THE AMERICAN ARCHITECT

VOL. CXIII WEDNESDAY, FEBRUARY 20, 1918 NUMBER 2200

SILK WALL HANGING. ARTHUR CRISP, *DESIGNER*

Thirty-third Annual Exhibition The Architectural League of New York

THE Architectural League of New York was, perhaps, the first of our architectural societies to discover that the ultra-technical exhibition, while of considerable interest to members of the profession, was dry and cryptic to the lay visitor. Architecture, as presented to the non-technical observer, was like something aloof, beyond his understanding. To him the intricate plan, the complicated detail, and the well-rendered elevation often contained nothing of interest.

The elimination of a large portion of technical material and the substitution therefor of many photographs was an innovation made several years ago. This was followed by exhibitions in which the arts allied with architecture were very largely represented.

The transformation from an imposing (to the architect only!) array of black and white sketches to an assemblage of many-toned photographs, colored casts, and whole rooms devoted to brilliantly

MEMORIAL TO DR. ALEXANDER DRAPER, STATE EDUCATION BUILDING, ALBANY, N. Y.
CHARLES KECK, *SCULPTOR*
HENRY HORNBOSTEL, *ARCHITECT*

colored mural paintings, at once attracted a large number of visitors aside from those directly interested in the profession of architecture.

In this manner the true intent and purpose of an architectural exhibition—the education of the laity—began to be realized. With each succeeding exhibition new lessons were learned, until to-day we have in the exhibition of the Architectural League of New York, open in the Vanderbilt Galleries on West Fifty-seventh Street, the culmination of a series of exhibitions, and one that is perhaps the most carefully planned, best executed, and most costly in its presentation, of any that has ever been attempted anywhere.

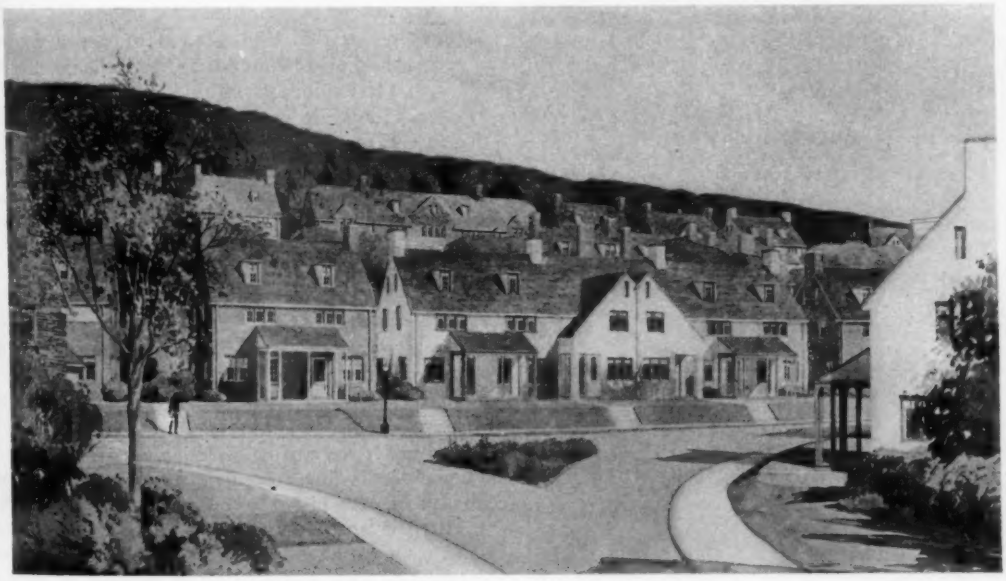
What this exhibition emphasizes in the most direct manner is the close inter-relationship that exists between architecture and the arts and crafts with which it is allied, for, while giving emphasis to the basic thing, Architecture, it has given equal prominence to the alliance. In this exhibition the League has succeeded in bringing into practical working harmony those arts and crafts which deal with the more prosaic features of construction; and while the decorator has exhausted his talents in supplying a series of rooms, each a distinct and well-designed entity, and while the arts of sculpture and mural painting have vied one with the other in embellishing these well-balanced spaces, there is in no instance any cause to feel that architecture, in its highest and broadest sense, has been neglected.

NAIAD
A. STIRLING CALDER, *SCULPTOR*

GROUP OF FARM BUILDINGS, ESTATE OF MAJOR CLARENCE FAHNESTOCK, COLD SPRING, N. Y.
LEWIS COLT ALBRO, *ARCHITECT*

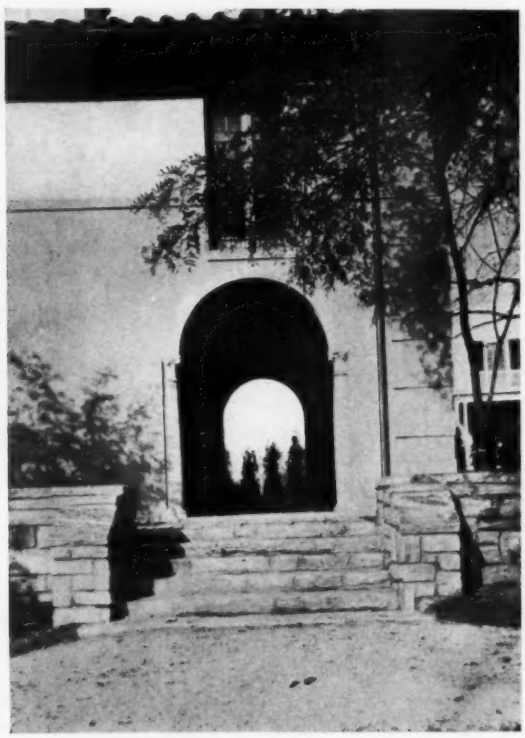
When this plan, now brought to a successful culmination, was first proposed, there were those who were strongly of the opinion that any effort to commingle architecture with craftsmanship would develop incongruities which would imperil the artistic character of the entire effort. Others, with commendable practical foresight, believed that there was here the beginning of a new era. They knew of that golden age when architecture and craftsmanship went hand in hand, onward and upward, to culminate in a period of the highest development of both the arts and the crafts. They believed that this plan afforded an opportunity to revive, after a long period of decadence, a close affiliation between all the arts and the more highly developed crafts. This exhibition is the result. It will be regarded for many years as epochal, and will set the standard by which all architectural exhibitions will be judged.

The aspect of the exhibition is, in a sense, bewildering, even to one who is familiar with the Vanderbilt Galleries, and their broad spaces as



INDUSTRIAL VILLAGE, WILLIAMSPORT, PA.
GEORGE S. WELSH, *ARCHITECT*

HOUSE OF DR. W. S. RAINSFORD, RIDGEFIELD, CONN.
GROSVENOR ATTERBURY, *ARCHITECT*



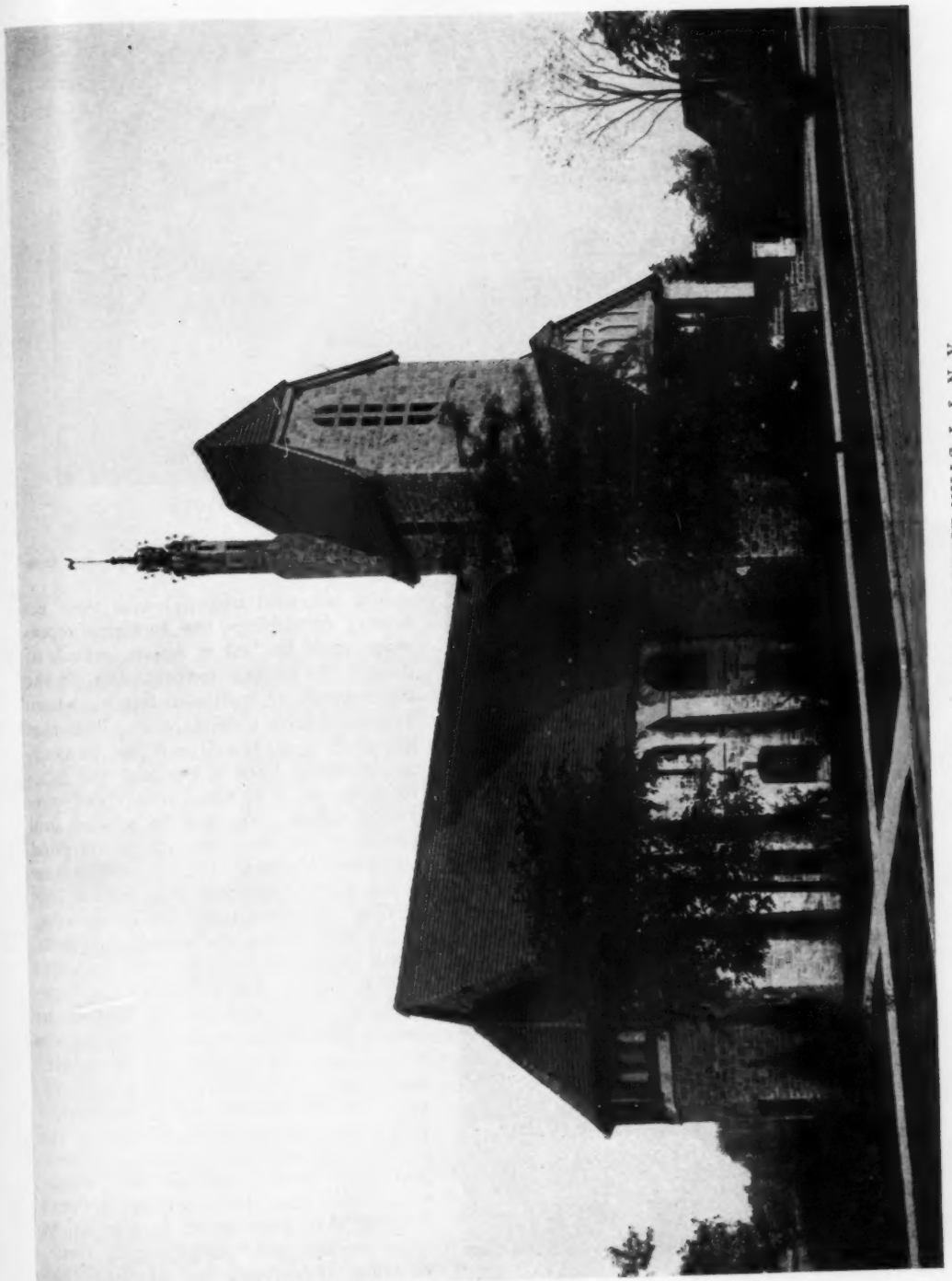
HOUSE OF PAOLINO GERLI, BRONXVILLE, N. Y.
EUGENE L. LANG, *ARCHITECT*

presented on previous occasions. The visitor approaches through the usual entrance, now transformed by the termes which flank it, and by a large, white eagle, whose outstretched wings reach across the main doorway. A writer, referring to the decorative features of this entrance, and the fact that the large eagle is the splendidly conceived national bird, suggests that the national motto, *E Pluribus Unum*, could also be aptly used to indicate the character of the exhibition within.

Along the wide entrance hallway, leading to the South Gallery, which is usually a dark and uninviting space, there has been arranged an exhibition of stained glass. This is well illuminated by a carefully diffused light which makes it a feature of more than passing interest.

On the threshold to the South Gallery, the visitor will instinctively halt, as he finds he is about to enter a space that in its exits and entrances plays many useful parts. From a central space there radiate niches, each set apart for a certain exhibitive purpose, with its own well-developed decorative scheme. There are no anachronisms of period styles, no unfortunate combinations of color. The whole is one restful harmony, and each part worthy of careful study and critical inspection.

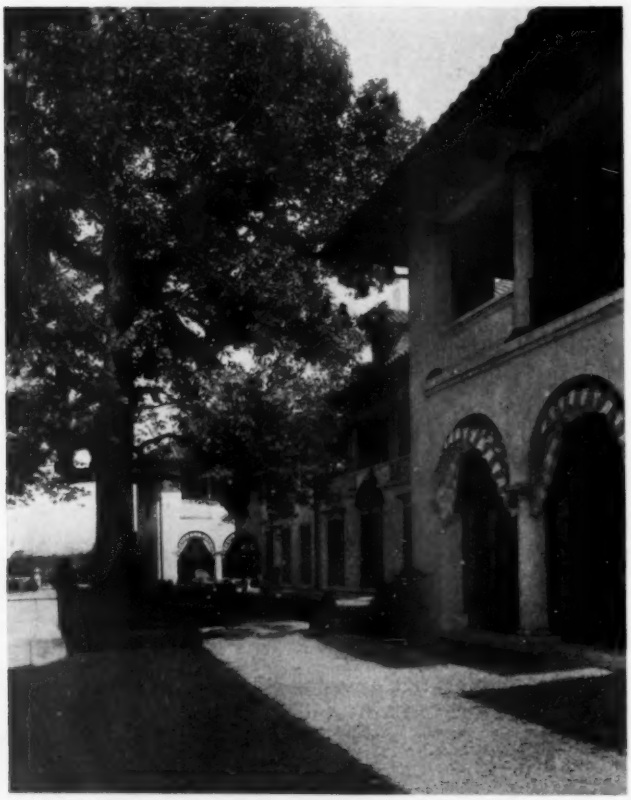
There is no diminution of the dignities of architecture, yet one wonders if this well-considered blending of each niche or room has not, in the perfection of its *ensemble*, subordinated the individual importance, in many instances, of the rare exhibi-



THE CHURCH IN THE GARDENS, FOREST HILLS, L. I., N. Y.
GROSVENOR ATTERBURY, *ARCHITECT*

HOUSE AT RIDGEFIELD, CONN.

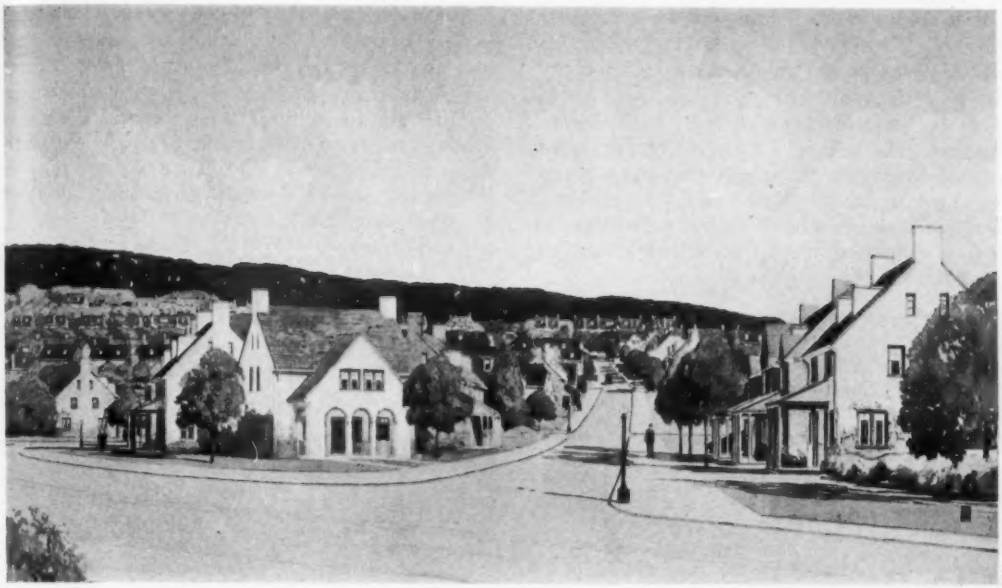
GROSVENOR ATTERBURY, *ARCHITECT*



DETAIL OF TERRACE, HOUSE OF B. W. ROBERTS, ESQ., VILLA NOVA, PA.
WILSON EYRE & McILVAINE, *ARCHITECTS*

tions of modern craftsmanship they contain.

The beautiful mantels, with their accessory furnishings, the furniture representative of the best in various periods of design, the electric fixtures, and all the other details of craftsmanship, have been assembled with a taste so excellent that the whole space blends into one harmonious grouping. For this reason, the exhibition is one to be taken slowly and seriously. Each group can be studied and restudied, and then not all of its good character be noted. The dominating tone in the South Gallery is blue, with a suggestion of yellow, found in the diffusing fabric that forms the ceiling draperies. In the Central Gallery, this blue is carried in a suggestive way to accent the dominating tone of yellow. The division of the Vanderbilt, or main gallery, into a large central court, separated from wide passages on all four sides by massive columns, is admirably adapted to its purpose, which is the main display of the architectural exhibit. Consisting of comparatively small drawings and photographs that must be viewed at a closer distance than large work, its location in these passages gives just the proper surrounding to enhance its interest. The lighting of these passages is cleverly arranged and the architectural visitor will



INDUSTRIAL VILLAGE, WILLIAMSPORT, PA.
GEORGE S. WELSH, *ARCHITECT*

find better facilities than usual to view a very dignified presentation of current architectural work. This large room is the climax of the entire color scheme. It is carried out in tawny yellows and browns, relieved by the subdued color of the walls of the passages on all four sides.

Thoughtful consideration of this presentation of architecture, the allied arts and craftsmanship, leads to the conclusion that the Architectural League of New York has accomplished, in a most successful manner, the high purpose it set out to achieve. In doing this, something more than an ephemeral success has been secured; the foundation of a movement has been laid that will be far-reaching in its good results. This exhibition will undoubtedly serve a very valuable end in acquainting men in the various fields represented with the work that each is doing, and from this acquaintance there is sure to result the very highest respect and a spirit of collaboration that should be most beneficial.

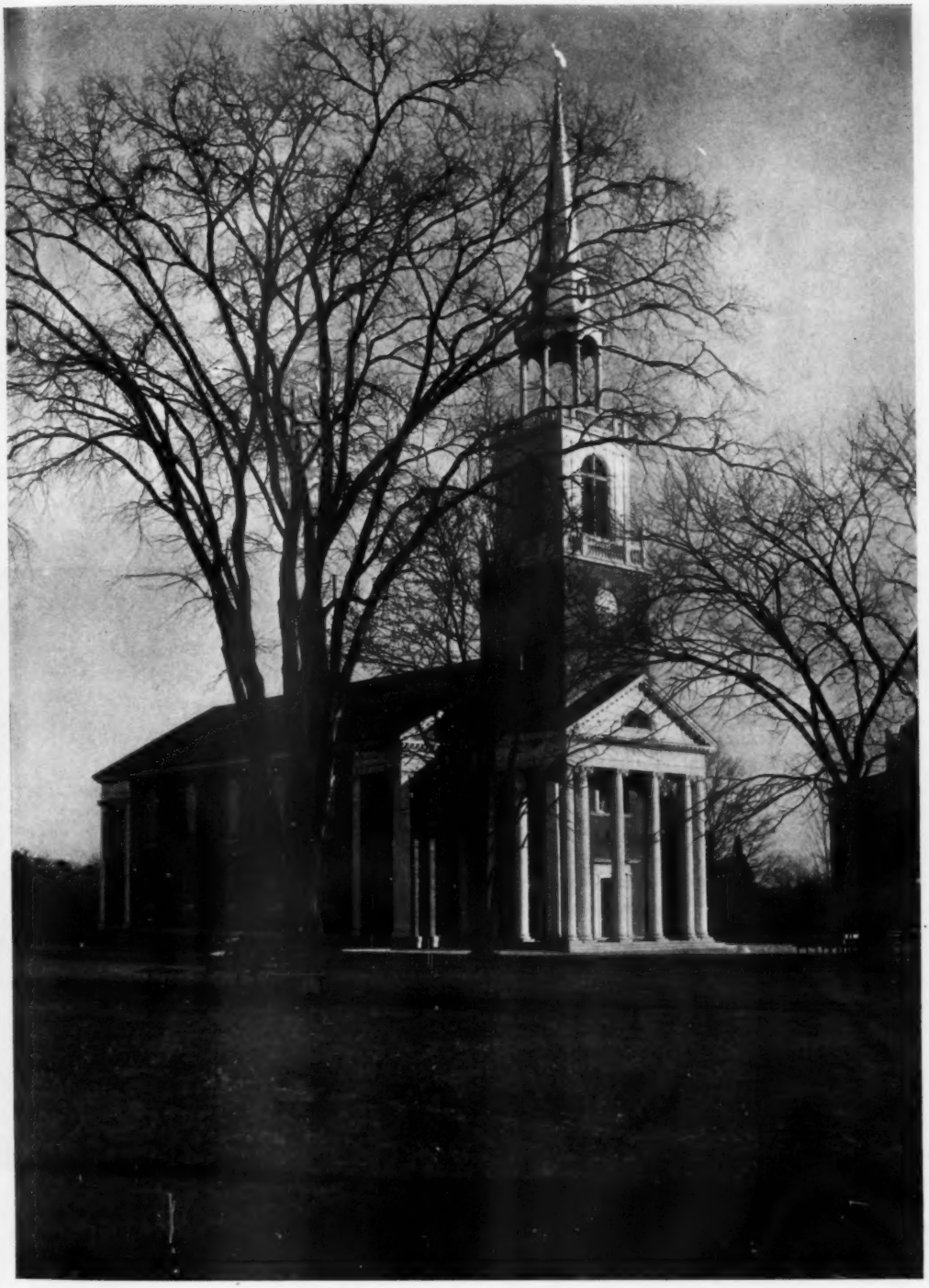
Matters in these fields have heretofore moved slowly. Architects have been cautious in the introduction of certain effects, as they were not sure that their successful execution could be secured. The craftsman also has labored in a certain rut, since he was not able to demonstrate to architects that he had sufficient skill and appreciation of art to do the things of which he knew himself capable.

We must first develop the genius, then train to skilled methods. But meanwhile men must live, and to do so they must execute many things at which their finer feelings revolt. We are becoming broader and better in all these things. We shall become even more skilled, and perhaps, with all the fields of art to act as inspiration, a time may come which will excel even those days when all the arts were at their zenith.

These things are not day-dreams; they are not the thoughts of visionists. They are the culmination of a very well-developed sense of art combined with a practical commercial attitude.

The things we see and admire at the League are artistic and most of them expensive. Fortunately for the craftsman, as well as for the encouragement of the architect, there are a great many people who desire the good and who gauge its excellence by its cost. For this reason alone we shall see this great development encouraged by builders of all types of expensive structures. With such encouragement, and the resultant increase in production, it is a sure and inevitable step to the more artistic making of cheaper things, and thus the ultimate goal of the

HOUSE OF PAOLINO GERLI, BRONXVILLE, N. Y.
EUGENE J. LANG, *ARCHITECT*



CHAPEL, WHEATON COLLEGE, NORTON, MASS.
CRAM & FERGUSON, *ARCHITECTS*

HOUSE OF B. W. ROBERTS, ESQ., VILLA NOVA, PA.
WILSON EYRE & McILVAINE, *ARCHITECTS*

thing that the League has so auspiciously conceived will be reached. The attendance at this exhibition, which remains open until February 23d, has been unusually large. As a collaborative showing of architecture and the allied arts its success demonstrates the good judgment of those responsible for its promotion.

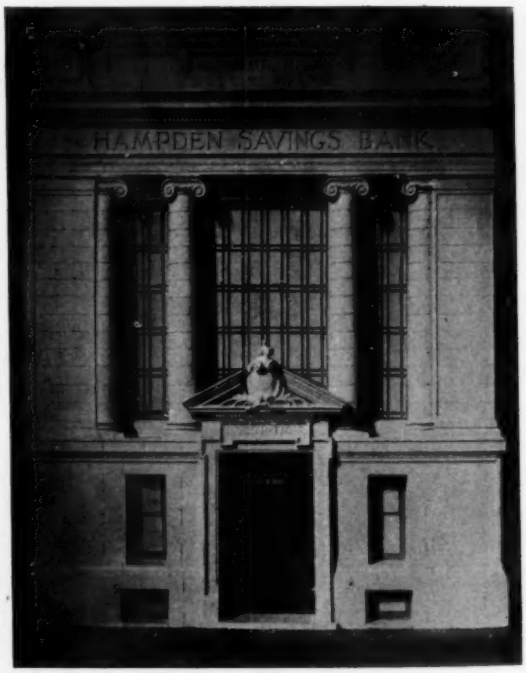
The Medals of Honor were awarded this year: For Architecture, Benjamin Wistar Morris; for Sculpture, Paul Bartlett.

The Avery prize for collaboration of architect, sculptor and mural painter was given to George Licht, architect; Raphael Menconi, sculptor, and F. F. Gates, painter, for successful collaboration in designing the stage of a Y. M. C. A. theater at an army cantonment.

H. Van Buren Magonigle, president of the League, was chairman of the Central Exhibition Committee. The chairmen of the associated committees on exhibitions were:

Architecture, Howard Greenley; Decoration, Frank P. Fairbanks; Sculpture, A. Stirling Calder.

The annual catalog, larger and more attractive than ever before, is a complete guide to the exhibition, and as a record of recent work by members of the League and contributing artists, is a valuable volume. It presents a record of the latest and best achievement in architecture and the allied arts and crafts.



FACADE OF HAMPDEN SAVINGS BANK, SPRINGFIELD, ILL.
M. H. WESTHOFF, *ARCHITECT*

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VOL. CXIII FEBRUARY 20, 1918 NO. 2200

In Time of War Prepare for Peace

DO war conditions make it difficult safely to determine the wisdom of building at this time?

The impression seems to be prevalent that the draft has absorbed a large percentage of building mechanics and building labor. As a matter of fact, most good draftsmen, good mechanics and skilled laborers are beyond the draft age. The most efficient of this class of labor are to be found among men between forty and fifty years of age; of course, exceptional talent is sometimes found among men of immature age, some of the best between twenty and thirty.

There is also a pronounced feeling that it will be difficult, even impossible, at this time to place orders for structural steel for building purposes at reasonable prices, or at any price, and that deliveries are out of the question. Those parts of the fabricating steel plants of the United States that are especially equipped for building shapes are practically idle and are now eager to accept orders at a base price of three cents per pound, whereas but a short while ago the base price was over five cents. Of course, there is great doubt as to available transportation, but it is reasonable to assume that, while the Government for war purposes will utilize the entire transportation facilities of the country, it will not permit such facilities to rest idle otherwise, therefore, we might expect that proper transportation for building purposes will be available when needed.

We have for some years been almost constantly in communication with building interests the country over and are now advised that many important building projects are pending subject to a successful and happy termination of the war. In our own office alone such prospective business amounts to several millions of dollars. Now, it is inconceivable to think that either the Imperial German Government or the Bolsheviki can ultimately triumph—their final defeat may be a matter of years and may be but a matter of months, but if any commercial value whatever is to attach to anything, if industry is to be rewarded and order is to prevail, then autocratic and anarchistic aims must be defeated.

When the time comes to turn our swords into ploughshares and the wheels of industry again begin to hum in peaceful pursuits, the steel mills may be unable to accept orders pending; the ranks of skilled labor may be unable to supply the demand for their services; ordinary rules of commerce will again prevail, and the order of first come first served will be the accepted standard. Ensuing competition will then inevitably advance the price of materials as well as of labor, and, while the steel mills are now willing to accept orders at three cents and the most skilled of our laborers and mechanics are available in efficient condition and perform their eight hours of labor for the minimum of eight hours' pay, the price of materials will advance and labor in its most efficient form will command a bonus.

Would it not, therefore, be the better part of wisdom at this time, at small expense and without commitment to the investment, to make complete preparations for prospective buildings? A well-considered set of plans studied in detail, practical, economical and artistic can, under stress, be produced in from two to three months, but if thoughtfully matured might easily consume from six months to a year of time. We, therefore, recommend that the preparation of such plans be immediately undertaken, so that you can be first on the market when the hoped-for time arrives. Architects should be perfectly willing to bear their share of the cost of the preparation of such plans; in other words, should propose practically a co-partnership with their prospective clients for their mutual benefit and advantage.

WILLIS POLK.

The Stability of Labor

DURING the period since the beginning of the war in Europe the question of labor has, with each succeeding month, been one of growing importance. Not only has the availability of labor, and labor of the right kind for the work in hand,

been a problem, but now the all absorbing question has arisen as to how best to provide housing for the present great industrial army, concentrated in large numbers at comparatively few points throughout the United States.

One of the grave problems in industry lies in the proper selection of workmen—to find in the great amount of untried material offered, the right man for the particular job, and having once found him, to keep him. This problem is not new, but the stress of war production has served to accentuate it more than ever before.

This subject has been very thoroughly discussed by a financial writer on the editorial staff of the New York *Times*. It is estimated by this authority that the "breaking in" cost of the new employee in the average industrial establishment amounts to $40 per man. Commenting on these figures it is further stated:

"As a matter of fact, many instances are known where the breaking in cost is much higher—running from $60 or $70 per employee to several hundreds and even thousands of dollars apiece. If a concern engaged only 500 new employees in a year and was able to maintain an average employment charge of only $40 apiece, it would cost that company $20,000 a year to get these newcomers and teach them their duties.

"Let us take a suppositional case, however. In a manufacturing plant with 5,000 employees, which hires by the hit-or-miss method, let us assume that their labor turnover is 150 per cent. In other words, in order to keep a working force of 5,000 men on the job for a year, this concern has to hire 7500 new employees in the course of a year. Such a turnover is not abnormal; rather, it is the usual thing in establishments which have made no specialized effort toward labor control."

It has now been learned that the one time successful method of raising wages does not solve the difficulty, and that the laborer who has been found to be efficient must, in addition to the usual scale of wages, receive other, and often, to him, as important considerations.

Wages being equal, the competent man, particularly if married, will seek a location for employment where his surroundings are most satisfactory to him and to the members of his family. With each succeeding year, men who control large industries are recognizing more and more the fact that, in addition to the question of wages, there are other important matters to be considered in retaining competent and well trained labor.

They have found that, as employers, they must exercise a certain paternalism towards their labor, that it pays to provide surroundings in which pride will be taken, and that this interest cannot cease with the factory building alone, but must be extended to the homes as well.

These questions, affecting the stability of labor and the many problems which even in normal times must be considered, but which are now very largely augmented by war conditions, will be very thoroughly discussed in the succeeding issue of THE AMERICAN ARCHITECT, which will treat of the present development of industrial buildings and the many problems of labor.

Architecture and Motion Pictures

MOVING-PICTURE audiences are each year becoming more critical. There was a time when the mechanics of the moving picture excited sufficient interest to cause audiences to overlook many very apparent lapses in stage settings.

The universality of moving pictures and the rivalry among producers to present thrills and novelties has to a certain degree bred a blasé attitude on the part of the public. With this attitude there has been also evolved a certain education in good taste. Producers realize that if they are to maintain their claims of superiority they must have their settings, particularly interiors, produced in a way that will conserve every propriety of good art.

Many painters, some of considerable prominence, have been retained to design and superintend the details of moving-picture settings. In a recent issue of *House and Garden* there are reproduced pictures of interiors by a prominent decorative painter, designed for a cinematographic reproduction of "The Cinderella Man."

The restrictions due to the limitations of the camera make it impossible to introduce a wide variety of color. The problem therefore becomes one of a correct and pleasing adaptation of forms to spaces.

Designing for moving-picture reproduction would seem to be a field in which architects might find an interesting and profitable opportunity. In fact, architects would logically be the ones to control in matters of this nature. Yet we find that decorative artists are being called on for work of this character, and in this we discover another instance where the true functions of the architect have been ignored, if they were ever thoroughly understood.

Communications

Cass Gilbert Disclaims Connection with a Proposed Enterprise

The Editors, THE AMERICAN ARCHITECT:

Several newspapers have recently published an article on a proposed "Better Homes Exposition," proposed to take place at the Grand Central Palace, New York, May 18th to 25th, in which my name has been mentioned as representing the Architectural League. I would be pleased to have you publish this general disclaimer to the effect that my name has been used absolutely without authority, and, furthermore, that I do not at present represent the Architectural League in that or any other matter. I am not in sympathy with the proposed exposition and I distinctly object to my name being used in connection with it.

Yours very truly,

CASS GILBERT.

The Government's Attitude Toward Building Operations

The Editors, THE AMERICAN ARCHITECT:

Secretary McAdoo's statement, published in the newspapers, advising against the building of houses during the period of the war seems to be unfortunate both in substance and method.

An announcement of this kind, affecting tremendous amounts of capital invested in the building materials industry and hundreds of thousands of working men and women employed in the industry, it would seem should only be made after profound consideration and consultation with carefully chosen representatives of that industry from all parts of the country. If such consultation should demonstrate that the restriction was necessary the announcement to the country should be a carefully stated explanation of the causes leading up to it and the benefits to be gained from it. With perfect acceptance of the patriotic purpose behind the announcement, we submit that such a tremendous blow to a vast industry should not be dealt in such a casual manner.

Ever since this country entered the war certain rumors have been heard from time to time that we should follow the lead of Great Britain in respect to the suppression of building, but these rumors have been based upon the general policy of taking advantage of British experience and copying their acts, and not upon investigation of the causes leading up to the British regulation. Great Britain is obliged to import a very large proportion of the building materials used there, and the British regulation on building was originally adopted mainly from the desire to keep British money from getting out of the country to pay for building material and to prevent cargo vessels carrying building material to the exclusion of food and munitions. Later on the actual enrolment of men reached such a point in Great Britain that no man between the ages of eighteen and sixty could be spared for the building industry, and this applied to many other industries as well. American conditions are in no wise parallel to these conditions that exist in Great Britain. We are completely self-contained as to our building material. No money goes out of the country for it and no vessels are required to carry it. The products are still plentiful and no private building operations will be allowed to interfere with Government supplies. The high cost of materials and labor and the great difficulty in securing money from the banks for building have automatically reduced the amount of building to the necessary point, and its development can be safely left to the enforced regulation produced by these conditions. In England with its dense population the question of housing for direct and indirect war purposes was much less urgent than in this country, and it is safe to say that few if any houses would be built here except those made necessary either for the actual occupancy of families directly or indirectly connected with war industries or for families whose previous dwellings were so occupied.

The industry is so great a producer of revenue to the Government and its conditions even now so serious that it would appear that a vast number of other things were much more urgent than this apparently lightly uttered word against it, unsupported by any known consideration of such character as its importance warrants or full explanation of the circumstances leading up to it. The building industry is of course quite as patriotic as every other industry, and any necessary sacrifices will be as willingly met, but is it not entitled to careful and weighty consideration before being handled in this way?

MARCH G. BENNETT,
General Manager.
SAMUEL CABOT, INC.,
Boston, Mass.

Iowa Chapter, A. I. A.

At the last regular meeting of the Iowa Chapter, A. I. A., the following resolutions were adopted:

RESOLUTIONS REGARDING WAR REVENUE BILL

Whereas, The last War Revenue Bill contains provisions imposing an excess supertax on the earned income of professional men; and,

Whereas, This law penalizes partnerships by providing only the same amount of exemption for a partnership as for an individual; and,

Whereas, The Iowa Chapter of the American Institute of Architects, in convention assembled Jan. 12, 1918, wishes to protest against the injustice of these provisions;

Be It Resolved, That the Iowa Chapter of the American Institute of Architects hereby declares its patriotism and its firm determination to assist the Government in any way in which it may be called upon to do; and,

Be It Further Resolved, That the Iowa Chapter of the American Institute of Architects respectfully petitions the Senators and Representatives of the State of Iowa in Congress that effort be made to amend the law by the omission of the paragraph, "The terms 'Trade' and 'Business' include professions and occupations," and,

Be It Further Resolved, That provision of the act which makes the exemption for a firm or an association of individuals practising together and devoting their entire time to the practice of the profession, the same amount as allowed an individual, to be annulled; and,

Be It Further Resolved, That a copy of these resolutions be transmitted to each of the Senators and Representatives of the State of Iowa in Congress, with the request that they use their influence to have these injustices removed; and that a copy be sent to the Board of Directors of the American Institute of Architects.

RESOLUTIONS REGARDING BUILDING TRADES AND PRACTICE OF ARCHITECTURE

Whereas, The work of the architect and the allied work of the general contractor has been greatly interfered with by the extraordinary activity of the Government in its building projects by reason of its laying a restraining hand on the work which it considers non-essential to the conduct of the war, and by reason of the disturbance to the labor market, caused by the methods of the Government in the execution of its work; and,

Whereas, While the war benefits certain industries, the architects and contractors find their means of livelihood on account of the war very much reduced if not entirely taken away from them; and,

Whereas, Such building work as the Government is doing on its own account has been performed in many cases by contractors from localities remote from the vicinity in which the work is done, thus further disorganizing the building industry and making it increasingly difficult for those locally engaged in the building trades and the practice of architecture to earn their livelihood; and,

Whereas, The Iowa Chapter of the American Institute of Architects in convention assembled this day, Jan. 12, 1918, believes that the Government could materially assist the local interests by employing so far as possible local contractors and architects and thus in simple justice give war-time employment to those who would otherwise find themselves deprived of their usual means of support; therefore,

Be It Resolved, That the Iowa Chapter of the American Institute of Architects calls the attention of the Senators and Representatives of the State of Iowa in Congress to this condition, and respectfully petitions them to use their influence to correct it; and,

Be It Further Resolved, That a copy of these resolutions be forwarded to the said Senators and Representatives of the State of Iowa in Congress, the Governor of the State of Iowa, the Iowa Council of Defense, the Directors of the American Institute of Architects and the Master Builders' Association of Iowa, with the request that they each give the matter due consideration, and if possible use earnest effort to bring about a more favorable condition.

A. I. A. Directors Meet

URGES ADOPTION OF A BETTER PLAN FOR INDUSTRIAL HOUSING

The board of directors of the American Institute of Architects, at a recent meeting held in Washington, urged the intervention of Congress, the Shipping Board and the Labor Council in behalf of the adoption of a complete program of industrial housing. They contended that government ownership, or at least supervision, of the homes of men at work on shipbuilding, munitions, and other branches of war preparation, is the best solution for providing necessary housing and adequate sanitary conditions.

It was proposed to organize a central priority board to co-operate with other duly constituted authorities. These authorities should have the power to confiscate land for housing purposes, to survey the needs for housing facilities and determine the relative importance of industrial operations, and to design and construct communities where the need

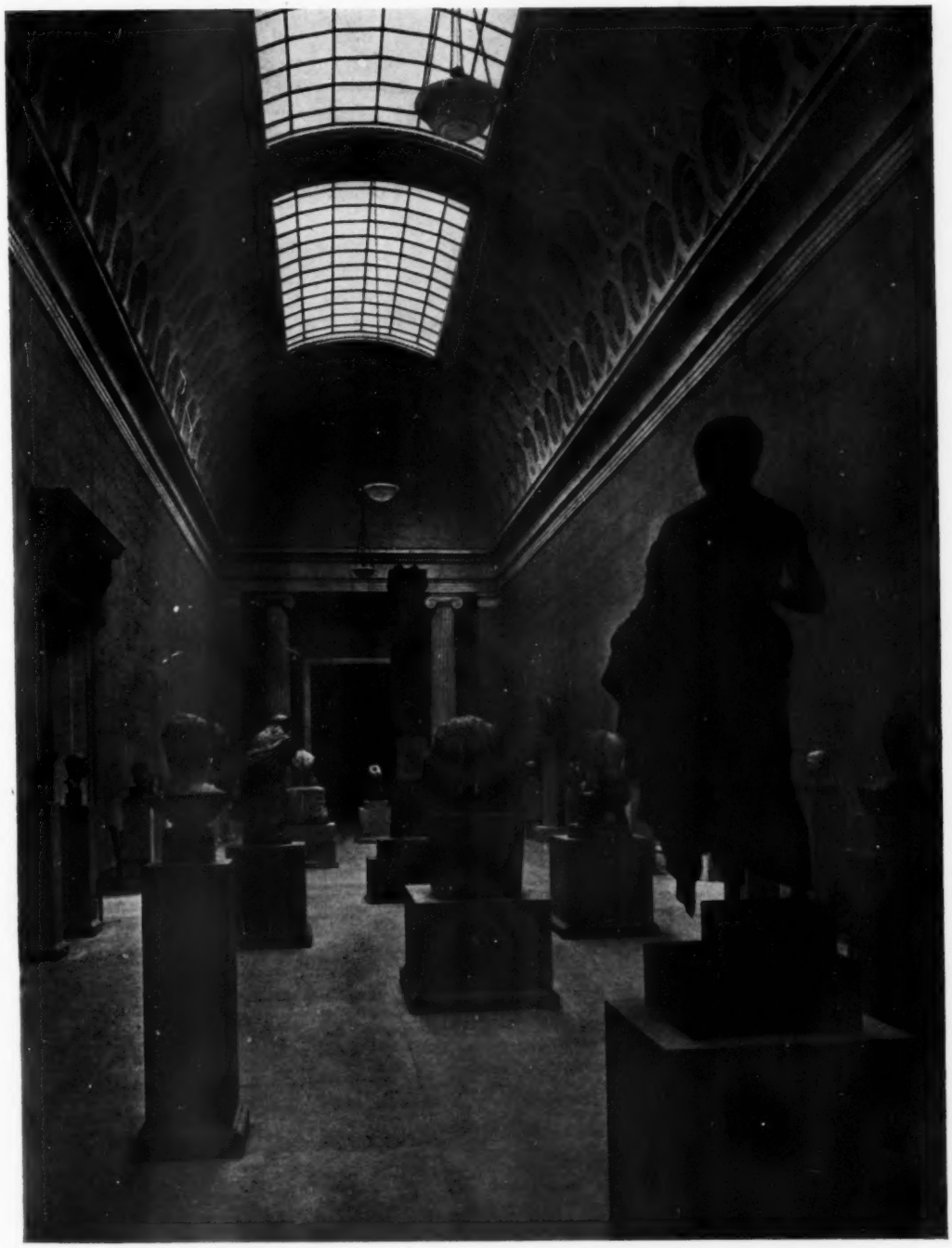


PLATE 69

HALL OF CLASSICAL SCULPTURE, METROPOLITAN MUSEUM OF ART, NEW YORK

McKIM, MEAD & WHITE, *ARCHITECTS*

THIRTY-THIRD ANNUAL EXHIBITION, ARCHITECTURAL LEAGUE OF NEW YORK

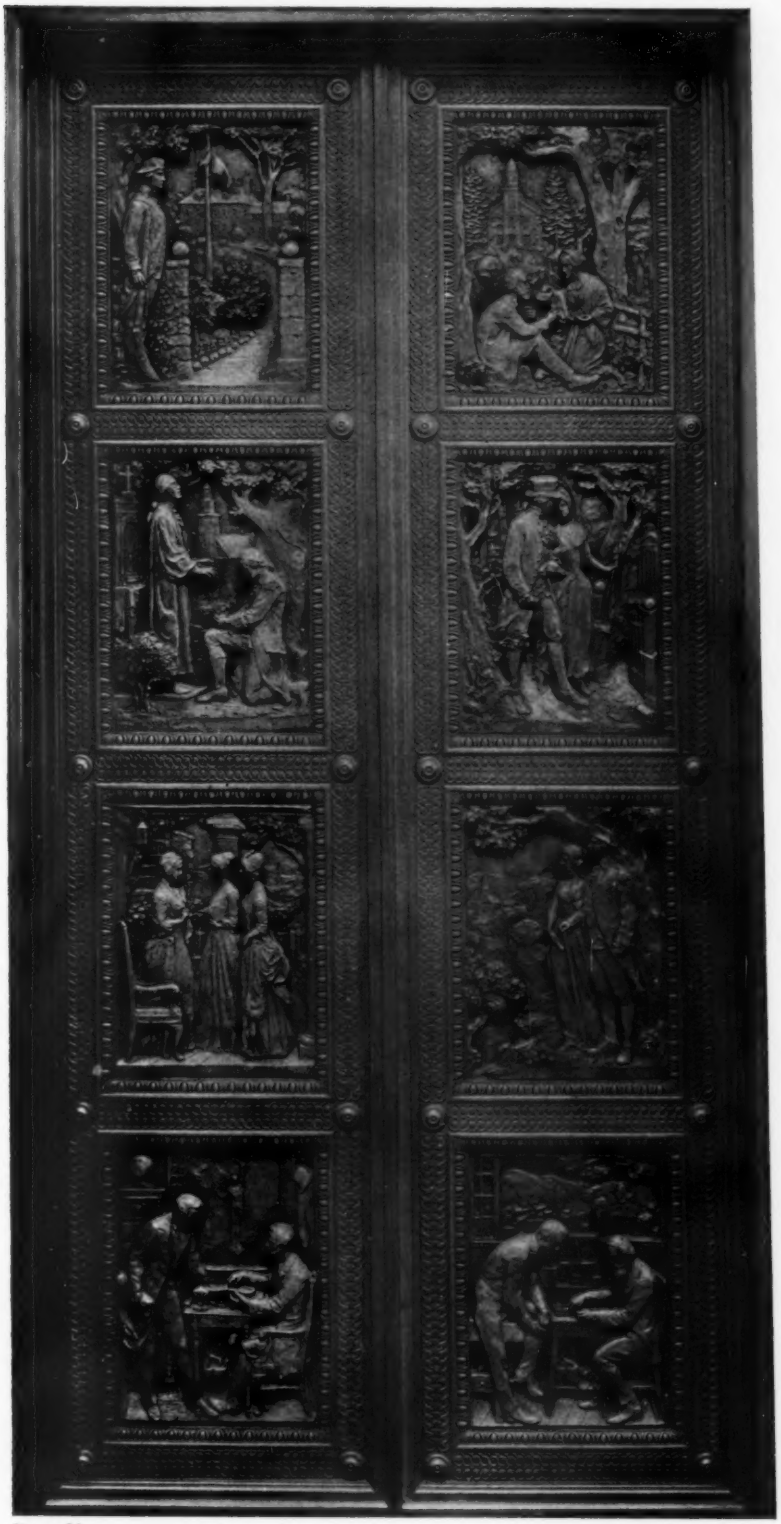
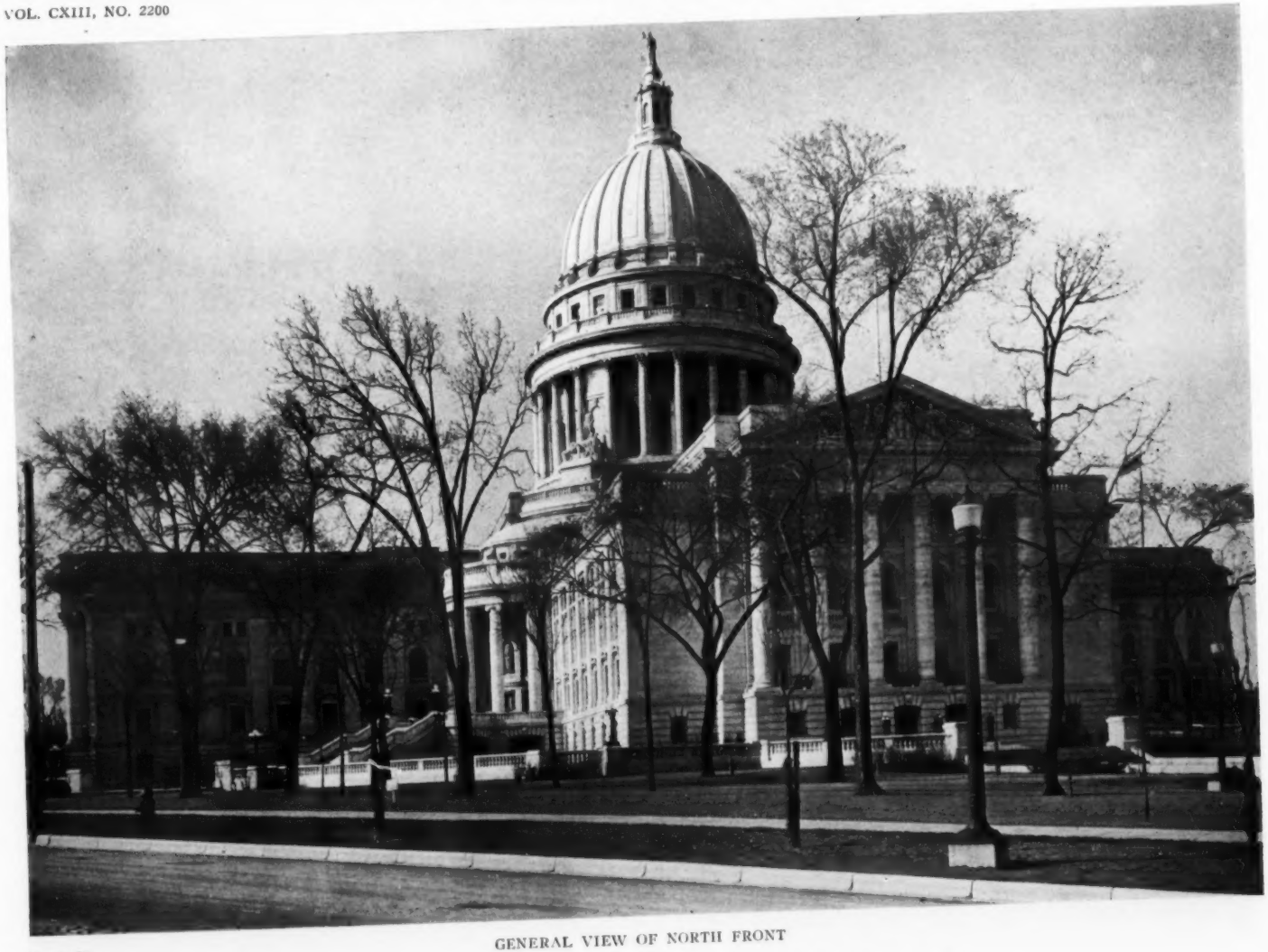


PLATE 70

BRONZE ENTRANCE DOORS, HOUSE OF THEODORE N. VAIL, MORRISTOWN, N. J.

CHARLES KECK, *SCULPTOR.* WM. WELLES BOSWORTH, *ARCHITECT*

THIRTY-THIRD ANNUAL EXHIBITION, ARCHITECTURAL LEAGUE OF NEW YORK



GENERAL VIEW OF NORTH FRONT

PLATE 71

CAPITOL BUILDING OF WISCONSIN, MADISON, WIS.

GEORGE B. POST & SONS, *ARCHITECTS*

THIRTY-THIRD ANNUAL EXHIBITION, ARCHITECTURAL LEAGUE OF NEW YORK

PLATE 72

INTERIOR DETAIL, CAPITOL BUILDING OF WISCONSIN

GEORGE B. POST & SONS, *ARCHITECTS*

THIRTY-THIRD ANNUAL EXHIBITION, ARCHITECTURAL LEAGUE OF NEW YORK

PLATE 73

DETAIL, HOUSE OF DR. W. S. RAINSFORD, RIDGEFIELD, CONN.

GROSVENOR ATTERBURY, *ARCHITECT*

THIRTY-THIRD ANNUAL EXHIBITION, ARCHITECTURAL LEAGUE OF NEW YORK

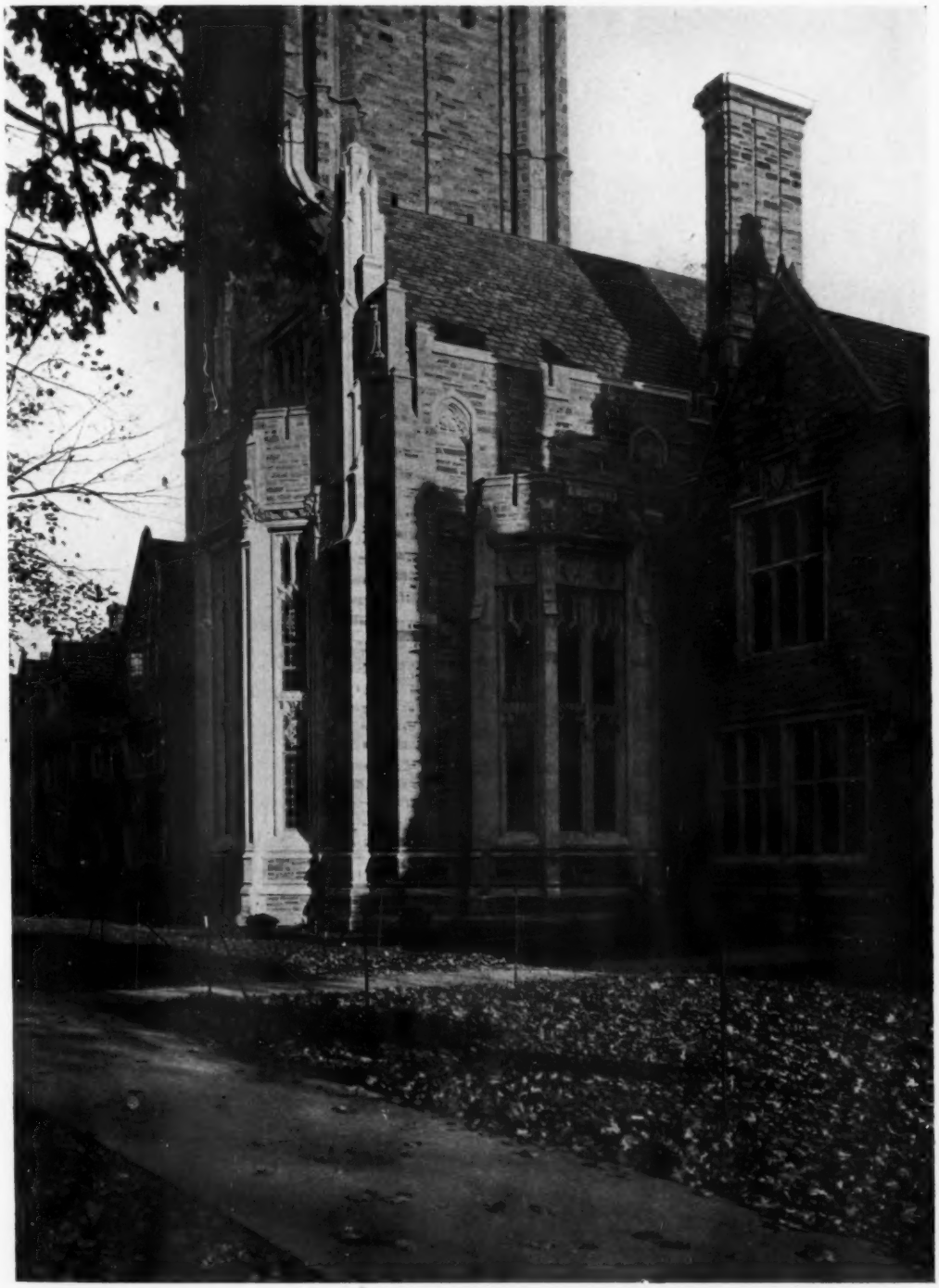


PLATE 74

DETAIL, NORTH SAGE DINING HALL, PRINCETON UNIVERSITY

DAY & KLAUDER, *ARCHITECTS*

THIRTY-THIRD ANNUAL EXHIBITION, ARCHITECTURAL LEAGUE OF NEW YORK

PLATE 75

BOTANIC GARDENS, BROOKLYN, N. Y.

McKIM, MEAD & WHITE, *ARCHITECTS*

THIRTY-THIRD ANNUAL EXHIBITION, ARCHITECTURAL LEAGUE OF NEW YORK

PLATE 76

DINING HALL, PRINCETON UNIVERSITY

DAY & KLAUDER, *ARCHITECTS*

THIRTY-THIRD ANNUAL EXHIBITION, ARCHITECTURAL LEAGUE OF NEW YORK

has arisen. The rights to operate and manage these communities, both now and after the war, and to create and maintain a high standard of physical well-being in munition plants, are also sought, and it is desired that the ideals of the most progressive industrial organizations are to be the standards for the government-owned communities.

Since the disposition of these enormous plants after the war will doubtless be necessary, a commission is proposed to form a basis on which to transfer the communities to cities or corporations when the government no longer has use for them. This commission would also have power to organize bodies to take over the communities and develop them after the war.

Allen Bartlett Pond of Pond & Pond and F. E. Davidson of Davidson & Weiss, both of Chicago, were sponsors for the set of resolutions adopted by the board of directors.

For Promoting Industrial Education

The eleventh annual convention of the National Society for the Promotion of Industrial Education will be held in Philadelphia, Feb. 21-23. The main topics for discussion will be "Vocational Education in War Time," "Administration of the Smith-Hughes Act," "Twentieth Century Vocational Training" and "Reorganization of the National Society."

Louisiana Chapter, A. I. A., Elects Officers

At the annual meeting of the Louisiana Chapter of the American Institute of Architects the following officers were elected: Moise Goldstein, president; Leon C. Weiss, vice-president; William R. Burk, secretary; Victor Wogan, treasurer.

To Control War Labor Housing

SECRETARY WILSON TAKES OVER THE PROBLEM

Entire control of the problem of housing workers in all war industries has been delegated to the Department of Labor. Secretary Wilson has announced that he had the assurance of the President and Secretary McAdoo that the $500,000,000 war finance corporation would not deal with the housing question.

A director of housing to have entire administrative charge of the program will be announced by Secretary Wilson, as soon as he receives the acceptance of a prominent man already selected for the place. In the meantime plans of administration are being worked out by the Labor Advisory Council, so that the director may begin work immediately. It is planned to have the organization ready so that there shall not be a day's delay when Congress provides funds.

Labor Housing Planned

Co-ordination of all the independent housing plans now being made by the Shipping Board, the Council of National Defense and other bureaus was begun at once upon the organization of the advisory council recently named by Secretary of Labor Wilson. It is now being urged that money be diverted from less necessary Government undertakings and used to provide adequate housing facilities for the thousands of new workers continuously pouring into industrial and shipbuilding centers. The critical need for such housing is now beginning to call for serious action. Secretary Wilson told his advisers to cut out all red tape and to get their information as speedily as possible and by the most direct route.

Rare Tapestry Bequeathed to the Metropolitan Museum of New York

In a tapestry bequeathed to the Metropolitan Art Museum by Colonel Oliver H. Payne, that institution announces one of the most notable acquisitions received for some time, even among the magnificent gifts that have come to it within the last few years. The tapestry, which dates from the year 1500, is of late Gothic weaving. Curator of Decorative Arts of the Museum Joseph Breck considers it in beauty of design and technical perfection in a class with the magnificent Mazarin tapestry which was for many years a feature in the museum collections, a loan from the late J. Pierpont Morgan. This tapestry has an added value in being signed by Jan Van Room, called also Jan Van Brussel, painter to Margaret of Savoy, Regent of the Netherlands, 1507-1530.

Mechanical Properties of American Wood

TESTS BY FOREST PRODUCTS LABORATORIES

During the last fiscal year 10,000 tests were made of the mechanical properties of the more important species of American woods in the Forest Products Laboratory at Madison, Wis., bringing the total number of such tests up to 130,000. A careful study

and analysis of the data gathered make possible the formulation of grading rules for structural timbers, which are being widely used, and furnish a scientific basis for the specification for timbers for different purposes, many of which are of great importance in connection with the present problems of national defense.

Chicago Lumber Receipts

AN ENORMOUS TOTAL FOR 68 YEARS

The total amount of lumber received in Chicago during the past sixty-eight years that the record has been compiled amounts to 97,248,836,000 ft. This quantity of lumber is equivalent to the loading of 4,800,000 freight cars of average capacity, and sufficient for construction of comfortable houses for 25,000,000 people. Reduced to the equivalent of a board 12 in. wide and 1 in. thick it would be 18,400,000 miles long.

Shall We Harness Our Water Power?

BUSINESS CONSIDERS THE QUESTION OF PROPER LEGISLATION

What legislation, if any, might Congress wisely pass for encouraging the development and conservation of the water-power resources of the United States? Would their extensive development, involving such enormous quantities of unused energy, estimated as greater than the total steam power now in service, be industrially practicable? Is it possible, in the case of any enterprise so costly to initiate, and so heavily burdened with fixed charges, to outline the essentials of a fair contract which shall protect the interests of the public, and at the same time shall make water-power projects sufficiently attractive to capital to secure their development? What legislation can be devised for obtaining this result?

That briefly summarizes the question which has been sent out to more than half a million American business men by the United States Chamber of Commerce for a referendum vote from the 985 commercial organizations throughout the country which compose the Chamber. The vote will represent a wide range of industrial interests and opinions, and it should, therefore, reliably indicate to Congress how the business men of the country look upon the water-power question.

Western Building Prospects

Following the recent convention in Columbus, Ohio, of the Association of Builders' Exchanges it is reported that building prospects for the coming season are good. The delegates estimated that the amount of building to be done in the central western section of the country this year would be within from 5 to 8 per cent of normal. It was decided to urge public authorities to proceed with all possible building operations. The Convention expressed itself as in favor of fixing prices for construction on the basis of cost plus a percentage commission as the contractor's compensation. The prices of materials are so fluctuating that it is impossible to submit lump estimates with any degree of safety.

A survey of building operations showed a large increase in the construction of moderate-priced dwellings.

Los Angeles, Cal., Shows Increase in Building

In a survey of building operations for 1917 it appears that Los Angeles, Cal., was one of the few large cities to show a decided increase in building operations. Nearly half of this construction was frame.

Omaha, Neb., also had a heavy building program for 1917. Most of the work in the latter city is of a very substantial nature, consisting in part of the Nebraska Telephone Company's 14-story building, a 10-story building for the Omaha Athletic Club, a new Masonic Temple, the 10-story Conant Hotel, as well as various large apartment buildings and a great deal of wholesale and manufacturing building.

Building Code Revision Urged

DETROIT SEEKS TO SIMPLIFY ITS PRESENT COMPLICATED METHODS

The advantages of building codes could be made much more significant if some of their apparent defects were remedied. Our larger cities are gradually beginning to realize that comparatively little effort is required to produce much more valuable results, and are taking steps to have their codes more widely discussed by men in the various fields affected, with a view to eliminating the duplication of work by different city departments and providing for better co-ordination of effort.

A man who desires a building permit in Detroit at present starts by obtaining a certificate from the assessor, then gets a partial permit from the building department, a further instalment from the board of health, another from the department of safety engineering, approval from the public lighting commission, and the additional indorsement of a few more departments. After the prospective builder has what he justifiably deems enough permits, he

frequently finds he is violating some provision of the code. Cases are taken to court in which one city department condemns a building which another approves. The case is then thrown out of court and construction work held up while different departments fight to see which is in supreme control.

This multiplicity of authority in the supervision of buildings has aroused widespread indignation, and it has been proposed to co-ordinate these conflicting departments now concerned in the enforcement of building laws. James A. Lee, Assistant Corporation Counsel, Detroit, proposes a single-headed commission with final jurisdiction on all building work. In the office of this man would be represented all departments concerned, each to pass on permit applications, so that one permit would cover all phases of construction work, and much efficiency would ensue.

Architects and Electrical Men to Co-operate

A Movement to Standardize Equipment

A recent meeting of the San Francisco Electrical Development League resulted in an arrangement to promote mutual helpfulness on the part of architects and the electrical workers and power companies on the coast.

Louis C. Mullgardt and Bernard R. Maybeck, speaking on behalf of architects in that section, explained that the best results were hindered by the large amounts of conflicting and confusing literature now issued by various electrical supply people. It was suggested that electrical men unite and standardize their requirements from an architectural standpoint, and express themselves in less technical language. By so doing, they would facilitate co-operation on the part of architects who did not profess to be expert electricians. The officers of the Electrical Development League promised to effect the reforms urged.

Developing the Lincoln Highway

During the last year it is estimated that a sum aggregating $4,000,000 has been expended for the comfort and convenience of Lincoln Highway tourists. Eleven new and modern hotels have been erected during the past year. These have cost from $25,000 to $500,000, depending on their location and size, and a total of $1,915,000 covers the year's expenditure for hotels alone.

Over $2,000,000 has been expended for the erection of garages, and it is said that there is not a town on the Lincoln Highway which does not have a new garage, either completed or in course of construction.

The establishment of this through, connected route of travel from the Atlantic to the Pacific has been responsible for a tremendous building boom. Tourist traffic has been increasing from 200 to 500 per cent annually, while millions of dollars are being spent each year by motorists. War conditions have increased rather than retarded the growth of this movement, since all America is now forced to do its traveling at home.

War Building Needs

Structures for Temporary Use in Washington Rushed to Completion

The temporary buildings being erected for the War and Navy Departments in Henry Park, Washington, D. C., are rapidly nearing completion. The buildings are of frame construction, and will provide more than a million square feet of space. Unit A is completed, and a division of the Army ordnance bureau in occupancy. The other buildings will be completed before March 1.

The War Department is to have 750,000 sq. ft. of the total area, and the Navy Department the other 250,000. The latter will use the space for bureaus of construction and repair, steam engineering, ordnance, yards and docks, while the War Department will give over its entire space to the ordnance bureau.

Convertible Rooms

A Novel Type of Apartment House in Fort Wayne

Apartments, each room of which can be converted at the touch of a lever into one of entirely different purposes, form rather unique homes. The first of its kind has recently been erected in Fort Wayne, Ind. The suites in this house ostensibly consist of three rooms, but are so built as to fill the requirements of six. Kitchen and bath are permanent, but the third serves as living-room, bedroom and dining-room.

The heavier articles of furniture are attached to panels which swivel about at the manipulation of a lever. This act places one piece of furniture in a sort of closet and brings the other out into the room. Thus, if the room has been used as a dining-room and a bedroom is desired, the buffet is swung into the closet, bringing the bed, which had been in the closet, into the room. Another lever brings a bureau into the bedroom. The lights and fur-

nishings, obviously, remain the same for all three rooms.

The chief advantage to be derived from this type of apartment is the saving in housework and expense of upkeep. As it is contemplated to build several large apartments of this sort, it would appear that they have been found acceptable in certain quarters.

Better Homes for Farms

The line of demarcation between country and town is now less clearly defined than it has ever been before, and the physical and social distinctions heretofore so apparent are gradually weakening. City folk are building their homes in the country and farm families are driving to town in their automobiles. With better roads, more automobiles, with telephones and other home comforts that are inevitably incorporated into daily habits when the ease of intercommunication is encouraged, it is being realized that the future holds greater opportunities for the farm home and greater incentive for improving it than have obtained in the past.

Minneapolis Architectural Club Elects Officers

The Architectural Club of Minneapolis, Minn., has elected officers to serve for the coming year as follows: Paul F. Jaquet, president; J. T. Jackson, vice-president; B. J. Knowles, secretary; Paul H. Perkins, treasurer.

Annual Report, California State Planning Association

Abundant illustration from European city planning characterizes the second annual report of the California State Capital Planning Commission. The work at Sacramento began with a committee of 5 in the Chamber of Commerce. Under the late Charles Mulford Robinson, and afterward Werner Hagemann, the committee was increased to 150. This was followed by the engagement of Dr. John Nolan, whose city plan was written into the municipal code. The city, meantime, had acquired nearly 900 acres of municipal park. Then came the creation by the Legislature of a State Commission to develop Sacramento under the Nolan plan as a model capital. The second annual report of this Commission is now ready for distribution. Free copies may be had by addressing State Librarian M. J. Ferguson, Sacramento, Cal.

Abbey of Dryburgh, Tomb of Sir Walter Scott, Presented to British Government

The ancient abbey and estate of Dryburgh has been purchased by Lord Glenconner, through Mr. J. C. Cowper, of Edinburgh. Lord Glenconner is to present the abbey, with the burial grounds and other pertinents, as a gift to the nation. This estate is hallowed by centuries of Scottish church and civil history, and possesses invaluable relics of Gothic art and monastic antiquity.

Perhaps its chief claim to fame lies in the fact that it embraces the grave of Sir Walter Scott. It seems most fitting that this spot should be ensured of preservation as a heritage of the nation.

Dillon Memorial Awards

The first prize for the Dillon Memorial Fountain, to be erected at Davenport, Iowa, by the Davenport Levee Commission, was awarded to F. A. and A. Ware and Paul Schulz, 1170 Broadway, New York City. The second prize went to Sliper, Lundie & Abrahamson, architects, 595 Endicott Building, St. Paul, Minn.; the third prize to Ramon Schumacher, Kansas City, and the fourth to George W. Meyer, Davenport, Iowa.

Personals

Frederick Deal, of the firm of Johnson & Deal, architects, has been commissioned a lieutenant in the U. S. Army, and is en route to France, where he has been ordered.

Melville B. Stanfield, aged seventy-four, died at his home in Cincinnati, Ohio. He was formerly a well known architect and engineer, and, as a member of the Samuel Hannford & Sons Company, did a large amount of important architectural work in that section of the country.

At the annual meeting of the Toledo Chapter of the American Institute of Architects, Thomas F. Huber was again elected president. Other officers are Harry W. Wacher, vice-president; Lawrence S. Bellman, secretary; Bernard Becker, treasurer.

Benjamin B. Owens, architect and former building inspector of Baltimore, Md., is dead. About eighteen years ago he established the architectural firm of Owens & Sisco, of which he was the senior member. He remained actively engaged in architectural work until the time of his death.

DEPARTMENT OF ARCHITECTURAL ENGINEERING

Daylighting the Factory

AMONG the many elements that enter into good working conditions that of the intensity and kind of light provided to the craftsman is one of the most important.

The sources of light are natural and artificial, and we will now consider the natural, or daylight element. The source of daylight, of course, is the sun, but direct sunlight rays are not necessary, or even desirable, in many cases. Direct sunlight is desirable under certain conditions, where its action as a germicide is very effective. But in industrial buildings these sanitary matters are better cared for by other means, leaving daylight in the position of a valuable auxiliary.

The subject of lighting industrial buildings has been exhaustively investigated by the Illuminating Engineering Society, a national organization which devotes its efforts to scientific research along these lines. As a result of these efforts this society has adopted a code standardizing the lighting requirements for this and other kinds of buildings. As a result of this action the States of New Jersey and Pennsylvania have adopted codes regulating the lighting of factories and other places. The matter of adopting such a code is under consideration by the State of Ohio at this time. These State codes are based on the recommendations of the Illuminating Engineering Society, and prescribe the permissible minimum intensity of light for existing factories and the necessary amount in new construction. The importance of this matter is apparent to all who have measured the efficiency of men in relation to light.

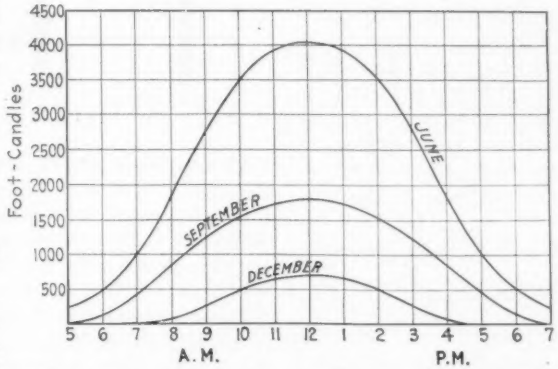


Fig. 1—Curves Showing the Variations in Natural Light at Different Portions of the Year

In order to realize the value of the methods proposed it is necessary to first understand somewhat of the conditions involved. The principal source of daylight is the sky, which transmits to us the light from the sun indirectly. This is apparent, as operating rooms are always placed on the north side of hospitals, where the light is derived from the sky rather than from the sun directly. Those who have enjoyed the afterglow of the sun after it has dropped behind the mountains in Colorado also realize that the sky is the medium of diffused light.

Where direct sunlight is encountered it is often necessary to whitewash the windows or provide shades for protection from the dazzling effect of the sun's rays.

As the sun is the source of daylight, the intensity of sunlight is the basis of calculation. Fig. 1 illustrates graphically the intensity of sunlight under a clear sky for average days; the curves represent the conditions in December, September and June, and for which intermediate periods can be interpolated. The intensity is measured in foot-candles and given for each hour of daylight. *The foot-candle is the measure of light intensity incident at right angles on a plane one foot distant from a light source of one candle power.* From this diagram we have the measure of the maximum supply of daylight illumination.

The hours of effective daylight are shown in Fig. 2, and are based on a working day of 10 hours, with deductions for Sundays, legal holidays, and half days for Saturday. The total of working hours is 2770 for a period of twelve months. The prob-

able effective daylight under sunlight conditions prevailing in the eastern section of the country will amount to 2248 hours per year. When the glass areas are properly proportioned it is apparent that artificial light will be required for 522 hours during the year. The shaded portions of the table represent the dark periods, when artificial light will have to be used, and both conditions of light are

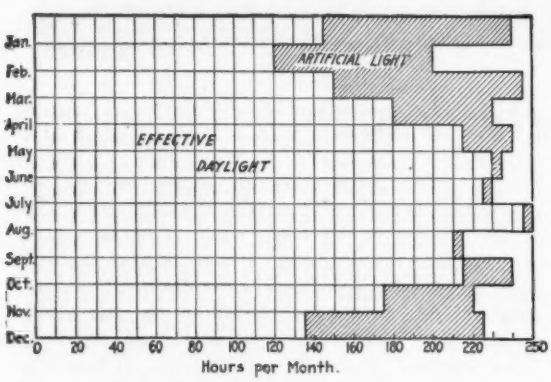


Fig. 2—The Distribution of Natural and Artificial Light for One Year

represented for each month. Average cases of ordinary typical shop arrangements show that a 10-hour working-day schedule requires from 700 to 1000 hours of artificial light in a year. This indicates a deficiency in natural lighting due to lack of sufficient window area. This deficiency amounts to from 200 to 500 hours time per year, and would be an annual expense in excess of the interest on any added cost for glass installation in the first instance.

Unless this artificial light is entirely adequate

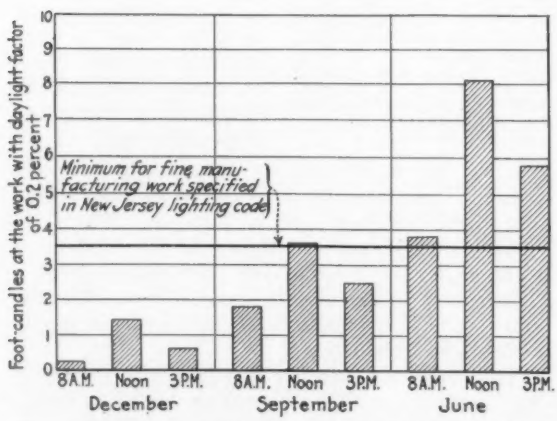


Fig. 3—Graphical Presentation of Probable Intensities Within a Shop at Different Portions of the Year for a Given "Daylight Factor" of 0.2 Per Cent

there is also the waste in labor due to poor lighting conditions.

The intensity of natural light in any building is expressed in the term of "daylight factor." This daylight factor is the ratio of the interior to the exterior illumination at some given time of the day and at some given point in the shop, the two measurements being taken simultaneously. This is accomplished by the use of two portable measuring devices, known as photometers. One is placed inside the building at a selected spot, and the other

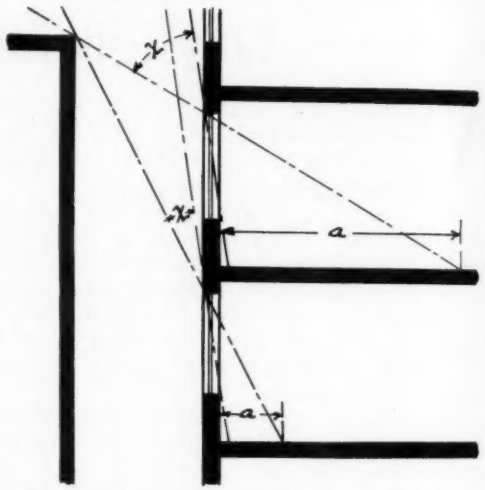


Fig. 4—Measuring the Effect of Adjacent Buildings on Daylight Illumination

is placed outside under the open sky, but shielded from the direct sunlight. This measurement gives a direct idea of how much of the available light outside of the building actually reaches the interior working surfaces by way of the windows and skylights.

Investigation made in England by the Departmental Committee on Lighting in Factories and Workshops, under appointment of Parliament, develops the fact that the average value of this factor for a large number of factories inspected was about 1.9 per cent where roof lighting only was used; about 1 per cent where combined roof and side lighting, and about 0.25 per cent where the side windows only were used. The daylight factor for roof lighting refers to cases where the side glass did not exceed 25 per cent of the roof glass area; the combination roof and side light factor is based on conditions where the side glass area is too great for them to be included as roof-lighted buildings, but where roof glass is still effective, being in excess of 2 per cent of the floor area; the factor for side lighting refers to buildings having side lights exclusively, or in which the roof glass area is less than 2 per cent of

the floor area. This indicates that for the buildings lighted by side windows only the average was as low as 1/400 for the ratio of inside to outside illumination at a given time.

Assuming a daylight factor of 0.2 per cent—in other words, when 1/500 of the exterior light reaches the darkest part of the shop—and applying the values of exterior light given in Fig. 1, we have conditions indicated in Fig. 3. In this diagram is

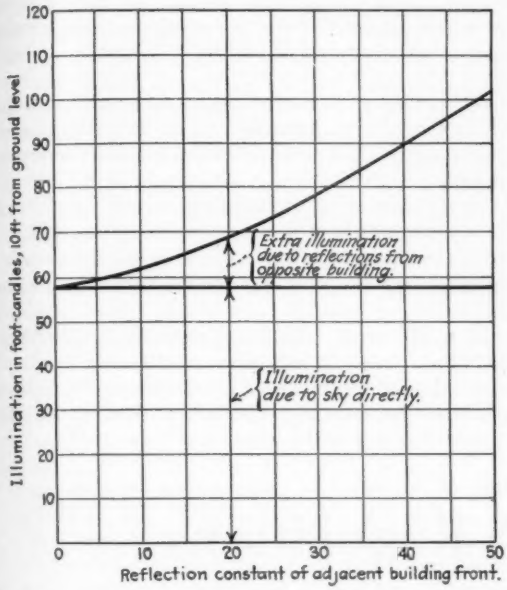


Fig. 5—Measure of Illumination Reflected from Adjacent Buildings. Reflection Constants in Percentages of Sky Illumination

indicated the minimum permitted light intensity for fine manufacturing, as specified by the New Jersey code, and the amount of artificial light required would be the difference between the daylight factor and the 3.5 foot-candle line as indicated. While there are undoubtedly many old plants in this country where such wasteful artificial light conditions prevail, this state of affairs would not obtain in our better designed modern shops. However, this illustration will visualize the working conditions of a large number of factories, showing the waste of artificial light if adequately supplied, and showing the loss in labor efficiency if not supplied properly with such light. In either event the owner loses more than the added overhead due to the cost of a modern shop.

Before considering the means of admitting daylight into the building we will consider interferences due to local conditions. As a rule, these interferences consist of adjacent buildings. The influence of near-by buildings on daylighting a floor space is shown in Fig. 4, in which the angle x is the sky angle in the vertical plane. In this case only the portion of the floor d will receive direct light from the sky, and additional natural light would be due entirely to light reflected from the wall of the adjacent building. The value of this reflected light

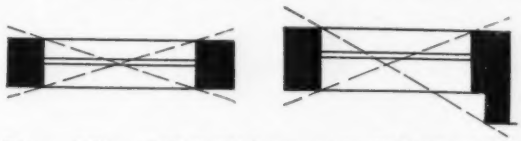


Fig. 7—Effect of Wall Thickness on Daylight Illumination

depends on the material used in the wall. The darker the material the less light would be reflected, and from many walls no light whatever would be secured in this way.

The intensity of reflected light is indicated in Fig. 5, taken from lectures by L. B. Marks, consulting engineer, delivered at Johns Hopkins University. This diagram is based on a building facing a street 80 ft. wide and with the opposite buildings 140 ft. high, the point of light admission being 10 ft. above the ground. The sky is assumed to have an average brightness of 250 candle-feet on a cloudless day. An illumination of 58 candle-feet is due directly to the sky, and the added diffusion due to reflections is indicated by the curved line. The reflection constants vary from zero to 50 per cent, this latter being for a white tile or enameled brick wall. Of the intervening constants, 8 per cent can be allowed for diffusion from the street surface, and the values of different textures and colors of wall surfaces can be judged as from a very dark wall to the white wall. Where a building exposure

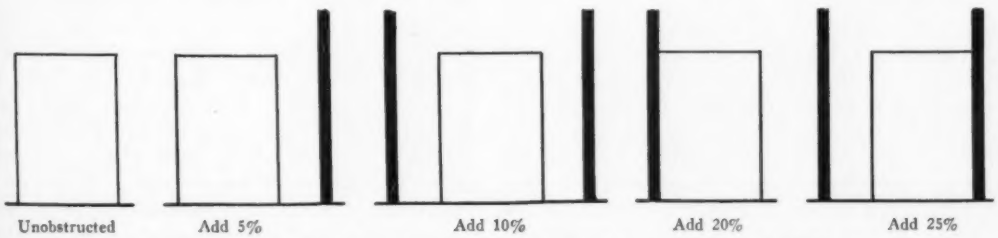


Fig. 6—Added glass area required for adjacent interferences to daylight

is on an alley of 16 to 20 ft. width the constant due to sky illumination would be decreased as indicated in Fig. 4, and the diffusion from the alley pavement would not approach 8 per cent. In considering the measure of light intensity reflected from adjacent surfaces, as indicated in the diagram, one is struck with the importance of facing court walls and walls that angle at 90 degrees with enameled brick or terra cotta. Conditions often arise when the use of gray or buff brick is adequate, and as these surfaces are permanent they are the more valuable. In cities where discoloration from smoke is a factor the use of glazed surfaces is desirable and a good investment. The annual spring washdown of glazed or enameled fronts in Chicago well illustrates the reduction in light diffusion after the winter season. In that city some adjacent property owners have paid the excess cost of facing alley and court walls of new buildings in this way for the benefit to their own buildings in added light. In any event, the use of whitewash or painting will be a great help in obtaining more daylight intensity.

In a building where there is no interference from adjacent buildings the area of the glass surface can be computed by a formula that will be given later. When interference does occur the glass area must be increased to compensate for these conditions. In Fig. 6 are illustrated four conditions of light obstruction due to this cause, and for each type there is indicated a percentage to be added to the calculated result of applying the formula to which reference has been made. The corrections are based on extensive observations, but should not be followed absolutely, but in the absence of any other rule they will serve as a rational basis for computation. The local conditions—which may consist of the height of the obstruction, width of the street, alley, or adjoining court, the color of the adjacent walls, and other elements of influence—must be considered.

The effect of the thickness of the wall and the location of piers or buttresses will affect the degree of the sky angle in the horizontal plans, as indicated in Fig. 7.

After measuring the conditions and factors that have been indicated it is apparent that *the basis on which to estimate the intensity of daylight illumination is the aspect of the sky from the point to be lighted.*

In a following article the method of calculating the glass area, the influence of different kinds of glass, the arrangement and disposition of windows and skylights, and the style and construction of the windows will be considered.

Municipal Stair Regulations

A RECENT amendment to the Chicago Building Code modified the requirements for stairways in buildings used for storage and warehouse purposes. The change in the requirements is based on the number of persons employed. When "the number of persons regularly employed above the floor nearest the street level does not exceed ten persons or when the number of persons occasionally employed above the floor nearest the street level does not exceed twenty persons," certain modifications of the existing regulations are made. A preceding paragraph specifies the number of "persons employed on any one floor," which is certainly definite. The amendment, however, is as definite as most ordinances are, and it can be construed that only the number of ten regular or twenty occasional employees can be employed in the entire building "above the floor nearest the street level." This is probably not the intention of the ordinance. Whatever the real intention may be, the total width of stairs in Class I buildings (buildings used for the sale, storage and manufacture of merchandise, other than department stores) is reduced for this specific condition. In buildings of ordinary mill and slow-burning construction the reduction in total width varies from 12.45 to 18.75 per cent and in fireproof buildings from 7.50 to 18.75 per cent. The variation is based on the net area of a floor. The total width to be divided into different numbers of stairs according to the floor area with deductions for fire escapes, stair enclosures with automatic fire doors and other factors.

This revision is important in one aspect, in that the number of persons to be served by stairs is recognized as an element in stair requirements. Almost without exception municipal requirements are based on floor areas regardless of the occupancy. The sole purpose of a stairway is to provide a means by which persons can travel from one level to another. In buildings constructed for commercial purposes they are not generally considered in the light of means of ingress but rather as a means of egress, special consideration being given to panic conditions. It is generally conceded that *all* stairways in this class of buildings should be enclosed in fire-resisting walls with automatic fire doors and fire-resisting windows. It would then follow that a stairway so enclosed and protected and properly designed to accommodate the number of people who use it would be sufficient regardless of

the construction of the building. As it is the contents that burn during the early stages of a fire the occupants will be removed before the structure itself burns, and inflammable contents burn as well, if not better, in a fireproof building as in a mill-constructed building.

The importance of proper stair construction is indicated by Mr. W. H. Mowery, of The American Museum of Safety, who gives information concerning accidents and deaths in New York City in the year 1916. He says: "Last year there were 65 persons killed by fires in Manhattan alone. Surface cars killed 53 and subway cars 12. In Manhattan, during the same period, there were 68 persons killed by falls on sidewalks and 102 killed by falls on stairs, over half of which were caused directly by slipping." It is possible that a considerable number of those killed by fires lost their lives through faulty construction of stairways.

A study of municipal regulations concerning stairways shows a great similarity in all of them. Evidently some one in past decades formulated a rule on which all others are based and this condition of affairs shows that very little study or investigation has been given to this important subject. Possibly the attitude of the average owner and architect towards "wasted" space for stairs has had its influence.

The subject was carefully investigated by Mr. Virgil D. Allen, Architect, during his service as Commissioner of Buildings of Cleveland, and the regulations of that city revised. From observations made in connection with persons traveling on stairways it was found that, as a rule, men travel faster than women; individuals faster than couples, and persons who are familiar with a stairway travel much faster than the occasional user. This increase in speed of the habitual user over the stranger is about 100 per cent, and this latter fact is very important, and strangeness of the stair exits can best be overcome by periodical fire drills for the employees as is required by some bureaus of fire prevention and public safety. Again, stairs should be so located that they are a convenience to the employee, rather than placed in some otherwise useless space, for in this way they would be used with greater frequency and become familiar to the occupants. First-time stair travel is a rather slow process, as we all know. In this connection it is urged that occupants be drilled in the use of fire escapes for the same reasons.

In the investigations above referred to it was found that persons traversing a busy street covered a distance of 100 ft. at the following rates of speed:

Women (single persons)—Fast, 18.1 seconds; slow, 29.1 seconds. Average, 23.6 seconds.

Men (single persons)—Fast, 16.0 seconds; slow, 21.2 seconds. Average, 18.6 seconds.

The average of the averages is 21.1 seconds.

Many observations on stairs developed an average of ¾ of a second consumed for each riser. In this latter study it was found that the proportion of rise to run had no noticeable effect on the rate of travel, but it has to do with sure-footedness or slipping. From these observations Mr. Allen deduced a formula for estimating the time required to empty a building of its occupants, and it is as follows:

$$T = \tfrac{1}{4}(A + B + C) + \tfrac{3}{4}D$$

in which

T = total time in seconds required to travel from any point on any floor by way of nearest stairway to outside of exit door.

A = travel distance in feet from any point on any floor to top of the nearest stairway.

B = total length in feet of stairway floor landings from the level in question to the exit level.

C = travel distance in feet from bottom step of the lowest flight to the exit door.

D = total number of risers from the floor level in question to the exit door level.

While this may appear complicated it is in reality very simple as an example will show. Assume a six-story building with a person on the top floor 100 ft. from the stair door and with straight run stairs.

Distances:

Top floor	100 ft.
Top stair landing	5 ft.
5 floor landings	100 ft.
Entrance at bottom	10 ft.
Horizontals	215 ft.

Ninety risers from 5 flights of 18 risers each; then we have for

Horizontal travel:	$215 \div 4$	= 54 seconds
Risers:	$90 \times \tfrac{3}{4}$	= 68 seconds
Total,		122 seconds

This solution of the time-travel element appears rational, but the time factors may vary under different conditions, and the matter is worthy of consideration and discussion.

The capacity of the stairway must be governed by the number of persons who are to be accommodated rather than by a mere floor area basis. While it is true that the floor area controls the maximum number of persons it is possible to be served, it is not reasonable to demand a stairway adequate for a maximum human occupancy when the purpose of the structure fixes a small number of persons in relation to area. For instance, a press room, in which a press may cover 130 sq. feet of space, will have less persons per square foot of floor area than will a garment factory, where the machines are small and close together with narrow aisles between.

A wholesale or mail order house will have few persons employed, as these spaces are utilized for storage of goods of considerable bulk, and the human occupancy is only employed in the movement of the merchandise, and a flour mill of very large area will only employ one person on a floor to watch the operation of automatic machinery.

The majority of buildings are built for a specific purpose and the stairways can be designed to suit the requirements, but the loft building with its diversified and shifting tenancy offers an entirely different problem. In this case it is better to design for the maximum conditions. It is readily seen how one or two densely populated floors can congest the flow of persons and dangerously retard the emptying of the building.

Ordinances which permit stairways to be widened by increments of 6 inches or other like amounts are entirely wrong in doing so. The width of stairs must be based on multiples of persons, and if a person requires 18 or 21 inches of width, the total width of a stairway must be a combination of these units. Some are of the opinion that 18 inches of stair width is sufficient to allow per person, but as comparative freedom of action is essential to quick action it would seem that 21 inches would best serve the purpose. A stairway 3 feet 6 inches wide will accommodate two persons abreast, and an additional width of 8 inches would not afford room for a third person, but this space would be an incentive for a third person to attempt to pass and retard the progress of all three. In case of panic this would probably result in injury to some of them.

Observation shows that when four persons abreast descend a stairway with a handrail on one side only, they would step off together, the one at the rail traveling in advance of the next and so on with the others. This demonstrates that a handrail contact for every user of the stairway is essential to speed of travel and safety also. There should be a handrail for each person and in stairs accommodating 3 columns of persons there should be an intermediate rail. These intermediate rails, in all cases, should be double to prevent interference of the hands. In long flights a landing is desirable, and they are sometimes made to consist of one long step. Another method is to have one full step on the landing before again starting either up or down, and of the two the latter seems to be preferable.

Mr. Allen suggests a specification for stairways consisting of twelve points and which appears below:

1. Stairways should be made of such width that every person traveling thereon will have not less than 21 inches of clear width.
2. Every file of persons should have a substantial handrail for support.
3. Every required stairway should be of fireproof construction and enclosed with fireproof or fire-resisting walls.
4. All openings in stairways should be either fireproof windows or doors, and the latter should swing into the stairway, be equipped with self-closing and panic hardware and should not, in swinging, obstruct the travel on the landings.
5. All doorways should be wide enough to allow the same number of files of persons to enter the stairway, as the designed capacity of the stairway.
6. The doors should preferably be so located that those entering do not have to change direction after passing the door, before descending the stair.
7. Every stairway should be well lighted.
8. No other openings should be allowed in stairway enclosures except windows for lighting same, and the required entrance doors.
9. Every stairway should lead directly to the outside of the building, when it reaches the first or ground floor.
10. The exit door should swing out of the ground floor stair hall.
11. Long flights should not be allowed, and the run and rise should be as near uniform as possible for the entire stairway.
12. The landings should be ample.

Owing to the discrepancies in dictionary definitions the Cleveland Code contains a set of definitions which have the virtue of being clear and explicit and we offer them for the consideration of architects and specifications writers.

DEFINITIONS

(a) Tread—The horizontal part of a stair step.
(b) Riser—The vertical part of a stair step.
(c) Winder—A tread that is wider at one end than at the other.
(d) Step—One tread and one riser.
(e) Rise—The vertical distance between the tops of the adjacent treads, or between the top of the tread and the adjacent landing.
(f) Run—The shortest horizontal distance between adjacent risers, or between corresponding points of adjacent treads.
(g) Landing—A level space larger than a tread between two flights of a stair.
(h) Quarter Space Landing—A landing where the flight changes direction approximately 90 degrees.
(i) Half Space Landing—A landing where the flight changes direction approximately 180 degrees.
(j) Floor Landing—That part of any floor within the stairway enclosure which is used in passing from one flight to another.
(k) Well—the open space in the center of a stairway, or around which the stairs are built.
(l) Flight—An unbroken succession of steps between landings.
(m) Single Width Flight—One wide enough for persons to travel in single file.
(n) Double Width Flight—One wide enough for two (2) persons to travel side by side, or in double file.
(o) Multiple Width Flight—A combination of two (2) or more double flights.
(p) Stair—All the flights and landings between two successive floor levels.
(q) Stairway—All the flights and landings together with the enclosing walls or partitions and the doors leading thereto and therefrom, extending from the exit level to and including all stories served by such stairs.
(r) Continuous Stairway—One extending unbrokenly, from the exit level to the most remote story served thereby.

The accumulation of data is a slow process at best and we will appreciate any information concerning the number of persons employed on a cer-

tain area in any kind of a business, and when sufficient information is at hand the results will be published. With this knowledge the designer can attack his stairway and other problems, such as sanitation, ventilation, elevators, etc., with a tangible basis for calculation.

A Modern Service Building

SERVICE is the insistent demand of modern life, whose requirements vary from the most delicate attention to tremendous operations. Among the latter it is often required that materials must be handled in such bulk and at such speed that the ingenuity of man is constantly employed to meet the demands of service.

To unload a car of frozen coal has heretofore been accomplished only by the extensive use of manual labor, and some conditions made this method impossible. To overcome this difficulty buildings have been constructed in which train loads of coal can be thawed out. The first plants were built about 1910, and constant progress has been made in their construction and mechanical equipment. The latest and most satisfactory plant is at South Amboy, N. J., owned by the Eastern Coal Dump Co. This plant is very adequately described in a recent issue of the *Engineering News-Record*.

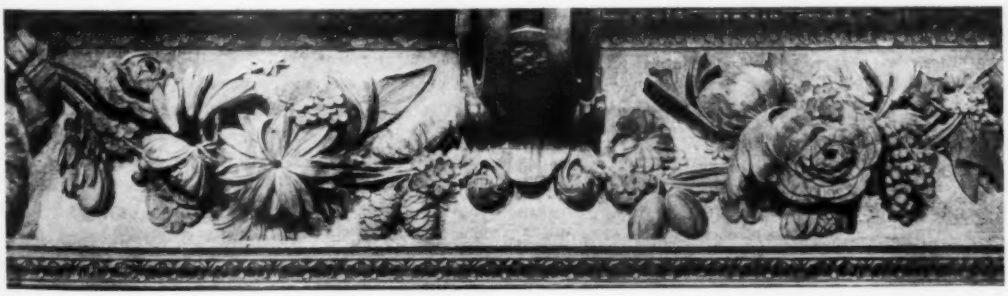
This building is 48 x 570 ft. in size, with three longitudinal sections 16 ft. wide, each with a track of 14 cars capacity. The side walls are 23 ft. high and the ridge 27 ft. above the ground. The building is constructed of pre-cast reinforced-concrete parts. The side and division walls are of double thickness, the air space of which is filled with mineral wool. The ceiling, 16 ft. above the base of the rail, and the roof are of single thickness of slabs.

In the center of the building is built a chamber 14 ft. high and extending across and above the three-track sections. In this chamber is placed three heating units, one for each section, but so cross-connected by two transverse plenum chambers that one unit may serve any section, or all the units may serve one section. The unit consists of a double-discharge blower with a steam coil in each discharge chamber. From this point longitudinal ducts are carried to each end of the building, above the ceiling and along each side of the compartment below. From these horizontal ducts there are taken at intervals of 5 ft. vertical ducts, each alternate duct terminating about 6 ft. above the floor and discharging air against the side of the car. The other ducts pass under the floor and open upward in the center of the track. In this way the car is entirely enveloped in hot air, which is applied at the point most desired. Above the center line of each compartment is a horizontal return air duct with openings to the ceiling of the compartment. Through this duct the cooled air is returned to the fan, reheated and again discharged, giving a continuous circulation of hot air.

It is not necessary always to thaw the entire contents of the cars, but to simply thaw the contact of the coal and the car, thus enabling the car to be picked up and dumped to other means of transportation. This dumping would naturally disintegrate the frozen mass.

Usually from one to two hours will serve to thaw the coal sufficiently to permit of dumping, and this has been accomplished at an average approximate cost of 1.4c. per ton, based on fuel prices of 1916. This application and method of thawing are covered by patents issued and pending.

Not only is this matter one of interest as denoting general progress in meeting the demands of service, but it indicates the necessity of special building construction of interest to the architect and engineer, as well as a successful application of a mechanical blower system of transmitting heat. It also well illustrates the constant and new demands made on the ingenuity and ability of architects and engineers to solve modern business problems. That an entirely new structural and mechanical service has been satisfied, after so few years of trial and experimentation, shows the speed with which these demands are met.



Industrial Information

In this department there is published each week the latest information as to developments of materials and methods, derived from many reliable sources.

One-Pipe Heaters

SIMPLE FURNACE INSTALLATION FOR THE SMALL HOUSE

The International One-Pipe Heater is based on the well-known principle that air when heated will rise and displace cooler air. The idea of heating an entire house from one centrally located register is the practical application of this principle.

These heaters, which are manufactured by the International Heater Company of Utica, N. Y., are suitable for use in houses having from four to fourteen ordinary sized rooms. They are particularly well adapted to bungalow types and houses having open stairways. Because of their low cost they are often installed in small churches, stores, and in summer camps and cottages which are but infrequently used in cold weather.

The installation is very simple, the entire equipment consisting of one heater with casings and one electroplated register, one galvanized smoke pipe elbow, one joint of smoke pipe and damper, with regulator and chains.

A heater of this type is saving of fuel, and heats only the living portion of the house. This means that the basement is left cold, being thereby made available for cold storage purposes.

New Steel Sash Operator

The Detroit Steel Products Company, 2250 East Grand Boulevard, Detroit, Mich., which manufactures Fenestra products, is advertising a new steel sash operator.

Starting with the premise that the value of any operating device depends, first, on amount of opening secured; second, on ease of operation; and third, on the economy of maintenance, this company proceeds to demonstrate the desirability of its product.

The Fenestra straight-line operator will open Monitor sash 60 degrees, and it is possible to design it to afford a full 90-degree opening. Easy operation is assured because the operator is designed on the principle of straight-line motion which provides a power increasing faster than the load increases. The maintenance cost is reduced to a minimum because spirals and counterweights are eliminated, and the number of parts and pivots is reduced as much as possible.

This operator consists of a worm and a worm wheel power, operated by a chain running over a chain wheel on the same shaft as the worm. This mechanism transfers a pull on the chain, through a steel rack to a sliding pipe, which operates scissors-like levers, which, in turn, open the sash.

The materials used for this operator are all of the best, designed to give maximum strength for weight of material; the fittings give easy and free operation, while the use of universal joints and roller or ball bearings minimizes friction.

The Fenestra Construction Company, which has experts in Detroit, New York, Chicago and San Francisco for the purpose, attends to all the details of installation of their sash and sash operators.

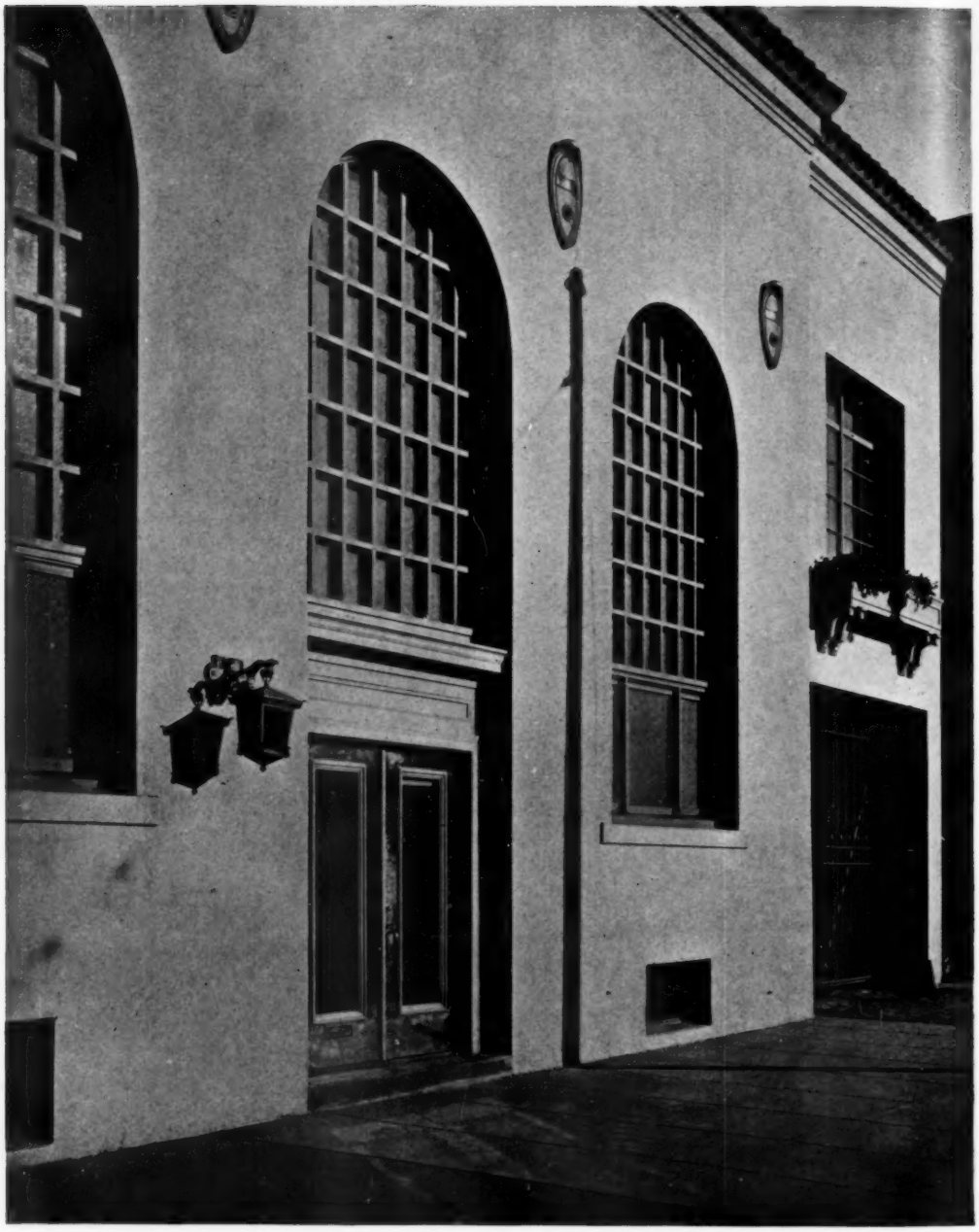
Steel Lockers

The Hart & Hutchinson Company of New Britain, Conn., has on the market steel lockers of types suitable for every locker purpose. There are single and double tier lockers, lockers with perforated doors, lockers with louvered doors, as well as with other variations. In every case ample provision is made for proper ventilation. Hat shelves and towel rods are provided in the single-tier lockers. In the double-tier types only the towel rod is furnished. In addition, the regular equipment includes solid brass number plates, a three-way locking device with rust-proof "T" handle, adjustable legs and rust-proof hooks.

The simplicity of design and attractive finish of these lockers makes them a valuable addition to any sort of locker or coat room, while their usefulness as spacious, sanitary and safe storage accommodations renders them almost indispensable.

In addition to these steel lockers, desirable for industrial plants, the Hart & Hutchinson Company manufactures another product which is even more essential in industry. This is the H. & H. shop box.

These boxes are constructed of 12-gauge steel, with heavy, strong handles, and are guaranteed not to vary more than 2 per cent from weight. This makes them most useful in weighing for inventory or for securing piece-work count. The telescopic feature of these boxes constitutes another important consideration. This makes it possible to nest the boxes when empty or only partially filled, thereby effecting a saving in floor space.



EXTERIOR DETAIL

BUILDING FOR H. N. COOK BELTING CO., SAN FRANCISCO, CAL.

WARD & BLOHME, *ARCHITECTS*

(For description see page 263)