOPER SHEETS—		
At the mill, hot rolled, 16 oz. base-price, per lb.	22½c.	22½c.
(From jobber's warehouse add 2 to 3 cents.)		
EAVES TROUGH—		
Galvanized Steel	60&10%	....
Galvanized Charcoal Iron	50%	....
Copper	40%	....
EAVES TROUGH MITERS—		
Lap or Slip Point, list	10%	....
ELBOWS AND SHOES—		
Galvanized Steel:		
Plain, round and corrugated—all sizes up to 6 in.	60%	....
Square:		
Square	50%	....
Copper:		
All sizes	20%	....
GALVANIZED SHEETS—		
Nos. 1 and 20 gauge, per lb	$6.40	$6.12
No. 26	6.70	6.42
No. 27	6.85	....
GLASS— (Discounts from manufacturer's price lists)		
Single strength, A quality, first three Brackets	80%	77%
Single strength, B quality	79%	77%
Double strength, A quality	80%	79%
Double strength, B quality	82%	81%
Plate—up to 5 sq.	82%	....
Plate—over 5 sq. ft.	84%	....
Plate—up to 10 sq. ft.	...	83%
Plate—over 10 sq. ft.	...	82%
GRAVEL—		
1½ in. (Borough of Manhattan only) per cu. yd.	$2.75*	$2.50
¾ in. (Borough of Manhattan only) per cu. yd.	2.75*	2.50
GYPSUM—		
Plaster Board:		
(Delivered in Boroughs of Manhattan or Bronx)		
27 x 28 x 1	35c.	....
27 x 48 x ½	30c.	....
32 x 36 x ¼	21c.	25c.
32 x 36 x ⅜	21c.	26c.
32 x 36 x ½	23½c.	....
Plaster Blocks:		
(Delivered in Boroughs of Manhattan or Bronx)		
2 in. solid per sq. ft.	7½c.	....
3 in. solid 12 x 30 per sq. ft.	10½c.	....
3 in. hollow	10½c.	10c.
4 in. hollow	12½c.	11c.
6 in. hollow	17½c.	....
HOLLOW TILE—		
(The New York Harbor strike makes a slight additional charge for cartage necessary.)		
Interior, 2 x 8 x 12 split furring per 1,000 sq. ft. and 15 cents thousand pieces.	$70.00	....
Interior, 3 x 12 x 12 split furring per 1,000 sq. ft.	102.00	$67.90
Interior, 4 x 12 x 12 split furring per 1,000 sq. ft.	114.75	72.50
Interior, 6 x 12 x 12 split furring per 1,000 sq.ft.	153.00	99.60
Interior, 8 x 12 x 12 floor and partition per 1,000 sq. ft.	....	135.80
Interior, 10 x 12 x 12 floor and partition per 1,000 sq. ft.	....	167.50
Interior, 12 x 12 x 12 floor and partition per 1,000 sq. ft.	....	194.60
LATH—		
Eastern spruce, per thousand	$6.50	....
No. 1 White pine, per thousand	...	$6.50
No. 1 Hemlock, per thousand	...	6.00
No. 1 Yellow pine, per thousand	5.75	5.25
LIME—		
Common, 300 lb. bbls., per bbl.	$3.50	$2.00
Finishing, 300 lb. bbls., per bbl.	3.70	....
Hydrated, in paper bags, per ton	17.25	$17.50
Common (Chicago), 200 lb. bbls., per bbl.	....	1.00
Common (Wisconsin), 200 lb. bbls., per bbl.	....	1.10
LUMBER (All Prices Wholesale F.O.B. New York)—		
Yellow pine, 3 x 4 to 14 x 14, 10 to 20 ft.	$42.00	$44.00
Yellow pine, fencing and boards	....	44.00
Yellow pine, dimensions and timbers	....	45.00
Norway pine, scantling and joists (rough)	....	50.00
Norway pine, heavy joists and timbers (rough)	....	54.00
N. C. pine, flooring, Norfolk, Va., 13/16 x 2½	43.00	....
Hemlock, base price	36.00	....
Spruce, random 2 in. cargoes	38.00	....
Spruce, wide cargoes	52.00	....
Cypress, by car, factory selects 5/4	59.00	....
Cypress shingles, 6 x 18 (heart)	10.00	....
Oak, quartered (red)	96.00	....
Oak, plain, flooring (red)	72.00	....
Oak, plain, flooring (white)	72.00	....
Maple, No. 1, 13/16 x 2 in.	57.50	....
Douglas fir, timbers (rough)	52.50	63.00
Douglas fir, porch and stair lumber	....	51.00
LEAD—		
American Pig, per lb.	6 to 6½	....
Bar, per lb.	7½ to 8	....

	New York	Chicago
METAL LATH—		
Under 100 sq. yd., per sq. yd.	40c.	....
PAINTS, OILS, ETC.—		
Leads:		
American White, in oil, kegs; lots over 100 lbs.	14c.	....
White, in oil, 25-lb. tin pails; add to keg price	¼c.	....
Red, bbl., ½ bbl. and kegs; lots over 100 lbs.	14½c.	....
Dry Colors:		
Red Venetian, American, per 100 lbs.	$2.75 to $5.00	....
Metallic Paints:		
Brown, per ton	24.00 to 32.00	....
Red, per ton	24.00 to 30.00	....
PIPE—		
Cast iron:		
6 in. and heavier	$57.70	$56.80
4 in.	60.70	59.80
3 in.	67.70	66.80
(and $1 additional for Class A and gas pipe.)		
Wrought:		
(Discounts to jobbers for carload lots on the Pittsburgh basing card; freight rates from Pittsburgh to New York, and also from Pittsburgh to Chicago, in carloads, per 100 lbs., are 27c.)		
Butt Weld		
Steel:		
Black, ⅛ to 3 in.	50½ to 57½%	57½%
Galv., ⅛ to 3 in.	20 to 44 %	41 %
Iron:		
Black, ⅛ to 1½	29½ to 39 %	39½%
Galv., ⅛ to 1½	2½ to 23½%	23½%
Lap Weld		
Steel:		
Black, 2½ to 6	53½%	53½%
Galv., ⅛ to 3 in.	24 to 44 %	41 %
Iron:		
Black, 2½ to 6	34½%	34½%
Galv., 2½ to 6	21½%	21 %
PLASTER—		
Neat wall cement in 15 cent bags, per ton	$20.30	$18.50
Finishing plaster	24.00	21.00
RADIATION—		
(A further reduction, effective April 4, of 15% on direct radiators, 12½% on wall radiators, and 10% on steam and hot water boilers is announced. This approximates a drop of 36% on radiators and 33% on boilers from prices in effect before the 1st of January, 1919.) Chicago reports a 57% reduction on all standard sizes.		
REGISTERS—		
Cast iron semi-steel or steel, in black or white japan or electroplate and small faces and borders	40%	40%
Wall frames	40%	40%
Large faced, 14 x 14 in. and larger	60%	60%
Base board registers	40%	40%
Base board intakes	40%	....
White enameled goods	15%	15%
Solid brass or bronze goods, except grilles	net	net
Grilles in black and white japan or electroplate in cast iron, plain lattice design, smaller than 14 x 14 in.	40%	40%
Over 14 x 14 in.	60%	60%
SLATE ROOFING—		
F. O. B. cars, Quarry Station.		
Pennsylvania:		
Best Bangor	$6.50 to $9.00	.....
No. 1 Bangor Ribbon	6.75 to 7.25	.....
Pen Argyl	7.25 to 8.00	.....
Peach Bottom	10.00 to 12.00	.....
No. 1 Chapman	7.25 to 8.25	.....
Vermont:		
No. 1 Sea Green	3.50 to 6.70	.....
Unfading Green	5.50 to 9.00	.....
Red	13.00 to 16.00	.....
Maine:		
Brownsville, Unfading Black, No. 1	10.00 to 12.50	.....
Slaters felt, 30 lb. roll	1.75	.....
Slaters felt, 40 lb. roll	2.25	.....
ROOFING MATERIAL—		
1-Ply Tarred Paper, per ton, per roll, 108 sq. ft.	$63.00 to $65.00	.....
2-Ply Tarred Paper	95c.	.....
3-Ply Tarred Paper	1.23 to 1.30	.....
Rosin Sized Sheathing	per ton 60.00	.....
Corrugated Roofing, galvanized, 2½ in. corrugation, over flat sheets, 30c. per 100 lbs.		
SHINGLES—		
Red cedar, 5 to 2, clear	...	$6.50
White cedar, extra star, A star	...	5.50
STRUCTURAL STEEL—		
Beams and channel, 3 to 15 in., per lb.	2.45c.	3.47c.
Beams and channel, over 15 in., per lb.	2.45c.	3.47c.
Angles, 3 to 6 in.	2.45c.	3.47c.
Zees and tees	2.45c.	3.47c.
Steel bars, half extras, from mill	2.35c.	3.37c.
REINFORCING BARS—		
High carbon steel from mill	$48.50	$49.50
Medium steel from mill	48.50	49.50
SAND (Borough of Manhattan only)—		
Mason, per cu. yd.	$1.80	$2.25
Torpedo, per cu. yd.	1.80	2.50

Department of Architectural Engineering

New Code for Automatic Sprinklers

THE automatic extinguishment of incipient fires has been the object of much effort. The development and present status of these efforts is well understood by architects. Several factors operate against the universal use of such apparatus, and they may be divided into commercial conditions and inherent mechanical defects.

The commercial objections are those pertaining to the cost of installing the elaborate equipment, the difficulty in securing Underwriters' approval of apparatus, the general opinion that unnecessary restrictions confine these operations to a very limited number of corporations with a consequent lack of real competition and the inability of the public to purchase approved apparatus. This latter condition restricts these installations to a very few construction organizations.

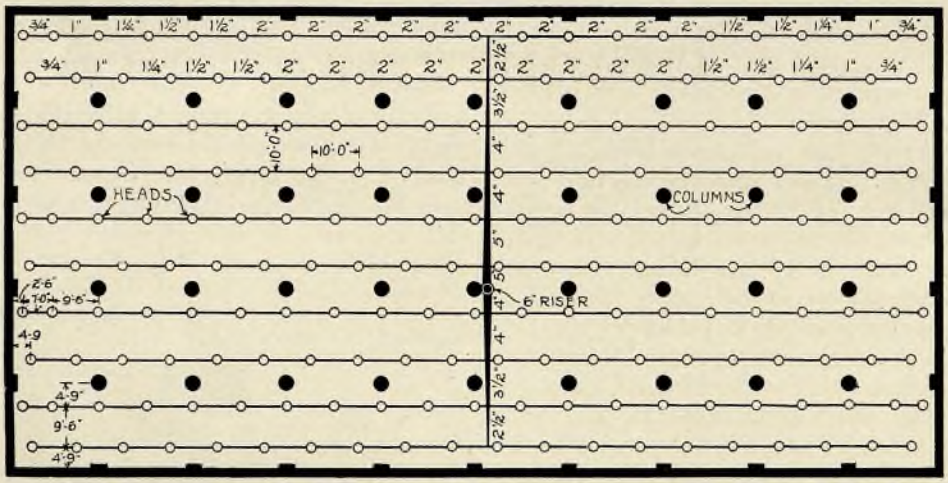
The result of these conditions has been the growth of an opinion that the use of automatic sprinkler systems involves an unnecessary tax or burden on the owner, although the desire for such protection is prevalent. The mechanical defects found in the present day standard installations are those of slowness to give alarm of fire, the danger of water leakage involving a special insurance tax against water damage occurring when there is no fire, and a lack of simplicity and directness in the many mechanical parts used.

The Board of Standards and Appeals and the Fire Department, of New York City, have made tests on an apparatus which has been developed and perfected. The results of these exhaustive tests have been of such a satisfactory nature that rules governing the use of such apparatus in that city have been adopted. The application of these rules will result in greatly decreasing the cost of such apparatus and overcoming some of the mechanical defects common to the standard apparatus as now made. This action of the Board of Standards and Appeals is in line with their policy of making rules governing building construction which will cheapen the cost of such operations by eliminating useless requirements and special privileges and at the same time conserving all of the requirements of structural strength, durability, fire protection and sanitation. It is a well-known fact that the majority of American building codes require useless expense to the owner by being many years behind the rapid progress made in construction methods. Credit is due this Board for the manner in which they attack these problems, under the efficient direction of John P. Leo, chairman. They act on the proven merit of matters which come before them, regardless of precedents established by commercial interests, and the result is a relief from the many useless burdens that are imposed on the investor in buildings. This is a matter of interest to architects who are seeking to cheapen the cost of building construction without, in any way, impairing the elements of good construction.

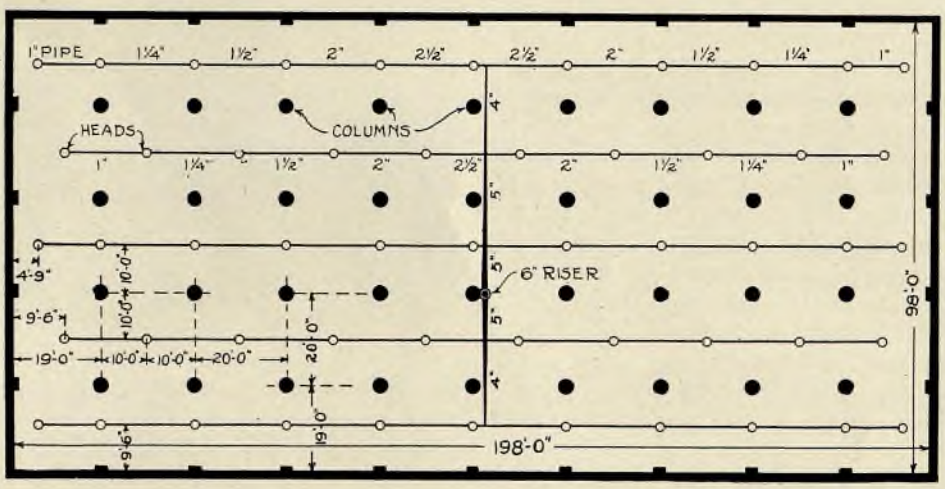
Table Showing the Comparative Amount of Pipe in Lineal Feet, Its Weight and the Number of Sprinkler Heads Required on the Three Plans Here Shown. Fittings Not Included.

Size of Pipe, Dia. in Inches	Length of Pipe in Feet for		
	Standard ½-In. Heads	Conran 1-In. Heads	Conran 1¼-In. Heads
¾	165	....	....
1	192½	163½	....
1¼	200	200	170
1½	400	200	200
2	950	200	200
2½	19	160	150
3½	19½	....	....
4	35	39	49
5	15	40	25
6	12	12	12
Weight of pipe in pounds	6700	4200	3700
	100%	62%	35%
Number of heads	205	53	34
	100%	26%	17%

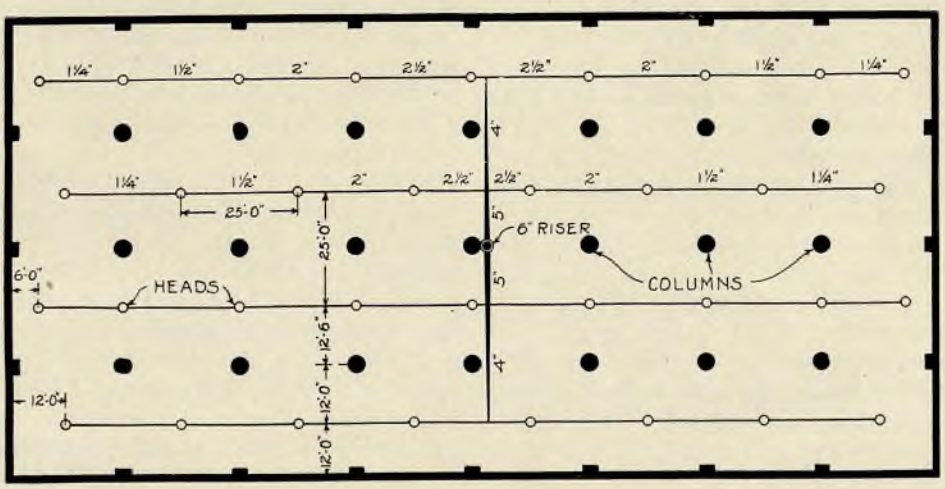
The ruling, with an explanation of its application, is here given. This system may be installed in a manner similar to the ordinary standard automatic wet sprinkler system, the only difference between the two being in the design and size of the sprinkler heads and size and spacing of pipes. In the standard system the orifice of the head is one-half inch in diameter, and when operating has an average discharge of 20 gallons of water per minute. The maximum floor area covered by such a head is 100 sq. ft. The diffusion of the water over this area is obtained by a deflector at the top of the head which breaks up the half inch stream



Sprinkler layout for Standard ½ in. heads. Building 100 x 200 ft. in size with 20 ft. bays, center central feed.



Sprinkler layout for Conran 1 in. heads. Building 100 x 200 ft. in size with 20 ft. bays, center central feed.



Sprinkler layout for Conran 1¼ in. heads. Building 100 x 200 ft. in size with 25 ft. bays, center central feed.

of water into a fine spray and also deflects it downward. The Conran head, see the ruling hereafter given, is manufactured in two sizes, with orifices 1 in. and 1¼ in. in diameter. The head is almost spherical in shape and has four holes equally spaced around the "upper hemisphere," four tangental openings equally spaced around the "equator" and four around the "lower hemisphere." The force of the water discharging through the tangental openings reacts on the sphere (which is mounted on a raceway with Tobin bronze ball bearings) in such a manner as to cause it to revolve rapidly, and this rotating motion causes a wide distribution of the water discharged. From tests made by the New York Fire Department, the smaller head was found to effectually cover a floor area of 400 sq. ft. and the larger a floor area of 625 sq. ft. From this it will be seen that the number of heads required by this system may be materially reduced from that required by the standard system; also, the lines of piping may be spaced much further apart, with a consequent saving of pipe. The size of pipe used in each line will be somewhat larger than required in a standard system. The average discharge of the 1 in. head is 80 gallons per minute and of the 1¼ in. head 125 gallons per minute. The initial operation of the head is caused in the usual manner by the fusing of a solder, usually at 165 deg. Fahr., which normally holds the strut in place, the release of this strut permitting the unseating of the valve in the head by the water pressure in the piping system. The only logical objection which might be raised against such a system as this, which brings fire protection equal to that afforded by the standard system, is that the accidental discharge of a sprinkler head will cause from four to six times as much water damage as in the case of a standard ½ in. head. It is a well-known fact that such accidental discharges are not infrequent in standard systems. This is preferable to having the building destroyed had an actual fire occurred. This condition is overcome by using an automatic dry pipe system such as is hereafter described. Dry pipe sprinkler systems are in no sense an innovation, and the method here adopted is worthy of commendation.

The entire sprinkled area is covered by an automatic thermostatic fire alarm system, usually the "Aero" system (approved by the Underwriters' Laboratories), which consists of a finely drawn copper tube resembling a fine wire, hardly noticeable to a casual observer, strung in a loop around the ceiling. A quick rise in temperature causes the air in this fine tube to expand and automatically operate local fire alarm gongs, and it can be also connected to send an alarm to Fire Department Headquarters at the same time. The system is connected to an electric trip, which in turn operates a hydraulically controlled valve in the sprinkler supply main where it enters the building. Up to this valve the supply line is wet, and beyond it both mains and sprinkler piping are dry and filled with air at atmospheric pressure. Thus it will be

Automatic Sprinkler Heads

From left to right, ½ in. standard head, 1 in. and ¼ in. Conran heads

seen that the accidental breaking of a sprinkler head will cause no water discharge, and a new head can be easily installed. Under conditions of an actual fire, it is well known that the fire must bank up considerable heat around a sprinkler head before the solder fuses and the head discharges water. The mere burning of a newspaper will not do this. With the ordinary system, by the time a sprinkler head opens there is a fairly good fire under way.

However, with this automatic dry system, as soon as a quick rise of temperature occurs from the burning of a little paper on the floor, the thermostatic fire alarm operates, doing three things simultaneously. It rings a local alarm; it notifies Fire Department Headquarters, and it operates the dry pipe valve, turning water into the entire sprinkler system. The fire may be quickly put out by a bucket of water by an employee who hears the alarm, in which case the sprinkler head does not operate and there is practically no "water damage." If, however, the fire increases and heat is banked at the ceiling, the head operates and dis-

charges, not a fine spray, but a heavy blanket of water. This, in the majority of cases, will extinguish the fire.

In addition, the Fire Department apparatus has arrived and the firemen may either lend their efforts to the extinguishment of the fire by a hose stream or, if the fire is already out, they will shut off the water in the sprinkler system, thereby obviating any unnecessary water damage. Had buildings been equipped with dry, instead of wet sprinkler systems during the winter of 1917-1918 many thousands of dollars would have been saved by avoiding bursting of pipes, tanks, etc., and in addition the property would have been protected at all times from fire. The frozen "wet" system was worthless for many days at a time.

Standard wet systems have been preferred to standard dry systems, because the standard dry system gives inferior fire protection under normal conditions, it has increased initial cost and increased cost of maintenance. This is due to the fact that in the standard dry system the sprinkler pipes are filled with compressed air. When a head operates, instead of an immediate discharge of water a stream of compressed air comes out. This continues from three to six minutes or longer, depending on the distance the head is from the dry pipe valve, until all the compressed air has been discharged from the pipes. Naturally a tardy discharge of water means decreased protection, as the fire has had that much additional time to gain headway. A standard dry system necessitates the installation of a complicated and expensive dry pipe valve and an air compressor. This adds considerably to the already high cost of sprinkling. As the system is never absolutely air tight, the air pressure in the pipes constantly drops, requiring the compressor to operate to build up the pressure. Such machinery requires supervision, inspection and repairing, all of which costs money.

Under these conditions, except where a building is not heated, or in sections of a building which it is not possible to heat, it would appear to be poor policy to install a standard automatic dry pipe sprinkler system. The automatic dry pipe sprinkler system here described eliminates all the objectionable features of the standard dry pipe system and at the same time provides an automatic alarm, giving added protection, and all at a much reduced cost.

Comparative plans are shown, which indicate, with the accompanying table, the radical differences between the standard type of installation and that approved by the Board of Standards and Appeals. A casual inspection will disclose the elements that cause a reduction in the cost of installing the automatic dry pipe system as compared with the standard system of either kind.

Rules for Fire Extinguishing Appliances (Sprinkler Systems) adopted May 24, 1917, by the Board of Standards and Appeals, as amended May 2, 1918, and January 21, 1919; effective February 17, 1919.

Rule 1. Definition of Automatic Extinguisher Systems. Automatic extinguisher systems shall consist of a system of piping connected to one or more acceptable sources of water supply, or other extinguishing medium, provided with distributing devices so arranged and located as to discharge and diffuse automatically under the action of heat an effective stream or spray over every part of the interior of the building area in which a fire may start or to which it may be communicated.

Rule 2. Classification of Sprinkler Systems. For the purpose of these rules, sprinkler systems shall be classified as:

(a) Automatic Wet Pipe Systems, in which all pipes and sprinkler heads are at all times filled with water;

(b) Automatic Dry Pipe Systems, in which the pipes and sprinkler heads are filled with air, either compressed or at atmospheric pressure, and the water supply is operated by a Dry Pipe Valve as defined in Rule 27 of these Rules.

(c) Non-Automatic Systems, in which all pipes and sprinkler heads are maintained dry with a fire department connection for water supply.

Rule 3. Approved Devices. Automatic Sprinklers and accessory appliances shall include all devices approved as such by the Bureau of Standards, Washington, D. C.; by the Underwriters' Laboratories, Inc., of Chicago; by the Associated Factory Mutual Laboratories of Boston; and all devices which meet the tests prescribed by the board of standards and appeals.

Rule 4. Water Supply. Approved sources of water supply shall be classified as Automatic and Auxiliary.

(a) Automatic Sources shall include the Gravity Tank, the Pressure Tank and the Public Water System.

(b) Auxiliary Sources shall include the Fire Pump and the Fire Department Connection.

Rule 5. Gravity Tank. Gravity tanks shall contain an available quantity of water sufficient to supply twenty-five per cent (25%) of the number of sprinkler heads in the average protected fire area for twenty (20) minutes, but not less than 5,000 gallons; and the bottom of the tank shall have an elevation of not less than twenty (20) feet above the highest line of sprinklers below the main roof.

Where a tank capacity in excess of 25,000 gallons is required by this rule, the amount of water to be provided in excess of 25,000 gallons shall be specified by the board of standards and appeals.

The tank shall be filled through a fixed pipe, independent of the sprinkler piping, not less than two (2) inches in size, discharging into the top of the tank, or through a by-pass not less than two (2) inches in size around the check valve in the discharge pipe, provided the supply is of sufficient pressure to fill the tank. The water supply and connections shall be capable of supplying the tank at a rate of not less than sixty-five (65) gallons per minute.

Rule 6. Pressure Tank. Pressure tanks shall contain sufficient water to supply twelve and one-half per cent (12½%) of the number of sprinklers in the average protected fire area for twenty (20) minutes, but not less than 5,000 gallons. No single tank shall have a capacity greater than 9,000 gallons. The tank shall be kept two-thirds (⅔) full of water under a pressure of seventy-five (75) pounds per square inch, and shall be so proportioned and located that a pressure of not less than fifteen (15) pounds per square inch will be available on the highest line of sprinklers below the main roof when all the water has been discharged from the tank.

The tank shall be placed either on the roof or in the highest sprinklered story.

Where a tank capacity in excess of 25,000 gallons is required by this rule, the amount of water to be provided in excess of 25,000 gallons shall be specified by the board of standards and appeals.

The water shall be supplied through a fixed pipe, independent of the sprinkler piping, not less than two inches in size with a one and one-quarter (1¼) inch connection to the tank, or through a by-pass not less than two (2) inches in size around the check valve in the discharge pipe provided the supply is of sufficient pressure to fill the tank. The water supply and connections shall be capable of supplying the tank at a rate of not less than sixty-five (65) gallons per minute without reducing the pressure in the tank. The tank shall have a fixed metallic horizontal line on the end opposite the glass gauge, or other acceptable device, to indicate the level of the water when the tank is two-thirds full.

The air compressor shall be of sufficient capacity to increase the air pressure at the average rate of one (1) pound in two minutes in each pressure tank.

Rule 7. Public Water System. Direct connection to the city water supply shall be capable of furnishing water at not less than fifteen (15) pounds per square inch static pressure at the highest line of sprinklers under the main roof.

Subject to the requirements of the department of water supply, gas and electricity, the size of each connection shall be as large as that of the main riser and not less than four (4) inches, and shall have a conveniently accessible control valve fixed to it at, or near, the curb, or when possible, still further away from the building. The control valve shall be fitted with a frost and waterproof box, not less than four (4) feet nor more than six (6) feet below the curb, with a fixed stem extending to a compartment at the level of the sidewalk. The cover shall be bolted to the casing and shall be so marked as to be quickly located and to indicate the purpose of the valve. The valve shall be of indicating pattern, operated by a special socket wrench approved by the department of water supply, gas and electricity.

Rule. 8. *Fire Pump.* Steam or electric standard fire pumps shall receive water supply from a suction tank, a direct connection to the city water main or other approved sources capable of supplying the pump at its rated capacity for sixty (60) minutes. The rated capacity of the pump shall be not less than five hundred (500) gallons per minute, and shall be sufficient to supply twenty-five per cent (25%) of the number of sprinklers in the average protected fire area.

The pump shall be located in a room of fireproof construction, properly ventilated, lighted and drained, enclosed in eight (8) inch brick or concrete walls with approved fire doors at openings and with fireproof floor and ceiling construction. If located in the lower story of the building, the pump shall be placed on a foundation not less than one (1) foot in height. The pump room shall be readily accessible with safe egress for the attendant.

A reliable source of energy for driving the pump shall be provided. For steam pumps, provision shall be made for sufficient steam power to operate the pump at full rated capacity, and a steam pressure of not less than fifty (50) pounds shall be maintained at the pump at all times. Where there is more than one boiler, the pipes and valves shall be so arranged to permit the cutting out of any one boiler without interrupting the steam supply to the pump from the other boilers. The boiler room shall be cut off from the remainder of the building by fireproof floor and wall construction with approved fire doors at all openings.

Electrical energy from a public service plant shall be acceptable as a source of energy for driving electric fire pumps. When local power plants supply the energy for operating electric pumps, two motor generator units shall be provided, or one generator unit supplemented by a public service break-down switch. Local electric power plants shall be located in rooms of fireproof construction with approved fire doors at openings.

Rule 9. *Sprinkler Discharge.* For the purpose of computing the capacity of water supplies, standard one-half (½) inch sprinkler heads shall be assumed to have an average discharge of twenty (20) gallons per minute, and the discharge of larger heads shall be computed proportionately in the ratio of the areas of their respective orifices.

Rule 10. *Fire Area.* A fire area is any floor space enclosed on all sides by exterior walls or fire walls or a combination of both. The number of sprinklers in the average protected fire area shall be determined by dividing the total number of sprinklers on a system in one fire section by the number of sprinklered stories in such section. In determining the required capacity of water supplies, the number of sprinklers in the average protected fire area need not include those located in low positions, such as under benches, low shelves, closets and platforms and between cars in car barns.

Rule 11. *Fire Department Connection.* All automatic sprinkler systems shall be provided with at least one two-way Siamese connection on each street front of the building for connection to the fire department hose. Buildings fronting on only one street shall be provided with at least two Siamese connections when the street frontage exceeds one hundred and fifty (150) feet in width.

All Siamese hose connections hereafter installed, except those on piers or warehouses intended for fire boat use, shall be three (3) inches in size. Fire boat connections shall be three and one-half (3½) inches in size. All hose connections shall be female, with standard fire department threads.

The inlets shall be placed at least eighteen (18) inches and not more than two (2) feet above the sidewalk, in a horizontal position accessible to the fire department, and shall be provided with a four (4) inch discharge connecting with a four (4) inch pipe to the sprinkler system for three (3) inch fire department connection and with a six (6) inch discharge outlet and six (6) inch pipe for three and one-half (3½) inch fire boat connection. Each inlet shall be provided with a clapper valve machined to a true face.

Each Siamese connection shall be designated by raised letters at least one (1) inch in size, cast in the fitting in a clear and prominent manner and reading for the service designated, viz.: "Base, Spkr.," etc., as the case may be. If the entire building is sprinklered, the fitting shall be marked "Auto. Spkr."

Rule 12. *Automatic Sprinkler Systems.* Automatic sprinkler systems shall be classified as:

(a) One Source Systems, supplied with water from any one of the automatic sources; and

(b) Two Source Systems, supplied with water from a combination of any two of the automatic sources; two pressure tanks with a total water capacity twice that required for a one source supply; direct connection to the city water supply on two different streets, so located that the closing of the controlling valve on one main will not eliminate the main on the other street; or a direct connection to the city water supply and one of the auxiliary sources provided the water supply main is at least six (6) inches in size, the main is fed both ways and a two (2) inch test pipe at the top of the sprinkler riser shows a flowing pressure of fifteen (15) pounds per square inch between the hours of 6 a. m. to 6 p. m.

Rule 13. *Sprinkler Spacing.* Sprinkler heads and lines shall be spaced as herein provided:

Mill Construction. Under mill ceiling (smooth solid plank and timber construction, 5 to 12 foot bays) one line of sprinklers shall be placed in the center of each bay and the distance between the heads on each line shall not exceed the following:

(a) For Standard one-half (½) inch heads—
8 feet in 12 foot bays;
9 feet in 11 foot bays;
10 feet in 10 foot bays;
11 feet in 9 foot bays;
12 feet in 5 to 8 foot bays.

(b) For Conran* one (1) inch heads—
20 feet in 5 to 12 foot bays.

(c) For Conran* one and one-quarter (1¼) inch heads—
25 feet in 5 to 12 foot bays.

Measurements shall be taken from center to center of timbers.

Ceilings of modified mill construction having bays less than three (3) feet wide shall be treated as open joist construction and sprinkler heads and lines spaced accordingly.

Bay timbers spaced three (3) feet or more on centers, but less than five (5) feet on centers, will require special ruling by the administrative official having jurisdiction.

Joisted Construction. Under open finish joisted construction, ceilings, floors, decks and roofs, the sprinkler lines shall be run at right angles to the joists and the heads "staggered spaced," so that heads on one line will be opposite a point half way between heads on adjacent lines.

(a) For Standard one-half (½) inch heads the distance between lines of sprinklers shall not exceed ten (10) feet, and the distance between heads on each line shall not exceed eight (8) feet, the end heads on alternate lines being spaced not more than two (2) feet from wall or partition. Permission may be given by the administrative official having jurisdiction to install but one line of sprinklers in each bay where girders project below the under side of joists and divide the ceiling into bays ten (10) to eleven and one-half (11½) feet wide from center to center of girders, and the heads shall then be spaced on each line so that the area covered by a single head does not exceed eighty (80) square feet. In all cases where such bays are over eleven and one-half (11½) feet wide, two or more lines of sprinklers shall be installed in each bay as required by the rules for spacing. Where girders and joists are flush at the bottom, heads shall be spaced according to the general rule.

(b) For Conran* one (1) inch heads the distance between adjacent lines shall not exceed twenty (20) feet and the distance between the heads on each line shall not exceed sixteen (16) feet, the end heads on alternate lines being spaced not more than four (4) feet from wall or partition. Where girders project below the under side of joists and divide the ceiling into bays not exceeding twenty (20) feet in width, measured from center to center of girders, one line shall be placed in the center of each bay. In bays exceeding twenty (20) feet in width at least two (2) lines shall be installed in each bay and in no case shall the distance between adjacent lines exceed twenty (20) feet.

(c) For Conran* one and one-quarter (1¼) inch heads the distance between adjacent lines shall not exceed twenty-five (25) feet and the distance between the heads on each line shall not exceed twenty (20) feet, the end heads on alternate lines being spaced not more than five (5) feet from wall or partition. Where girders project below the under side of joists and divide the ceiling into bays not exceeding twenty-five (25) feet in width, measured from center to center of girders, one line shall be placed in the center of each bay. In bays exceeding twenty-five (25) feet in width at least two (2) lines shall be installed in each bay, and in no case shall the distance between adjacent lines exceed twenty-five (25) feet.

Smooth Finish, Sheathed or Plastered Ceilings. Under smooth finish, sheathed or plastered ceilings, in bays six (6) feet wide and over (measurements to be taken from center to center of timber, girder or other projection or support forming the bay), sprinkler heads and lines shall be spaced as follows:

(a) For standard one-half (½) inch heads—

One line of sprinklers shall be placed in the center of each bay for bays not exceeding twelve (12) feet in width, and the distance between the heads on each line shall not exceed the following:

8 feet in 12 foot bays;
9 feet in 11 foot bays;
10 feet in 6 to 10 foot bays.

Bays in excess of twelve (12) feet in width and less than twenty-three (23) feet in width shall contain at least two (2) lines of sprinklers; bays twenty-three (23) feet in width or over shall have the lines therein not over ten (10) feet apart. In bays in excess of twelve (12) feet in width, not more than one hundred (100) square feet of ceiling area shall be allotted to any single head.

(b) For Conran* one (1) inch heads—

One line of sprinklers shall be placed in the center of each bay for bays not exceeding twenty (20) feet in width, and the distance between the heads on each line shall not exceed twenty (20) feet. Bays in excess of twenty (20) feet in width shall contain at least two (2) lines and in no case shall the distance between adjacent lines exceed twenty (20) feet.

(c) For Conran* one and one-quarter (1¼) inch heads—

One line of sprinklers shall be placed in the center of each bay for bays not exceeding twenty-five (25) feet in width and the distance between the heads on each line shall not exceed twenty-five (25) feet. Bays in excess of twenty-five (25) feet in width shall contain at least two (2) lines and in no case shall the distance between adjacent lines exceed twenty-five (25) feet.

Fireproof Construction. The rules of slow-burning mill construction shall apply as far as practicable. The rule may be modified, however, the intent being to arrange the spacing of heads to protect the contents rather than the ceilings; but in no case shall the distance between a head on one line and a head on an adjacent line exceed the following:

(a) For standard one-half (½) inch heads, 12 feet.
(b) For Conran one (1) inch heads, 20 feet.
(c) For Conran one and one-quarter (1¼) inch heads, 25 feet.

Distance From Walls. The distance from wall or partition to

*Wherever the term "Conran head" is used in these Rules, it is to be taken as meaning either a Conran head of the type tested and approved by the Fire Department, or one that has passed similar tests by the Fire Department.

the first head on a sprinkler line shall not exceed one-half the allowable distance between the heads on such line. Additional heads may be required in the narrow pockets formed by bay timbers or beams and wall. Where beams, girders, columns, walls, partitions or other obstructions prevent the effective discharge of water, additional heads shall be installed to effectively sprinkle the area.

Vertical Shafts. In vertical shafts having inflammable sides, heads shall be provided within the shaft in addition to the head or heads at the tops of shafts, as follows:

(a) One standard one-half (½) inch head for each 200 square feet of inflammable surface.

(b) One Conran* one (1) inch head for each 400 square feet of inflammable surface.

(c) One Conran* one and one-quarter (1¼) inch head for each 500 square feet of inflammable surface.

Such head or heads shall be installed at each floor when practicable, and always when shaft is trapped. Where practicable, heads shall be "staggered" at the alternate floor levels, particularly when only one head is installed at each floor level.

Pitched Roofs. Under a pitched roof sloping more steeply than one (1) foot in three (3) feet, heads shall be located in peak of roof, and those on either side of the peak shall be spaced according to the foregoing requirements. The distance between heads shall be measured on a line parallel with the roof. Where the roof meets the side wall or the floor line, the heads shall be placed not more than the following distance from such intersection.

(a) For standard one-half (½) inch heads, 3½ feet.

(b) For Conran* one (1) inch heads, 7 feet.

(c) For Conran* one and one-quarter (1¼) inch heads, 8½ feet.

Heads spaced not to exceed the following distance each way from the peak of roof, measured on a line parallel with the roof, may be used in lieu of heads located in peak of roof.

(a) For standard one-half (½) inch heads, 2½ feet.

(b) For Conran* one (1) inch heads, 5 feet.

(c) For Conran* one and one-quarter (1¼) inch heads, 6¼ feet.

In sawtooth roof construction, the end heads on the branch line shall be spaced not to exceed the following distance from the peak of the sawtooth:

(a) For standard one-half (½) inch heads, 2½ feet.

(b) For Conran* one (1) inch heads, 5 feet.

(c) For Conran* one and one-quarter (1¼) inch heads, 6¼ feet.

Special Locations and Variations. In special locations, such as over electric generating, power and transforming apparatus, over their controlling devices and switchboards, where water from the fire extinguishing equipment would be detrimental, the sprinkler lines and heads may be omitted at the discretion of the administrative official having jurisdiction, and when in his judgment a slight variation of this rule of spacing is desirable to effect a more efficient distribution of water for fire extinguishing purposes, the sprinkler lines and heads shall be spaced as he may direct.

Rule 14. *Sprinkler Position.* All sprinkler heads shall be located, wherever possible, in an upright position on top of the pipes, except that sprinkler heads on automatic wet pipe systems may be pendant on concealed piping and when construction or occupancy of a room or enclosure makes it preferable.

(a) Where standard one-half (½) inch heads are installed sprinkler deflectors shall be parallel to ceilings, roofs or the incline of stairs, but when installed in the peak of a pitched roof they shall be horizontal. Distance of deflectors from ceilings of mill or other smooth construction, or bottom of joists of open joist construction, shall be not less than three (3) inches nor more than ten (10) inches.

In fireproof buildings, the distance between deflectors and panel ceilings shall not exceed fifteen (15) inches.

Not less than eighteen (18) inches effective clear space shall be left below the sprinkler heads, so that they may discharge an unbroken spray blanket from sprinkler to sprinkler and sides of room when in operation. Any stock piles, racks or other obstructions interfering with such action shall not be permitted.

(b) Where Conran* heads are installed, the top of head shall be located the same distance below joists or ceiling as specified for deflectors in paragraph (a) of this rule; except that when heads are located under pitched roofs of piers or similar structures, they shall in general be installed in the upright position (not normal to slope of roof) and three (3) feet vertically below the underside of roof. When the administrative official having jurisdiction deems a variation of this rule advisable to obtain a more efficient distribution of water, the heads shall be located with respect to joists or ceiling, as he may direct.

Rule 15. *Pipe Sizes.* The number or heads on a given size pipe in one fire area in any story shall not exceed the following:

(a) For standard one-half (½) inch heads—

Size of Pipe.	Maximum No. of Heads Allowed.
¾ inch	1 head
1 "	2 heads
1¼ "	3 "
1½ "	5 "
2 "	10 "
2½ "	20 "
3 "	36 "
3½ "	55 "
4 "	80 "
5 "	140 "
6 "	200 "
7 "	300 "
8 "	420 "

(b) For Conran* one (1) inch heads—

Size of Pipe.	Maximum No. of Heads Allowed.
1 inch	1 head
1¼ "	2 heads
1½ "	3 "
2 "	4 "
2½ "	6 "
3 "	9 "
4 "	18 "
5 "	34 "
6 "	51 "
7 "	75 "
8 "	105 "

(c) For Conran* one and one-quarter (1¼) inch heads—

Size of Pipe.	Maximum No. of Heads Allowed.
1¼ inch	1 head
1½ "	2 heads
2 "	3 "
2½ "	4 "
3 "	6 "
4 "	12 "
5 "	21 "
6 "	40 "
7 "	60 "
8 "	84 "

When it is desired to use pipe of larger size than eight (8) inches in diameter, special ruling will be required by the administrative official having jurisdiction as to the permissibility of its use and the number of heads that may be fed thereby.

Where practicable, it is desirable to arrange the piping so that the number of heads on a branch line will not exceed eight.

When the piping is arranged on the "gridiron" plan, the permissible number of heads may be doubled, provided the feed main is of the size indicated in the schedule for the total number of heads.

Where feed mains supply branch lines of only two heads each, the conditions approach those of long single lines. Such feed mains shall usually be centrally supplied where there are over eight (8) or ten (10) branch lines. Branch lines up to fourteen (14) in number may be fed from end, provided a two and one-half (2½) inch pipe does not supply more than sixteen (16) standard one-half (½) inch heads, in lieu of twenty (20).

Buildings having slatted floors, or large unprotected floor openings without approved stops, shall be treated as one room with reference to the pipe sizes, and the feed main shall be of sufficient size to accommodate the number of heads called for. Larger pipe sizes than are allowed in the schedule for a given number of heads may be required wherever the construction or conditions introduce unusually long runs of feed mains or many angles. Buildings with blind attics with small unprotected openings to floor below, may be piped from the system on the ceiling of floor below, provided pipe size schedule is not overloaded on sizes three (3) inches or under.

Rule 16. *Feed Mains.* The size of the feed mains shall not be less than the size of riser and shall be arranged to run as direct as possible from source of water supply to riser.

Feed mains for stair or other towers without approved stops between floors, when piped on independent riser, shall be of sufficient size to accommodate the total number of sprinklers in such tower.

Rule 17. *Risers.* There shall be one or more separate risers in each building and in each section of the building divided by fire walls. Risers shall be arranged to provide "Center Central", or "Side Central" supply to feed main. Each riser shall be of sufficient size to supply all the heads on said riser in one story, according to the schedule of pipe sizes in Rule 15.

If the conditions warrant, special permission will be granted allowing the heads in a fire section of small area to be fed from the risers in another section, provided the total number of heads in such area does not exceed the following number per floor:

(a) For standard one-half (½) inch heads, 48.

(b) For Conran* one (1) inch heads, 12.

(c) For Conran* one and one-quarter (1¼) inch heads, 8.

Risers shall not be located close to windows, shall be properly protected from mechanical injury and freezing, and shall be properly supported on foundations and by floor plates, clamps, couplings or hangers.

Rule 18. *Pipes and Fittings.* All pipe shall be full-weight standard wrought iron or steel threaded pipe, well reamed and screwed up tight into fittings without reducing the waterway. Fittings shall be standard cast-iron fittings, and shall be long turn pattern on feed mains and risers.

Such fittings shall be designed and guaranteed for a working pressure of 150 pounds per square inch and must be capable of withstanding a hydrostatic test pressure of 750 pounds per square inch without failure.

All pipe shall be secured to the ceiling, walls and other parts of the building with standard steel, wrought or malleable iron hangers.

Extra heavy fittings shall be employed where the normal pressure in the pipe system exceeds one hundred and fifty (150) pounds per square inch, and shall be designed for a working pressure of 250 pounds per square inch and be capable of withstanding a hydrostatic test pressure of 1250 pounds per square inch without failure.

All underground pipe shall comply with the specifications for cast iron pipe of the American Water Works Association.

Rule 19. *Protection of Pipes and Sprinklers.* When exposed to moisture, sprinkler pipes and hangers shall be protected against corrosion whenever found necessary by thoroughly cleaning the pipe of all scale and grease and painting with a coat of red lead and linseed oil paint or other acceptable moisture resistive paint.

When exposed to chemical fumes, the pipe and fittings shall be coated with graphite or other approved chemical resistive paint. Care shall be taken not to paint the sprinkler heads.

Supply pipes of risers in low basements or low spaces under ground floors exposed to frost, shall be properly protected by a masonry or wood enclosure, properly heated, or filled with mineral wool, sawdust or tar mixed with granulated cork, extending below bottom of pipe and through the top flooring of ground floor, or the pipe shall be protected with three alternate layers of one-inch hair felt and building paper or by other approved method. When of wood, such enclosure shall be constructed double with a layer of tar paper between the two thicknesses of wood.

Where risers, drains, heating pipes, etc., pass through cinder concrete floors or partitions, they shall be protected with a metal sleeve or be grouted with cement mortar.

Wherever sprinklers are exposed to corrosion, the heads shall be protected with an approved hermetically sealed cover, or with an approved wax coating.

Rule 20. *Drainage.* All sprinkler pipe and fittings shall be so installed that they can be thoroughly drained, and where practicable, all piping shall be arranged to drain at the main drips.

Drains or drip pipes shall be so arranged as not to expose any part of the sprinkler system to frost, and shall be so connected, either by check valves or other means, that they will not overthrow domestic service or other connections to the same sewer or house drain.

Drains, pitched not less than one-quarter (¼) inch in ten (10) feet, shall be installed:

At the base of the main riser;
At each alarm valve;
At each dry-pipe valve;
At each gravity tank;
At each pressure tank;
At each fire department connection;
On each floor, if independent floor control valves are used; and
At each supply main, when the water in the same cannot be removed through any of the above drains. Such drains shall be installed with controlling valves so that flowing tests may be made to determine if the water supplies or connections from yard mains to the inside of the building are in order without causing water damage or overflowing service connections to the same house drain. Any such drain shall be not less than two (2) inches in size except that drains at independent floor valves may be one and one-quarter (1¼) inches in size. The drain at the main riser shall discharge into a cone or sight drain, or if carried through the wall and exposed to the weather, it shall be fitted with a hood or down-turned elbow.

On automatic wet pipe systems, the horizontal branch pipes shall be pitched not less than one-quarter (¼) inch in ten (10) feet to drain towards the sources of supply with drip valves at the low points.

On automatic dry pipe systems, branch pipes shall be pitched at least one-half (½) inch in ten (10) feet.

Rule 21. *Test Pipe.* On all automatic systems a test pipe of not less than ¾ inch in diameter shall be connected directly with each riser in upper story and arranged to discharge, through a ½-inch brass outlet, preferably to a point where it can readily be seen. With long runs or many angles, size of test pipe shall be increased to one (1) inch or larger.

Rule 22 *Pressure Gauges.* A four and one-half (4½) inch double-spring Bourdon pressure gauge shall be provided in all automatic sprinkler systems as follows:

Above dry-pipe valves;
Below dry-pipe valves;
At the pressure tank;
At the air compressor;
Above the alarm valve;
Below the alarm valve; and
In the connections from city water supply.

Provision may be made for taking the pressure both above and below the alarm valve and the dry-pipe valve with only one gauge at each valve.

Gauge connections shall be taken from the supply main or riser and not from the two-inch drain or test pipe.

Gauges shall be installed in a suitable place protected from freezing and be controlled by a valve with arrangements for draining. A plugged outlet, not less than one-quarter (¼) inch in size, shall be located between each valve and gauge for purpose of installing the inspector's gauge.

Rule 23. *Valves.* All valves two (2) inches in diameter and under shall be of brass or bronze, or other approved non-corrodible material. Valves over two (2) inches in diameter shall be of brass, or bronze or iron body, brass-mounted, or of other approved non-corrodible material.

All sidewalk Siamese inlet valves, caps and chains shall be of galvanized cast iron or other approved non-corrodible material.

All gate valves shall be solid or double wedge disc, stuffing box pattern with hand wheel, outside screw and yoke, or other approved indicator pattern.

All check valves shall be approved, straight way regrinding pattern, so built that the clappers may be readily removed for repairs.

Rule 24. *Water Supply Gate Valves.* The piping connecting each source of water supply with the sprinkler system shall be provided with a gate valve of the outside screw and yoke type, sealed open and tagged to designate its purpose, so located as to control each source of water supply except that from fire department hose connections. All such gate valves shall be located within the building where easily visible and readily accessible and as close as possible to the supply inlet.

Rule 25. *Water Supply Check Valves.* The piping connecting each source of water supply with the sprinkler system, including fire department connections, shall be provided with a check valve.

On two-source systems, check valves shall have a gate valve on each side to permit repair of check without shutting off both supplies, except that where the two sources of supply consist of tanks located above the highest line of sprinklers, a gate valve need only be provided on the down-stream side of each check valve.

Rule 26. *Control Valves.* All automatic sprinkler systems shall be provided with a main control or shut-off valve arranged to be readily accessible and sealed in the open position; except that when the sprinkler system is fed from water supplies on the roof of the building, independent and readily accessible floor control valves, sealed in the open position, may be installed.

When not more than ten (10) standard one-half (½) inch sprinkler heads or three (3) Conran* heads in any automatic wet pipe system are exposed to cold and subject to freezing, shut-off valves may be provided to discontinue the water supply to such heads between November 1 and April 1. A greater number of heads than specified above, located in places which cannot be properly heated, shall be controlled by an automatic dry-pipe valve.

Rule 27. *Dry-Pipe Valves.* A dry-pipe valve shall be taken to mean a valve automatically controlling the water supply of the sprinkler system in such a manner that under normal conditions its piping system beyond the valve is maintained dry, but in the event of fire, the valve automatically releases the water into the sprinkler system, for fire extinguishing purposes.

Dry-pipe valves shall, for the purpose of these rules, be classified as follows:

Type A, in which the valve is actuated by the release of compressed air in the sprinkler piping system, due to the opening of a sprinkler head; and

Type B, in which the valve is actuated by an approved trip under electric control of an approved automatic thermostatic fire alarm system.

Dry-pipe valves shall be located as near as practicable to the sprinkler system in an enclosed and accessible place protected from mechanical injury and freezing.

Automatic wet-pipe sprinkler systems in which only twenty-five (25) per cent of the heads are required to be maintained dry for protection from freezing, shall have only such heads under dry-pipe valve control.

(a) When *"Type A"* valve is installed, the air pressure in sprinkler systems under such dry-pipe valve control shall not exceed forty (40) pounds per square inch, nor be permitted to fall below twenty-five (25) pounds per square inch, nor shall it be less than one-sixth (1/6) of the water pressure in any case.

The air compressor shall have a capacity of not less than eleven (11) cubic feet per minute and the air supply for the pump shall be taken, if possible, from a room containing dry air, or it shall be passed through a drying chamber containing calcium chloride, in order to avoid the introduction of moisture into the system.

The air pressure on such dry-pipe systems shall be maintained throughout the year.

Not more than the following number of heads shall be controlled by one "Type A" dry-pipe valve:

(a)	For Standard one-half (½) inch heads.....	400
(b)	For Conran* one (1) inch heads.....	100
(c)	For Conran* one and one-quarter (1¼) inch heads..	64

(b) When *"Type B"* valve is installed the actuating alarm system shall be designed to operate at a temperature lower than that required to open the sprinkler heads, and all connections between the alarm system and the dry-pipe valve shall be adequately protected against injury of any kind.

When required by the administrative official having jurisdiction, the dead end of every feed main in such dry-pipe system shall be provided with an air relief valve or vent, so constructed as to be normally open in order to permit the free escape of air from the system, but to close automatically against the escape of water.

Not more than the following number of heads shall be controlled by one "Type B" dry-pipe valve:

(a)	For Standard one-half (½) inch heads.....	500
(b)	For Conran* one (1) inch heads.....	125
(c)	For Conran* one and one-quarter (1¼) inch heads..	84

Rule 28. *Alarm Valve.* All automatic wet pipe sprinkler systems shall be equipped with an alarm valve so constructed that a flow of water through a one-half (½) inch orifice will operate an electric or mechanical gong.

Dry-pipe valves shall be equipped with a reliable device to give either an electrical or mechanical alarm.

Rule 29. *High and Low Water and Pressure Alarm.* All gravity tanks shall be equipped with a device to indicate when the water falls below or rises above the normal level in the tank, with an indicator or alarm located in the engineer's room near the pump.

All pressure tanks shall be equipped with a device to indicate when the pressure in the tank falls below seventy (70) or rises above eighty (80) pounds per square inch with an indicator or alarm located in the engineer's room near the compressor.

Rule 30. *Heating of Tanks.* The water in all sprinkler tanks subject to freezing shall be protected by internally heating the water or enclosing the tank in a frost-proof house properly heated and lighted.

Rule 31. *Concealed Pipe Systems.* All pipe in concealed pipe systems shall be of standard full-weight wrought iron or steel, painted with two coats of protective paint, one before and one after installation. Such pipe shall be installed in ducts or be encased in cement mortar and shall be inspected prior to concealment. When installed in the concealed space between floor arches and ceiling, such pipe shall be supported by hangers and all pipe, fittings and hangers be protected with two coats of paint.

Rule 32. *Preparation of Building.* Floor or wall openings and other structural defects which prevent the banking up of heated air and retard the automatic action of sprinkler heads shall be provided with the necessary curtain boards and draft stops to permit specific control of the fire by the local sprinklers.

Curtain boards shall project at least three (3) inches below the lowest sprinkler.

Rule 33. *Sprinkler System Tests.* All automatic sprinkler systems, excluding the water supply tanks, shall be subjected after installation to a hydrostatic pressure test of at least fifty (50) pounds per square inch in excess of that which will be normally carried and observed in the sprinkler system, such test pressure, however, never to be less than one hundred and fifty (150) pounds per square inch in any part of the system.

All pressure tanks shall be tested after erection to a test pressure of one and one-half (1½) times the working pressure. To prevent the possibility of serious water damage in case of a break, the pressure shall be maintained by a small pump, the main controlling gate being meanwhile kept shut. Brine or other corrosive chemicals shall not be used for testing systems.

In automatic dry-pipe systems with "Type A" valve control, an air pressure of forty (40) pounds per square inch shall be pumped up, be held for twenty-four (24) hours, and all leaks stopped which allow a loss of pressure of over two (2) pounds per square inch for the twenty-four (24) hours.

In the case of automatic dry-pipe systems with differential "Type A" valve, the valve shall be held off its seat during the test to prevent injuring the valve.

Non-automatic systems shall be tested after installation at not less than fifty (50) pounds per square inch in excess of the pressure necessary to reach the highest line of sprinklers.

All tests of installed systems shall be made by the contractor in the presence of the fire commissioner, or his authorized representative.

Rule 34. *Non-Fireproof Business Buildings.* Automatic sprinklers required in non-fireproof business buildings under the provisions of Chapter 5, Article 4, Section 72, code of ordinances, unless otherwise specifically provided in these rules, shall consist of at least a One Source System.

Rule 35. *Theatre Buildings.* Automatic sprinklers required in theatre buildings under the provisions of Chapter 5, Article 25, Section 524, code of ordinances, shall consist of at least a One Source System.

Rule 36. *Firework Storage.* Automatic Sprinklers required in buildings in which fireworks are stored or sold under the provisions of Chapter 10, Article 6, Section 92, code of ordinances, shall consist of a Two Source System.

Rule 37. *Nitro-Cellulose Products.* Automatic sprinklers required in buildings in which nitro-cellulose products are stored under the provisions of Chapter 10, Article 19, Section 232, code of ordinances, shall consist of a Two Source System.

Rule 38. *Inflammable Motion-Picture Films.* Automatic sprinklers required in buildings in which inflammable motion-picture films are stored under the provisions of Chapter 10, Article 20, Section 241, code of ordinances, shall consist of a Two Source System.

Rule 39. *Existing Installations and Approvals.* Automatic extinguisher systems and devices heretofore approved and accepted by the authorities having jurisdiction shall not be required to conform to the provisions of these rules; and all such systems heretofore installed shall not be required to be altered to conform to these rules so long as the fire hazard due to construction and occupancy of the building is not increased and the system after inspection is found to be in good working order.

JOHN P. LEO, *Chairman.*

"The Building Contract of the Future"

WITH the above caption there appears an article in *The Journal of the American Institute of Architects,* March, 1919, by Sullivan W. Jones. A careful reading of this article causes some curiosity as to why many of the conclusions contained therein have been formed. An intimate contact with architectural practice and contracting work, covering a large portion of this country, is an experience such as to preclude the formation of many of Mr. Sullivan's conclusions. The article favors the adoption of the cost-plus-fee contract and presents many arguments in favor of such procedure, but does not carry it to the ultimate and logical conclusion. The practical result of his scheme would be disastrous to the architect as defined by modern conditions.

During the Middle Ages and the Renaissance period the architect did not exist, and construction was in charge of guilds and the work done on a cost basis, paid for from the public funds or voluntary contributions. The lump-sum construction contract "is a product of the mercenary spirit of modern industrialism." The main argument for the cost-plus-fee contract is for a return to the conditions of the Middle Ages and Renaissance period, the modern contractor to assume the function of the old-time guilds. The architect would then become a mere draftsman or layout man, yielding his present day prerogative of directing and controlling the project.

The "mercenary spirit of modern industrialism" is the result of the civilization of today, and it is questionable if a movement to return to the conditions of the Middle Ages and Renaissance period, merely to aid the contracting business, would meet with a general approval. The only existing buildings of those former ages are ecclesiastic monuments and the palaces of autocrats and aristocrats. Modern industrialism may have its drawbacks, but it can never be displaced, and as it is here to stay, it will continue to make its peculiar demands on architecture, such as did not exist in former times. Great progress has been made in satisfying these demands during the past half-century, and the immediate future will require every talent and effort of the architect to solve these problems.

"The contract system which was in almost universal use before the war had revolved about two wholly false assumptions: One, that a modern building can be described by drawings and specifications with sufficient completeness to provide for an accurate computation of costs, and, hence, for bids on its construction that are fairly competitive; and the other, that the contractors' business is that of selling finished work, that he is essentially a merchant, who should, but by no means always does, possess a specialized knowledge of the suitable and economical use of the things he buys and sells." It is not a false assumption that a modern building can be adequately described by plans and specifications. They have been, are, and will be so described by competent architects. Any contractor who has operated throughout this country can cite great numbers of architects whose work disproves the correctness of this assumption. A further refutation of this claim of the architects' incompetency is found in a recent address by C. E. Dobbin, Deputy Superintendent of School Buildings in charge of General Drafting Room, New York, before the Municipal Engineers of New York City, February, 1919. Under the general direction of C. B. J. Snyder, Architect and Superin-

tendent of School Buildings, New York City, the extras *due to errors and omissions* during the past eight years amounted to $24,000 on contracts for school buildings aggregating $28,000,000, or less than one-tenth of one per cent. Many other architects can present a similar record.

Can it be imagined that the great bridges and steel constructions are fabricated and erected without adequate plans and details? The fact is that such plans and details are furnished by engineers as a *matter of course* with no yielding of control to others. This is a result of the engineer being trained to accurate workmanship and knowing that he is responsible for the results. That responsibility he never surrenders.

If the architect is going to acknowledge his inability to prepare adequate plans and specifications and place the responsibility on the contractor with a cost-plus-fee contract, he will very quickly be superseded by the competent engineer who never dreams of evading his responsibilities and obligations.

All contractors are not "merchants" in any sense of the word. It is true that some financial institutions have subsidiary corporations masquerading as contractors who assume cost-plus-fee contracts for projects that the parent organization finances. The amount of such operations is small compared with the total of building construction operations. Such firms are usually termed "brokers" and not considered to be real contractors by the craft. The real contractor is essentially a producer whose organization, by its own efforts, transmutes labor and materials into the finished structure. There are vast numbers of such contractors who would resent the appellation of "merchant or broker." Both of the assumptions appear to be based on conditions that do not exist.

Under modern conditions the owner "strives to drive shrewd bargains with the contractor." Bargains have always comprehended the element of shrewdness on the part of one or both of the contracting parties. If the contractor, through ignorance or incompetence, realizes he is unable to safely bargain for his service, it is readily to be seen why he prefers the cost-plus-fee contract, for in this way he can evade the responsibility and possible loss. With both the architect and contractor evading responsibility, the owner can pay the bill.

The purchaser of almost any known commodity buys with such guarantees that he can accurately measure the value of the thing purchased by the money expended. Then why make an exception of buildings? There is no reason for such procedure except to favor the architect or contractor who is unable to measure in terms of money the value of his service. This exception will not, under normal conditions, be generally made. War conditions are no criterion for these matters.

Contracting methods during the period of the war were very wasteful and cannot be continued. A superintendent of a Government housing project writes that they "turned over" 5000 carpenters to get 1400 "halfway" workmen. He secured a very hard name as a "driver" and was even called to task, by Government inspectors, for driving the men too hard. It was a cost-plus-fee job, and such jobs always attract the incompetent and irresponsible, a fact known to all contractors.

If we wish to hold to the lump-sum contract and competitive bidding, it is "obvious, then, that we must find some way of giving the contractor in advance the information essential as a basis for fair competition on price. Can it be done?" There is nothing more simple. Real knowledge, intelligence and hard work incorporated into plans and specifications, with an accurate quantity survey of the materials involved, given to a competent contractor will solve the problem. This is being done every day, with success and satisfaction to both parties to the contract.

"Estimating, even under the most favorable conditions, will always involve risk to the contractor, and as long as there are risks, competition will be based on risks instead of the work to be done." Here again is afforded an example of the exact analogy between the selling of contractors' services and any other form of merchandising. With proper plans, specifications and a quantity survey, a large measure of the estimating and contracting risk is overcome. Risks will remain, such as labor and the weather. Every human activity involves a risk of some kind. If one is too cowardly or effeminate to assume a risk, living will lose its charm to all except architects and contractors under a universal cost-plus-fee system. But the owner is asked to assume all the risk, a thing which he will not do. The whole proposition leads to a state of inefficiency and supposed security which must finally eliminate the architect as such and build up a group of contractors who will control construction.

The Committee on Contracts and Specifications of the American Institute of Architects, and the members of that organization, will consider this important matter before committing themselves to a returning to the conditions of the Middle Ages and Renaissance period. THE AMERICAN ARCHITECT does not believe that architects will, in this way, yield their rightful privileges and prerogatives to the contractor, to whom in "confidence", the owner is expected to honor all monetary drafts.

BUILDING NEWS

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Persons in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

ARIZONA

PHOENIX, ARIZ —High School Trustees plan election to vote on $45,000 bonds to build machine shop and $25,000 for heating plant in connection with improvements to high school.

PHOENIX, ARIZ.—High school trustees plan election to vote on $100,000 bonds to build twenty room Liberal Arts Building and $40,000 for gymnasium, in connection with improvements to high school.

CALIFORNIA

ATASCADERO, CAL.—Colony Holding Corp. let contract for 100 x 416 ft. timber dehydrating plant to H. Clarke Co., 1101 East Fifth Street, Los Angeles. $125,000.

COVINA, CAL.—Trustees C School District voted on $150,000 bonds to build one story concrete school. W. W. Nash, trustee.

FOWLER, CAL.—Trustees of Union High School District will build high school. $100,000.

FRESNO, CAL.—High school trustees purchased 30 acre site and plan election to vote between $600,000 and $700,000 bonds to build high school on Palm Avenue.

HANFORD, CAL.—California Packing Corp., 101 California Street, San Francisco, let contract for building one story, 110 x 250 ft., brick and frame factory and 100 x 250 ft. frame warehouse, power house and number of cottages here to R. F. Felchin, Rowell Building, Fresno. $50,000.

LOS ANGELES, CAL.—Angeles Furniture Co. will build two story, 13 x 80 ft., brick and concrete warehouse, two story, 40 x 138 ft., timber and corrugated iron mill on East Pico Street.

LOS ANGELES, CAL.—Hollywood Studios, Inc., 6980 Hollywood Boulevard, let contract for building steel and timber moving picture plant on Santa Monica Boulevard, to include administration service and other buildings, to Milwaukee Building Co., Wright and Callender Building. $250,000.

LOS ANGELES, CAL —Sun Drug Co., Los Angeles and Commercial Streets, plans to build five story, 140 x 150 ft., reinforced concrete, brick and steel plant, on Los Angeles Street near 11th Street. I. Eisner, President. $200,000.

PORTERVILLE, CAL.—City plans to build auditorium. Cost between $50,000 and $100,000. G. C. Murphy and E. L. Lindsay appointed to secure plans. E. F. Halbert, city clerk.

SAN JOSE, CAL.—Richmond-Chase Co. let contract for building three story, 40 x 250 ft., reinforced concrete warehouse, one story, 120 x 210 ft., frame fruit cannery, two story, 41 x 120 ft., fruit packing building, power house and cafeteria to Z. O. Field, 167 South Fourteenth Street.

COLORADO

MONTROSE, COL.—C. O. Earnest, 702 Second Street, proposes building three story, 50 x 125 ft., brick, steel and concrete hotel. W. N. Bowman, Central Savings Bank Building, Denver, Architect. $65,000.

CONNECTICUT

BRIDGEPORT, CONN.—Salvation Army, 82 Elm Street, will build four story, 50 x 100 ft., brick and concrete home on Elm and Main Streets. $100,000.

BRIDGEPORT, CONN.—F. Jacoby, 1083 Broad Street, plans to build three story, 52 x 150 ft., brick and steel business building on Main Street, opposite Lumber Street. F. A. Cooper, 1024 Main Street, Architect. $65,000.

BRIDGEPORT, CONN.—Bridgeport Aerie of Eagles, 67 Madison Avenue, plans to build club house and auditorium on Main Street and East Washington Avenue. $150,000.

BRIDGEPORT, CONN.—F. Crosby Memorial Association, care of O. H. Brothwell, treasurer, 888 Main Street, plans to build memorial to Fanny Crosby. $50,000.

BRIDGEPORT, CONN.—Olivet congregation, 2140 Main Street, plans to build two story hall on Main Street, opposite Tom Thumb Street. Address H. S. Brown, pastor. $60,000.

HARTFORD, CONN.—H. I. Brightman, 82 Wooster St., plans to build two story, 82 x 82 ft. brick and steel warehouse, on Windsor Avenue. Berenson & Moses, 26 State Street, Architects. $40,000.

HARTFORD, CONN.—F. C. Walz, Architect, 348 Trumbull Street, soon receives bids for four story, 64 x 90 x 128 ft. brick and steel garage, machine and paint shop, on Main Street, for Rosenberg & Older, 222 Collins Street. $80,000.

NEW HAVEN, CONN —Marlin-Rockwell Corp., Whitney Avenue, proposes building one story, 160 x 180 ft., brick and concrete foundry. $100,000.

NEW HAVEN, CONN —W. S. Cady, Architect, 40 West Thirty-second Street, New York City, has plans for two story, 76 x 132 ft., brick and steel parish school on Whitney Avenue for Chapel Street Ecclesiastical Society, Whitney Avenue. $100,000.

NEW LONDON, CONN —Bilderbeck & Langdon, Inc., Architects, 253 State Street, soon receive bids for two story, 80 x 101 ft. reinforced concrete garage, on Main Street, for M. A. Avery, 176 Main Street. $60,000.

SOUTHINGTON, CONN.—Peck, Stow & Wilcox Co., Railroad Square, let contract for building six story, 55 x 112 ft., and 22 x 43 ft., brick and steel factory on Center Street to Torrington Building Co., 197 Water Street, Torrington. $125,000.

STAMFORD, CONN.—Thompson-Binger, Engineers, 280 Madison Avenue, New York City, will build three story, 128 x 150 ft. reinforced concrete and steel warehouse, on Canal Street, for C. E. Slawson, Canal Street. $150,000.

STRATFORD, CONN. (Bridgeport, P. O.).—Raybestos Co., Bostwick Avenue, Bridgeport, let contract for one story, 160 x 170 ft., brick and reinforced concrete factory on East Main Street here to J. R. Sheehan, 211 State Street, Bridgeport. $100,000.

FLORIDA

MIAMI, FLA.—Miami Electric Co. will enlarge plant to increase capacity 150 per cent. C. W. Murray, City Engineer. $20,000.

WEST PALM BEACH, FLA.—Good Samaritan Hospital soon receives bids for hospital. $50,000.

ILLINOIS

CHICAGO, ILL.—Industrial Building Co., 38 South Dearborn Street, will build one story, 110 x 286 ft., reinforced concrete machine shop. $70,000.

CHICAGO, ILL.—W. P. Whitney, Architect, 38 South Dearborn Street, is preparing plans for three one story, 110 x 350 ft. brick and steel factories, concrete foundation. $100,000.

CHICAGO, ILL.—A. L. Levy, Architect, 28 North Clark Street, will build two story, 100 x 160 ft., brick and steel theater and offices on Archer Avenue and Sacramento Boulevard for Brighton Theater Co., care of Architect. $235,000.

CHICAGO, ILL.—Illinois Packing Co., 3940 Normal Avenue, let contract for four story, 70 x 147 ft., packing plant, one story, 50 x 60 ft., power plant, one story, 25 x 55 ft., office, reinforced concrete, on Auburn and Thirty-eighth Streets, to J. Rodatz, 209 South La Salle Street. $225,000.

CHICAGO, ILL.—Western Packing & Provision Co., 3854 South Morgan Street, let contract for building one story, 75 x 175 ft., brick and timber garage at 3822 South Morgan Street to J. Rodatz, 209 South La Salle Street. $28,000.

CHICAGO, ILL.—Douglas Park State Bank let contract for building two story, 35 x 95 ft., brick and timber bank on Twelfth and Crawford Streets to C. E. Brockhausen, 111 West Monroe Street. $75,000.

CHICAGO, ILL.—Chicago Public Library, Michigan Avenue and Washington Street, let contract for building two story, 97 x 122 ft., brick and timber library on Crawford Avenue and Monroe Street to Dahl-Stedman Co., 11 South La Salle Street. $75,000.

CHICAGO. ILL.—Western Stoneware Co., 2911 South La Salle Street, let contract for building two story, 100 x 135 ft., brick and timber warehouse at 124 West

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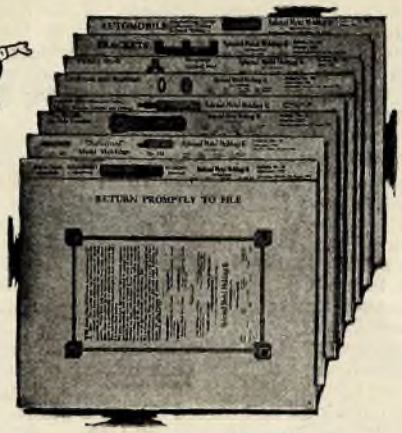
For Your Files



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Forty-sixth Street to Industrial Building Co., 38 South Dearborn Street. $45,000.

CHICAGO, ILL.—W. J. Hirsh Co., 360 West Superior Street, is having plans prepared by A. S. Alschuler, Architect, 28 East Jackson Street, for three story, 200 x 200 ft. reinforced concrete and brick factory on Diversy Avenue. $100,000.

CHICAGO, ILL.—Kling Bros. & Co., 411 South Wells Street, are having plans prepared by A. S. Alschuler, Architect, 28 East Jackson Street, for building three story, 125 x 300 ft. brick and timber factory on Wabansie and Milwaukee Avenues. $225,000.

DECATUR, ILL.—Consumers Refining Co. is receiving bids to build warehouse, brick garage and brick filling station on Main and North Streets. Riddle & Riddle, 122 South Michigan Avenue, Chicago, Architects.

EAST PEORIA, ILL. (Peoria P. O.).—Conover-McHenry Elevator Co., 322 South Washington Street, had plans prepared for grain elevator. $250,000.

ELMHURST, ILL.—J. C. Llewellyn, Architect, 38 South Dearborn Street, Chicago, is receiving bids for two story, 152 x 168 ft., brick, steel and concrete high school for Board of Education. $125,000.

LE ROY, ILL.—Keenan National Bank is having plans prepared by A. L. Pillsbury, Architect, Peoples Bank Building, Bloomington, for remodeling and building addition to bank. J. Keenan, president. $50,000.

PEORIA, ILL.—Lehmann-Stern Knitting Co., 529-31 Fulton Street, is having plans prepared for building four story, 78 x 160 ft. brick, concrete and steel factory, on Adams and Persimmon Streets. J. L. Stern, secretary and treasurer. $100,000.

ROCKFORD, ILL.—W. P. Whitney, Architect, 38 South Dearborn Street, Chicago, has designed one story, 72 x 117 ft., brick, concrete and steel church for First Baptist Church, care of Architect. $60,000.

VILLA GROVE, ILL.—J. W. Royer, Architect, Flat Iron Building, Urbana, has prepared plans for three story, 85 x 200 ft., high school for board of education. W. E. Irwin, chairman. $100,000.

INDIANA

HUNTINGTON, IND.—H. L. Newhouse, Architect, 4630 Prairie Avenue, Chicago, Ill., planned 44 x 135 ft. brick and reinforced concrete theater and store for A. Perfect, care of architect.

MICHIGAN CITY, IND.—Smith Bros., North Hamilton Street, Poughkeepsie, N. Y., are having plans prepared by W. P. Field, Architect, 763 Broad Street, Newark, N. J., for brick and reinforced concrete plant.

SOUTH BEND, IND.—Studebaker Corp., Detroit, Mich., plans to build additions to plant here, to include four story, concrete factory, also foundry, machine shop and power plant. W. F. Wollering, Detroit, First Vice-President. $1,650,000.

IOWA

DUBUQUE, IOWA.—Brunswick - Balke - Collender Co. let contract for constructing factory, motor building and dry kilns to A. Zwack, Thirteenth and Clay Streets. $100,000.

MASON CITY, IOWA.—J. E. Decker & Sons Packing Co., Fifteenth Street, N. E., proposes building two story, 60 x 120 ft. concrete and brick addition to packing plant. J. E. Decker, president. $60,000.

LOUISIANA

DE RIDDER, LA.—City will vote on $90,000 bonds to install pumping, light and power plant. X. A. Kramer, Magnolia, Miss., Engineer.

NEW ORLEANS, LA.—Board of Levee Commissioners of Orleans Levee District, New Orleans Court Building, will build two story, brick garage and warehouse on square bounded by Canal, Water, Gravier and Delta, First District. T. Killeen, president.

MARYLAND

BALTIMORE, MD.—The Hub, Baltimore and Charles Streets, let contract for two story, 40 x 85 ft., steel, brick and concrete addition and altering store front to C. L. Stockhausen Co., Gay and Water Streets. $50,000.

BALTIMORE, MD.—J. M. Curran, 501 North Pulaski Street, plans to build one story, 208 x 286 ft., brick and mill construction garage, on Butchers Lane, Franklin and Calverton Streets. F. J. Beall, 1335 North Gilmor Street, Architect. $50,000.

BALTIMORE, MD.—F. O. Singer, 600 Equitable Building, plans to build two story, brick, steel and concrete theater on Howard Street. W. O. Sharklin, 802 Law Building, Architect. $400,000.

BALTIMORE, MD.—Herold Co., 1620 Gough Street, plans to build three story, 50 x 168 ft., brick and steel syrup factory, on Key Highway and Harvey Street. O. Kublitz, 1004 Emerson Tower, Architect. $55,000.

BALTIMORE, MD.—Merchants-Mechanics First National Bank purchased site on South Street and plans to build two story, 20 x 110 ft., steel and concrete addition. J. B. Ramsey, chairman board of directors. $70,000.

MASSACHUSETTS

ASHLAND, MASS.—United States Color Co. let contract for building two story, 50 x 84 ft., concrete factory to Penn Tile & Construction Co., 45 Milk Street, Boston. $50,000.

BROOKLINE, MASS.—W. A. Brooks, 167 Beacon Street, Boston, is having plans prepared for two story hospital on Summit Avenue here. $175,000.

DORCHESTER, MASS.—W. M. Bacon, Architect, 27 Kilby Street, Boston, soon lets contract for two story, 84 x 117 ft., brick and reinforced concrete market on Ramsey Street for Upham Market Co. $100,000.

NEW BEDFORD, MASS.—W. A. Robinson Oil Co., 144 South Water Street, let contract for rebuilding four story brick, steel and reinforced concrete storage plant recently destroyed by fire to J. W. Bishop Co., Times Building. $60,000.

SPRINGFIELD, MASS.—Springfield Coal & Wood Co., 155 Main Street, plans to build reinforced concrete plant and coal pocket near Armory Street. $50,000.

SPRINGFIELD, MASS.—Commissioner on City Property will build one story brick and timber addition to Chestnut Street school. E. C. and G. C. Gardner, 33 Lyman Street, Architects. $96,000.

MICHIGAN

DETROIT, MICH.—Burkhardt Building Co., 85-87 Congress Street, let contract for building five story, 75 x 75 ft., brick and reinforced concrete factory on Second Avenue and Larned Street to Cooper-Widenmann Construction Co., 854 Penobscot Building. $60,000.

DETROIT, MICH.—Liberty Starter Co., 702 West Jefferson Avenue, let contract for two story, 112 x 114 ft., brick and steel factory on West Jefferson Avenue to O. Misch Co., 725 Chamber of Commerce Building.

HIGHLAND PARK, MICH. (Detroit P. O.).—Maxwell Motor Car Co., Oakland Avenue, let contract for one story, 78 x 140 ft., brick and steel heat treating shop and one story, 120 x 372 ft., brick and steel forge shop on Oakland Avenue to Walbridge Aldinger Co., 2356 Penobscot Building, Detroit. $51,000.

MINNESOTA

AUSTIN, MINN.—Cozy Theater Co. receives bids about May 1 for building 60 x 135 ft. reinforced concrete, brick and steel theater. S. Jacobson, 601 Capital Bank Building, St. Paul, Architect. $55,000.

CLOQUET, MINN.—Board of Education will build three story, reinforced concrete high school. Croft & Boerner, Lonsdale Building, Duluth, Architects.

CLOQUET, MINN.—Board of Education will build three story, 65 x 190 ft., reinforced concrete, brick and steel high school on Main Street. Croft & Boerner, Lonsdale Building, Duluth, Architects. $140,000.

HIBBING, MINN.—Hibbing Power & Light Department let contract for building three story, 100 x 160 ft., reinforced concrete and brick power house on Sixth Avenue and Wilson Street to National Electric Construction Co., St. Paul. $700,000.

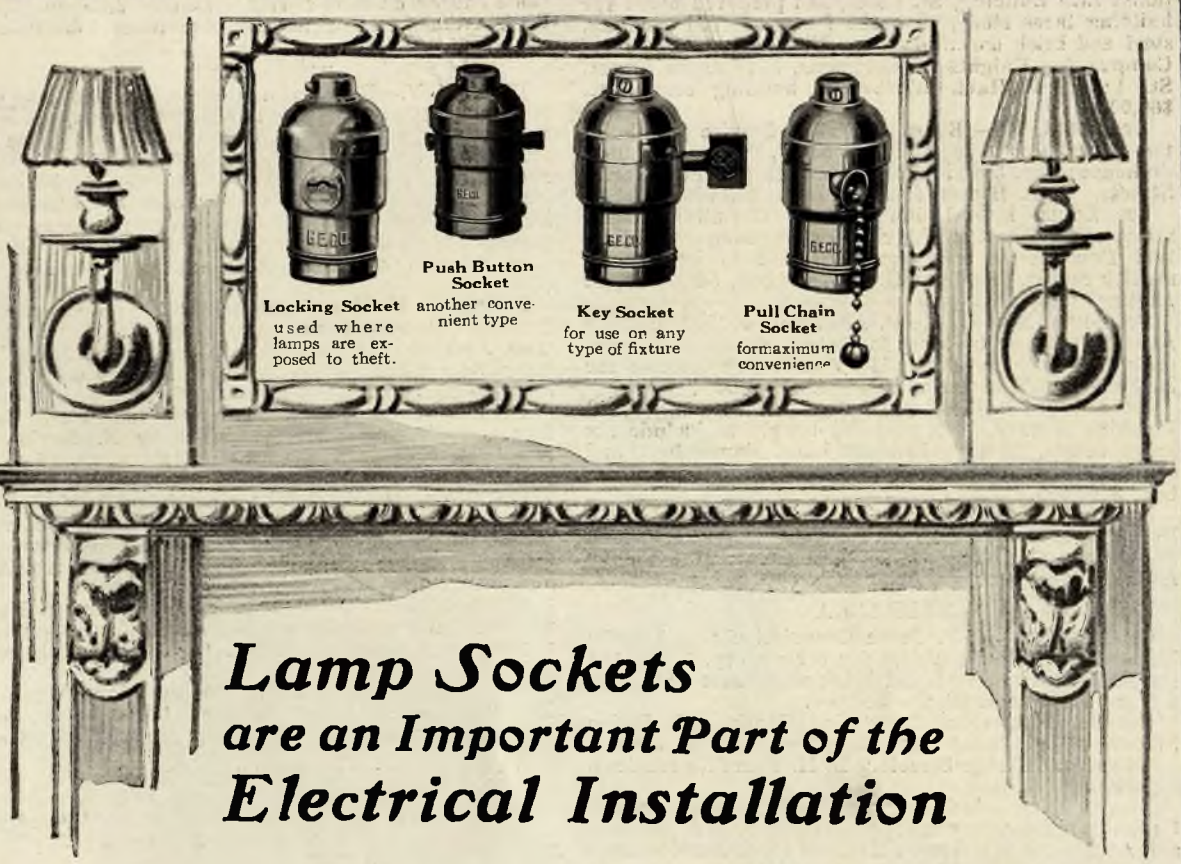
LANCASTER, MINN.—City proposes building two story, 57 x 91 ft., brick and tile school. Sund & Dunham, 512 Essex Building, Minneapolis, Architects. $50,000.

MINNEAPOLIS, MINN.—H. E. Pence, 800 Hennepin St., is having plans prepared for ten or twelve story bank and office building on Hennepin Avenue and Eighth Street.

MOORHEAD, MINN.—City will build brick city hall and fire station. R. G. Price, city clerk. Rosetti & Braseth, 105½ Broadway, Fargo, N. D., Architects.

ST. PAUL, MINN.—A. H. Wilder Charity, 404 Wilder Building, plans to build three story, 51 x 96 ft., reinforced concrete and brick dispensary on Rice Street between College and Summit Avenues. C. H. Johnston, 715 Capital Building, engineer. $100,000.

ST. PAUL, MINN.—North American Casket Co. is having plans prepared by H. Firminger, Architect, 408 Oppenheim Building, for one story, 50 x 230 ft. brick factory. $50,000.



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41-20

MISSOURI

COLUMBIA, MO.—P. J. Bradshaw, Architect, International Life Building, St. Louis, has prepared plans for building three story, 45 x 125 ft., reinforced concrete, steel and brick dormitory near University of Missouri Campus for Knights of Columbus, 3549 Olive Street, St. Louis. L. Hart, member of building committee. $65,000.

ST. LOUIS, MO.—Board of Public Service will build two story, 36 x 76 ft., and 28 x 65 ft., brick and timber firehouses Nos. 3 and 32 on Twentieth and St. Charles Streets. L. R. Bowen, city engineer. $53,000.

ST. LOUIS, MO.—Union Avenue Christian, Westminster Presbyterian, Pilgrim Congregational and Central Presbyterian congregations plan to build community center. Address G. A. Campbell, 5411 Vernon Avenue. $50,000.

ST. LOUIS, MO.—J. Helm, Architect, 4006 Castleman Avenue, proposes building four story, 66 x 120 ft., concrete and brick hotel at 3516 Washington Avenue for A. Fox, 3518 Washington Avenue. $60,000.

ST. LOUIS, MO.—Masonic Lodges of St. Louis, 5330 Pershing Avenue, plan to build temple to include six lodge rooms, library, banquet halls, dance hall and chapel. D. A. Jamison, chairman of building committee. $700,000.

ST. LOUIS, MO.—F. Tate, 402 Central National Bank Building, soon receives bids for four story, 110 x 150 ft., theater and office. G. A. Lansburgh, 2122 Pacific Avenue, San Francisco, Architect. $500,000.

NEBRASKA

OMAHA, NEB.—J. P. Jerpe Commission Co., 1108-10 Howard Street, let contract for three story, 110 x 132 ft., reinforced concrete and brick warehouse to J. Lof & Sons, 600 Barker Block. $80,000.

OMAHA, NEB.—Farrell & Co., Tenth and Dodge Streets, plan to build seven story, 60 x 100 ft., factory on Ninth and Dodge Streets. D. H. Farrell, president. $100,000.

OMAHA, NEB.—Am. Transfer & Fireproof Storage Co. had preliminary plans prepared by J. & A. McDonald, Architects, 911 Omaha National Bank Building, for eight story, 100 x 132 ft., reinforced concrete storage and transfer buildings on Fourteenth and Pacific Streets. F. Busch, 1110 Douglas Street, president. $250,000.

NEW JERSEY

JERSEY CITY, N. J.—M. W. Kellogg Co., West Side Avenue, purchased 40 acre site on Hackensack Meadows and plans to build reinforced concrete and steel plant. $3,000,000.

NEWARK, N. J.—American Oil & Supply Co., 52 Lafayette Street, let contract for one and two story, fireproof oil plant at 236 Wilson Avenue, consisting of storage and office buildings, power house, etc., to C. R. Hedden Co., 763 Broad Street. $70,000.

NEWARK, N. J.—Lewis Bros., 133 Monroe Street, let contract for four story, mill construction factory, concrete foundation, on Monroe and Lafayette Streets to Essex Construction Co., 85 Academy Street. $75,000.

NEWARK, N. J.—American Food Co., 392 Plane Street, is having plans prepared by W. E. Lehman, Architect, 738 Broad street, for building four story, 50 x 80 ft., reinforced concrete and brick warehouse on Badger Avenue, south of Alpine Street. $100,000.

NEWARK, N. J.—Baker & Co., Inc., 54 Austin Street, is having plans prepared by F. A. Phelps, Architect, Union Building, for building five story, 50 x 188 ft., reinforced concrete and brick addition to factory on Murray and Austin Streets.

NEWARK, N. J.—Detroit Cadillac Motor Co., 534 Broad Street, is having plans prepared by W. E. Lehman, Architect, 738 Broad Street, for three story, 60 x 120 ft., brick and concrete addition to auto service station.

NEWARK, N. J.—R. Treat Hotel Co., care of Guilbert & Betelle, Architects, 665 Broad Street, is having plans prepared for fourteen story, 86 x 160 ft., concrete, brick and steel addition to hotel at 54 Park Place. $1,000,000.

NEWARK, N. J.—E. V. Warren, Architect, Essex Building, has plans for three story, 40 x 140 x 300 ft., reinforced concrete and brick garage, on Broad and Spring Streets, for State Garage Inc., care of Architects. $150,000.

VERONA, N. J. (Montclair P. O.).—Essex County (Newark) proposes building two, three and four story reinforced concrete, brick and steel sanatorium on Fairview Avenue. J. Green, Essex Building, Newark, Architect. $500,000.

WESTFIELD, N. J.—First Baptist congregation soon receives bids for building one story, brick, steel and stone church on Elm Street. Ludlow & Peabody, 101 Park Avenue, New York City, Architects. $50,000.

NEW YORK

BATH, N. Y.—Board of directors of Soldiers and Sailors Home let contract for building two story, 44 x 151 ft., barracks, with rear wing, 44 x 75 ft., reinforced concrete, brick and steel, at State Institution to T. H. McHale & Son, 604 Cahill Building, Syracuse. $71,500.

BROOKLYN, N. Y.—W. Bauer, care of Shampan & Shampan, Architects, 772 Broadway, is having plans prepared for building three story, 60 x 100 ft. brick and steel garage, on Vanderbilt and DeKalb Avenues. $50,000.

BROOKLYN, N. Y.—Diana Chocolate Co., 382 Jefferson Avenue, is having preliminary plans prepared by C. L. Otto, Architect, 15 Park Row, New York City, for five story, 84 x 200 ft. brick and steel factory on Wyckoff and Willoughby Avenues. $100,000.

BROOKLYN, N. Y.—C. Marcusci, 135 West Third Street, is having plans prepared by F. Savignano, Architect, 6005 14th Avenue, for two story, 25 x 150 ft. brick and steel factory.

BROOKLYN, N. Y.—Pirika Chocolate Co., 972 Dean Street, proposes building three story, 78 x 120 ft. reinforced concrete and steel factory, on Dean Street and Carlton Avenue. Timmis & Chapman, 315 Fifth Avenue, New York City, Architects. $130,000.

BUFFALO, N. Y.—Mentholatum Co., 146 Seneca Street, will build five story, 100 x 160 ft. reinforced concrete factory on Niagara and Brace Streets. Cost between $150,000 and $200,000.

NEW YORK, N. Y.—J. M. Felson, Architect, 1133 Broadway, has designed two story, 100 x 125 ft., brick and steel garage at 400 East Ninety-first Street. $100,000.

NEW YORK, N. Y.—G. Keister, Architect, 56 West Forty-fifth Street, proposes building four story, 42 x 98 ft., brick and steel warehouse at 233-235 West Thirty-fifth Street, for W. H. Hussey & Son, 150 West Thirty-fifth Street. $75,000.

NEW YORK, N. Y.—B. Levitan, Architect, 7 West Forty-fifth Street, has planned two story, 100 x 171 ft., brick and steel garage on Lenox Avenue, between 110th and 111th Streets, for Stalwart Realty Co., care of Ames & Co., 26 West Thirty-first Street. $200,000.

NEW YORK, N. Y.—National Aniline & Chemical Co., 21 Burling Slip, let contract for alterations to four story, 60 x 100 ft., brick and steel office at 15-19 Burling Slip to Gillies Campbell Co., 101 Park Avenue. $50,000.

ROCHESTER, N. Y.—Beechnut Packing Co., Canajoharie, let contract for building two story, 120 x 180 ft., reinforced concrete addition to plant on Main Street, E., here to Aberthaw Construction Co., 27 School Street, Boston. $70,000.

SALISBURY CENTER, N. Y.—Supervisors of Herkimer County (Herkimer) soon receive bids for building brick and concrete tuberculosis hospital on Heller Farm here. $150,000.

TARRYTOWN, N. Y.—General Motors Corp., Chevrolet Division, let contract for three story, 80 x 220 ft., reinforced concrete addition to factory on Kingsland Point to White Fireproof Construction Co., 286 Fifth Avenue. $500,000.

OHIO

BARBERTON, OHIO.—Park Theater Co., 156 Columbus Street, let contract for building two story, 48 x 100 ft., brick and steel theater on West Tuscarawas Street to W. Bernard, Barberton, Ohio. $54,000.

CLEVELAND, OHIO—J. M. and L. A. Osborne Co., Superior Viaduct, is having plans prepared by G. S. Rider Co., Architects, 612 Century Building, for two story, brick, steel and reinforced concrete warehouse, on Superior Avenue and East 39th Street. $300,000.

CLEVELAND, OHIO.—Reflex Ignition Co., Superior Building, let contract for building two story, 80 x 160 ft., brick, steel and reinforced concrete on West 110th Street and New York Central R. R. to S. W. Emerson Co., 1900 Euclid Building. $65,000.

CLEVELAND, OHIO—Aluminum Castings Co., 2800 Howard Avenue, plans to build brick, steel and concrete power house on Havard Avenue and East Twenty-eighth Street. G. S. Rider Co., 612 Century Building, Architects. $50,000.

CLEVELAND, OHIO.—Kaplan & Shamman, 502 Sweatland Building, is having plans prepared by Fulton &

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Taylor, Architects, 631 Hippodrome Building, for building four story, 65 x 131 ft., brick, steel and concrete, at 1260 Riverbed Street. $75,000.

CLEVELAND, OHIO—C. F. Narwold, 2202 East Fourth Street, plans to build five story, 81 x 91 x 100 ft., brick, steel and reinforced concrete factory at 522 Eagle Avenue. Allen Osborne Co., 702 Rose Building, engineers. $150,000.

COLUMBUS, OHIO.—American Rolling Mills Co. is receiving bids for extensive remodeling and new construction work at its plant along tracks of Toledo & Ohio Central R. R. on Parsons Avenue. J. C. Miller, Middletown, local manager. $300,000 and $400,000.

TOLEDO, OHIO—Toledo Factories Co., Southard and 12th Streets, plans to build machine shop. I. B. Hiett, President. $150,000.

TOLEDO, OHIO.—Board of Education received bids for building two story, brick, steel and reinforced concrete school at Wernerts Corners. J. Compte, 149 Michigan Street, $74,586.

OKLAHOMA

HOLDENVILLE, OKLA.—Board of Education is having plans prepared by Tonini & Bramblett, Architects, 301 Terminal Building, Oklahoma, for two story, reinforced concrete, brick and stone school. $75,000.

MIAMI, OKLA.—State Legislature, capitol, Oklahoma, appropriated $125,000 to build and maintain State School of Mines here.

NEWKIRK, OKLA.—Arkansas Valley Tractor Co. let contract for one and two story, 50 x 200 ft., reinforced concrete and steel factory to J. W. Nidway, Newkirk. $31,000.

OREGON

PENDLETON, ORE.—Pendleton Lodge No. 288, B. P. O. E., plans to build two story lodge on Court and Cottonwood Streets. G. W. Phelps, Court House, trustee. $60,000.

PORTLAND, ORE.—Labor Temple Association, 162 Second Street, plans to build on Fourth and Jefferson Streets. H. Anderson, president. $120,000.

PENNSYLVANIA

JOHNSTOWN, PA.—Board of Directors School District let contract for building school and boiler house for group of six buildings known as William A. Cochran School in Eighth Ward to Gilpatrick Dawson Co., Empire Building, Pittsburgh. $169,635.

PHILADELPHIA, PA.—A. Colburn & Co., 2228 North Tenth Street, plans to build four story, 60 x 242 ft. brick and timber factory on Tenth and Nevada Streets. $80,000.

PHILADELPHIA, PA.—Germantown Trust Co. Germantown and Chelton Avenues, is having sketches prepared by A. H. Brockie, Architect, 1713 Sansom Street, for altering and building addition to existing bank. $50,000.

PHILADELPHIA, PA.—Tenth National Bank, 1645 North Broad Street, is having sketches prepared for 54 x 64 ft. bank addition. $50,000.

PITTSBURGH, PA.—Y. M. C. A. is having plans prepared by E. B. Lee, Architect, Chamber of Commerce Building, for constructing four story, 81 x 120 ft., steel and brick building on Center and Francis Streets. $100,000.

RHODE ISLAND

BARRINGTON, R. I.—Town receives bids about April 19 for two story, brick and steel school. F. S. Peck, chairman committee. W. R. Walker & Son, Custom House Street, Providence, Architects. $50,000.

EAST PROVIDENCE, R. I.—Metacomet Golf Club, Union Trust Building, proposes building two story brick club house. W. R. Walker & Son, 17 Custom House Street, Providence, Architects. $50,000.

PAWTUCKET, R. I.—Bellows & Aldrich, Architects, 8 Beacon Street, Boston, have designed two story, 60 x 160 ft., reinforced concrete addition to business plant on North Union Street for Times Publishing Co., Exchange St. $60,000.

PROVIDENCE, R. I.—Women's College of Brown University, College Street, let contract for building four story dormitory, 138 x 145 ft., brick, steel and concrete, to C. B. Maguire Co., 1208 Turk Head Building. $150,000.

TENNESSEE

MEMPHIS, TENN.—Belmont Candy Co., 88 West Virginia Street, plans to build three story brick and stone factory on Colorado and Kansas Streets. $100,000.

MEMPHIS, TENN.—Baptist Hospital, Madison Avenue, will build eight story, 92 x 101 ft., brick and concrete hospital. C. O. Pfeil, Union & Planters Bank Building, Architect. $250,000.

TEXAS

ABILENE, TEX.—Simmons College had plans prepared for science building. Cost between $50,000 and $75,000.

AMARILLO, TEX.—Independent School District voted $80,000 bonds to purchase site and build school. E. P. Works, president board of trustees.

DE LEON, TEX—W. C. Steety and associates purchased 40 acre site near here and plan to build oil refinery, 3000 bbl. daily capacity.

FAIRFIELD, TEX.—Commissioners of Freestone County plan to build courthouse. $125,000.

HOUSTON, TEX.—Burkhardt Laundry Co., 1704 Congress Avenue, plans to build two story laundry on Congress and Jackson Avenues. $40,000.

HOUSTON, TEX.—Gurney Refrigerator Co., 64 South Brooke Street, Fond du Lac, Wis., plans to build plant here. E. G. Vail, president. $250,000.

LONGVIEW, TEX.—Texas Leasing & Development Co., Wichita Falls, plans to build oil refinery, 10,000 bbl. daily capacity, here.

RANGER, TEX.—G. V. Taylor, Cushing, Okla., and H. A. Stroud, Electra, Cal., purchased site here and plan to build 2000 bbl. refinery.

SAN ANTONIO, TEX.—Orthodox Jewish congregation, 115 Newton Street, is having plans prepared by C. W. Adams, Architect, Gibbs Building, for 85 x 100 ft., reinforced concrete and brick church on Main Avenue and Quincy Street. A. Gerstein, rabbi. $60,000.

VIRGINIA

RICHMOND, VA.—Spotless Co., 1017-27 East Canal Street, plans to build seven story, 130 x 140 ft. warehouse and office on 10th and Canal Streets. Carneal & Johnston, 707 Chamber of Commerce Building, Architects. $225,000.

RICHMOND, VA.—Calvary Baptist congregation plans to build one story, 82 x 97 ft., brick addition to Sunday school on Grove Avenue and Boulevard. Address R. A. Gary, 2316 Stuart Avenue. H. L. Cain, 2311 Grove Avenue, Architect. $50,000.

WASHINGTON

SEATTLE, WASH.—Seattle Warehouse Co., 107 Jackson Street, plans to build one story, 250 x 750 ft. concrete and steel warehouse, on Duwamish Waterway. H. Bittman, Securities Building, Engineer. $250,000.

YAKIMA, WASH.—Richey-Gilbert Co. plans to build two story, 100 x 180 ft. timber warehouse. W. Devereaux, Yakima, Architect. $100,000.

WEST VIRGINIA

MORGANTOWN, W. VA.—Bank of Morgantown plans to build seven story, 26 x 70 ft., steel and concrete bank and office. T. E. Hodges, president.

WISCONSIN

CAMERON, WIS.—Bank of Cameron is building two story bank and office. W. L. Alban, 347 Endicott Building, St. Paul, Minn., Architect.

CHIPPEWA FALLS, WIS.—City plans to build junior high and vocational school here. L. M. Newman, chairman. $200,000.

MANITOWOC, WIS—Wisconsin Textile Mfg. Co., care of O. B. Albert, Manitowoc, will build one story, 90 x 200 ft., reinforced concrete, brick and steel factory. $70,000.

MANITOWOC, WIS.—Chicago, Northwestern R. R., Jackson Boulevard and Franklin Street, Chicago, plans to build depot on Leland Avenue here. W. H. Finley, chief engineer. $500,000.

NORTH FREEDOM, WIS.—North Freedom Canning Co. plans to build plant to include one story, 38 x 46 ft. boiler house and steam generating plant. G. Shore, manager. $50,000.

SHEBOYGAN, WIS.—City plans to build high school on Jefferson and Ninth Streets. C. M. Boley, city engineer. $300,000.

TWO RIVERS, WIS.—City had preliminary plans prepared by Childs & Smith, engineers, 64 East Van Buren Street, Chicago, for memorial building. $50,000.

VALDERS, WIS.—Wisconsin Condensed Milk Co. let contract for two story, 30 x 125 ft., reinforced concrete, brick and steel condensery to A. Hogaseen, Valders. $78,500.

Photograph of Aldermanic Committee Room, City Hall, New York City.

"I never had to bother with them—so I don't know"

said the custodian of New York's City Hall when asked if the radiator valves in the building were Jenkins.

Of course, after investigation they proved to be genuine Jenkins Valves—the same valves that were installed ten years ago.

In explanation, the custodian said the radiator valves were the "least of his troubles," and that the reason he didn't know the make was because he never had had the occasion to fix them.

That's the story of Jenkins Valves in a few words—they are "trouble-free" because they are made that way.

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2027 J

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Ads. marked E.O.W. appear every other week
Ads. marked E.F.W. appear every fourth week
Ads. marked O.A.M. appear once a month

DIGEST
Of Manufacturers' Data

ARCHITECTS' OFFICE EQUIPMENT

PENCILS:

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

CASEMENT WINDOWS

METAL:

Pomeroy Co., Inc., S. H., 30 E. 42d St., N. Y.

CEMENT AND PLASTER

CEMENT:

Atlas Portland Cement Co., The, New York.

CORNER BEADS:

Milwaukee Corrugating Co., Milwaukee, Wis.

PLASTER:

National Kellastone Co., The, Chicago, Ill.

SPECIALTIES:

Truscon Steel Co., Dept. 68, Youngstown, Ohio. Representatives in principal cities. Corner beads, "Kahn" curb bars, "Trus-Con" slotted inserts; "Kahn" adjustable inserts; "Trus-Con" National socket inserts; "Kahn" elastic filler and armor plates for expansion joints.

STUCCO:

National Kellastone Co., The, Chicago, Ill.

CONCRETE REINFORCEMENT

REINFORCEMENT:

American Steel & Wire Co., Chicago-New York.

Berger, The, Mfg. Co., Canton, Ohio.

Truscon Steel Co., Dept. 68, Youngstown, Ohio. Representatives in principal cities. "Kahn" System reinforced concrete; "Kahn" bars; "Rib" bars; "Rib" lath; "Floretyles," "Floredome," etc.; flat and beamed ceilings of all types.

DAMPPROOFING

(See Water and Dampproofing)

DAYLIGHTING

Berger, The, Mfg. Co., Canton, Ohio.

DOORS AND TRIM

HOLLOW STEEL DOORS:

Interior Metal Mfg. Co., Jamestown, N. Y.; Bankers Trust Bldg., 501 Fifth Ave., New York. Hollow steel doors in all standard sizes.

SHEET METAL DOORS:

Merchant & Evans Co., Philadelphia, Pa. "Almetl" fire doors and shutters.

SLIDING DOOR EQUIPMENT:

Richards-Wilcox Mfg. Co., Aurora, Ill.

STEEL ROLLING EQUIPMENT:

Edwards Mfg. Co., The, 319-349 Eggleston Ave., Cincinnati, O. Send specifications for estimate.

THIS department is intended to assist our subscribers in readily determining the names and addresses of manufacturers of products in which they may be interested, together with brief data about their material.

The headings and sub-headings are arranged alphabetically and have been selected in accordance with the intent of meeting the architect's thought in preparing his specifications.

If the information desired is not found here, it will gladly be supplied by the Service Department of THE AMERICAN ARCHITECT.

DUMB-WAITERS

Sedgwick Machine Wks., 159 W. 15th St., N.Y.

ELECTRICAL EQUIPMENT AND SUPPLIES

CONDUITS AND FITTINGS:

National Metal Molding Co., 1111 Fulton Bldg., Pittsburgh, Pa. "NATIONAL" metal molding for surface wiring; "SHERADUCT" and "ECONOMY" conduits, "FLEXSTEEL" armored cable and a complete line of fittings.

Youngstown (O.) Sheet & Tube Co. "Buckeye" rigid conduit. "Realflex" armored conductor.

COOKING APPLIANCES:

General Electric Co., Schenectady, N. Y.

DOOR OPENERS:

Richards-Wilcox Mfg. Co., Aurora, Ill.

INSULATED WIRE:

Habirshaw Electric Cable Co., 10 E. 53rd St., New York City.

LIGHTING SYSTEMS:

General Electric Co., Schenectady, N. Y.

OUTLET BOXES:

General Electric Co., Schenectady, N. Y.
Hart & Hegeman Mfg. Co., Hartford, Conn.

PANEL BOARDS:

Structural Slate Co., The, Pen Argyl, Pa.

RECEPTACLES:

Hart & Hegeman Mfg. Co., Hartford, Conn.

SOCKETS:

Hart & Hegeman Mfg. Co., Hartford, Conn.

SWITCHES:

General Electric Co., Schenectady, N. Y.
Hart & Hegeman Mfg. Co., Hartford, Conn.

WIRES AND CABLES (Insulated):

General Electric Co., Schenectady, N. Y.

ELEVATORS AND HOISTS

CONVEYORS:

Otis Elevator Co., 11th Ave. and 26th St., N. Y. C. Gravity spirals.

DOOR EQUIPMENT:

Richards-Wilcox Mfg. Co., Aurora, Ill.

ELEVATORS:

American Elevator & Machine Co., Louisville, Ky.

Kaestner & Hecht Co., 500 South Throop St., Chicago, Ill.

Otis Elevator Co., 11th Ave. and 26th St., N. Y. C. Offices in principal cities of the world. Electric, hydraulic, belt and hand power, inclined freight elevators and escalators.

ELEVATORS (Hand Power):

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ELEVATOR CABLE:

American Steel & Wire Co., Chicago-New York

HOISTS (Ash):

Otis Elevator Co., 11th Ave. and 26th St., N. Y. C. Automatic coal and ash hoists, blast furnace and ship hoists.

FIREPROOFING MATERIALS

CAGING OR FORMING:

Mitchell-Tappen Co., 15 John St., N. Y. C.

METAL LATH:

Berger, The, Mfg. Co., Canton, Ohio.

Milwaukee Corrugating Co., Milwaukee, Wis.

Truscon Steel Co., Dept. 68, Youngstown, Ohio. Representatives in principal cities. "Hy Rib," "Rib" lath; "Diamond Mesh" lath.

FIRE PROTECTION

AUTOMATIC FIRE DOOR HARDWARE:

Richards-Wilcox Mfg. Co., Aurora, Ill.

FLOORS

COMPOSITION:

Franklyn R. Muller & Co., Waukegan, Ill.
National Kellastone Co., The, Chicago, Ill.

TILE AND CERAMIC MOSAIC:

Structural Slate Co., The, Pen Argyl, Pa.

FOUNDATIONS

PILES:

Raymond Concrete Pile Co., 140 Cedar St., N. Y. C. "Raymond" concrete piles are made by driving a reinforced steel shell which is left permanently in the ground. This shell is then filled with concrete.

ALPHABETICAL INDEX OF ADVERTISERS ON PAGE 20

FURNITURE AND DECORATIONS

DRAPERIES, UPHOLSTERIES, WALL COVERINGS:

Standard Textile Products Co., The, 320 Broadway, New York. "Sanitas" Tinted, Decorative and Glazed. Fast colors, sanitary. For private homes, hotels, auditoriums, institutions, etc.

ECCLESIASTICAL FURNITURE:

Thomas & Co., Inc., 110 Exchange St., Worcester, Mass.

METAL:

Canton Art Metal Co., Canton, Ohio.

HARDWARE

"AIR-WAY" HARDWARE:

Richards-Wilcox Mfg. Co., Aurora, Ill.

BOLTS:

Corbin, P. & F., New Britain, Conn.

BUILDERS' HARDWARE:

Corbin, P. & F., New Britain, Conn.
Richards-Wilcox Mfg. Co., Aurora, Ill.
Sargent & Co., New Haven, Conn.
Stanley Works, The, New Britain, Conn.

BUTTS AND HINGES:

Corbin, P. & F., New Britain, Conn.
Lawson Mfg. Co., Superior and Franklin Sts., Chicago, Ill. "Nu" Jamb Hinge.
McKinney Mfg. Co., Pittsburgh, Pa.
Stanley Works, The, New Britain, Conn. (Ball-Bearing)—steel, brass, bronze.

DOOR CHECKS:

Corbin, P. & F., New Britain, Conn.
Richards-Wilcox Mfg. Co., Aurora, Ill.

GARAGE HARDWARE:

Richards-Wilcox Mfg. Co., Aurora, Ill.
Stanley Works, The, New Britain, Conn. Garage door holders and garage door hinges.

HEATING, VENTILATION, PLUMBING

BLOWERS AND EXHAUSTERS:

Buffalo Forge Co., Buffalo, N. Y.

CLOSETS:

Clow, James B., & Sons, Chicago, Ill.

DRINKING FOUNTAINS:

Cahill Iron Works, The, Chattanooga, Tenn.
Clow, James B., & Sons, Chicago, Ill.

FLOOR DRAINS:

Crampton-Farley Brass Co., Kansas City, Mo.

HEAT REGULATING SYSTEMS:

Gold Car Heating & Lighting Co., 17 Battery Place, New York. Gold's thermostatic heat regulating system.

LAUNDRY TUBS:

Cahill Iron Works, The, Chattanooga, Tenn.
Structural Slate Co., The, Pen Argyl, Pa.

LAVATORIES:

Cahill Iron Works, The, Chattanooga, Tenn.
Clow, James B., & Sons, Chicago, Ill.

PIPE (Steel):

Youngstown Sheet & Tube Co., Youngstown, O.

PLUMBERS' HARDWARE:

Structural Slate Co., The, Pen Argyl, Pa.

RADIATORS:

Clow, James B., & Sons, Chicago, Ill.

SHOWERS:

Structural Slate Co., The, Pen Argyl, Pa.

HEATING, VENTILATION, PLUMBING—Continued

SINKS:

Cahill Iron Works, The, Chattanooga, Tenn.

SINKS (Slop):

Cahill Iron Works, The, Chattanooga, Tenn.

TANKS (Closet):

Cahill Iron Works, The, Chattanooga, Tenn.

TEMPERATURE INSTRUMENTS:

Taylor Instrument Co., Rochester, N. Y.

TOILET PAPER HOLDERS:

A. P. W. Paper Co., Albany, N. Y.

TRAPS (Steam):

Jenkins Bros., 80 White St., N. Y. C.

TUBS (Bath):

Cahill Iron Works, The, Chattanooga, Tenn.

TUBS (Laundry):

Cahill Iron Works, The, Chattanooga, Tenn.

URINALS:

Cahill Iron Works, The, Chattanooga, Tenn.
Clow, James B., & Sons, Chicago, Ill.
Structural Slate Co., The, Pen Argyl, Pa.

VALVES (Air):

Jenkins Bros., 80 White St., N. Y. C.

VALVES (Radiator):

Jenkins Bros., 80 White St., N. Y. C.

VALVES (Steam):

Jenkins Bros., 80 White St., N. Y. C.

VALVES (Water Line):

Jenkins Bros., 80 White St., N. Y. C.

VAPOR HEATING SYSTEMS:

American Dist. Steam Co., N. Tonawanda, N.Y.
Moline Heat, Moline, Ill.

VENTILATORS:

Burt Mfg. Co., The, 77 Main St., Akron, O. Manufacturers of all types of ventilators, both stationary and revolving.
Merchant & Evans Co., Philadelphia, Pa.
Milwaukee Corrugating Co., Milwaukee, Wis.

WATER SYSTEMS:

Deming Co., Salem, O.

HOISTS

(See Elevators and Hoists)

INSULATION (Sound and Heat)

BUILDING:

Cabot, Samuel, Inc., Boston. "Cabot Quilt."
Hydrex Felt & Eng. Co., 120 Liberty St., N.Y.

LIGHTING FIXTURES

GLASSWARE:

Mitchell-Vance Co., 503 W. 24th St., New York City.

METAL:

Mitchell-Vance Co., 503 W. 24th St., New York City.

MARBLE

Appalachian Marble Co., Knoxville, Tenn.

MUSICAL INSTRUMENTS

ORGANS:

Kimball, W. W., Co., Chicago, Ill.

ORNAMENTAL BRONZE AND IRON

Polachek, John, Bronze & Iron Co., 480 Hancock St., Long Island City, N. Y.

PAINTS, VARNISHES, STAINS

PAINT (Steel Protective):

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

STAINS:

Cabot, Samuel, Inc., Boston. "Cabot's" Creosote Stains, Stucco Stains, Brick Stains, Old Virginia White and Old Virginia Tints.

PARTITIONS

METAL:

Berger, The, Mfg. Co., Canton, Ohio.
Interior Metal Mfg. Co., Jamestown, N. Y.; Bankers Trust Bldg., 501 Fifth Ave., N. Y. Interchangeable Hollow Metal Partitions.
Pomeroy, S. H., Co., Inc., 30 E. 42d St., N. Y.

SLIDING PARTITION EQUIPMENT:

Richards-Wilcox Mfg. Co., Aurora, Ill.

PLASTER

(See Cement and Plaster)

PLUMBING

(See Heating, Ventilation, Plumbing)

REFRIGERATION

REFRIGERATORS:

McCray Refrigerator Co., 607 W. Lake St., Kendallville, Ind.

ROOFING

ASPHALT:

Carey, Philip, Co., The, Lockland, Cincinnati, Ohio. Carey Flexible Cement Roofing. A roofing for all classes of buildings, flat or steep surfaces; concrete, tile or wood sheathing construction. Made of a flexible asphalt cement in sheets 26 in. wide by 36 ft. long.

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American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Merchant & Evans Co., Philadelphia, Pa.

SHINGLES, METAL:

Milwaukee Corrugating Co., Milwaukee, Wis.

SLATE:

General Slate Co., 148 State St., Boston, Mass.
Rising & Nelson Slate Co., West Pawlet, Vt.; 101 Park Ave., N. Y. C. Special slate to architect's design.

TILE, METAL:

Merchant & Evans Co., Philadelphia, Pa.

TILE (Reinforced-Cement):

American Cement Tile Mfg. Co., Pittsburgh and New York. "Bonanza" roofing tile.

SAFETY TREADS

Am. Mason Safety Tread Co., Lowell, Mass.
Structural Slate Co., The, Pen Argyl, Pa.

SASH

(See Windows)

ALPHABETICAL INDEX OF ADVERTISERS ON PAGE 20

SASH CORD

Samson Cordage Works, 88 Broad St., Boston.

SHEET METAL

American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.

Merchant & Evans Co., Philadelphia, Pa .

FORMED PRODUCTS:

American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.

Berger, The, Mfg. Co., Canton, Ohio.

Kawneer Mfg. Co., 1201 No. Front St., Niles, Mich.

METAL CEILINGS:

Berger, The, Mfg. Co., Canton, Ohio.
Canton Art Metal Co., Canton, Ohio.
Milwaukee Corrugating Co., Milwaukee, Wis.

SKYLIGHTS, ROLLED STEEL

Milwaukee Corrugating Co., Milwaukee, Wis.

STAINS

(See Paints, Varnishes and Stains)

STORE FRONTS

Kawneer Mfg. Co., 1201 No. Front St., Niles, Mich.

STRUCTURAL STEEL

PRESSED STEEL CONSTRUCTION:

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Truscon Steel Co., Dept. 68, Youngstown, Ohio. Representatives in principal cities. "Kahn" pressed steel beams, joists, studs, plates, etc.

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STUCCO:

National Kellastone Co., The. Chicago, Ill.

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N. Y. Arch. Terra Cotta Co., Tel. Astoria 700.

TILE

(See Flooring and Roofing)

VARNISHES

(See Paints, Varnishes and Stains)

VENTILATION

(See Heating, Ventilation, Plumbing)

WALL BOARD

(See Stucco and Wall Board)

WATER AND DAMPPROOFING

Cabot, Samuel, Inc., 141 Milk St., Boston.
Hydrex Felt & Eng. Co., 120 Liberty St., N. Y.

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Carter, R. B., Co., 152 Chambers St., N. Y. C.

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Kawneer Mfg. Co., 1201 No. Front St., Niles, Mich.

Pomeroy, S. H., Co., Inc., 30 E. 42d St., N. Y.

Truscon Steel Co., Dept. 68, Youngstown, Ohio. Representatives in principal cities. "United" steel sash in all types; horizontally and vertically pivoted sash; counterbalanced and counterweighted sliding sash; center pivoted and top hung continuous sash; steel and glass partitions; sliding and swinging doors; casement sash of all designs.

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(See Casement Windows)

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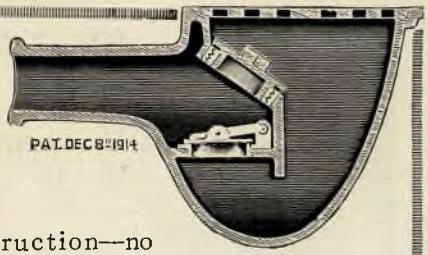

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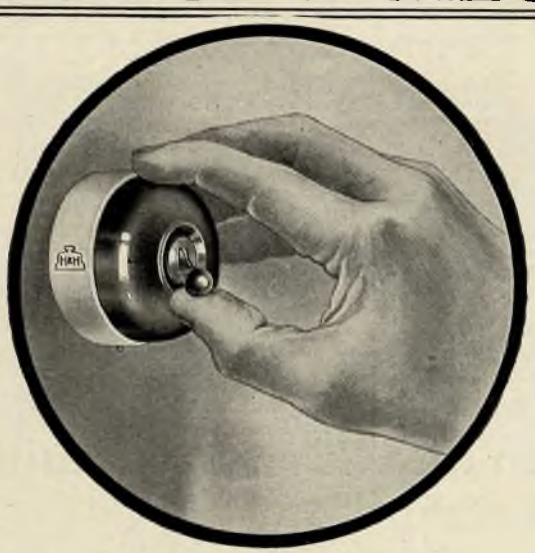

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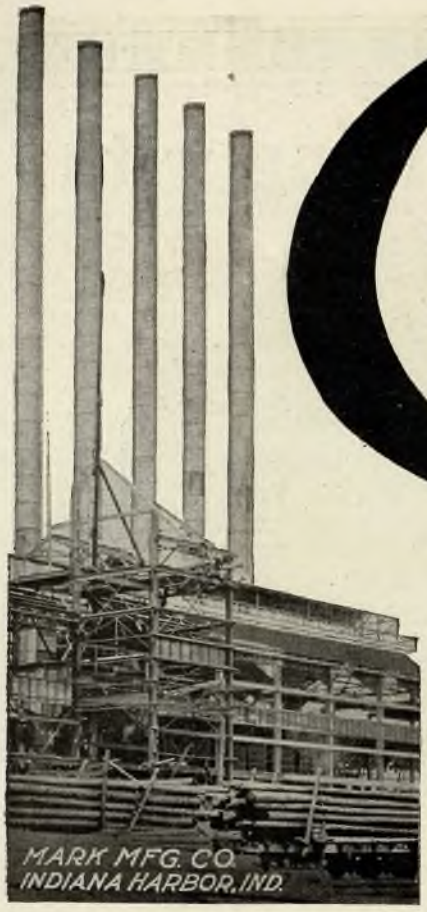

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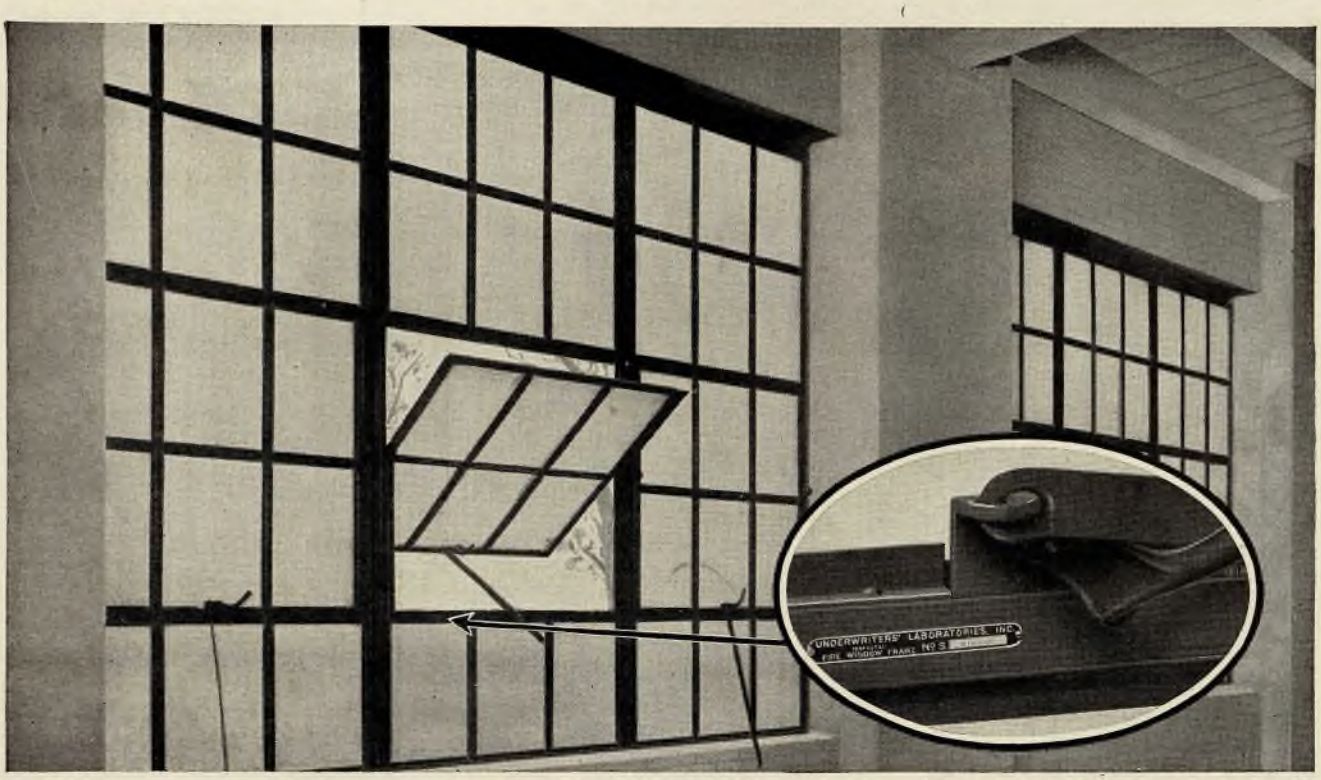

Units of Fenestra Underwriters' Sash (Pivoted type) combined with T-bar mullions to fill wide openings in building of the Melba Manufacturing Co., Chicago

Fenestra *Underwriters'* Sash *—Labeled*

FENESTRA Underwriters' Sash, approved and labeled by the Underwriters Laboratories, cost less than other types of underwriters' sash.

In addition Fenestra Underwriters' Sash permit construction which lowers building costs:

1. Concrete encased "I" Beams which often cost more than the windows are no longer necessary.
2. For single openings, units can be secured in widths up to 7 feet, and in heights up to 12 feet.
3. For wide openings, multiple units are combined by means of standard mullions.
4. Installation details are the same as on standard sash.

Fenestra Underwriters' Sash may be ordered with the assurance of *prompt shipment.*

Full information on request.

Erection Service Assures Satisfaction

The Fenestra Construction Company, a subsidiary of the Detroit Steel Products Company, is organized to take care of every detail of sash and operator installation, when desired. You can buy Fenestra Sash installed, and know that when the building is finished, your windows will give the utmost satisfaction and service.

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