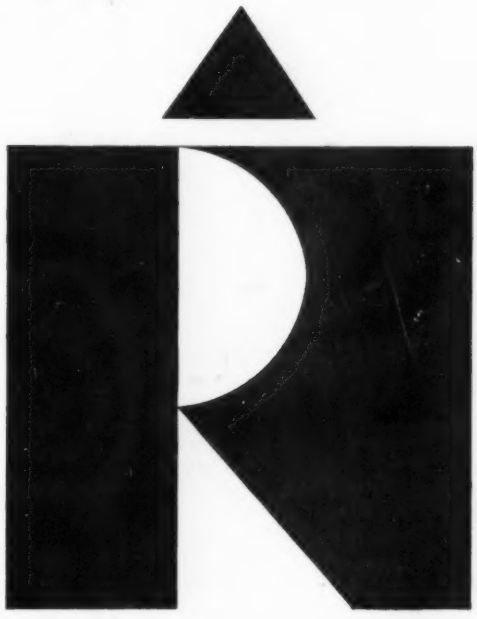


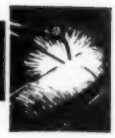
APRIL 1935

ERNEST BORN

THE ARCHITECTURAL RECORD

BROADCASTING STUDIO • HOUSING • WOOD PRODUCTS AND FABRICS

The FACTS about WELDED PIPING



No. 2
of a series

presenting the decisive advantages of WELDED PIPING. *The entire series in booklet form will be sent to any Architect or Engineer on request.*

Logical
for small buildings as well as large . . .

AIRCO stands ready to assist Architects and Engineers with information and data on WELDED PIPING, and with experienced engineering cooperation on specific installation problems.

LOWER material and installation costs; reduced weight, with its advantageous effect on building design and costs; more efficient operation; elimination of leaks and maintenance; permanence—these decisive advantages and economies of welded piping, which have established its use in large buildings, hold equally true for installations in residences and other small buildings.

And there are today no obstacles to preclude the use of welded piping in small buildings. Small pipe is welded by the oxyacetylene process just as readily and effectively as large. Trained journeymen welders are available today in every locality, who can consistently make welds on pipe down to ½" which on test will prove stronger than the pipe itself. Small pipe and pipe fittings for welding, in the usual materials as well as in brass and copper, are on the market. Brass and copper fittings are available as well, for brazing or bronze welding.

And existing small building installations—of which there are more than is generally realized—show conclusively that welded piping is just as practicable and just as desirable for the small project as for the large. In fact, the staunchest advocates of WELDED PIPING for small buildings are those who have experienced its benefits and economies.

●

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THE ARCHITECTURAL RECORD

F.W. DODGE CORPORATION

Published monthly by

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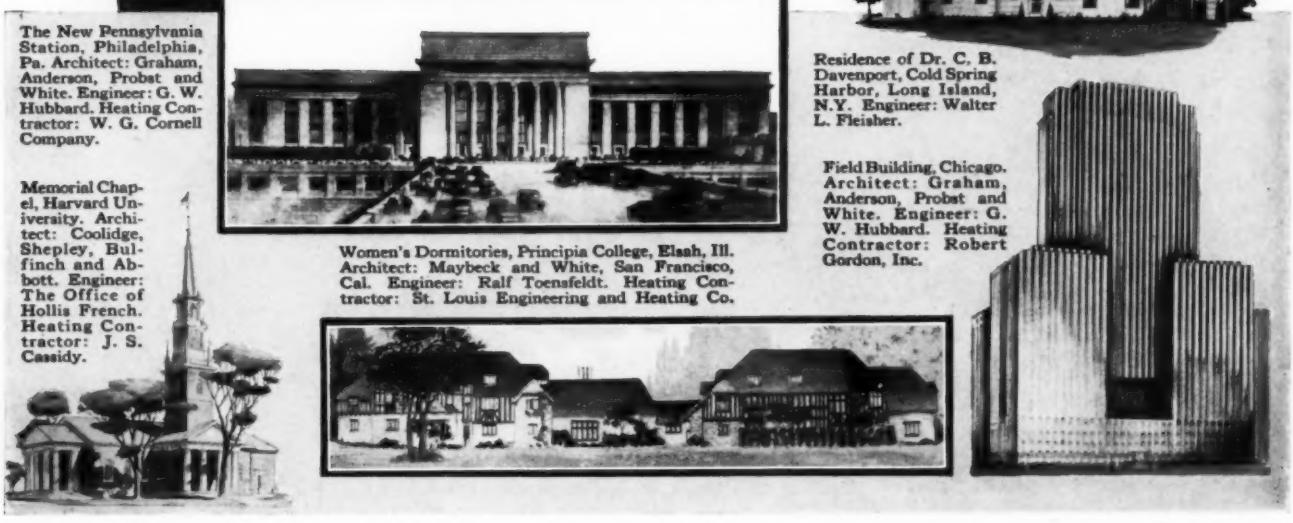
Entered as second class matter May 22, 1902, at the Post Office at New York, N. Y., under the Act of March 3, 1879. Printed in U. S. A.

Bearing Witness to the Broad Field and High Standing of the Aero Convector



The New Pennsylvania Station, Philadelphia, Pa. Architect: Graham, Anderson, Probst and White. Engineer: G. W. Hubbard. Heating Contractor: W. G. Cornell Company.

Memorial Chapel, Harvard University. Architect: Coolidge, Shepley, Bulfinch and Abbott. Engineer: The Office of Hollis French. Heating Contractor: J. S. Cassidy.

Women's Dormitories, Principia College, Elsah, Ill. Architect: Maybeck and White, San Francisco, Cal. Engineer: Ralf Toensfeldt. Heating Contractor: St. Louis Engineering and Heating Co.

Residence of Dr. C. B. Davenport, Cold Spring Harbor, Long Island, N.Y. Engineer: Walter L. Fleisher.

Field Building, Chicago. Architect: Graham, Anderson, Probst and White. Engineer: G. W. Hubbard. Heating Contractor: Robert Gordon, Inc.

HOME and apartment, church and school, railroad station and skyscraper—the variety of the installations in which the Aero Convector has been installed proves its versatility and adaptability. The prominence of these installations proves its standing and architectural acceptance.

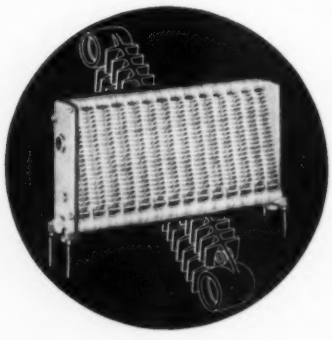
Designed specifically for concealed heating service, the Aero Convector meets every requirement for permanence and durability. Operating perfectly over all ranges of temperature on steam, hot water, or vapor systems, it has the requisite flexibility to meet all heating needs. Delivering a large volume of moderately warmed air, it offers maximum comfort and economy.

In Aero are combined all of the properties that a concealed heating unit should have. You can get full details from Sweet's—see the page numbers below.

To create maximum employment,
THE NATIONAL RADIATOR CORPORATION
pledges itself to immediately manufacture duplicate or equivalent replacements of all items of heating equipment shipped from stock.

This plan, suggested and initiated by Warner and Swasey Company, is being followed by the National Radiator Corporation as a tie-in with the general campaign of the National Rehabilitation Committee.

NATIONAL RADIATOR CORPORATION
JOHNSTOWN, PA.

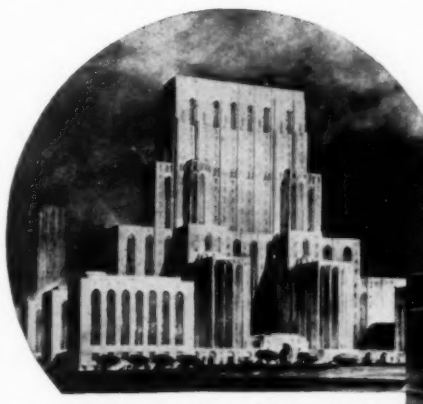


A 5½", 15-section Type C Aero Convector. Various Types and Sizes for recesses from 3½" to 9" deep are available.

TURN TO SWEET'S
Aero Convector . . . . . Pg. D-419
National Premier Steel Boiler . . . . . Pg. D-519
National Gas Boiler . Pg. D-526

Feeding 3,000

"All in a day's work" with decentralized units like this!



● *The majestic 27-story home of the New York Hospital–Cornell Medical Center, New York City. This $10,000,000 institution is one of the world's outstanding hospitals. Coolidge, Shepley, Bullfinch and Abbott, Boston, Mass., were the architects.*

● *View in one of the Patients Kitchens in the main hospital building showing Monel Metal equipment made and installed by THE ARKAY COMPANY, New York, N. Y. This equipment includes refrigerator cabinet, food trucks, Thermotainer roll warmer, steam table, coffee urns and urn stand.*

● Interior view shows a patients kitchen in the great new New York Hospital–Cornell Medical Center. It is one of many similar units which are part of a huge decentralized feeding system installed by the Arkay Company and designed to serve 3000 meals 3 times a day!

Study the equipment in this kitchen. Notice that nearly all of it has the softly reflective gleam of silvery metal ...that modern "at your service" appearance. That's because it's made of Monel Metal. And it's the same throughout this hospital's food service department ...Monel Metal everywhere that surfaces must be attractive, durable, easy-to-clean. 65,000 pounds of this modern equipment ready to give highest feeding efficiency at lowest cost for cleaning, maintenance and replacements!

It is easy to understand why modern hospitals prefer Monel Metal for this new kind of service. Monel Metal is rust-proof, corrosion-resisting and easy to clean. Its cleanability speeds up kitchen and cafeteria routine. It has no coating to chip or wear off and its steel-like strength protects its silvery attractiveness against years of hard wear and tear. Monel Metal retains its usefulness and good looks long after ordinary equipment has gone to the scrap-heap.

Let us send you the latest information about Monel Metal in the modern hospital. Just write.

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WHERE MONEL METAL EQUIPMENT WAS USED IN THIS GREAT HOSPITAL

Main Hospital Kitchen
Private Patients Kitchens
Staff Kitchen
40 Diet Kitchens
Ward Pantries
Orderlies Cafeteria
Nurses Cafeterias
Students Cafeterias
Psychiatry Hospital Kitchen
Psychiatry Hospital Pantries
Nurses Home Kitchens
Nurses Home Cafeteria
Nurses Home Employees Cafeteria
Woman's Clinic & Pediatric Hospital Kitchen and Cafeteria
Private Patients Kitchen and Ward Pantries
Hospital Laundry
Clinical Department

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THE ARCHITECT'S LIBRARY

ECONOMIC TENDENCIES IN THE UNITED STATES: ASPECTS OF PRE-WAR AND POST-WAR CHANGES. By Frederick C. Mills. With an Introduction by The Committee on Recent Economic Changes. A Publication of The National Bureau of Economic Research, Inc. (51 Madison Avenue, New York, N. Y.) in Cooperation with The Committee on Recent Economic Changes. 639 pages, 213 tables, 108 charts. Price $5.

The report of the Committee on Recent Economic Changes of the President's Conference on Unemployment appeared early in 1929, before the current depression had set in. It was mainly a study of the post-war years of prosperity. The committee intends to publish a continuation study when the depression has run its course and when, consequently, the basic facts for a complete economic cycle may be correlated.

The volume by Prof. Mills presents one of several investigations under the auspices of the committee, designed both to supply factual information required for the continuation study and to serve as interim reports. It is remarkable for the number and variety of statistical series brought together and for its extensive use of index numbers to render unconnected series comparable. The purpose is to give an objective description of the characteristic economic developments of the years 1899 to 1929 in terms of quantitative measurements. The result is an invaluable collection of records of units of goods produced, per-unit prices and production costs, wages, dividend payments, trade and capital movements and the like.

The material is so arranged as to bring out particularly the similiarities and dissimiliarities between the pre-war and the post-war years. Certain of the attributes of the two economic periods are summarized by Prof. Mills in the following table:

	Average annual rate of change 1901-1913 (per cent)	1922-1929 (per cent)
Population of the United States.....	+2.0	+1.4
Physical volume of production.....	+3.1	+3.8
Volume of production, per capita of the population	+1.1	+2.4
Prices, wholesale	+1.8	−0.5
Volume of employment, manufacturing industries	+2.7	+1.0
Per capita real earnings, manufacturing workers	−0.1	+1.4
Prices of industrial common stocks...	+2.8	+19.4

This table and the comment on it are typical of the objective descriptive method followed in connection with some 200 statistical statements. The table is an admirable summary of events, but the comment on it refrains from exploring the causes and consequences of the events. "The present study does not aim at an explanation of the recession of 1929, nor of the depression which ensued. It deals with tendencies prevailing in certain economic fields during the years preceding the crisis of 1929. These tendencies had a bearing, of course, on that crisis, but they do not necessarily account for the economic collapse. That is a problem which calls for a wider survey than is here attempted."

Meanwhile, any one interested in the problems of the building industry cannot fail to profit by reading this instructive and suggestive book. What seemed most significant to the present reviewer was that the balance between economic factors during the years 1922 to 1929 was primarily a consequence of the war. Thus, to single out one item in the foregoing table, the climb in stock prices at a rate sevenfold that of the pre-war era was associated with an unexampled growth of capital and credit traceable to the war, a growth accelerated by forced saving consequent upon the government's policy of maintaining high taxes to reduce the war debt. "Credit was utilized by those to whom it was available in such a way as to enhance values in two major markets—markets for securities and for urban realty." There were marked inequalities of distribution during the period, but there was also a marked advance in the rewards of the average man. The most obvious cause of disaster was misdirected investment, culminating in an excess of speculation.

ADVANCE PLANNING OF PUBLIC WORKS IN THE DISTRICT OF COLUMBIA. U. S. Department of Commerce. 1933.

There has been an increased demand for a detailed explanation of methods and technique to be followed in establishing advance planning of public work, whether Federal, State or local. This subject has been extensively and intelligently discussed by economists, architects, engineers, financiers and builders. The existing depression is the time to terminate discussion and to transform a sound but inactive principle into a workable procedure.

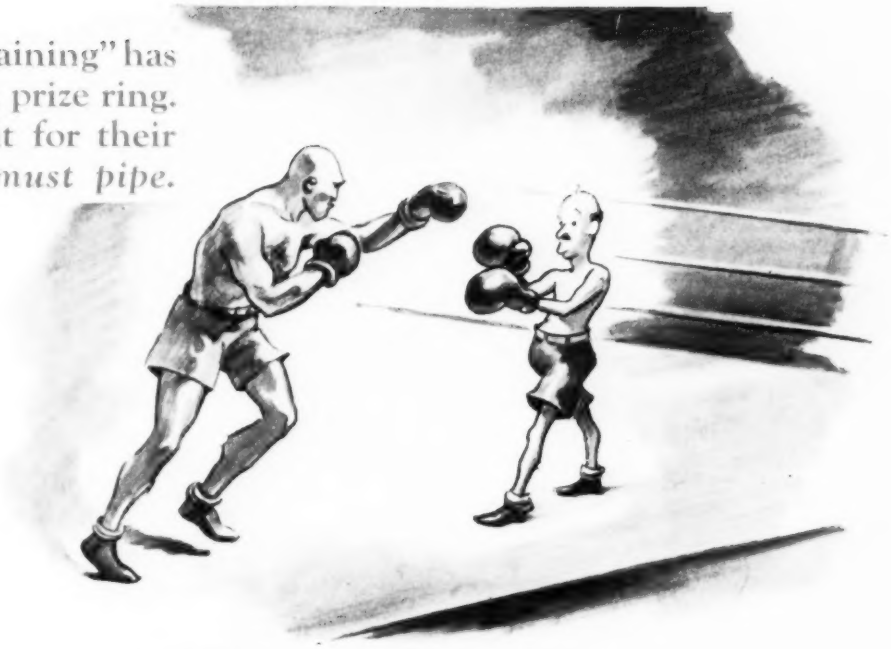
This bulletin, twenty-eight pages in length, has possibilities for use by architects in developing projects, whether for private construction or for public works. It can be a guiding influence in the development of advance planning that is reasonably certain to be fruitful of results in initiating a construction program.

The contents of this bulletin have been designed to enable the reader readily to grasp the fundamentals of advance planning, its application by a typical community, the trends which must be taken into account in order to properly appraise public or private enterprises, together with data in chart and tabular form which serve as a basis for formulating planning activities.

This study, while applied to the District of Columbia, can be considered typical as a model. The standard trends analyzed include population density, population trends, school enrollment, daily and average number of persons cared for in institutions, bank clearings, transportation, department store sales. How these relate to building needs is the subject of adjustment by the architect or interested group, undertaking a similar survey.

The price of this document is 10 cents, Superintendent of Documents, Washington, D. C.

a man "out of training" has no business in a prize ring. Men must be fit for their jobs—*and so must pipe.*



For these TOUGH Jobs—

Pick Pipe That Can Take It!

It's all right to put in untried pipe—experimental alloys of this and that—when you are looking for only a few years of service, or where service demands are easy. But where pipe must LAST under the tough conditions imposed by *specific hard-service installations,* you need the PROVED endurance of Reading Puddled Iron.

For the uses described on this page, Reading Puddled Iron Pipe stands without an equal. That has been demonstrated by more installations, over a longer period of years, than any other kind of pipe can show. Insist on READING for lowest-cost service in these uses. If you need pipe for a "hard-service spot," write us.

For Cold and Hot Water Lines

Reading Puddled Iron Pipe assures *generations* of trouble-free service with all ordinarily corrosive waters. In thousands of such installations, it has been proved that the life of Reading Pipe is from two to five times longer than that of ordinary pipe.

For Drains

Alternating wet and dry conditions often mean swift death for most kinds of pipe. Reading Puddled Iron Pipe is especially adapted to give long service under such conditions.

For Heating Supply Risers, Distributing Mains and Return Lines

Due to its high melting point (300 Degrees F. higher than that of steel) and because of the presence of non-metallic silicate, Reading Puddled Iron is far less subject to destructive oxidation than other ferrous metals.

For Vents

When exposed to atmospheric corrosion, Reading Puddled Iron Pipe forms *two* hard, impervious films of oxide which effectively prevent destructive pitting and penetration of rust. Corrosion is actually *stifled.*

READING PUDDLED IRON

SINCE 1848

READING IRON COMPANY PHILADELPHIA

Science and Invention Have Never Found a Satisfactory Substitute for Genuine Puddled Iron

ARCHITECTS' ANNOUNCEMENTS

Kilham, Hopkins and Greeley, architects, announce the opening of their new offices at 126 Newbury Street, Boston, Massachusetts.

George H. Buckley, architect, has moved from the First Trust Building, Hammond, Indiana, to 664 North Michigan Avenue, Chicago, Illinois.

Samuel L. Malkind, architect, announces the dissolution of the firm of Malkind and Weinstein, 93 Court Street, Brooklyn, New York. A new firm has been organized, to be known as Malkind and Mayers with offices at 105 Court Street, Brooklyn, New York.

Offices of the President's Conference on Home Building and Home Ownership have been moved from Washington, D. C., to 42 Broadway, New York City. Headquarters of Better Homes in America will also be located at the latter address.

Charles H. Lench, architect, announces the removal of his office from 110 West 34th Street, New York City, to 512 Fifth Avenue, New York City.

Louis E. Jallade, architect, has moved from 15 East 47th Street, New York City, to 139 East 79th Street, New York City.

Raseman and Raseman, architects, are now located at 6 Sunset Terrace, Bloomfield Hills, Michigan, instead of at 1335 East Jefferson Street, Detroit, Michigan.

W. F. Staunton, Jr., architect, has moved from the Architects' Building, Los Angeles, California, to 371 Patrician Way, Pasadena, California.

Zareh M. Sourian, architect, has changed his address from 11 West 42nd Street, New York City, to 100 West 55th Street, New York City.

By reason of his recent appointment as a Research Fellow under the American Council of Learned Societies for a period of one year beginning May 1, Myron Bement Smith has tendered his resignation as General Secretary of the American Institute for Persian Art and Archaeology. Mr. Smith has been in charge of the Persian Institute's headquarters since its organization three years ago. The terms of his present fellowship require him to spend the next year in a scientific examination of the pre-Islamic and early Islamic architecture of Persia, with special reference to brickwork.

STATEN ISLAND ARCHITECTURAL SHOW

The Staten Island Society of Architects will hold its annual architectural exhibition during May at the Staten Island Museum, Stuyvesant Place, St. George, it is announced by Maurice G. Uslan, secretary of the society.

CALENDAR OF EXHIBITIONS AND EVENTS

April 15	Closing date for receipt of drawings or sketches in the Modern Furniture Design Contest sponsored by the American Walnut Manufacturers Association
April 22	Closing date for application for Princeton Prizes in Architecture. Address the Director, School of Architecture, Princeton University, Princeton, N. J.
April 23-30	Better Homes week, an educational movement under auspices of Better Homes in America, 1653 Pennsylvania Avenue, Washington, D. C. Demonstrations of new and remodeled houses, lectures, contests, etc., are urged.
May 6	Opening day of the Second Philadelphia International Salon of Photography. Last day for receiving prints is April 21. Address communications to Philip N. Youtz, Curator of Exhibitions, Pennsylvania Museum of Art, Philadelphia.
June	"A Century of Progress," International Exposition at Chicago.
June 1	Closing date of competition sponsored by the Scoville Manufacturing Company, Waterville, Connecticut.
June 1-10	International Congress for Modern Architecture to be held in Moscow.
June 10	Annual meeting of the Garden Cities Association of France and of the International Linear Cities Association, to be held at the Institut Oceanographique in Paris.
June 26-30	Thirty-sixth annual meeting, A. S. T. M., Chicago.

BROOKLYN CHAMBER OF COMMERCE AWARDS

Architects, builders and owners of two new structures erected in Brooklyn during 1932 are recipients of the Brooklyn Chamber of Commerce 1932 building awards: The Dime Savings Bank of Brooklyn, in the financial-business classification, and the new branch plant of John Morrell and Company, in the industrial classification. Halsey, McCormack and Helmer, Inc., were the architects and the William Kennedy Construction Company, builders of the Dime Savings Bank. H. P. Henschien, of Chicago, was the architect and the Turner Construction Company, the builder of the new branch house for John Morrell and Company.

PRINCETON PRIZES IN ARCHITECTURE

Two competitive prizes of $800 each in the School of Architecture, Princeton University, are announced for the year 1933-34.

The prizes will be awarded as the result of a Competition in Design to be held May 31.

Candidates for these prizes shall be unmarried male citizens, not less than twenty-one or more than twenty-seven years of age on September 1, 1933, who have been employed as draftsmen in architects' offices for not less than three years, or who have otherwise demonstrated their ability in Architectural Design. Applications to enter the competition must be filed on or before April 22nd. Address the Director, The School of Architecture, Princeton University, Princeton, N. J.

DUTCH BOY ROUNDS OUT THE LINE!

3 new products so that now you can specify Dutch Boy QUALITY *throughout!*

●Three new products, including an *improved* soft-paste white-lead, now make it easy to insure Dutch Boy quality throughout on every white-lead painting job. By rounding out this famous family, these products enable you to specify beautiful and durable finishes, either interior or exterior, that are "Dutch Boy" even to colors-in-oil and drier.

Dutch Boy ALL-PURPOSE Soft Paste White-Lead is the first of these improved paint products. It is a rapid-mixing soft-paste which can be used for inside or outside work with equal ease and success. Mixed with linseed oil, it gives a durable exterior gloss finish—the kind that Dutch Boy is noted for. With flatting oil, it produces a fine, washable inside flat finish, without a vestige of "flashes" or shiny spots.

Dutch Boy Colors-in-Oil comes next. This is a line of best quality oil colors specially developed for tinting white-lead paint. These colors have strong tinting power and are absolutely accurate in color tone. They disperse into the paint quickly without streaking because they are made in a "short," buttery paste form.

Dutch Boy Liquid Drier is the third of these newcomers. This is a paint drier that is properly "balanced"...a drier of uniform quality and strength, made up of just the right ingredients. You can depend upon it to give characteristic Dutch Boy performance.

These three products, together with their older Dutch Boy companions listed on this page, greatly simplify your job of specifying white-lead finishes, and insure the results that you demand and that your clients desire.

Other Members of the Dutch Boy Family of Paint Products

★

DUTCH BOY LINSEED OIL. Pure, clear, well-settled linseed oil—either raw or boiled. Only the best of selected oil is sold in these sealed cans.

DUTCH BOY FLATTING OIL. A skillfully blended flatting liquid for use with white-lead to produce both flat and semi-flat paint for modern interior painting. Gives a finish which is sanitary, washable, durable, beautiful and economical. For use also as a blending, glazing and bronzing liquid.

DUTCH BOY WALL PRIMER. A special primer developed for use in white-lead painting. Stops suction, seals fire cracks and, at same time, serves as first coat. Possesses exceptional hiding power. Forms a tightly adhering foundation for succeeding coats of white-lead. Works equally well on all interior surfaces—plaster, wallboard, insulating board, brick, concrete.

DUTCH BOY RED-LEAD. Unexcelled for protecting iron and steel against corrosion. A pure, fine, highly oxidized red-lead, supplied in either paste or liquid form.

NATIONAL LEAD COMPANY

111 Broadway, New York; 116 Oak St., Buffalo; 900 W. 18th St., Chicago; 659 Freeman Ave., Cincinnati; 820 W. Superior Ave., Cleveland; 722 Chestnut St., St. Louis; 2240 24th St., San Francisco; National-Boston Lead Co., 800 Albany St., Boston; National Lead & Oil Co. of Pa., 316 4th Ave., Pittsburgh; John T. Lewis & Bros. Co., Widener Building, Philadelphia

AMERICAN ACADEMY IN ROME COLLABORATIVE COMPETITION AWARDS

The winners in the Collaborative Competition of the Association of the Alumni of the American Academy in Rome are as follows:

The team of John L. King as architect, Philip F. Bell as painter and Raymond Barger as sculptor, of Yale University; the team of Robert K. Chisholm as architect, Doris Monroe as painter, and Edith Barnes as sculptor of Yale University; and the team of James H. McNaughton as architect, Charles L. Dietz as painter and Katherine McSwigan as sculptor of Carnegie Institute of Technology, were all given the grade of second medal and were considered a tie for first place.

This competition is fostered by the Association of the Alumni of the American Academy in Rome, and has as its purpose the stimulation of collaboration between the arts of architecture, painting and sculpture. In the competition of this year six schools were represented—Cornell University, Leonardo Da Vinci Art School of New York, Yale University, Carnegie Institute of Technology, University of Pennsylvania in cooperation with the Pennsylvania Academy of the Fine Arts and the Armour Institute of Technology allied with the Art Institute of Chicago.

KELLEY FELLOWSHIP AWARD

The Educational Committee of the Boston Society of Architects announces that John E. Linnett of Boston has been appointed the fourth holder of the James Templeton Kelley Fellowship in Architecture.

LEBRUN SCHOLARSHIP AWARD

The award of the LeBrun Traveling Scholarship for 1933 is announced by Chester Aldrich of Delano and Aldrich, chairman of the Scholarship Committee of the New York Chapter, American Institute of Architects. The winner of the scholarship is Walter T. Stopa of Chicago, nominated by John Holabird of that city. Honorable mentions were awarded to George D. Recher of Chicago, Ill.; Edward A. Pauly, Hamburg, N. Y.; Magnus Thompson, Washington, D. C.; Floyd Rible, Los Angeles, Calif.

STOCKHOLM COMPETITION JURY

When the competition closed for the new city plan in Stockholm 239 entries had been announced. Of the 500 applicants for the rules and other materials about one-half had decided to participate, which was regarded as a very promising proportion. At the closing hour only 111 proposals were actually on hand, but the customs authorities reported that they had 12 plans from the United States and 11 telegrams had arrived, announcing that entries were on the way. All those will be considered.

The judges, who have an appropriation of 60,000 kronor for prizes and purchases of plans, are Harry Sandberg and Yngve Larsson of the Stockholm Municipal Council, Professor Hermann Jensen of Berlin, George L. Pepler, an architect of

London, Ragnar Oestberg, designer of the Stockholm City Hall, E. Gunnar Asplund, architect of the 1930 Exposition and the Stockholm City Library, Carl Bergsten, chief designer of the interior of the motor-liner, "Kungsholm," A. Lilienberg, head of the city planning commission of stockholm, and G. Ahlbin, an editor of Svenska Dagbladet.

RADIO CITY GUIDE SERVICE OFFERED BY ARCHITECTS' EMERGENCY COMMITTEE

Sightseeing tours through Rockefeller Center are now possible under the guidance of the architect-guides available through "Manhattan Land Cruises," it is announced by Mrs. Edward Shepard Hewitt, Chairman of the committee in charge of that employment activity for the Architects' Emergency Committee.

EUROPEAN STUDY TOUR

A group of young architects will make a study of modern architecture in Europe this summer in a tour sponsored by Alpha Alpha Gamma, national architectural sorority, according to an announcement from The Open Road, 56 West 45th Street, New York, which is completing the arrangements.

Miss Jane West, a graduate of the University of Minnesota and a member of Beta chapter of the sorority, has been appointed leader. She has recently returned from a year and a half of study abroad. While in Paris she worked as a designer in the office of Le Corbusier.

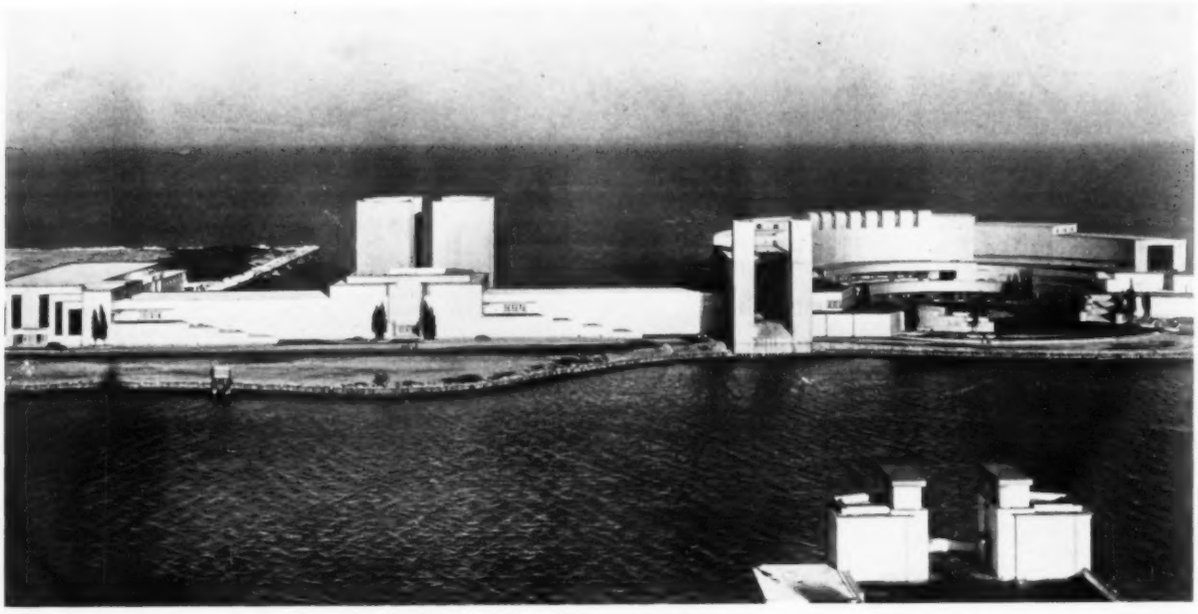
The group will study city planning projects, housing, and public buildings in Holland, France, Switzerland, Germany and the Scandinavian countries. Special arrangements in Europe, and Miss West's personal acquaintance with the offices of important architects, will permit study of typical structures in the plans, as well as by inspection. A native English-speaking guide who has some knowledge of architecture will accompany the group in each country.

The group will sail from New York on June 30 on the *Columbus*, returning on August 30 on the *Bremen*.

FURNITURE COMPETITION JURY

While previous announcements have been made of the requirements and qualifications of a designer who may submit designs for the Modern Furniture Design Competition, this is the first announcement of the selection of the Jury of Awards who will decide the winning designs. The Jury selected by the American Walnut Manufacturers' Association is as follows: Richard F. Bach, Metropolitan Museum of Art, New York City; Louis F. Breuner, John Breuner Company, Sacramento, California; A. W. Crawford, John A. Colby & Sons, Chicago, Illinois; L. W. Stevenson, Lord and Taylor, New York City; Joseph Urban, New York City.

All designs must be in the hands of the American Walnut Manufacturers' Association, 616 South Michigan Avenue, Chicago, by April 15. The awards will be made immediately thereafter.



A CENTURY OF PROGRESS — CHICAGO'S INTERNATIONAL EXPOSITION

FEATURES OF THE MAY ISSUE

DEVELOPING PRIVATE BUSINESS IN 1933

Architects everywhere are concerned with methods for developing current business and they are looking to the architectural publications for practical ideas to apply in their own communities. There are methods that involve research which some members of the profession are now using to encourage small and large housing projects, civic improvements, modernization. The architect, particularly at present, has every inducement to qualify himself to give sound advice on the investment problem in building as well as on the problem of design. The tendency of practice is distinctly in the direction of such twofold service.

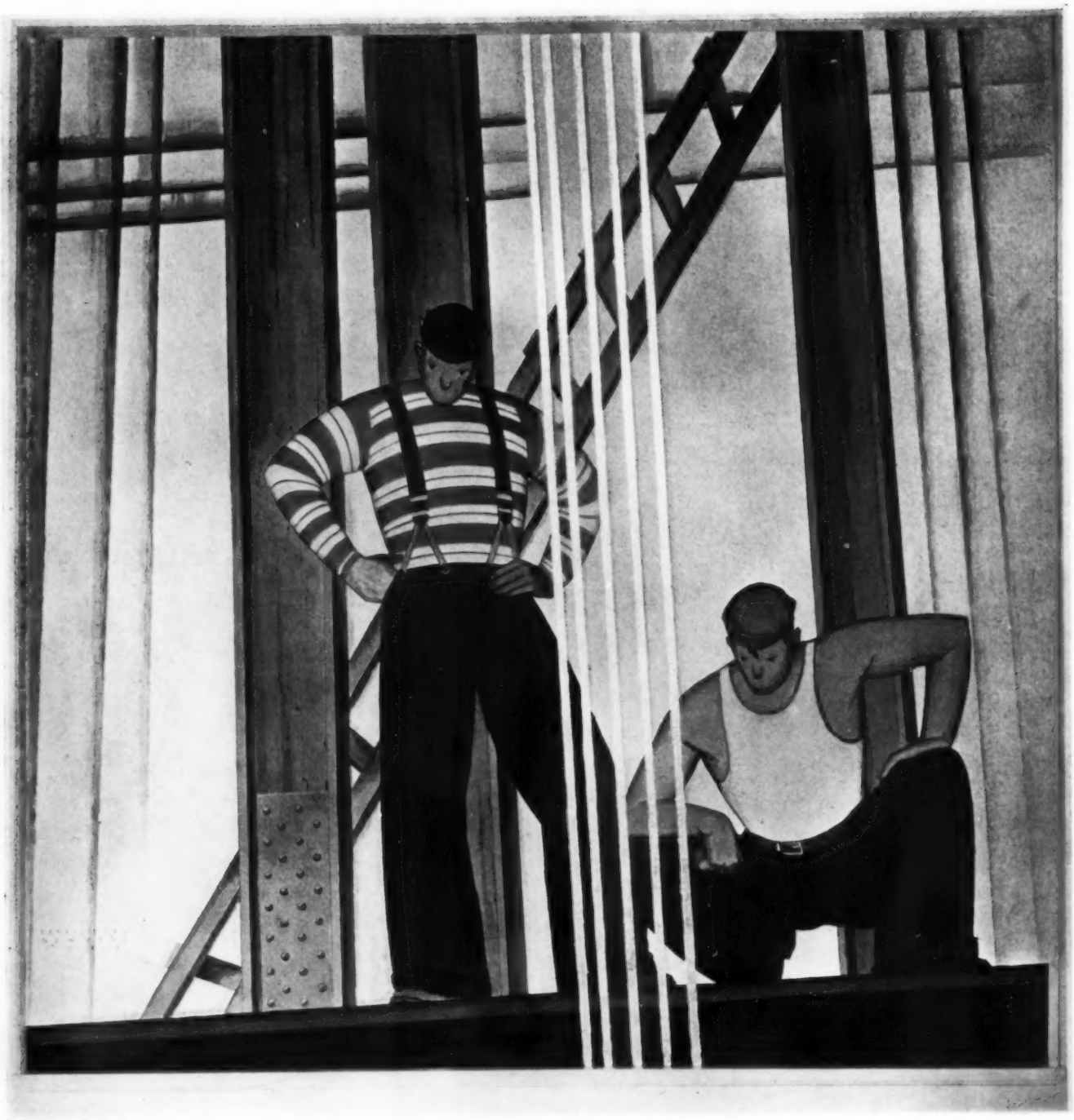
To promote this tendency, The Architectural Record will publish articles, in our May issue, by consulting specialists in answer to the question, "What information is required under present conditions to convince, first oneself and, next, the owner and lending institution of the soundness of a proposed building project?" The articles will explain how analyses to determine the most profitable uses of real estate are made and what sources of information the architect may employ.

A leading article in this symposium will be written by Mr. Delbert S. Wenzlick, president, Real Estate Analysts, Inc., of Saint Louis and Chicago. Mr. Wenzlick was engaged in the real estate business in Saint Louis for many years. Several years ago he turned his attention to the broader aspects of urban real estate economies. This interest in this subject has been given expression during the last two years in the form of extensive and exhaustive analyses of urban real estate. Mr. Wenzlick is now applying his analyses to individual properties. These studies, it is believed, can be applied in appraising other undertakings.

A CENTURY OF PROGRESS EXPOSITION

The May issue will also include a symposium discussion of the Chicago World's Fair Buildings with particular reference to new and interesting technical features and with emphasis on design, use of color, lighting, etc. The following are the subjects under consideration and the architects and engineers who have been asked to contribute:

Exterior color—Otto Teegen of the Office of Joseph Urban.
Interior color—Shepard Vogelgesang.
Exterior lighting effects—D'Arcy Ryan.
Gadgets, shelters and foundations—C. W. Farrier.
Sky Ride and other concessions—Nathaniel Owings.
Exhibit design—A. D. Skidmore.



Peter A. Juley & Son

MURAL BY ERNEST BORN FOR OFFICE OF SIDNEY F. ROSS, NEW YORK CITY

THE ARCHITECTURAL RECORD

APRIL, 1933 VOLUME 73 — NUMBER 4

PUBLIC WORKS PROGRAM URGED BY CONSTRUCTION INDUSTRY

A list of more than 2,700 projects for road work, water works, sanitation, bridges, housing and slum clearance, hospitals and schools, amounting to more than two and a half billion dollars has been submitted to the new administration in Washington.

A Committee of the Construction League of the United States has been endeavoring for more than a year to convince the Federal Government that the most definite, practical measure of recovery which could be initiated would be a public works construction program of such magnitude as would affect every part of the country and thus increase the purchasing power of individual workers.

The Construction League of the United States, a cooperative body which was formed in the autumn of 1931 on the initiative of the American Institute of Architects and which now includes representatives of approximately twenty national associations, is actually a cross section of all component parts of the construction industry. A Committee on Public Works of the American Society of Civil Engineers had already taken the leadership in sponsoring a construction program before the League was formed. Thereafter the architects and engineers jointly forwarded this movement with the cooperation of representatives of the Associated General Contractors, the Producers Council and the national associations of masters of the various crafts (such as painters, plumbers, plasterers), and other groups like the Institute of Steel Construction and the Portland Cement Association.

Since the new administration in Washington has taken office, the work has been continued through the efforts of Col. John P. Hogan of the American Society of Civil Engineers, President Malcom Pirnie of the American Water Works Association, President Russell and Robert D. Kohn of the Institute of Architects, Col. Walbridge, A. C. Tozzer and J. H. P. Perry of the Associated General Contractors, and other representatives. These men have spent much time in Washington and through a special committee called the Committee on Trade Recovery, which now comprises more than 40 State agencies, have collected information as to the available public works that could be started by proper financing through the Federal Government.

Shortly after March 4 a definite program of procedure was presented by this Committee to the new administration in Washington. At the request of Secretary of Labor Perkins and Budget Director Douglas, the Committee proceeded to gather definite data to support the contention, which it had presented to the administration, that more than three and a half billion dollars of Municipal, State, County and Federal public works of various kinds had been postponed during the last three years because of the depression. The Committee had maintained that a considerable portion of this work was already designed and that the major part was actually needed and would make for better living and working conditions of people throughout the country. Spurred on by requests of the administration the Committee telegraphed all over the country and gathered further information. The members were thus able to go to Washington the week of March 28 and present to officials a list of more than 2,700 projects for road work, water works, sanitation, bridges, housing and slum clearance, hospitals and schools, amounting to a total cost of two and a half billion dollars already reported. Millions of dollars for additional projects were being listed for each day thereafter. The Committee made a definite statement to the administration that it was convinced that, under the leadership of the President and with a call on his part to every community to put men to work on public works to be financed by Federal loans, more than one and a half million men could be employed before the coming winter. The wages of these men would gradually produce a collateral increase of purchasing in their families, and many others would be benefited by the increased activity.

The whole matter is still under consideration in Washington at the present time (April 4). The program, which is being presented in the name of the entire construction industry and not of any one group, is looked upon with favor by a number of members of the President's cabinet.

The actual Chairman of the Committee in charge is Robert D. Kohn, Past-President of the American Institute of Architects.

THE INDIANA "PENNY PETITION"

A movement has been recently started by the Indianapolis chapter of the Indiana Society of Architects to reform the procedure now followed in the design and construction of Federal buildings. The proposal includes new legislation governing all Federal contracts that "will (1) insure the appointment of a duly qualified architect to supervise the Bureau of Architecture; (2) attempt to eliminate many grossly unfair practices now prevailing therein; (3) control bid peddling and 'cut-throat' competition; (4) restrict subcontract proposals to selected lists of qualified contractors; (5) demand that general contracts represent the sum total of original sub-bids without recourse to lowering of these bids after contracts are awarded."

The sponsors of this movement intend to seek the indorsement of the various architectural and engineering societies, building congresses, contractors' associations, and building material groups throughout the country before petitioning legislators. To carry out this activity it is proposed that during a period of two weeks postcards bearing the label of "The Penny Petition" be mailed from every member of the building industry to State representatives. From architects, engineers, contractors and others in the building industry individual contributions of 5c are to be solicited, of which 3c will be reserved for postage, printing and incidental local expense and 2c contributed to a designated national headquarters.

ARKANSAS FARM HOUSING PROJECT

A farm rehabilitation program involving large acreage in Arkansas is sponsored by a Committee under the chairmanship of Vincent M. Miles of Fort Smith, Arkansas, appointed by the Governor of Arkansas. A loan from the Reconstruction Finance Corporation is being sought to finance the enterprise. Plans call for the construction of housing as well as provision of land and necessary seed and equipment which will be supplied to men selected for this rehabilitation project.

FIRST HOUSING LOAN BY R. F. C.

The first loan to be advanced by the Reconstruction Finance Corporation has been awarded to Knickerbocker Village, an apartment development to be built on the lower east side of New York City. The project has been planned by the Fred F. French Operators, Inc.

The loan of $8,075,000 will be used to purchase all the land in the blocks bounded by Catherine, Monroe, Market and Cherry Streets now occupied by tenements condemned for many years as unfit for human habitation, yet housing nearly 3,000 persons. This section is in the most congested part of the lower east side and has become known as the "lung block" because of the prevalence of tuberculosis.

As a part of the land assembly, Hamilton Street, which cuts diagonally across the site, is to be vacated, creating an area of 219,736 square feet.

The old tenements will be replaced by 12-story and basement fireproof apartments of steel and concrete construction. They will contain 1,662 apartments and 6,030 rooms at an average rental of $12.50 a room per month.

Actual work on the project is scheduled to begin May 1, according to Fred F. French, president of Fred F. French Operators, Inc. About 10,000 men will be employed directly and indirectly for at least a year in razing the old dwellings and building the new, according to Mr. French.

AMERICAN PRODUCTS FOR PUBLIC WORKS

Only American products and materials will henceforth be used in the construction of public buildings and public work, according to the terms of a law enacted March 3. A section of the law covering this requirement includes the following:

"Sec. 2. Notwithstanding any other provision of law, and unless the head of the department or independent establishment concerned shall determine it to be inconsistent with the public interest, or the cost to be unreasonable, only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States, and only such manufactured articles, materials, and supplies as have been manufactured in the United States substantially all from articles, materials, or supplies mined, produced, or manufactured, as the case may be, in the United States, shall be acquired for public use. This section shall not apply with respect to articles, materials, or supplies for use outside the United States, or if articles, materials, or supplies of the class or kind to be used or the articles, materials, or supplies from which they are manufactured are not mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality. . . ."

By the terms "public use," "public building," and "public work" is meant use by, public building of, and public work of, the United States, the District of Columbia, Hawaii, Alaska, Puerto Rico, Philippine Islands, American Samoa, the Canal Zone, and the Virgin Islands. The provision is in effect from the date of its enactment but does not apply to any prior contract.

BEER INCREASES BUSINESS ACTIVITY

The effect of beer on business is plainly evident in the early April reports that magazine editors in all industries have made to their association, The Associated Business Papers, Inc., at New York. A survey shows that hotels and restaurants are now spending $55,000,000 for modernization and new equipment to meet expected trade. Chemical producers feel a strong demand from bottle and glassware makers. Electric power equipment makers are filling orders traceable to beer. Electric refrigerator manufacturers are rushing heavy orders of beer-cooling equipment. A great increase in corn and rye milling is credited to beer.

Sigurd Fischer

Forty-third Street Façade

REMODELING FOR BRANCH BANKING

42ND STREET BRANCH OF EMIGRANT INDUSTRIAL SAVINGS BANK, NEW YORK

VOORHEES, GMELIN AND WALKER, Architects

The new branch of the Emigrant Industrial Savings Bank in the remodeled Transit Building in the heart of the Grand Central district of New York City, extends between Forty-second and Forty-third streets, with entrances on both streets.

This new branch bank departs from the conventional bank interior of cold marble and formidable steel cages. The entire interior is finished in soft reddish brown lacewood, and by this warmth of color and simplicity of tone, the coldness that characterizes many banks is obviated.

Partitions and cages are absent. The fifteen receiving tellers work with only a narrow counter separating them from depositors. The administrative officers, instead of being cloistered by partitions, have their desks out in the open, where they can be seen by all depositors.

The floor of the bank is terrazzo, also reddish brown. Illumination is by inverted bronze fixtures of nesting semi-cones on the wall, with the light reflected indirectly from the ceiling. The floor in the women's rest room and in the area occupied by the administrative officers is covered with a maroon carpet.

In remodeling the Transit Building the entire wall of the front of the building was torn away for two floors and a new façade erected of Indiana limestone with grey granite base. A large clock, with illuminated dial of translucent glass and with bronze numerals and hands, is installed at the third story level. On the Forty-third Street side of the bank two brownstone houses were torn down and the present two-story structure, with limestone front on granite base, was erected.

To the right of the Forty-second Street entrance is the women's rest room and lavatory; to the left is a conference room; between them is an anteroom to the bank. The open offices of the administrative officers are next. In the center of the bank is a large open space, with an opening to the men's wash room and an entrance to the lobby of the building. Then comes the tellers' space, with

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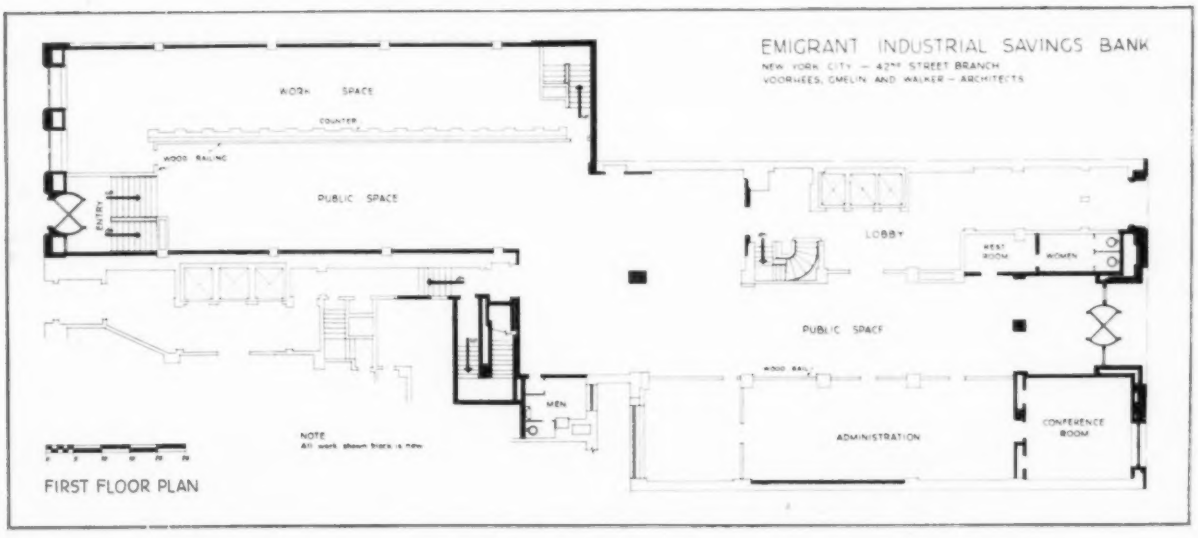
Forty-Second Street Façade



glass-topped desks along the opposite wall for the convenience of customers. Daylight floods the main banking room and the foreign exchange department through a clear-story roof.

The safe deposit vault is reached either from the main floor of the bank or by stairs going down from the Forty-third Street entrance. At the entrance of the safe deposit room is a stainless steel grille. The room has plastered walls finished in deep maroon, with harmonizing carpet on the floor. Coupon booths are ranged along the side. A conference room is adjacent.

The vault, with thick concrete walls and the latest type of vault reinforcing, is lined with stainless steel. The floor is paved with rubber tile. A passage runs around the vault, and mirrors are set in the corners so that all sides of the vault may be seen from the front.

In the basement of the bank are also rest rooms for both men and women employees, locker rooms, and also rooms for records, stationery and other purposes.

Sigurd Fischer

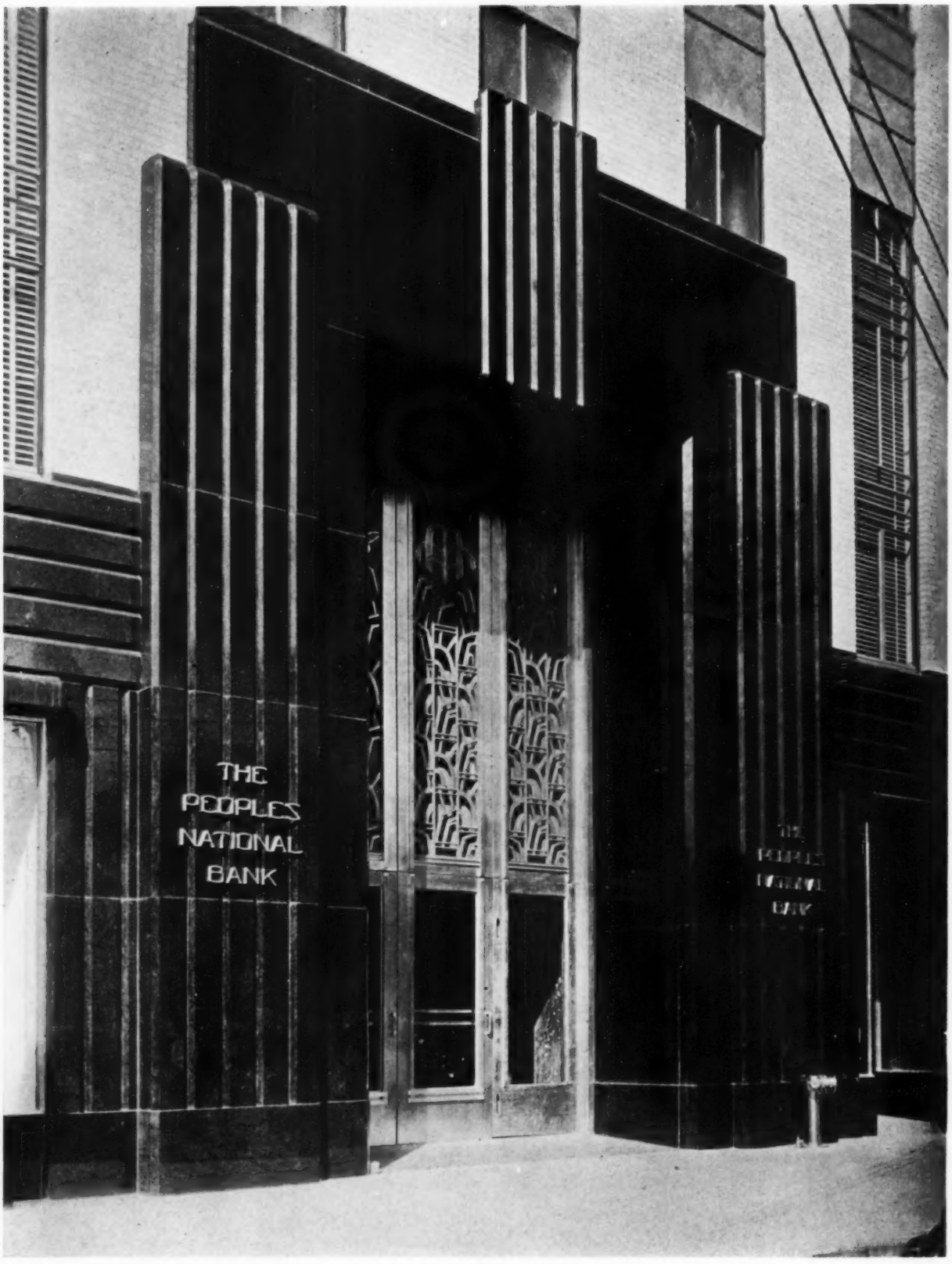
EMIGRANT INDUSTRIAL SAVINGS BANK
42ND STREET BRANCH, NEW YORK CITY
VOORHEES, GMELIN AND WALKER, ARCHITECTS

View from the Square. Building is 15 stories and basement in height.

THE PEOPLE'S NATIONAL BANK, TYLER, TEXAS
ALFRED C. FINN, ARCHITECT

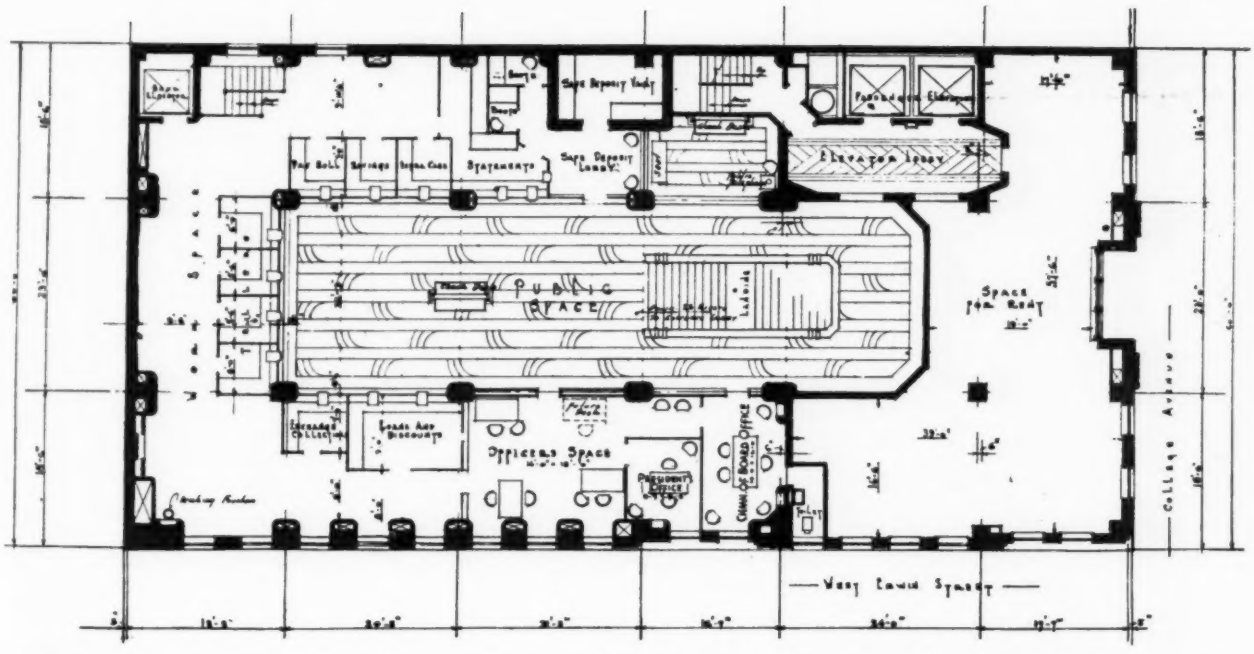
View down North College Avenue. First story is of black granite; upper stories of buff brick with cast stone spandrels.

THE PEOPLE'S NATIONAL BANK, TYLER, TEXAS
ALFRED C. FINN, ARCHITECT



Main entrance of black granite with polished aluminum doors and grille.

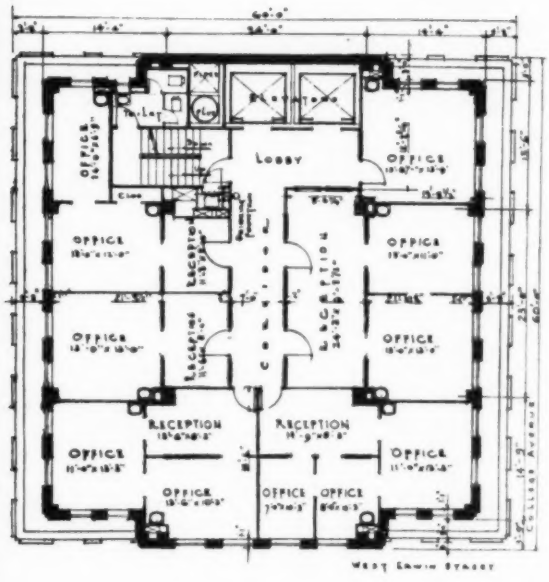
THE PEOPLE'S NATIONAL BANK — TYLER, TEXAS
ALFRED C. FINN, ARCHITECT



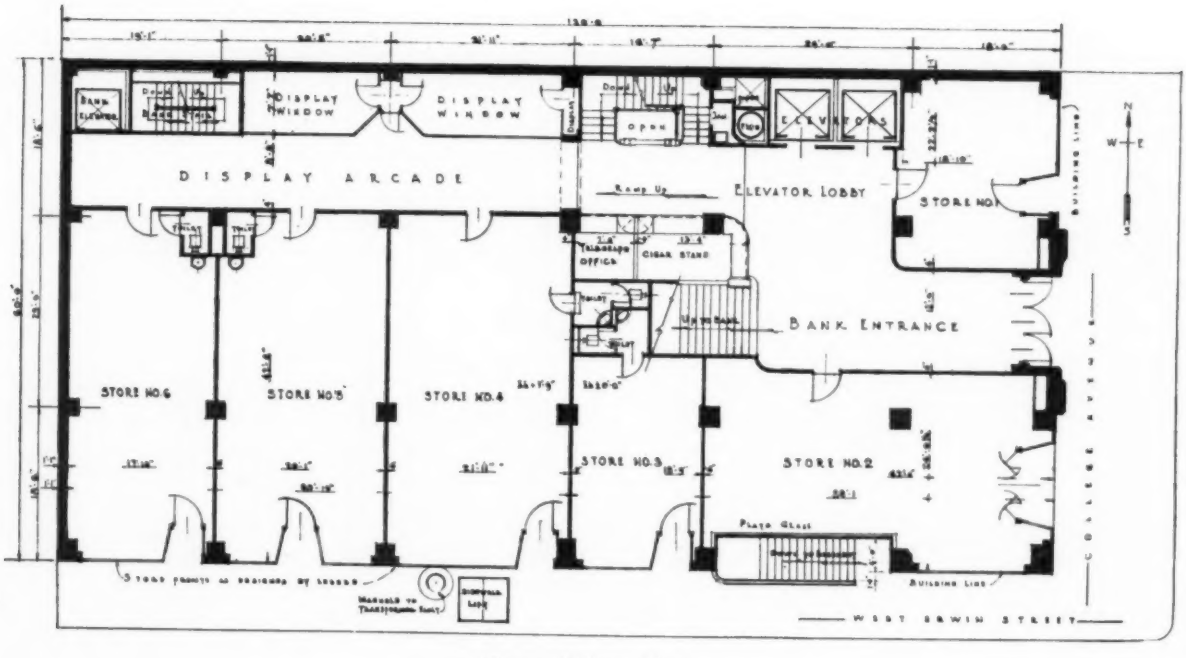
Banking Room on second floor. Terrazzo floor; marble stair and wainscot; metal leaf walls and columns; polished aluminum and glass fixtures; plaster ceiling.

THE PEOPLE'S NATIONAL BANK — TYLER, TEXAS
ALFRED C. FINN, ARCHITECT

Detail of Banking Room.



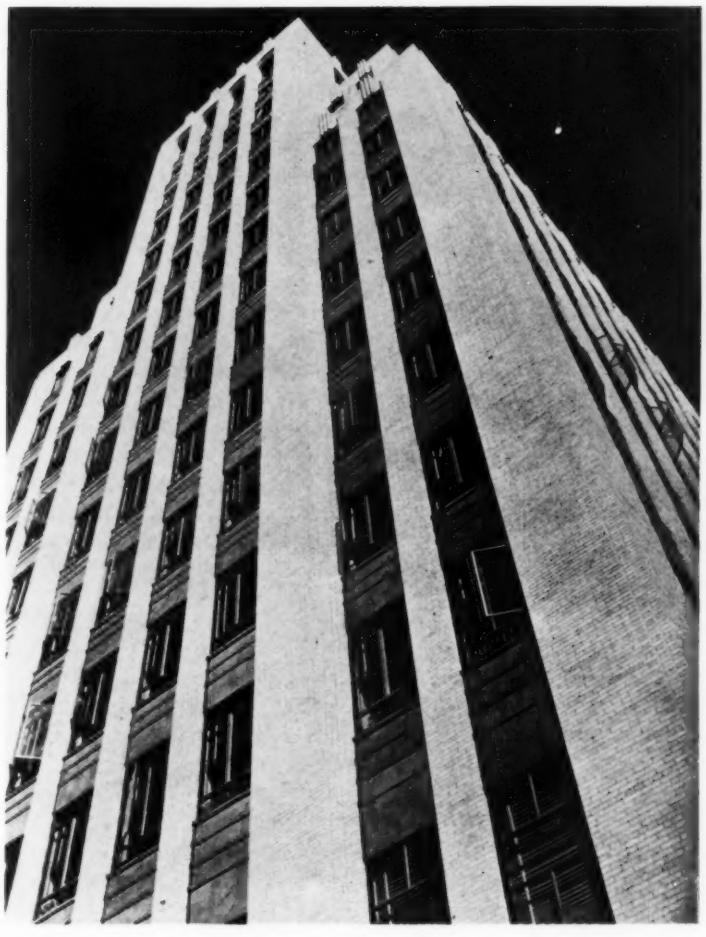
Plan of 11th and 12th Floors.

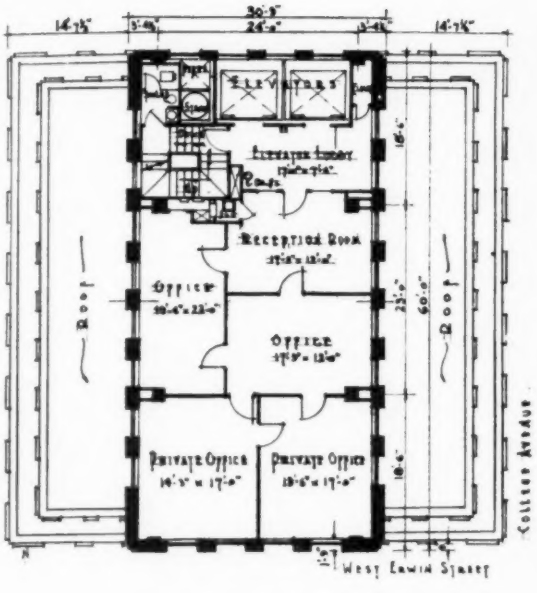


Ground Floor Plan.

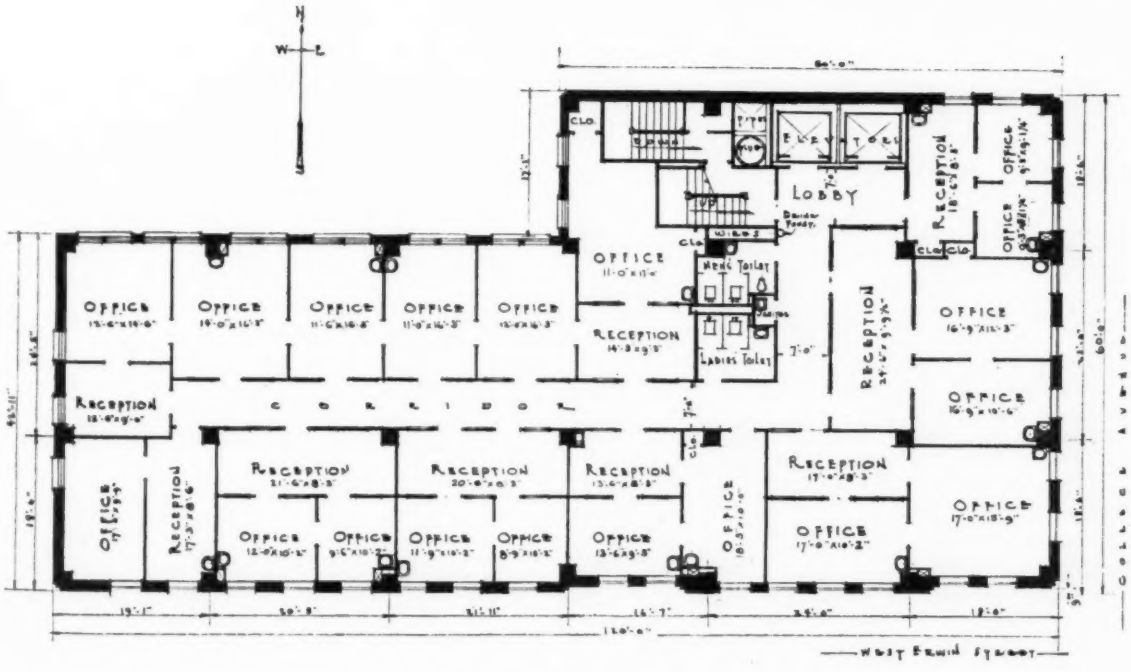
THE PEOPLE'S NATIONAL BANK — TYLER, TEXAS
ALFRED C. FINN, ARCHITECT

Detail of Exterior.





Plan of 13th to 15th Floors.



Typical Floor Plan.

THE PEOPLE'S NATIONAL BANK — TYLER, TEXAS
ALFRED C. FINN, ARCHITECT

WCAU BROADCASTING STUDIOS, PHILADELPHIA

By ROBERT HELLER, Interior Architect

The new WCAU Broadcasting Studios, affiliated with the national chain of the Columbia Broadcasting System, occupy the three upper floors of the recently completed WCAU Building.*

The main audition room, rehearsal room and four principal studios (A, B, C and D) are located on the sixth floor. Each studio is arranged with a separate control room, a private vestibule and a room-sized closet in which musical instruments and other equipment are stored. On the floor above are the reception room, secondary studios (F, G, H and J), main control room, general audition, testing and recording rooms. On the uppermost or eighth floor are the executive offices and offices for general administration.

Soundproofing

The location of this building alongside a noisy business thoroughfare presented the problem of soundproofing against street noises in addition to the soundproofing and acoustical problems of the studios. In all cases windows and other openings in outside walls were blocked up where they opened into studios, and covered with special soundproofing treatment.

The wrought block walls of all studios and auxiliary rooms have been isolated from each other as well as from exterior walls by air space, so that each room is a self-contained unit. The soundproofing treatment, which has been applied to the floors as well as to the walls and ceiling, insulates the finished work from the rough contours of the room, making the interior of each studio virtually a shell within the room. In the walls and ceilings this is accomplished by a special construction that employs cork "insulators" in the structural members that suspend the plaster. In the "floating floors," this is accomplished by regularly spaced cork blocks that separate the finished floor thickness from the underfloor.

To guarantee complete freedom from any outside interference, the rooms adjoining each studio have been soundproofed—the control rooms in the same manner as the studios, and the vestibules with a special acoustic tile. In addition, all openings between these rooms, such as doors and windows, have been specially treated. Observation galleries also have soundproofing treatment as well as double sashed windows to insulate them completely.

Acoustical Treatment

In order to insure ideal conditions for sound transmission, the acoustical treatment was designed on a performance basis, and specifications were drawn permitting a choice of materials, the requirements indicating the number of sound absorption units at selected frequencies to be furnished by such materials. The area of each studio to be treated and the proportions of the total absorption required on each surface were given with a small allowable variation.

On the basis of these requirements, the application of rockwool lining for sound absorption, covered with perforated metal or fabric for protection was selected for all studios.

The principle of the "live" and "dead" end studio was used, the location of treatment in all studios being governed by the location of "dead" and "live" areas surrounding the microphone and performers respectively, the degree of liveness and deadness depending on the shape and absolute dimensions of the room.

The "live" end of the room, from which the programs are to be broadcast, has walls and ceiling of solid construction to reflect the sound waves to the "dead" or receiving end where the microphones are properly placed to receive every note. In the "dead" end of the room, which comprises from one-half to two-thirds of the room, as determined, the walls as well as ceiling, where required, are lined with rockwool application mentioned before. This application is graduated in thickness, with maximum thickness at "dead" end and a reduced thickness used as "live" end is approached.

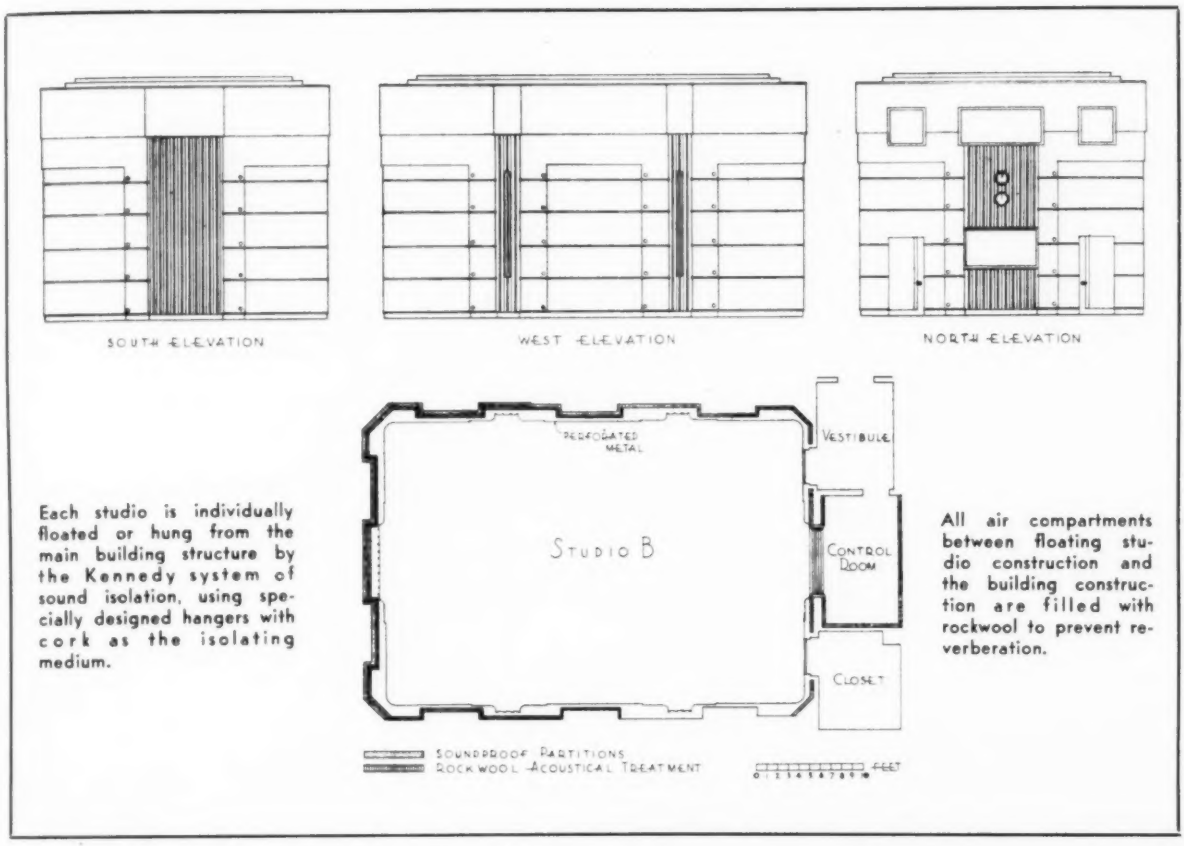
In the maximum thickness, the rockwool application consists of a 2-inch layer placed against soundproof wall, with another layer of the same thickness in front of it, separated by an air pocket of 2 inches. In the larger studios the walls have been designed with highly irregular surfaces, for the purpose of diffusing the sound energy and reducing the interference pattern.

Construction Details

Leading into each studio is a heavy duty soundproof wood door, 3 inches in thickness, with a lead lining in the core, and a double rubber gasket fixed on the door where it meets the stop. As an added precaution, a special lock and lever handle has been installed in each door that automatically controls the release of the handle and eliminates any clicking when the door is opened.

The studio and control room windows are composed of a triple sash, the three panels of the glass being ¼", ⅝" and ⅜" thick respectively, the ⅝" thickness being placed between the lighter panels as an added protection against sound waves caused by any vibration. Each section of the sash and glass is separated from the other parts by cork insulation.

*This building was designed by Gabriel B. Roth, architect.



Ventilating System

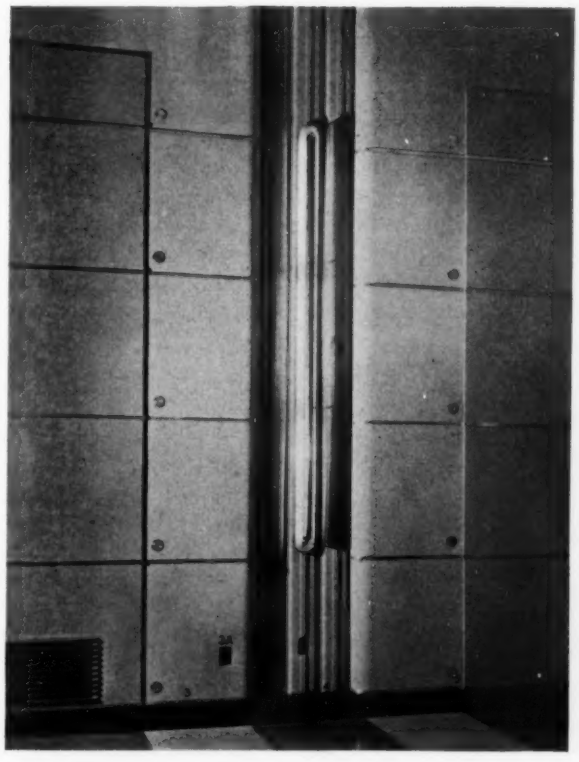
The studios are ventilated by a system of mechanical air conditioning, thereby eliminating the use of outside windows and safeguarding against extraneous noises. The metal ducts used in this system are suspended in all studios by hangers that are insulated with cork, and the ducts proper are packed in rockwool. Each air opening is equipped with a sound trap, to prevent the transference of sound along these ducts. The system provides for air washing, humidifying and cooling each as required. The air supply is provided through openings in the ceilings which are concealed by baffle plates that harmonize with the treatment of the studios and in the larger studios are incorporated in the lighting fixtures. The exhaust air is taken care of through openings near the floors which are screened by grilles.

Audition Room

Walls and floor treated in different tones of cork, with the exception of the south wall as well as the wainscoting around the entire room which are panelled in East India Rosewood. Decorative mural executed in cork. Metal indirect lighting fixtures. Furniture in Brazilian Rosewood and Macassar Ebony. Upholstered pieces covered in fabric.

Studio "A"

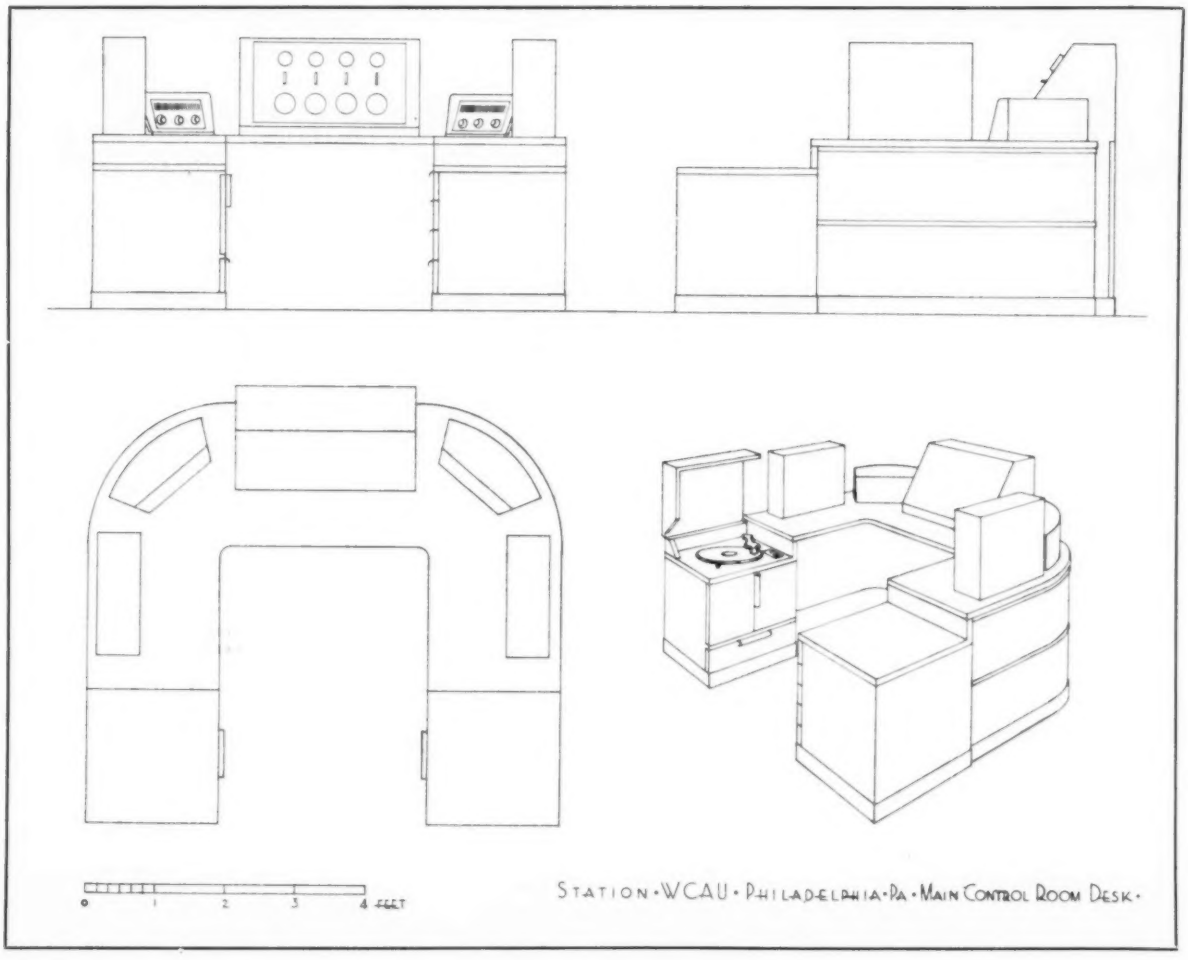
Perforated metal in various shades of gray with horizontal polished aluminum bands; vertical



Rittase

Detail of Wall Construction in Studio "B"

WCAU BROADCASTING STUDIOS IN PHILADELPHIA
DESIGNED BY ROBERT HELLER



panels of azure blue accented by vertical strips of metal. Polished aluminum bands were used not only decoratively but also as a stiffener to prevent vibration of the perforated metal sheets. Lighting fixture—satin finished aluminum and translucent opal glass direct ceiling fixture. Floor—¼″ rubber tile of such color designed to recall color of side walls.

Studio "B"

Perforated metal walls conceived as a series of slabs held together in decorative treatment with horizontal aluminum strips and round metal discs. Walls vary in color from darker shades of green used in rubber tile floor areas, graduating out in sequence to the lighter pale gray jade green in the ceiling surface. Lighting—satin finished aluminum ceiling fixtures and wall brackets with reflective shield for indirect light.

Studio "C"

Horizontal bands of gray, red and black. The same motive is continued in the inlaid rubber floor. The axis of the panel and end of this studio is emphasized by a mural painting executed by John Vassos depicting the drama of radio: Half-round lighting fixtures in the soffit.

Rittase

Main Control Room on Seventh Floor

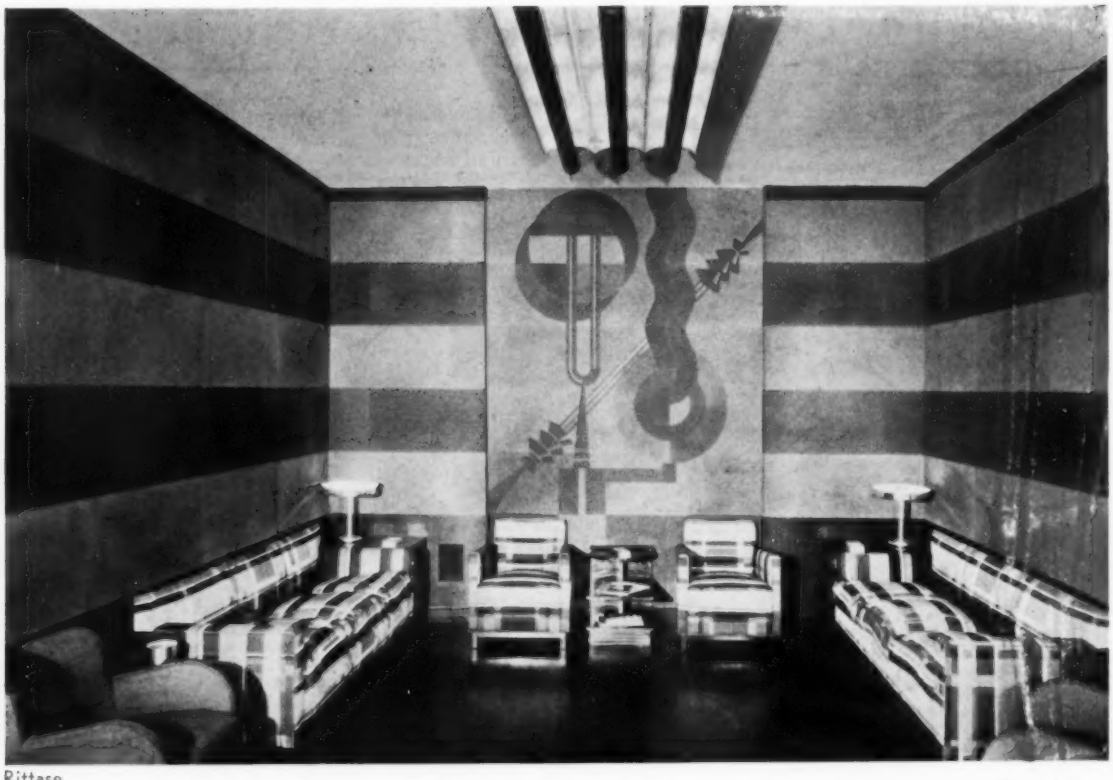
Studio "D"

Tightly stretched mesh wire over the acoustical treatment is covered by a fabric of specially woven red and beige stretched on upholsterer's strips. Mural in light beige fabric embroidered decorative design in red woolen yarn. Ceiling fixtures set into soffit. Rubber tile floor in sympathetic colors recalled from the side walls.

Rittase

Studio "A" on sixth floor.

WCAU BROADCASTING STUDIOS IN PHILADELPHIA
DESIGNED BY ROBERT HELLER



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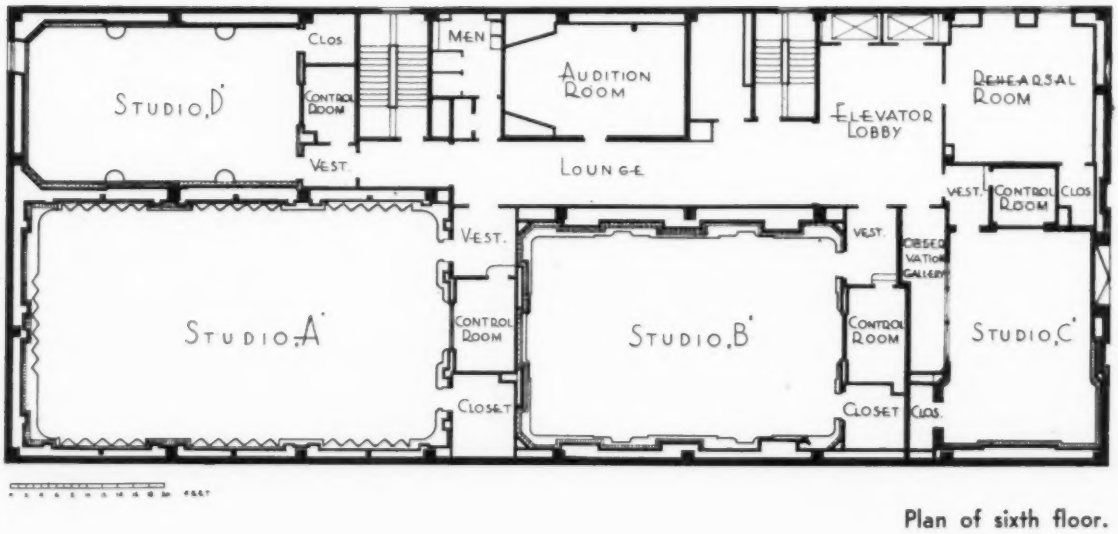
Audition Room.



Plan of sixth floor.

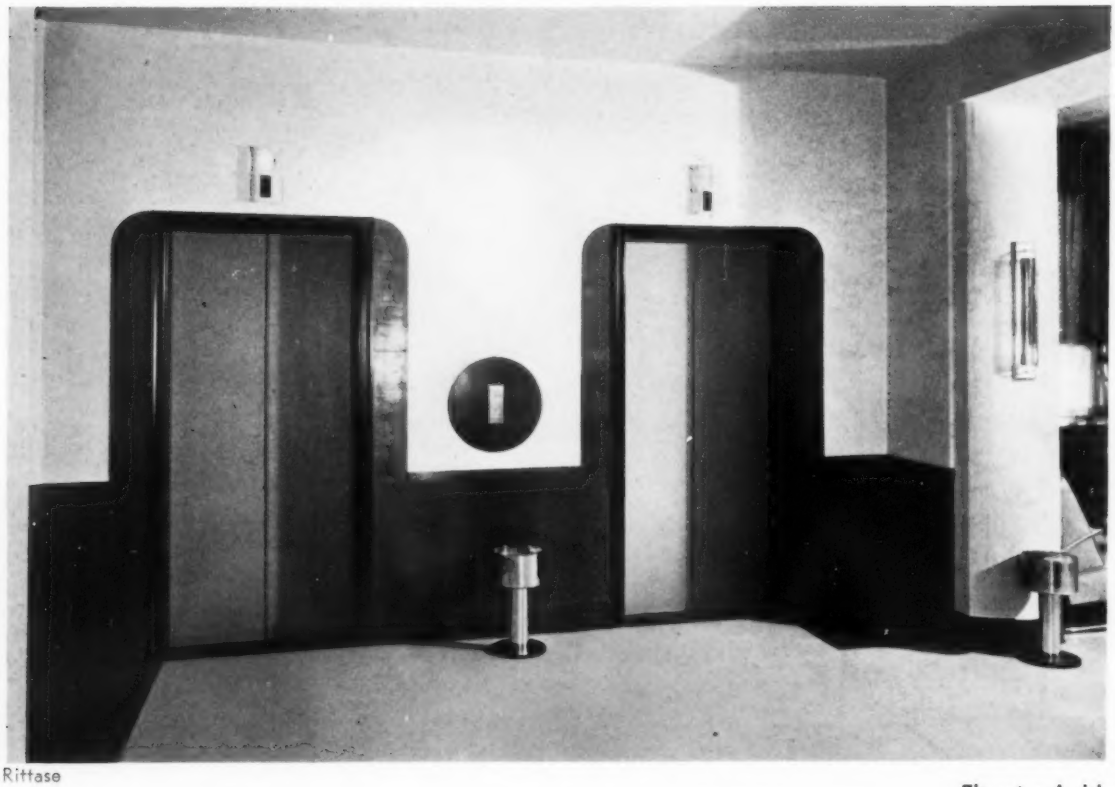
Each main studio is arranged with separate control room, a private vestibule and a room-sized closet in which musical instruments and other equipment are stored. All windows and openings in outside walls have been blocked up and covered with acoustical material.

BROADCASTING STUDIOS
STATION WCAU — PHILADELPHIA
DESIGNED BY ROBERT HELLER

Rittase

Audition Room on sixth floor.

BROADCASTING STUDIOS
STATION WCAU — PHILADELPHIA
DESIGNED BY ROBERT HELLER



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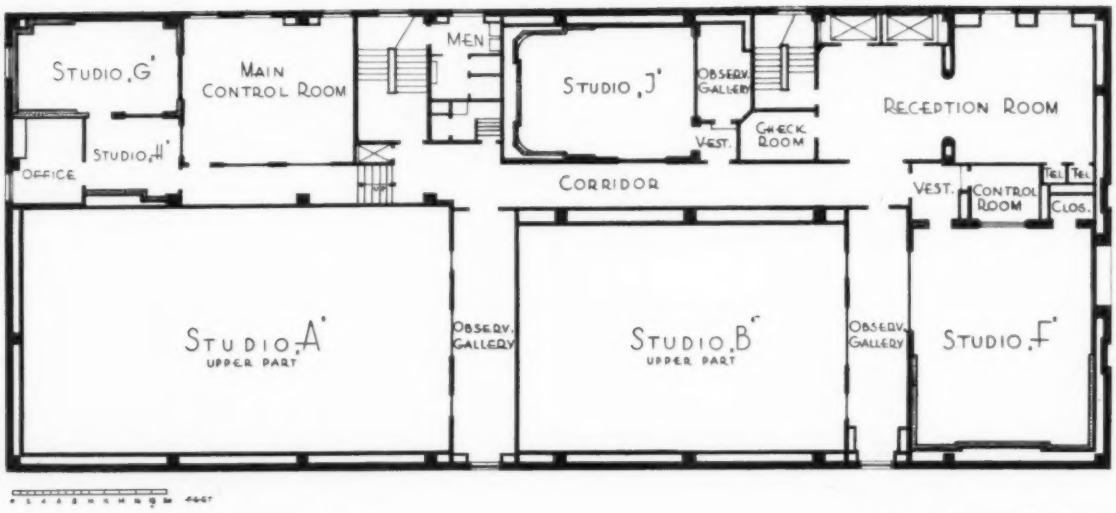
Elevator Lobby.



Plan of seventh floor.

Studios are ventilated by a system of mechanical air conditioning. Metal ducts are suspended by cork-insulated hangers and the ducts packed in rockwool. Each air opening is equipped with a sound trap to prevent transference of sound along ducts. Exhaust air is vented through screened openings near the floors.

BROADCASTING STUDIOS
STATION WCAU — PHILADELPHIA
DESIGNED BY ROBERT HELLER

Rittase

Reception Room on seventh floor.

BROADCASTING STUDIOS
STATION WCAU — PHILADELPHIA
DESIGNED BY ROBERT HELLER

Rittase

Studio "A" on sixth floor.

Rittase

Observation Gallery on seventh floor.

BROADCASTING STUDIOS
STATION WCAU — PHILADELPHIA
DESIGNED BY ROBERT HELLER

Rittase

Studio "A." Walls of perforated metal in shades of gray and blue with horizontal aluminum bands. Floor of rubber tile.

BROADCASTING STUDIOS
STATION WCAU — PHILADELPHIA
DESIGNED BY ROBERT HELLER

Rittase

Studio "B" on sixth floor.

BROADCASTING STUDIOS
STATION WCAU — PHILADELPHIA
DESIGNED BY ROBERT HELLER

Rittase

Studio "B." Perforated metal walls varying from dark green near floor to pale jade green in ceiling.

BROADCASTING STUDIOS
STATION WCAU — PHILADELPHIA
DESIGNED BY ROBERT HELLER

Rittase

BROADCASTING STUDIOS
STATION WCAU — PHILADELPHIA
DESIGNED BY ROBERT HELLER

Studio "C" on sixth floor. Mural by John Vassos depicts the drama of radio.

Rittase

Studio "D" on sixth floor. Red and beige fabric covers mesh wire stretched over acoustical treatment. Floor of rubber tile.

BROADCASTING STUDIOS
STATION WCAU — PHILADELPHIA
DESIGNED BY ROBERT HELLER

Rittase

BROADCASTING STUDIOS
STATION WCAU — PHILADELPHIA
DESIGNED BY ROBERT HELLER

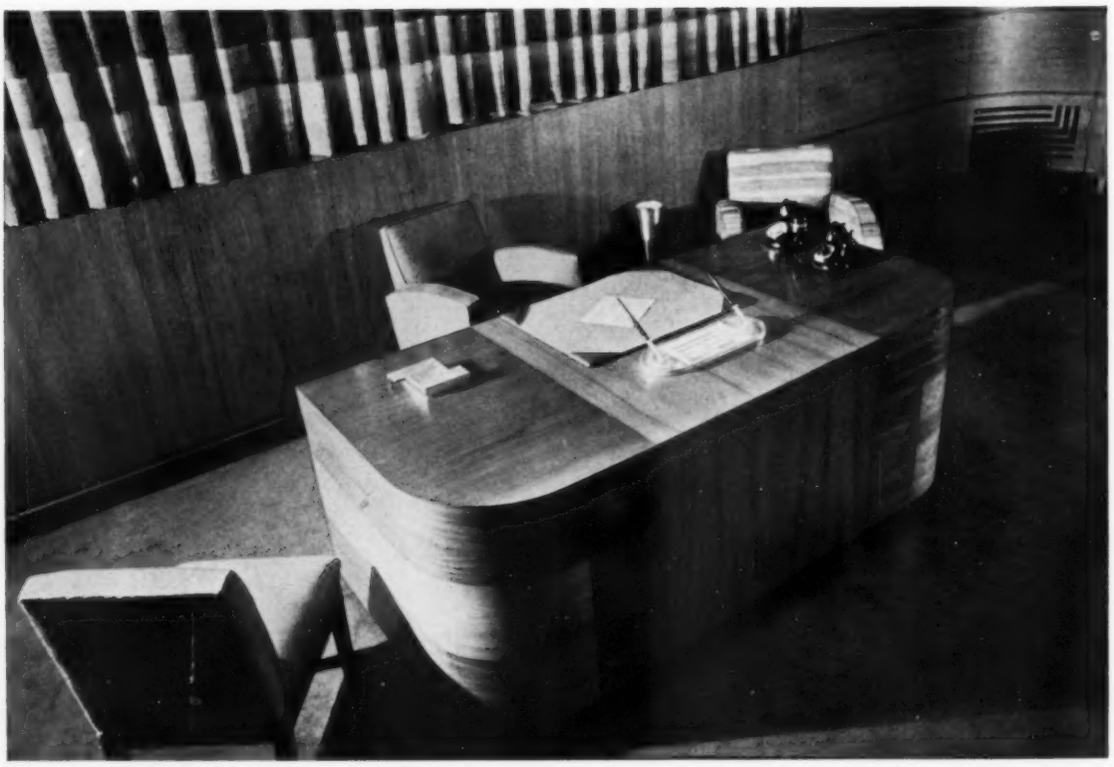
Studio "F" on seventh floor. Horizontal bands alternate in gray and faint salmon.

Rittase

Hallway on sixth floor.

BROADCASTING STUDIOS
STATION WCAU — PHILADELPHIA
DESIGNED BY ROBERT HELLER

President's Office on eighth floor.



Rittase

Walls paneled in selected teakwood and dark walnut inlay. Brown chenille carpet; fabrics in tones of blue and brown. Ceiling coved for indirect lighting.

BROADCASTING STUDIOS
STATION WCAU — PHILADELPHIA
DESIGNED BY ROBERT HELLER

Glasgow

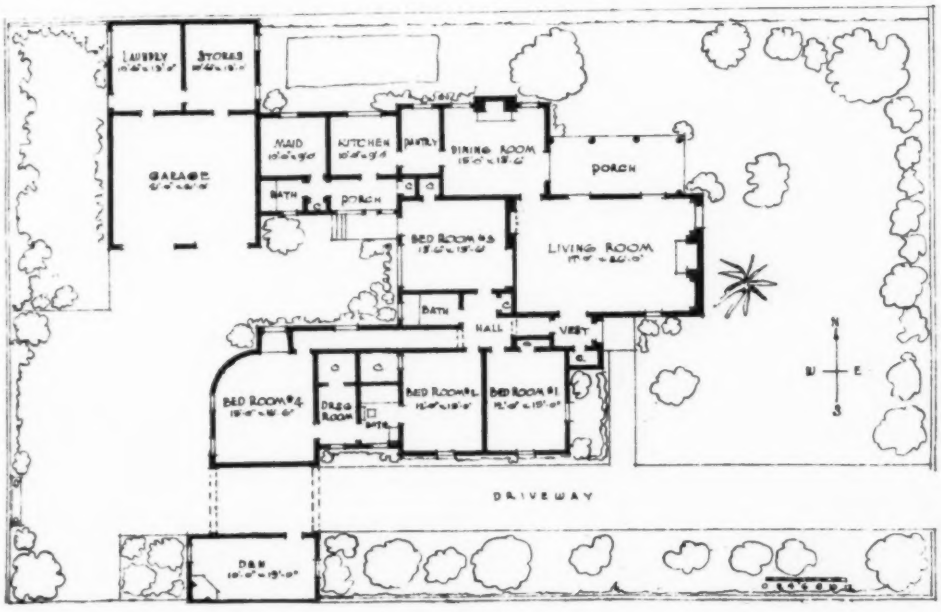
HOUSE OF L. W. WILSON
NEW MILFORD, CONNECTICUT
LEWIS E. WELSH, ARCHITECT

Ground Floor.

Second Floor.

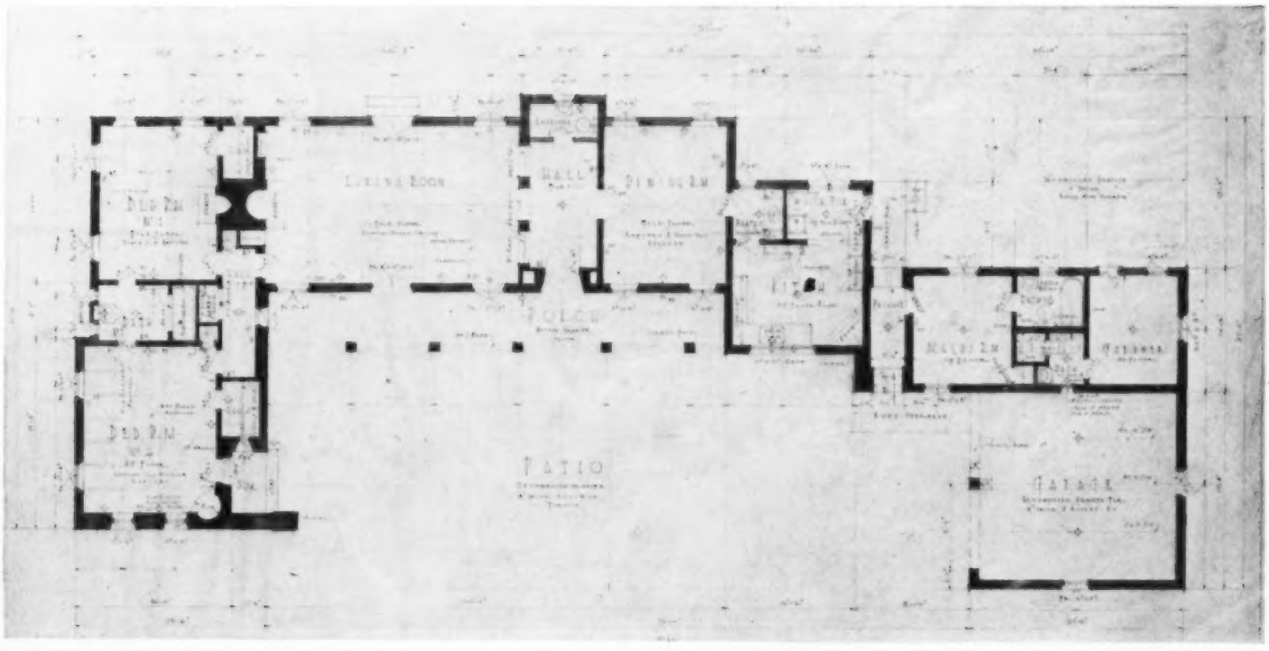
HOUSE OF L. W. WILSON
NEW MILFORD, CONNECTICUT
LEWIS E. WELSH, ARCHITECT

Haight



HOUSE OF OTHO M. BEHR
PASADENA, CALIFORNIA
DONALD D. McMURRAY, ARCHITECT

Mott Studios



HOUSE OF ARTHUR ROSSON
SANTA MONICA, CALIFORNIA
JOHN BYERS, ARCHITECT

Sims & Co.—© "Building"

MESSRS. BOOTS' NEW DRUG FACTORY BEESTON, NOTTINGHAMSHIRE, ENGLAND

SIR E. OWEN WILLIAMS, Engineer

Messrs. Boots Pure Drug Company, Ltd., are the proprietors of nearly one thousand chemist shops spread over Great Britain and also manufacture a large proportion of the chemicals, toilet requisites and goods they sell. Their present factories in the city of Nottingham have been developed with the growth of the business and to that extent have not the advantages either in site or arrangement of a factory planned as an entity for large-scale production. To achieve the efficiencies and economies of a specifically designed factory the Company decided to transfer the manufacturing activities to the outskirts of the same city. The site acquired for this purpose is over 200 acres practically level, for the greater part with good gravel foundations, with satisfactory railway and road facilities and with ample water supply.

The building here described and illustrated constitutes one-third of one of the buildings ultimately contemplated, the present section covering a ground area of about 6 acres.

Factory Operation

The complete building is designed so that the whole of the production is at ground-floor level, from the entry of the raw materials at the two sides to the dispatch bay situated on the center line.

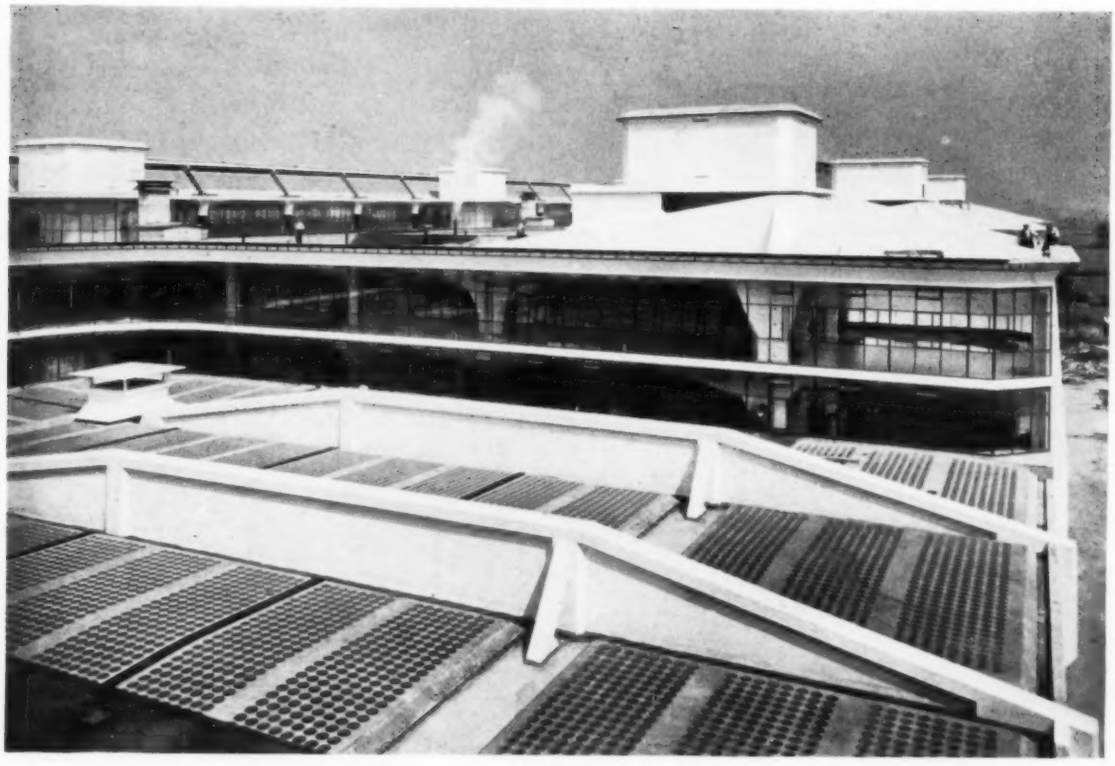
The packing materials and finished stocks are housed in multi-story sections flanking each side of the main hall in which the packing is carried out, the first being fed to the packing benches by chutes, and the finished stocks being lifted to the upper floors by elevators on the opposite side of the hall.

The multi-story sections are connected transversely by bridges at approximately 150 feet centers extending the full width of the building and narrowing down to a width of 15′ 4″ across the main hall.

Construction

The portion of the factory as completed to date has a covered floor area of 740,000 square feet, and a volume of 14,050,000 cubic feet, and was built at a cost of a little more than 9 shillings per square foot of floor area.

The main construction of the building is in reinforced concrete, the floors being designed on the "mushroom" principle.

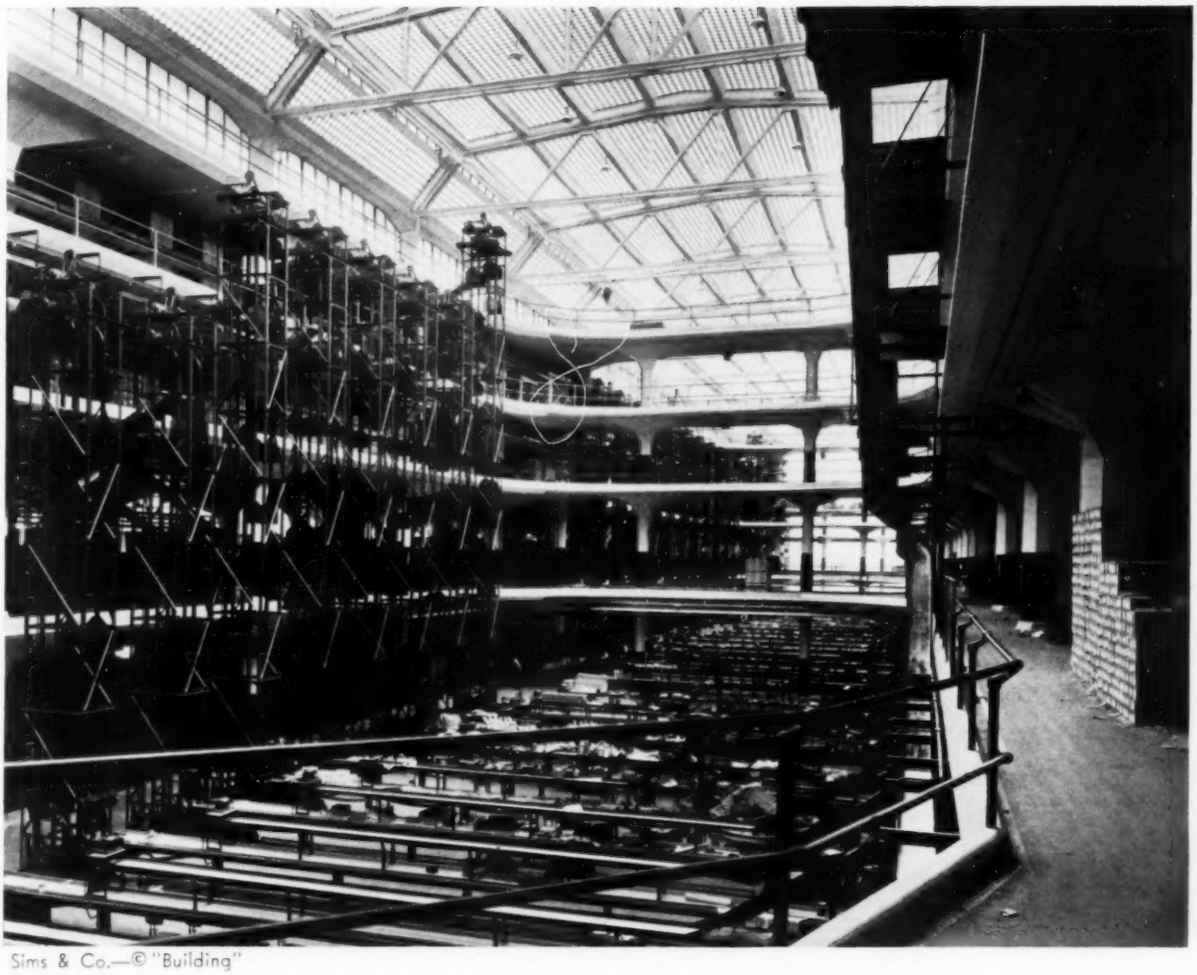


General view of roofs, showing cantilever beams over unloading docks.

Sims & Co.—© "Building"

General view of roof over main hall.

MESSRS. BOOTS' FACTORY, NOTTINGHAM, ENGLAND
SIR E. OWEN WILLIAMS, ENGINEER



Sims & Co.—© "Building"

View of main hall, showing packing benches, also feeding chutes and delivery elevators on each side.

MESSRS. BOOTS' FACTORY, NOTTINGHAM, ENGLAND
SIR E. OWEN WILLIAMS, ENGINEER

The roof over the main hall is carried on steel trusses surmounted by a glass concrete roof.

Exterior walls and interior partitions are constructed similarly in glass in steel frames, the exterior walls having weathered joints specially designed to prevent the ingress of water.

The building is divided constructionally into units, the largest being 107 feet by 64 feet, by free joints extending laterally and across the building, enabling movements, inevitable in a building of this size, to take place without danger to the structure. These joints have been arranged at points of future extension so that the latter may be effected without disturbance to the working of the present building.

Glass concrete roofs have been used where top lighting was found to be necessary, and consist of circular glass units 8⅛ inches in diameter and 1¾ inches thick centered at 9¼ inches in both directions; the intervening spaces containing the reinforcement are filled with fine concrete.

The glass concrete roofs have been constructed with sliding joints, properly protected from the weather, at their points of contact with the main structure, enabling a ready response to temperature changes.

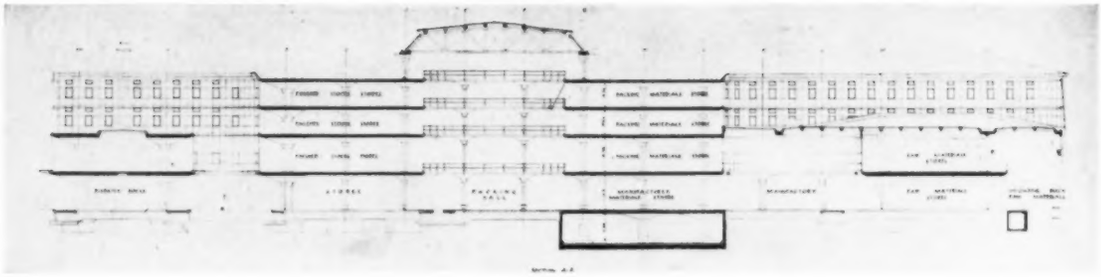
The heating of the building is dealt with by heating pipes running continuously along all exterior walls at approximately 2 feet above floor level, and designed to operate as protecting buffer rails.

Arrangements have been made for cleaning the exposed side of the exterior walls by means of hand-operated cradles suspended from a monorail at roof level.

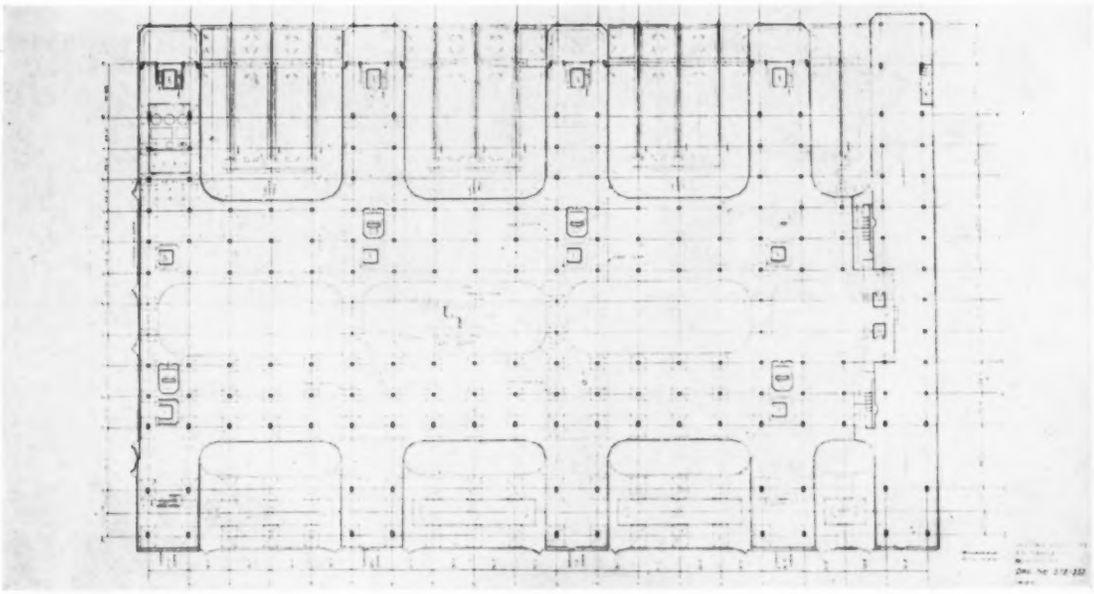
Generally the floors have been designed to carry 2 cwt. per square foot.

The concrete used in the superstructure consists of 3 parts coarse aggregate and 1½ parts sand to 1 part portland cement having an ultimate strength at 90 days of not less than 4,500 lb. per square inch.

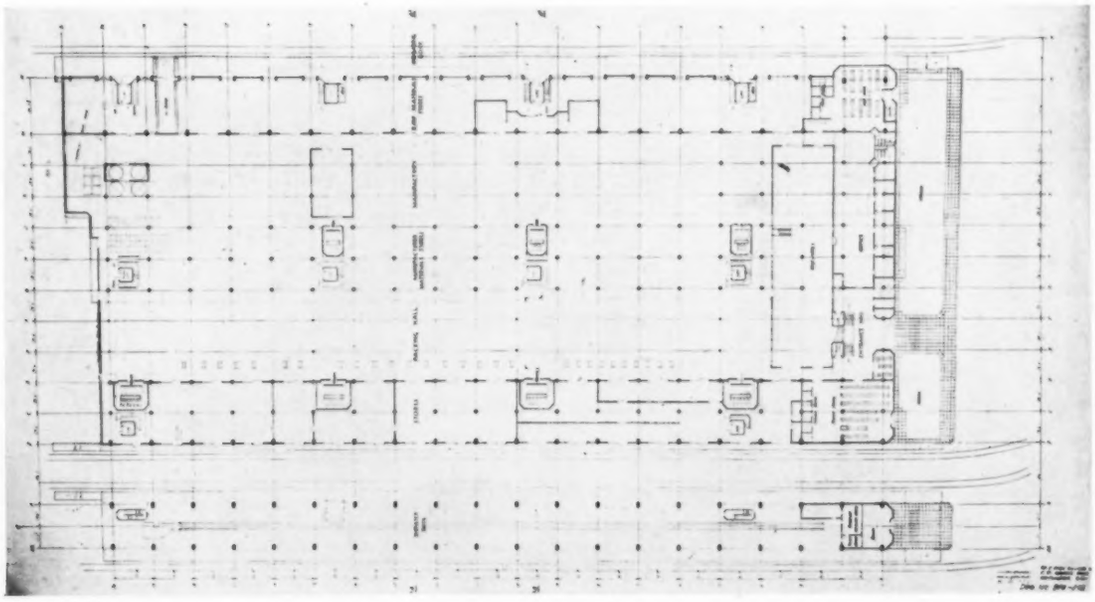
To facilitate the designing, planning and construction, a standard unit was adopted, and with exception of a few dimensions controlled by special conditions, all dimensions, column spacing, floor heights, etc., are multiples of this unit.



Sectional Diagram.



Second Floor Plan.



Ground Floor Plan.

MESSRS. BOOTS' FACTORY, NOTTINGHAM, ENGLAND
SIR E. OWEN WILLIAMS, ENGINEER

Sims & Co.—© "Building"

Lavatories are constructed of obscured glass set in metal frames.

MESSRS. BOOTS' FACTORY, NOTTINGHAM, ENGLAND
SIR E. OWEN WILLIAMS, ENGINEER

Sims & Co.—© "Building"

General view along dispatch bay, showing projections and free joints for future extension.

MESSRS. BOOTS' FACTORY, NOTTINGHAM, ENGLAND
SIR E. OWEN WILLIAMS, ENGINEER

Sims & Co.—© "Building"

View of unloading dock for raw materials. Roof, together with glass and metal "hanging screen," is suspended by cantilever beams.

MESSRS. BOOTS' FACTORY, NOTTINGHAM, ENGLAND

SIR E. OWEN WILLIAMS, ENGINEER

Richard Averill Smith

PORT OF NEW YORK AUTHORITY COMMERCE BUILDING
ABBOTT, MERKT & COMPANY, ENGINEERS AND ARCHITECTS

THE PORT AUTHORITY COMMERCE BUILDING NEW YORK CITY

The Port of New York Authority Commerce Building is the largest building in New York and one of the largest in the world. It was designed by and constructed under the supervision of Abbott, Merkt & Company, engineers and architects of New York. Turner Construction Company were the builders.

The structure is actually two buildings, so far as its use and purpose are concerned. On the ground floor and basement it is Inland Terminal No. 1, a union "less than carload" freight station for the joint cooperative use of all the railroads serving Manhattan. On the upper floors it is the Port Authority Commerce Building, with some two million square feet of floor space for lease to commercial enterprises of all kinds. This duality of purpose was kept in mind throughout the development of the project.

The Site

The selection of the site was the first problem. The Port of New York Authority selected the city block bounded by 15th and 16th Streets and Eighth and Ninth Avenues, and measuring 206½ by 800 feet. This is 164,800 square feet, or about 4 acres. The total floor area is 2,500,000 square feet, or 57 acres.

The site is convenient to a large number of shippers and consignees in Manhattan, and to the rail terminals of the railroads, with access to the rail terminals in New Jersey via ferries and the Holland Tunnel. It is long enough and wide enough to accommodate the union terminal facilities on ground floor and basement. Its use required the destruction of no existing buildings of great value or public use. Subsurface conditions were favorable enough to avoid excessively high foundation costs, the location was also desirable for a commercial building for rental to private tenants.

Foundations

The entire building rests on bedrock. Concrete piers in open sheet-pile caissons were carried down to this rock surface which varied considerably in elevation, being about 20 feet below sidewalk in certain parts and a maximum of 75 feet below sidewalk at one corner.

Governing Factors of Design

The building covers the entire site because this area was needed for the railroads' facilities; this arrangement also makes it possible to obtain the largest amount of commercial space with minimum building height and cost. The total amount of commercial space was determined by calculating the necessary income therefrom which would make the building as a whole "self-liquidating." This determined approximately the total square foot and cubic foot size.

It was decided to make the building a solid mass or block without interior or open courts, so that large regular-shaped floor plans would result and the unit building cost be kept at a minimum. It was not possible, however, to carry the exterior walls up to the roof in one vertical plane, because, to conform to Manhattan zoning laws, these exterior walls must be set back after reaching a certain height. This maximum allowed height was 150 feet on Eighth Avenue, extending back 150 feet along 15th and 16th Streets; it was 200 feet on Ninth Avenue, extending back 150 feet along 15th and 16th Streets, and it was only 100 feet for the remaining lengths on 15th and 16th Streets. These and other zoning laws governed the permissible shape of the building, and, after studying about 50 possible and permissible shapes, the present design was selected as being the best.

The exterior design was kept simple, first, to be in keeping with the commercial and utilitarian uses of the structure, and, second, to keep down the cost and so aid in making the building self-liquidating.

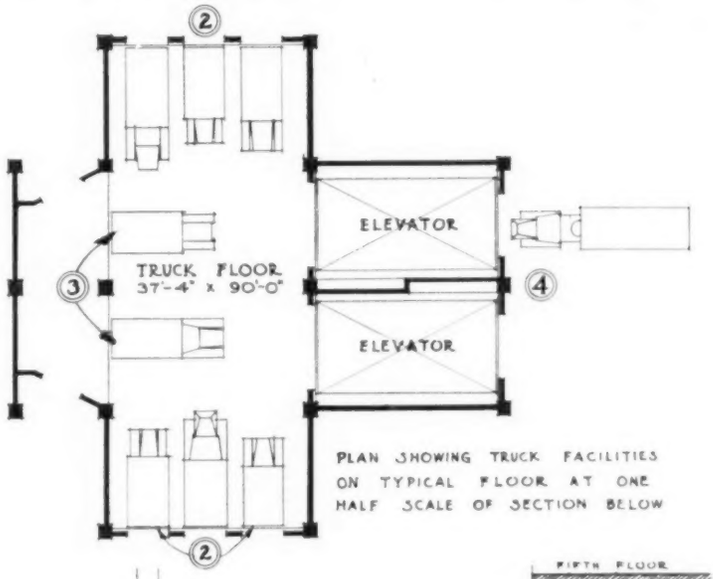
A selected common brick with a variety of red and brown color tones was used, The base of the walls is of granite, and the first two stories are limestone. The brick walls also are topped with terra cotta copings and finials. The exterior walls were built in vertical panels, giving the effect of a series of massive piers and adding apparent height.

Freight Terminal Conveniences

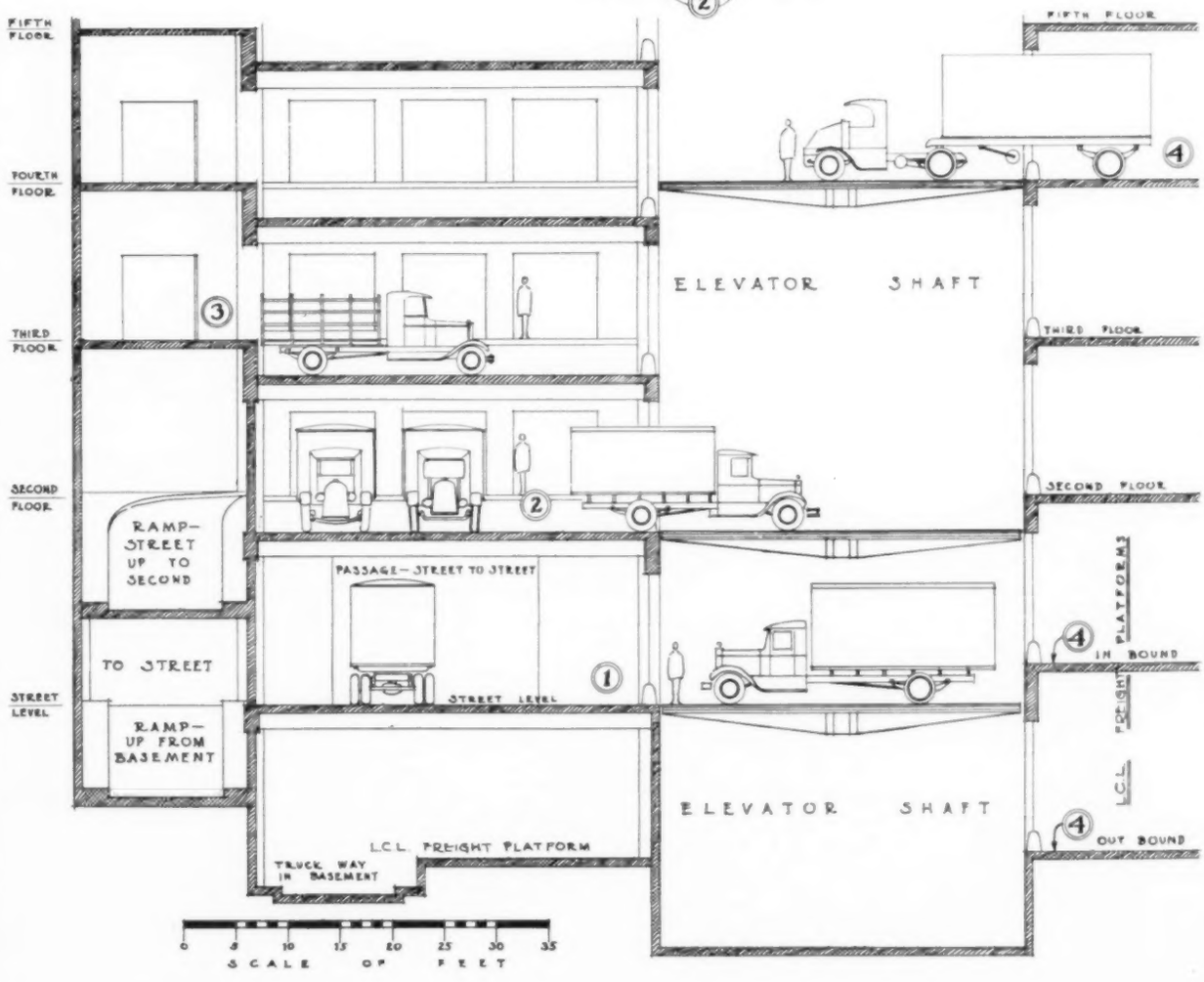
The layout of the freight terminal areas on the ground floor and basement was the most complicated part of the planning. It was necessary to provide the maximum number of truck berths on both ground floor and basement, and also large freight handling platforms on both floors. A system of ramps for trucks going to and from the basement was installed for the convenient flow of this traffic, together with eight freight elevators running between basement and first-floor freight platforms. In fact, the entire layout was designed so that any one of three possible operating plans might be adopted after this terminal was put into use.

To facilitate easy maneuvering of trucks in the basement, wide driveways were provided by spacing the first line of interior columns on the north and south sides 35 feet back from the exterior walls. This is an unusually wide span for build-

The freight terminal on ground floor and basement required a maximum number of truck berths and large freight-handling platforms. A system of ramps for trucks going to and from the basement has been provided, together with 8 freight elevators between basement and first-floor freight platforms. The first line of interior columns is spaced 35 feet back from exterior wall to provide wide driveways.



PLAN SHOWING TRUCK FACILITIES ON TYPICAL FLOOR AT ONE HALF SCALE OF SECTION BELOW



PORT OF NEW YORK AUTHORITY COMMERCE BUILDING
ABBOTT, MERKT & COMPANY, ENGINEERS AND ARCHITECTS

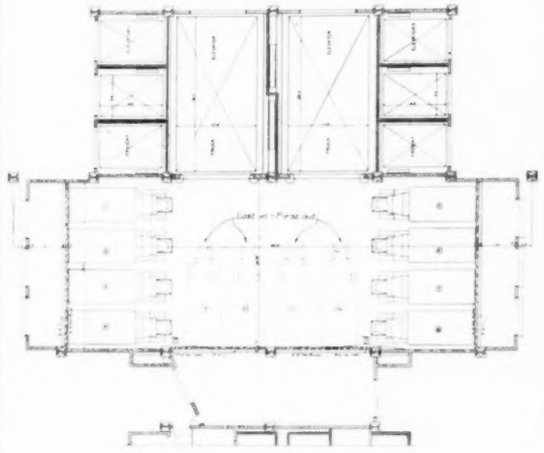
ing construction, but it resulted in advantages on the upper floors also by creating wide open floor areas along the north and south sides convenient for certain layouts of manufacturing machinery.

The freight terminal occupies practically all of the basement area. On the ground floor space was required for the access of passengers, freight and trucks to the upper floors. These upper floors are serviced almost like two separate buildings, one facing Eighth Avenue with eight passenger elevators and the other fronting on Ninth Avenue with four elevators and with provision for four more if needed. Near each end of the building are two receiving platforms and six freight elevators for the exclusive use of upper floor tenants.

Four large truck elevators, two at each end of the building, are reached by two through interior driveways between 15th and 16th Streets. These truck elevators are 17 feet wide and 34 feet long, with a capacity of 40,000 pounds, and will carry the largest and heaviest trucks now made. These truck elevators run to all floors and thus permit any tenant to receive and ship by truck from his own floor.

On each floor, immediately adjoining the truck elevators, are truck lobbies 3 feet lower than the main floor level and large enough for trucks to drive off the elevators and to maneuver into proper loading position around the edges. In this way, 24 trucks can be loading and unloading at one time on each floor.

These truck and freight elevators also run to the basement, making it possible for all tenants to receive and ship "l.c.l." freight without any hauling.



Detail plan, showing how trucks can maneuver into proper position around edges of truck lobbies on each floor.

Post Office, Bank and Stores

Areas on the ground floor that are not taken up by either the freight terminal or by tenant service are along the Eighth and Ninth Avenue fronts, and are for rent as banks, stores, post office, telegraph offices, restaurants, etc.

Two entrances at each end of the building connect with a U-shaped corridor leading to a bank of passenger elevators at a central interior point. The corridor walls are of marble. Bronze seals of the Port Authority are placed in the floor and in the panels of the elevator cars. Window frames and doors on the first floor are of ornamental bronze. Over all main entrances are stone-carved figures of sea gull and fasces, symbol of the Port Authority.

Upper Floors

All upper floors are designed for a safe live load of 200 pounds per square foot and will carry much heavier concentrated loads, such as machinery. The floors are large open areas easily adaptable to almost any purpose.

The freight and passenger elevators are grouped in two banks, one at the center of each end portion, leaving all the floor area adjacent to the windows open and available for work spaces. Some of the floors will be subdivided for tenants requiring less than half a floor, and in such cases a central longitudinal corridor will be run connecting the banks of elevators at each end of the building, thus providing passenger and freight access to all rental areas.

All ceilings are unusually high, measuring 15 feet from floor to floor. This provides necessary head room for trucks on all floors, and also increases the amount of daylight reaching the interior of the floor areas.

Mechanical Features

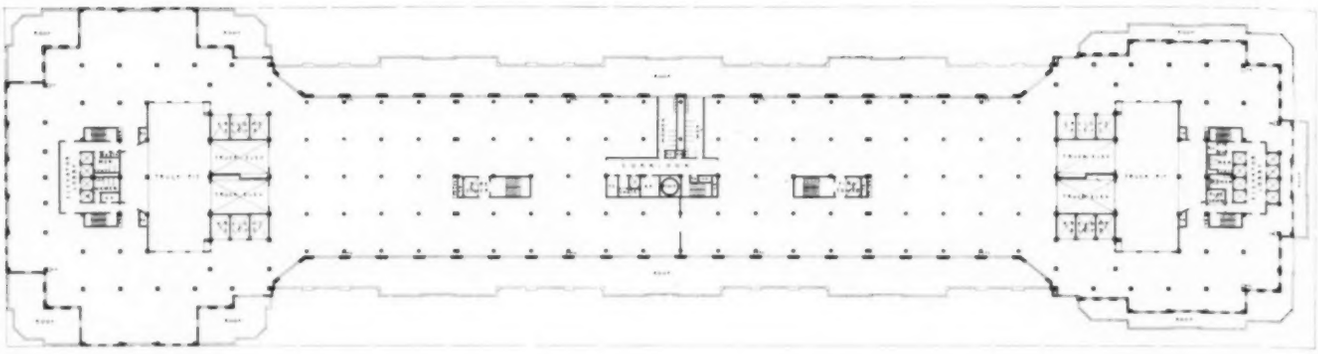
The mechanical equipment is in a sub-basement 50 feet below the street, with a floor area about 150 feet square, located at the center of the building. Steam for heat and power and electric current are purchased.

Mechanical ventilation is provided for the basements, where it is necessary to carry off fumes from the motors of trucks. A complete system of sprinklers, sprinkler alarms and fire and watchman's alarms is installed throughout the entire building.

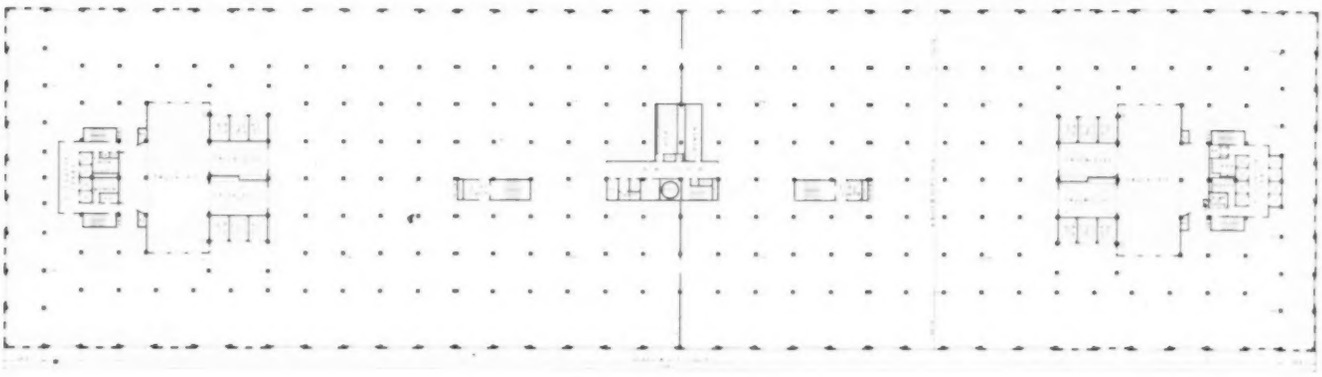
The tenant floors are provided with cooled drinking water and adequate toilet facilities.

Construction

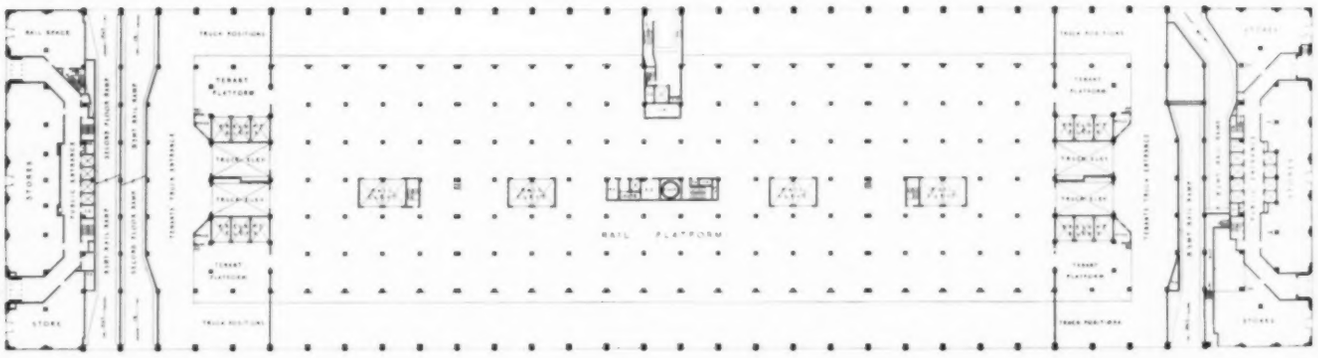
The entire building is fireproof, with a frame of concrete-covered steel columns and beams for the two ends and reinforced concrete in the central portion. Careful studies of cost showed that steel construction was cheapest and best for the main sections at the two ends of the building, and that reinforced concrete was cheapest and best for the central part of the building.



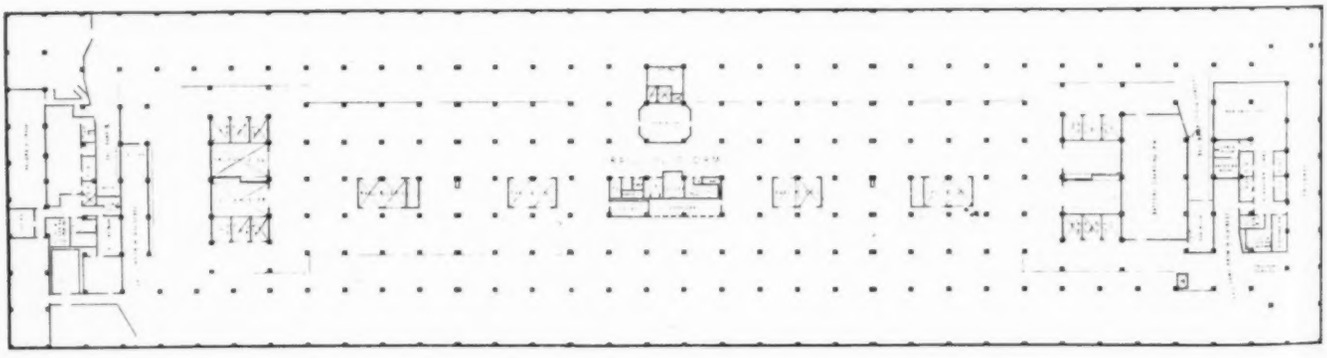
14th Floor.



4th, 5th and 6th Floors.



First Floor.



Basement.

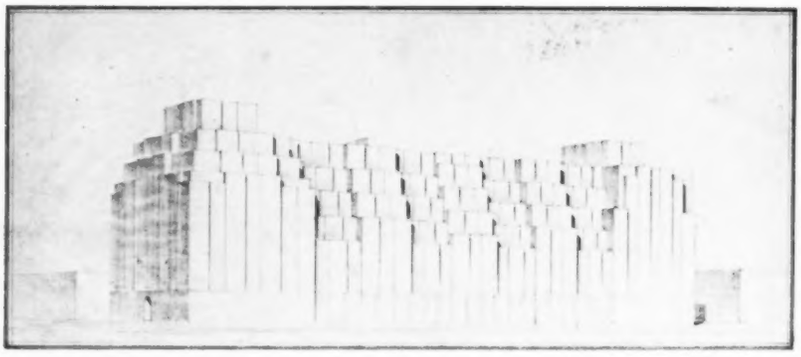
PORT OF NEW YORK AUTHORITY COMMERCE BUILDING
ABBOTT, MERKT & COMPANY, ENGINEERS AND ARCHITECTS

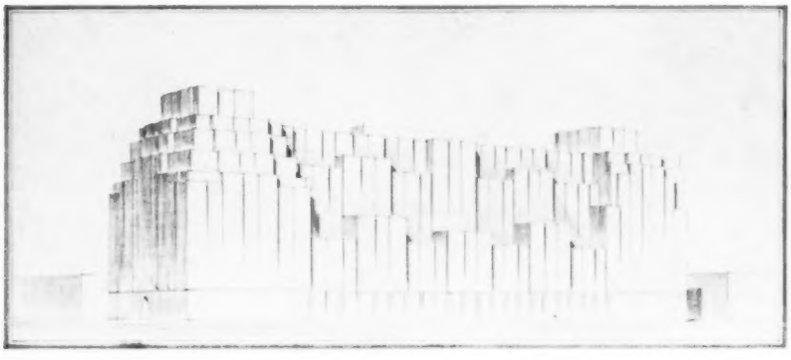
Loading Dock.

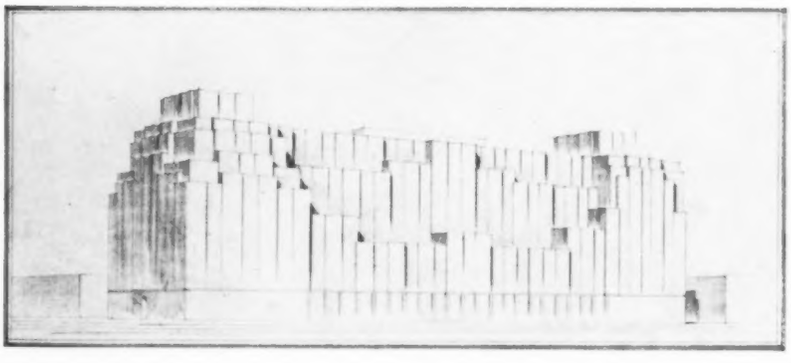
Richard Averill Smith

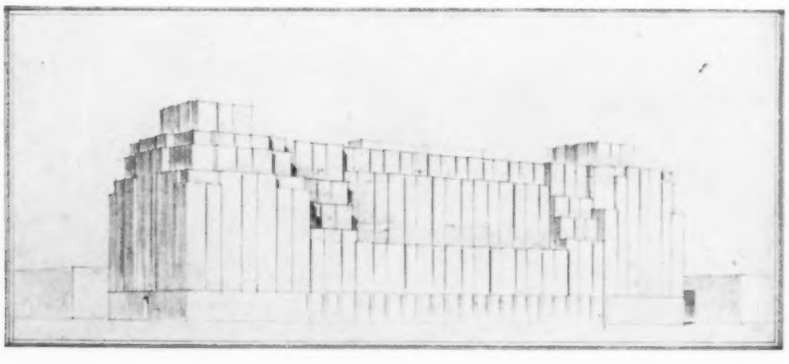
Interior of Typical Floor.

PORT OF NEW YORK AUTHORITY COMMERCE BUILDING
ABBOTT, MERKT & COMPANY, ENGINEERS AND ARCHITECTS







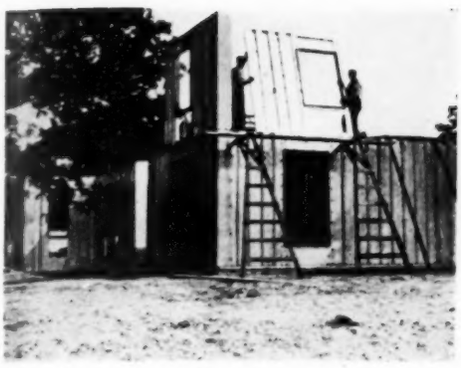


Total cost, including land, building and other initial costs, about		$15,000,000
Area of site (about 4 acres)	(square feet)	164,800
Total floor area (about 57 acres)	(square feet)	2,500,000
Total volume	(cubic feet)	38,000,000
Elevators		38
Truck berths		440
Earth exca't'n	(cubic yards)	125,000
Concrete	(cubic yards)	120,000
Brick		12,000,000
Roofing	(acres)	4
Window glass	(acres)	7
Electrical conduit	(miles)	70
Pipe	(miles)	65
Electrical outlets		30,000
Sprinkler heads		26,000

Zoning laws governed the permissible shape of the building. Many possible variations of the external mass, as shown by the four sketches on this page, were studied before the present design was selected as best.

PORT OF NEW YORK AUTHORITY COMMERCE BUILDING

ABBOTT, MERKT & COMPANY, ENGINEERS AND ARCHITECTS



Armco
FRAMELESS STEEL HOUSE WITH WALL UNITS HANDLED BY TWO MEN

NEW MATERIALS AND IMPROVED CONSTRUCTION METHODS

By A. LAWRENCE KOCHER
and ALBERT FREY

The more important new materials and methods of construction are derived from efforts to reduce installation labor on the job, to lighten weight of construction and transportation and incidentally to lower cost. These efforts have been particularly directed toward prefabrication of units in floor, wall, roof construction and building parts such as windows and doors that incorporate frame and adjoining wall.

The purpose of this article is to describe the improved construction methods, including new materials which they employ, that have been put to use in building the house. This is done so as to enable architects to make a comparative study of current methods and materials on the market. In addition, mention will be made of some few promising methods and materials in process of development.

It is probable that no new and complete structural system for the house will be devised as an act of design by one individual. New house construction will arise gradually with continued experimentation by architects, engineers and by industry.

During the past decade there has been rapid increase in the factory-fabrication of parts of houses and buildings. Wall sections with incorporated window, frame and heating box are now manufactured as units, ready to install. Wall, sections, including insulation and exterior and interior facing, are also available for use by architects. Wall sections for the bathroom and kitchen will soon be on the market. These cases are cited as indicative of a trend in building.

In any fabrication of the house there are certain ideals which should be met. These may be stated in the form of a check list as follows:

Structural system with prefabricated units joined together by pressure or bolting.

Materials for wall that effectually exclude heat, cold, dampness and sound.

Weathertight joints throughout, not subject to deterioration.

Exterior surface of walls should be hard and durable, requiring little or no maintenance.

Wall units of uniform size to permit interchange of parts.

Interior wall surface suited to cleaning with commonly used cleansing powders and soap.

Structure resistant to corrosion and attack by insects and fungi.

Absence of projections that gather dust.

Dry construction.

Lightweight.

Minimum flashing.

Wall structure capable of housing or attaching heating, wiring and lighting pipes and ducts.

Insulation that prevents condensation within interior of house or within walls.

Parts capable of replacement and addition.

Erection and installation of units by unskilled labor.

Possibilities for demolition and re-erection on new site.

Resistant to earthquake and heavy wind pressure.

Lightning-proof.

Fireproof throughout.

Economical of space because of thinness of walls.

Possibilities for natural or applied color.

Windows of uniform and standard size, permitting maximum daylighting and control of fresh air and sunlight.

Roof drainage through center of house for economy of required piping and to prevent freezing.

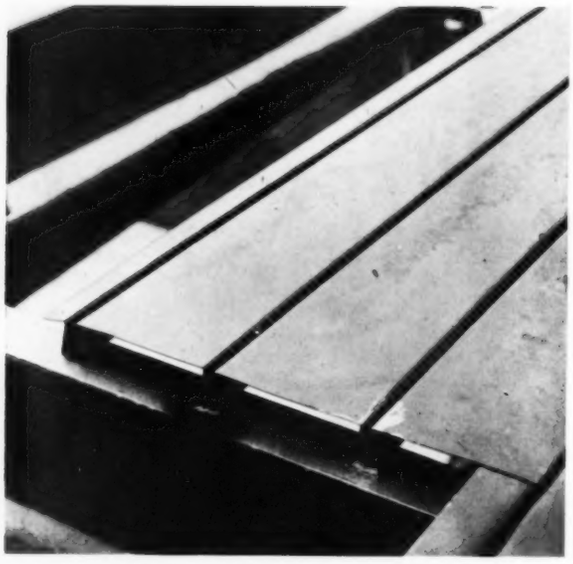
Soundproof partitions.

Interior partitions flexible and capable of varied arrangements.

Closets, cabinets and equipment as units.

Minimum cost of construction and upkeep.

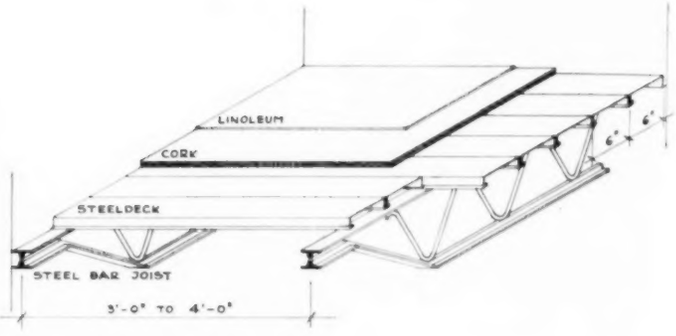
LIGHTWEIGHT ROOF AND



HOLORIB ROOF AND FLOOR DECK. Copper bearing or galvanized sheet steel or aluminum, reinforced by self-contained triangular ribs into sheets horizontally. Can be used as floor with and without concrete, also as wall plates.

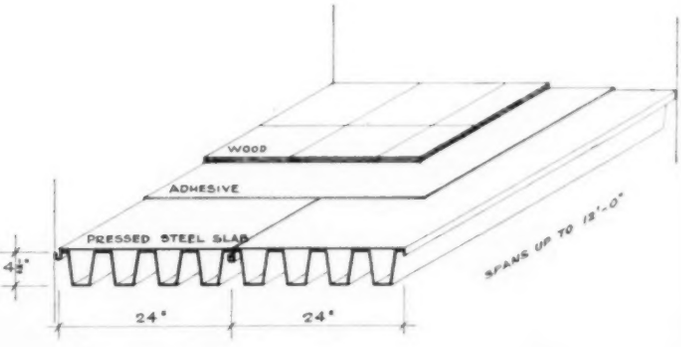
ROBERTSON STEEL FLOOR. A pressed steel, cellular type floor, factory-fabricated in lengths up to 12' and in 2' side units.

A LIGHTWEIGHT STEEL FLOOR with strength attained by shape and welding of units.



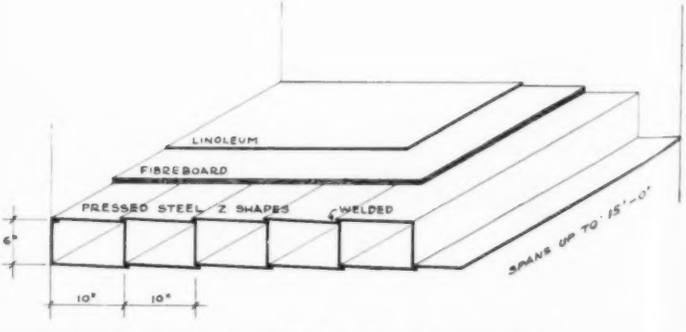
A LIGHTWEIGHT STEEL FLOOR

Steel deck has been extensively used for roofs. The first use of steel deck for floors was made in the Aluminaire House, 1931. Spans 3 to 4 feet over open steel bar or other steel joists are economical. Cork board is laid over the steel deck, both to insulate against heat, cold and sound transmission and to distribute the loads equally. Linoleum forms the finished wearing surface. Ferroclad steel deck is manufactured by Truscon Steel Company, Youngstown, Ohio. Holorib, a similar steel deck, is manufactured by Detroit Steel Products Company, Detroit, Mich.



PRESSED STEEL FLOOR

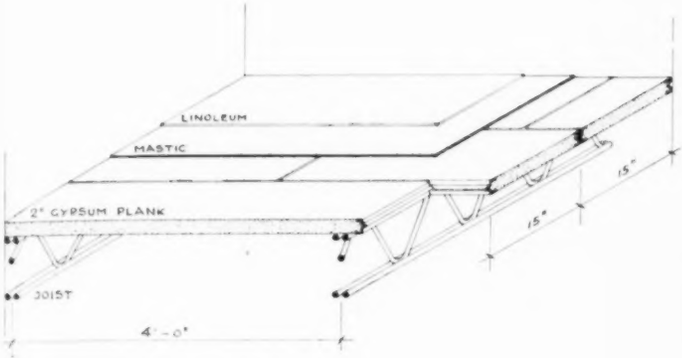
Flat sheet steel surface is welded to corrugated steel shafts. The 2' units are attached to one another with interlocking joints. These units are welded, bolted or clipped to supporting members. The keystone-shaped cells form ducts for wiring and piping. Any suitable floor or roof finish can be applied directly to the sheet slab. Developed by the Mellon Institute, Pittsburgh, Pa. Manufactured by H. H. Robertson Company, Pittsburgh, Pa.



PRESSED STEEL Z SHAPES FOR FLOORS AND WALLS

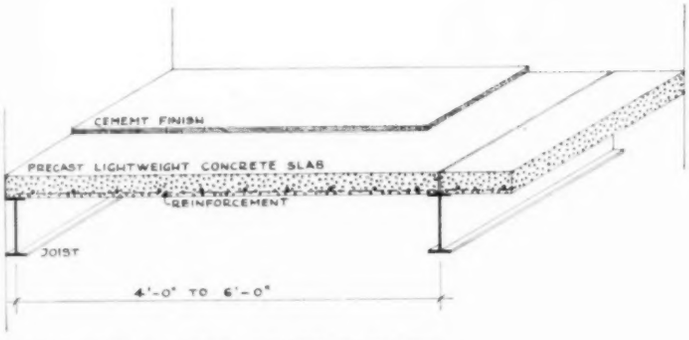
Thin sheet steel shapes are welded together on the job. The floor system can be placed on brick, stone or frame walls. Insulation can be applied to top of floor. Asphaltic compound for roof waterproofing. Produced by the American Rolling Mill Company, Middletown, Ohio.

FLOOR CONSTRUCTION



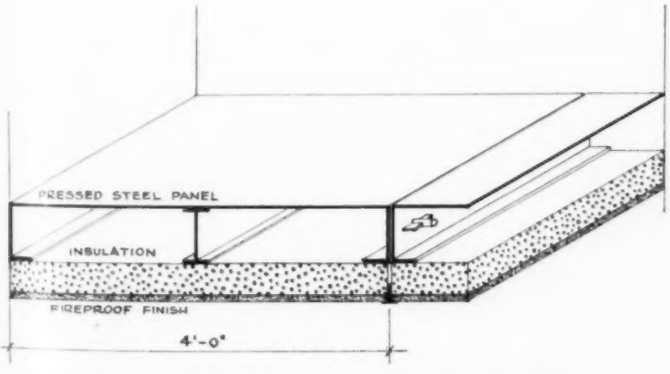
A FIREPROOF PLANK FLOOR

Reinforced gypsum boards can be applied to any kind of joist. Their sides and ends are tongued and grooved with steel, permitting joints on or between joists. They are made up to 10' in length. Any floor finish may be applied directly to their perfectly smooth surface. Produced by the Structural Gypsum Corporation, Linden, N. J.



PREFABRICATED STEEL-CONCRETE FLOOR

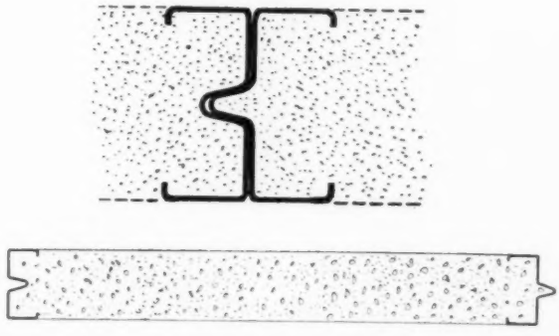
Lightweight precast and reinforced concrete slabs, 3" thick, are placed over steel beams. A wearing surface, as desired, of cement is applied on the job. This material was first used for flat roofs. Porete Manufacturing Company, North Arlington, N. J.



A FLOOR AND ROOF CONSTRUCTION INTENDED FOR MASS PRODUCTION

Panels of same construction as for walls serve for floors and roof, but are stiffened in the center by a small I-beam, tack-welded to the steel plate. Finished insulation slabs form the suspended ceiling. The joints of the panels are made watertight for roofs and need no other roofing. Patents pending; General Houses, Inc., Chicago, Ill. Howard T. Fisher, architect.

GYPSUM PLANK (GYPSTEEL), 2" in thickness, for floors and roofs. Edges and ends are tongued and grooved with steel. Can be surfaced with cement, linoleum or mastic.



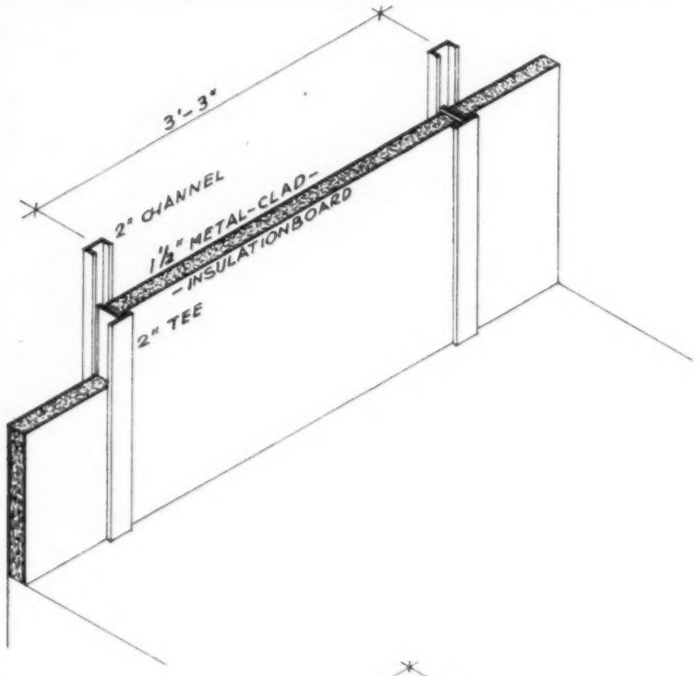
Cross section through Gypsum plank, showing tongued-and-grooved steel edges and ends, forming continuous I-beam entire length of plank.

Harvey Patteson

ENDURO ROOF CONSTRUCTION. Corrugated asbestos cement sheets (Transite) screwed to purlins spaced up to 6 feet. Top surface of same material in flat sheets, with finish of asphalt. Thickness of corrugated sheets from 1/4" to 5/16"; flat sheets, 3/16" to 1/4". R. A. Laidlaw, patented, San Antonio, Texas.*

*Recent Technical Developments, by K. L. Holm, in *The Architectural Record*, December, 1930, pp. 473-482.

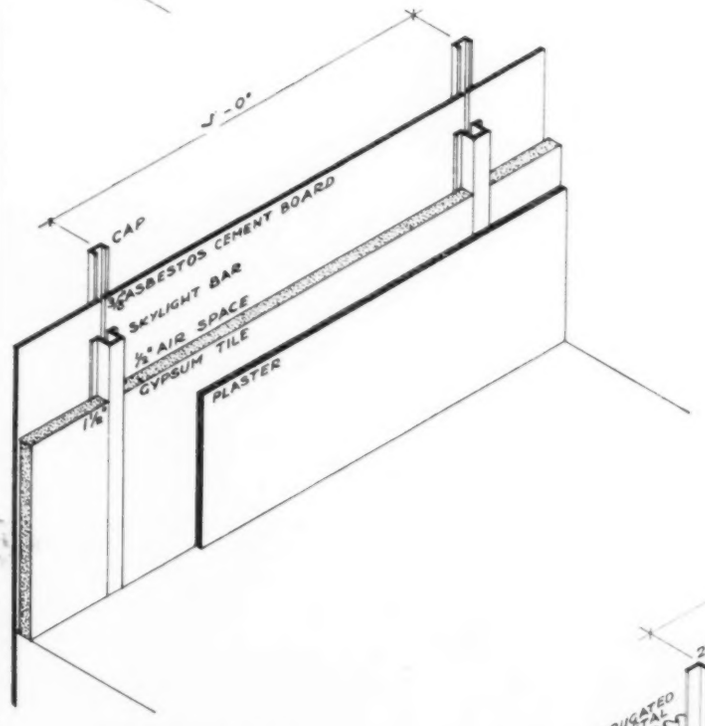
WALL SYSTEMS



EXTERIOR WALLS AND PARTITIONS OF METAL-CLAD INSULATION BOARD

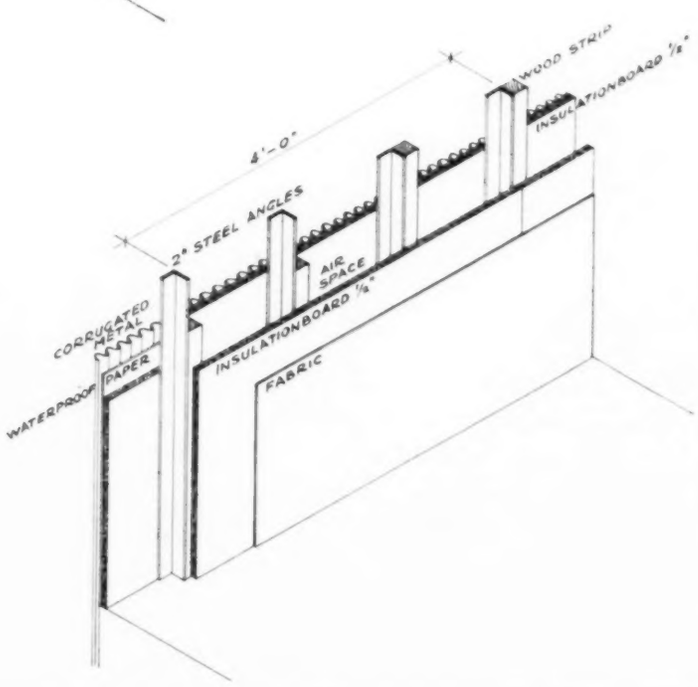
Standard "tees" and channels are used for the frame of this membrane wall. They are bolted or welded together in the field. The panels of ½", 1" or 1½" thickness are prefabricated and cut to size. These panels come up to 4 feet in width and 8, 10 and 12 feet in length. For small houses, the spacing of the mullions at 3' 3" on centers permits use of units of 3 feet in width (panels, doors, windows). Standard skylight bars may be substituted for "tees" and channels.

Developed for President's Conference on Home Building and Home Ownership, 1931, by A. Lawrence Kocher and Albert Frey. Ferroclad insulation board manufactured by Truscon Steel Company, Youngstown, Ohio.



WALL OF PANEL CONSTRUCTION

Skylight bars are used for the uprights in this wall. Asbestos cement boards (Transite) take the place of glass. Gypsum tiles are for insulation and serve as base for plaster on the interior. Constructed by Richter and Schädel, Berlin, Germany.

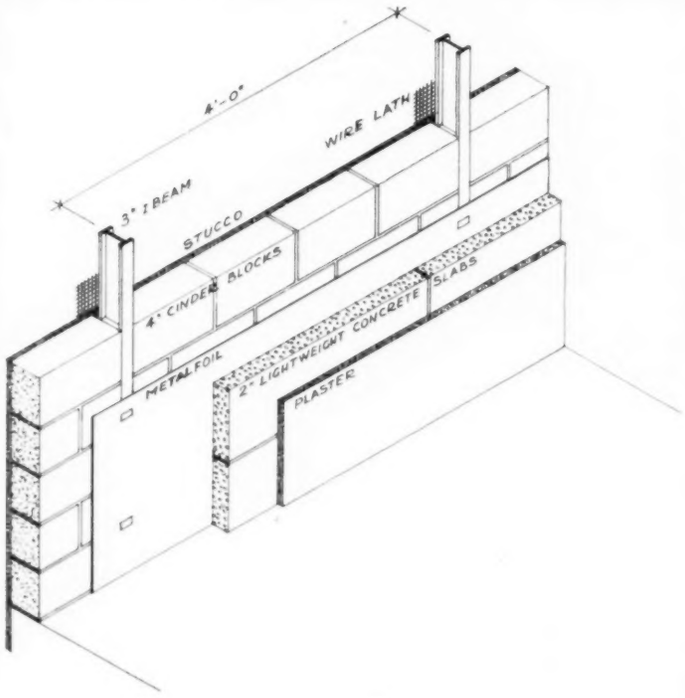


DRY-ASSEMBLY WALL

Steel angles with attached wood strips form the nonbearing wall structure. Insulation board inside and outside serves as base for surfacing. Polished aluminum, slightly corrugated, reflects the sun rays and is a waterproof skin requiring minimum maintenance. The oilcloth in plain colors is a desirable and sanitary wall finish for most of the rooms.

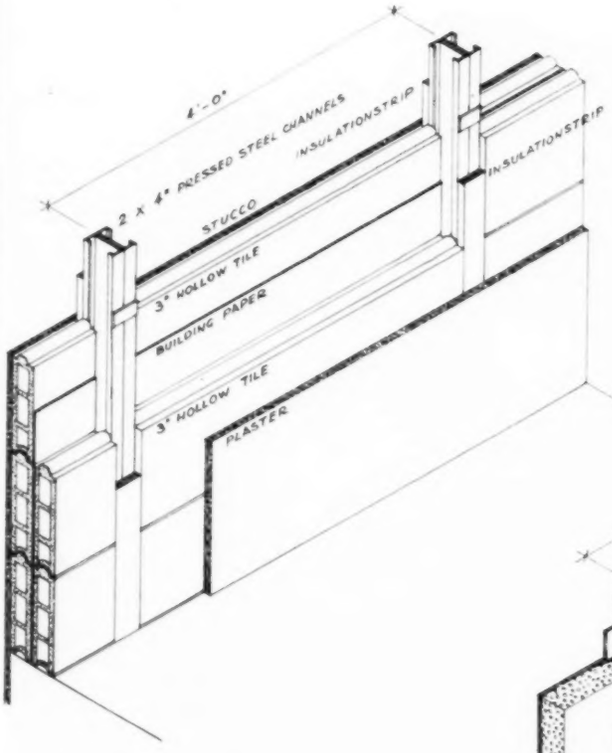
This construction method eliminates the use of water for erection and the house is therefore ready for immediate occupancy. Developed for the "Aluminaire House."

WALL SYSTEMS



STEEL AND MASONRY WALL

Steel beams give stiffness to this relatively thin masonry wall. Precast cinder-concrete blocks bear stucco on the exterior. Lightweight concrete slabs are plastered on the inside. A metal foil between the two walls cuts the passing of dampness and insures excellent heat insulation. Patented by Böhler Stahlbau, G. in B. H., Berlin, Germany.

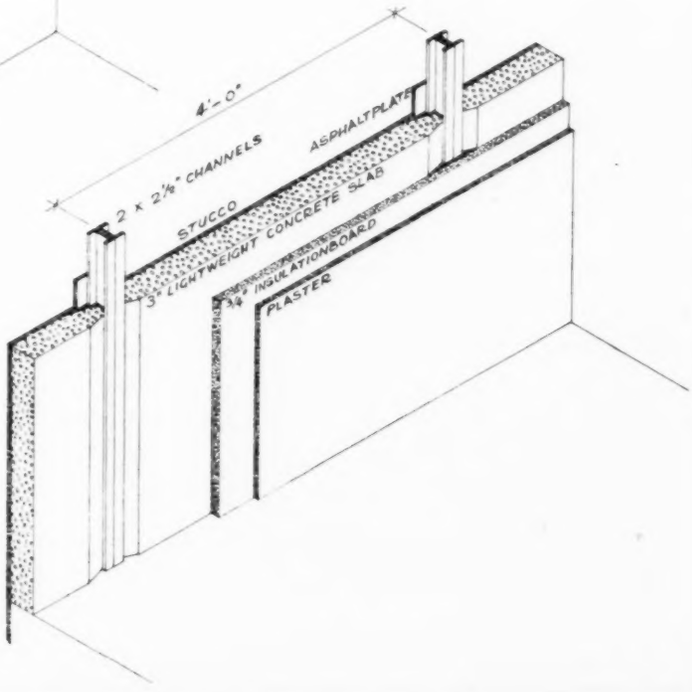


TILE WALL WITH PRESSED STEEL FRAME

Hollow tile wall affording insulation and fireproofing and suited to application of stucco and plaster. The relatively thin hollow tile units are fitted between structural supports of pressed steel.

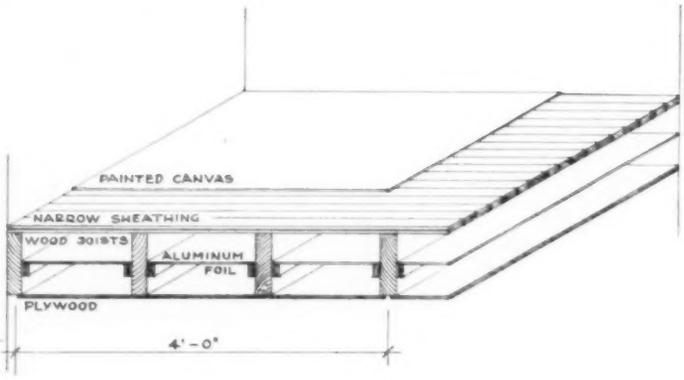
Six materials and much hand labor are required in the construction of this type of wall. The insulation value is fair. The salvage value is moderate.

Developed and patented by the Gesellschaft für neue Bauweisen, Berlin, Germany.



CONCRETE-STEEL WALL

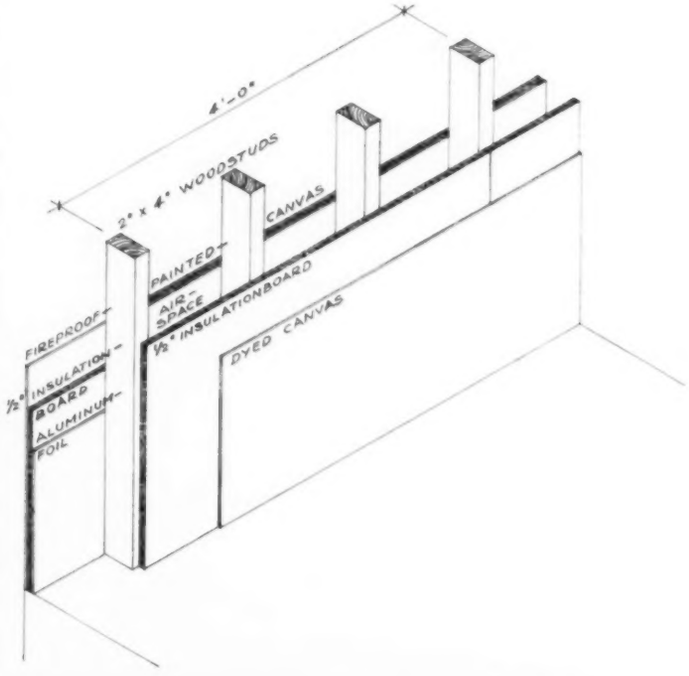
Steel channels are erected by bolting or welding. The lightweight concrete slab is inserted between the columns from the top. The exterior is stucco for weather protection. Plastered fiber-board on the inside adds to the cold, heat and fire protection. Produced by Deutsche Stahlhausbau Gesellschaft, m. B. N., Hindenburg, Germany.



AN IMPROVED FLAT ROOF OVER WOOD CONSTRUCTION

Wood joists are of the type commonly used for frame buildings. Narrow tongued-and-grooved sheathing or flooring forms the base for the deck canvas. This is fastened down with large-headed copper nails. The sheathing and surfaces of canvas are waterproofed with deck paint.

Aluminum foil stretched between the joists insulates through increase of air spaces and by the high reflectivity of polished aluminum foil. The ceiling is of plywood, nailed or screwed to the wood joists.



IMPROVED WOOD-FRAME WALL

The frame is of the ordinary 2" x 4" studding. Exterior sheathing is by large sheets of insulation board. Aluminum foil-covered building paper is applied directly to outside of studs. See insulation value tests of aluminum foil on this page. On the exterior the insulation board is weather-and-flame-protected with canvas, impregnated with fireproof paint. Dyed canvas, glued to insulation board, is an agreeable wall surface for interior walls and partitions, and is suitable for color schemes. Exterior canvas should be applied in accordance with specifications of U. S. Navy.

This wall construction was developed by A. Lawrence Kocher and Albert Frey with assistance of the Cotton Textile Institute, New York, and the Reynolds Research Corporation, New York.

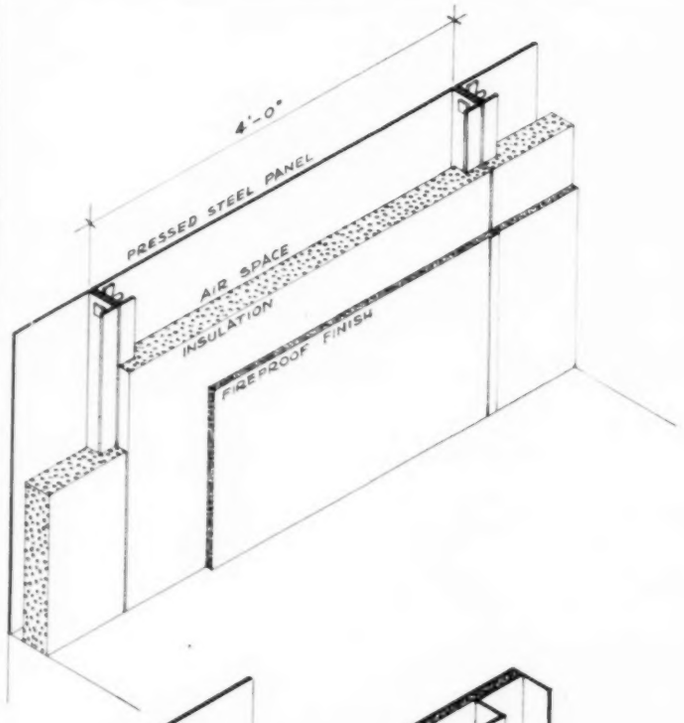
Publishers' Photo Service, Inc.

Aluminum foil mounted on building paper being applied to under side of porch as insulation against heat and cold.

INSULATION VALUE OF ALUMINUM FOIL

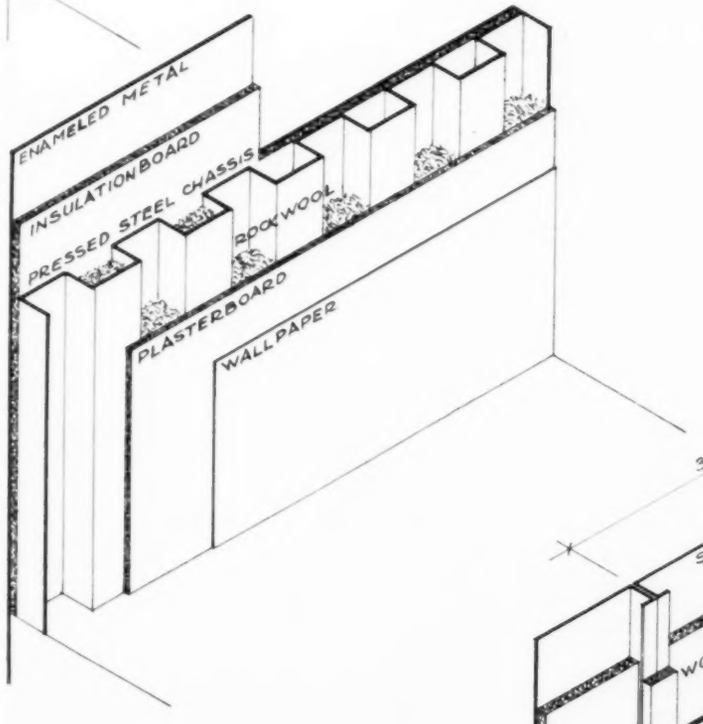
Tests of foil-covered building paper as insulation were made at Batelle Memorial Institute, Columbus, Ohio. The wall sections of wood construction were of regulation 2" x 4" studs, spaced 16" on centers. The air space was approximately 3⅝" in depth (the nominal 4" dimension of studs). Merely attaching a layer of foil-covered paper to one side of the studding was found to be equivalent to using a good insulating material about 0.8" thick. Best insulating results were obtained by placing foil-covered paper midway between inner and outer wall, i. e., thermal insulation value equivalent to 1.5 inches of good insulating material. See "Refrigerating Engineering," May, 1932.

WALL SYSTEMS



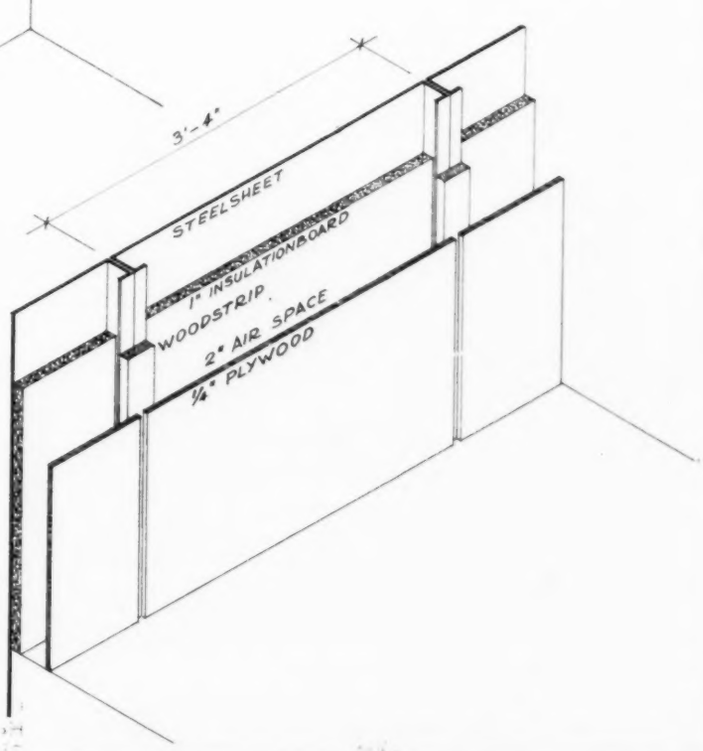
A WALL CONSTRUCTION INTENDED FOR MASS PRODUCTION

Panels of pressed sheet steel of uniform size are produced in the factory and assembled with bolts in the field in a few hours. Wall, door and window panels are interchangeable. The interior is fitted with rigid slabs of insulation provided with a finished wall surface. Patents pending. General Houses, Inc., Chicago, by H. T. Fisher.



FRAMELESS WALL CONSTRUCTION

Rigidity is obtained through units of steel sheets pressed into rectangular corrugation. Insulation board is glued to the outside and plaster board to the inside. The box-like spaces are filled with mineral wool. Porcelain enamel metal protects the outside permanently and without painting. Wallpaper for the interior is one of the many finishes possible over plaster boards. Six materials are involved in the construction of this wall. Developed by the American Rolling Mill Company, Middletown, Ohio.



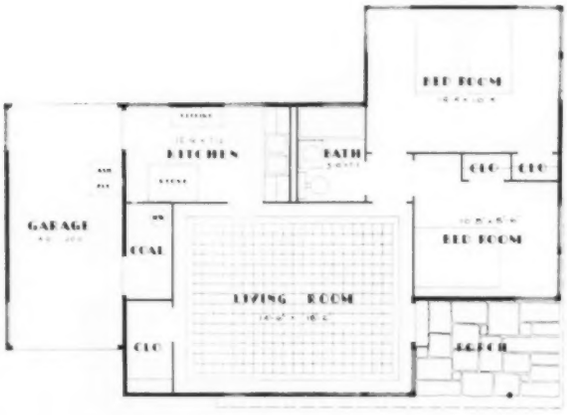
WALL OF SHEET STEEL

Steel pressed to form outer wall surface and columns as single unit. These members are bolted together. Insulation board is glued from the inside. The interior finish is plywood, screwed or nailed to wood strips. The total wall thickness is 3½". Patented by G. Kunze, Jr., Berlin, Germany.

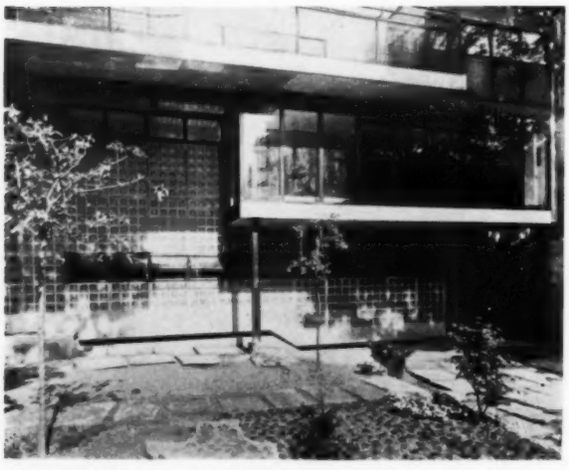
HOUSES BUILT WITH NEW CONSTRUCTION METHODS

Hoedt Studios, Inc.

HOUSE DESIGNED FOR AMERICAN HOUSES, INC., by Holden, McLaughlin and Associates.
Steel frame on 4-foot centers; exterior walls faced with asbestos-cement sheets both inside and out; outside painted· inside finished with washable colored material; floors and roof with open truss steel joists and sound insulating composition plank; copper tube piping.



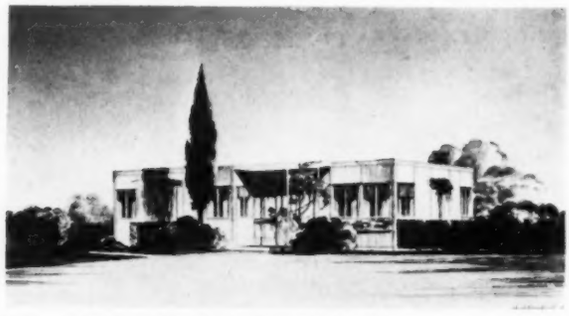
PLAN OF HOUSE FOR AMERICAN HOUSES, INC., by Holden, McLaughlin and Associates.



GLASS AND STEEL HOUSE IN PARIS
Framework of steel; floors concrete; walls of polished glass and glass set in concrete. Residence for a doctor in a garden court in Paris. Garden elevation. Pierre Chareau, architect. Paris.

HOUSE OF REX STOUT in Connecticut near Brewster, New York. By A. Lawrence Kocher and Gerhard Ziegler, 1929. Exterior walls double, each 3" concrete poured in Van Guilder forms. There is a 2" air space. Aluminum window sills.

PLAN OF HOUSE OF REX STOUT in Connecticut, near Brewster, New York.

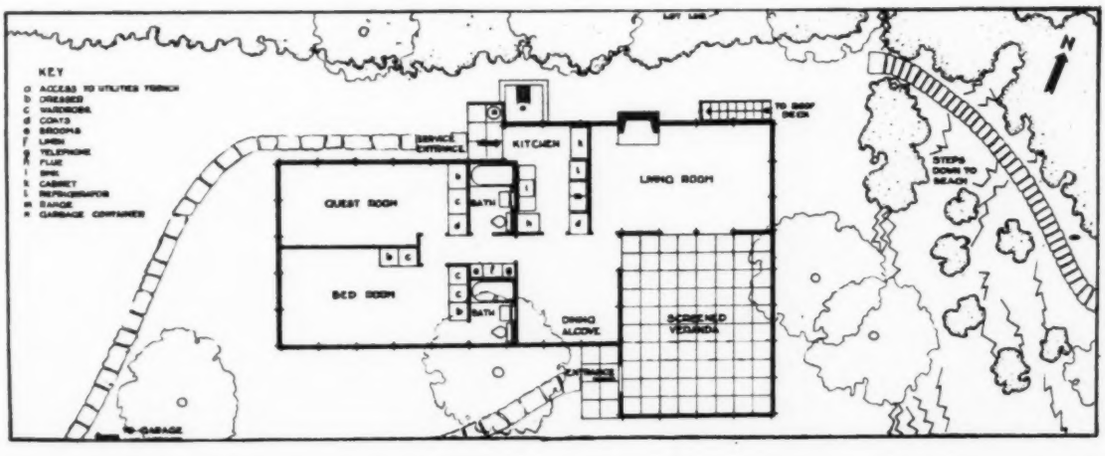


STEEL HOUSE FOR MASS PRODUCTION
House with pressed steel walls to be exhibited by General Houses, Inc., in the Home and Industrial Arts Exhibit of Chicago's 1933 World's Fair. Howard T. Fisher, architect.

Acme

SECTIONAL STEEL HOUSE FOR MISS RUTH PAGE

BY GENERAL HOUSES, INC.—HOWARD T. FISHER, ARCHITECT



PLAN OF HOUSE FOR MISS RUTH PAGE

BY GENERAL HOUSES, INC.—HOWARD T. FISHER, ARCHITECT

Exterior Wall of Sectional Steel Plates—a frameless construction. Insulation of cork panels. Roof construction similar to walls.

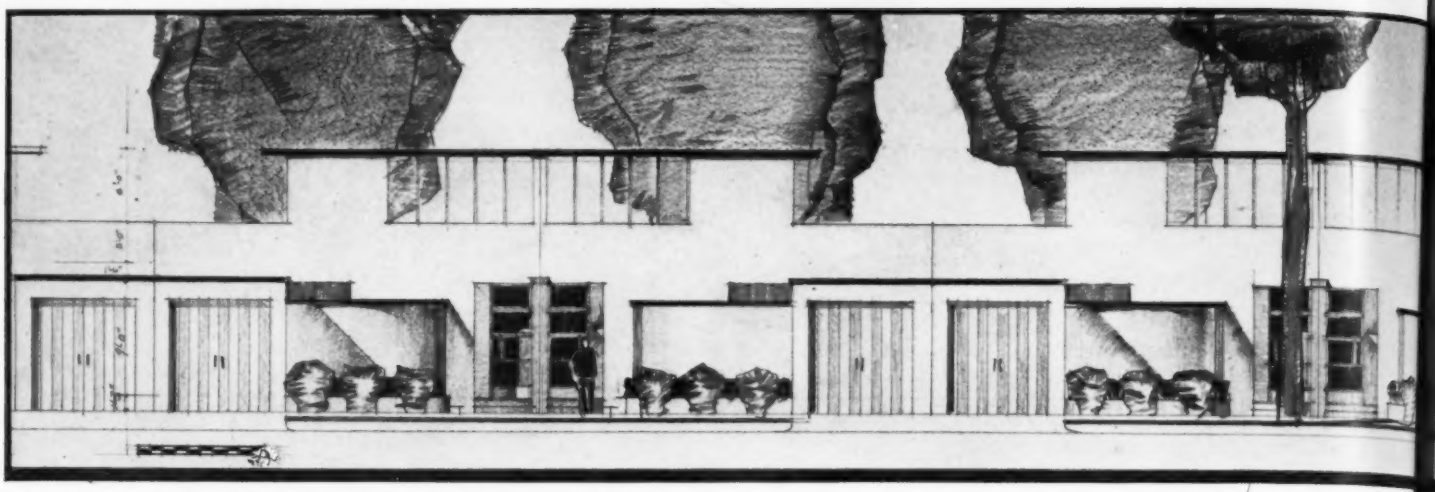
Foundation of concrete piers; small concrete walled basement.

Partitions are sectional and have sound-deadening qualities.

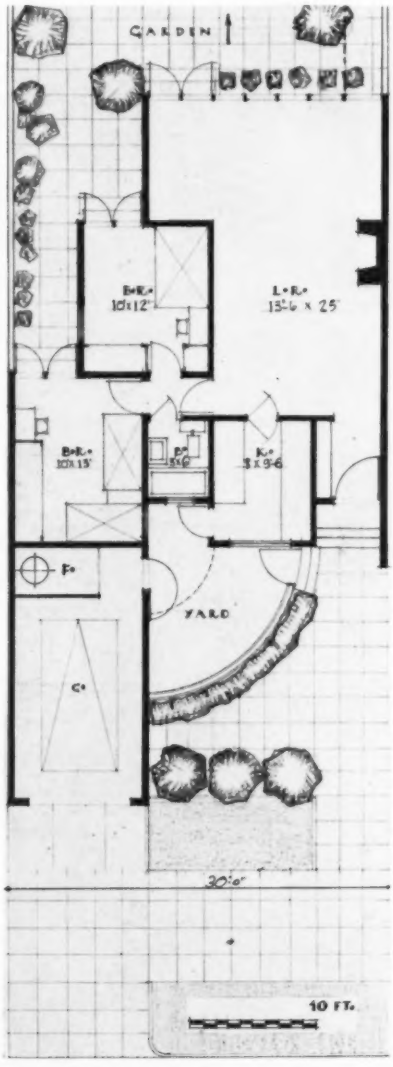
Exterior of house is painted; interior walls are painted or papered.

This house will be available in four models and may be readily enlarged as required. It is estimated that this house can be erected in about two weeks after the parts are in full production.

The house, fully equipped with complete kitchen, heating, wiring and plumbing, will sell from $2,500 up to $5,000, depending on size.



ELEVATION OF ROW HOUSES TOWARD STREET



PLAN OF ROW HOUSE AT GROUND LEVEL
ERNEST BORN, ARCHITECT

DESIGN OF LOW-COST ROW HOUSES WITH USE OF NEW MATERIALS AND NEW CONSTRUCTION METHODS

By ERNEST BORN, Architect

The Problem

The house scheme presented on these pages is for a thirty-foot lot with all rooms on one floor and with no side lighting.

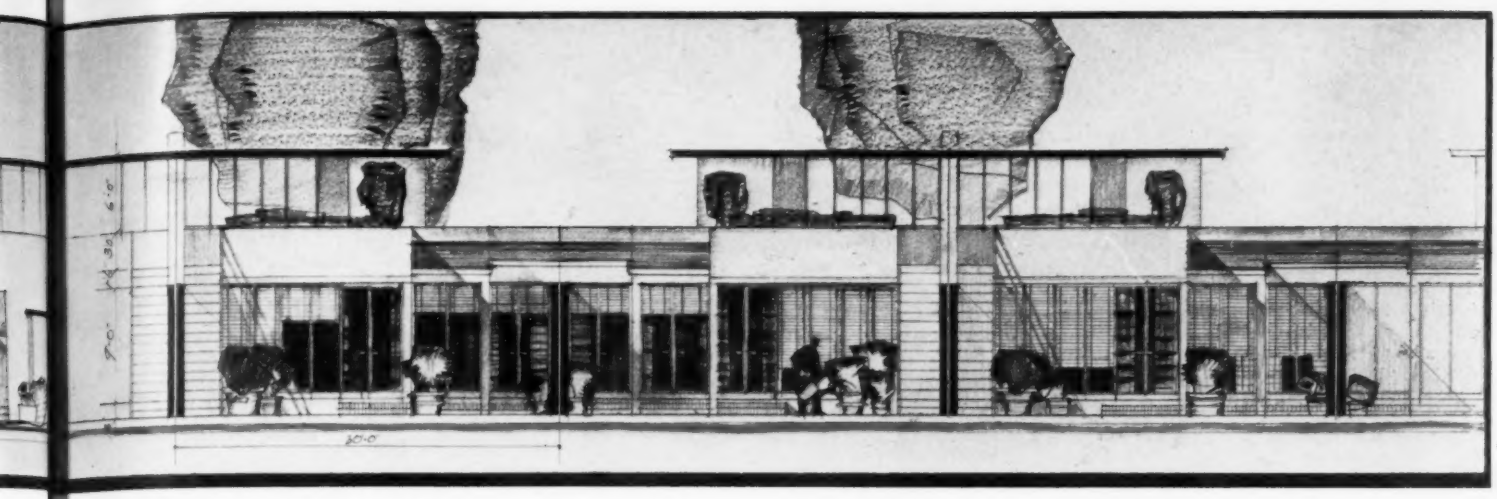
The narrow lot was set up as a condition of the problem because lots of thirty feet in width are typical. The lot of limited width was accepted as a necessary condition of low-cost housing. An ample living room with dining space, two bedrooms of convenient size, kitchen, bathroom and a garage were determined as required elements suited to the average and comfortable needs of the home owner.

The Solution

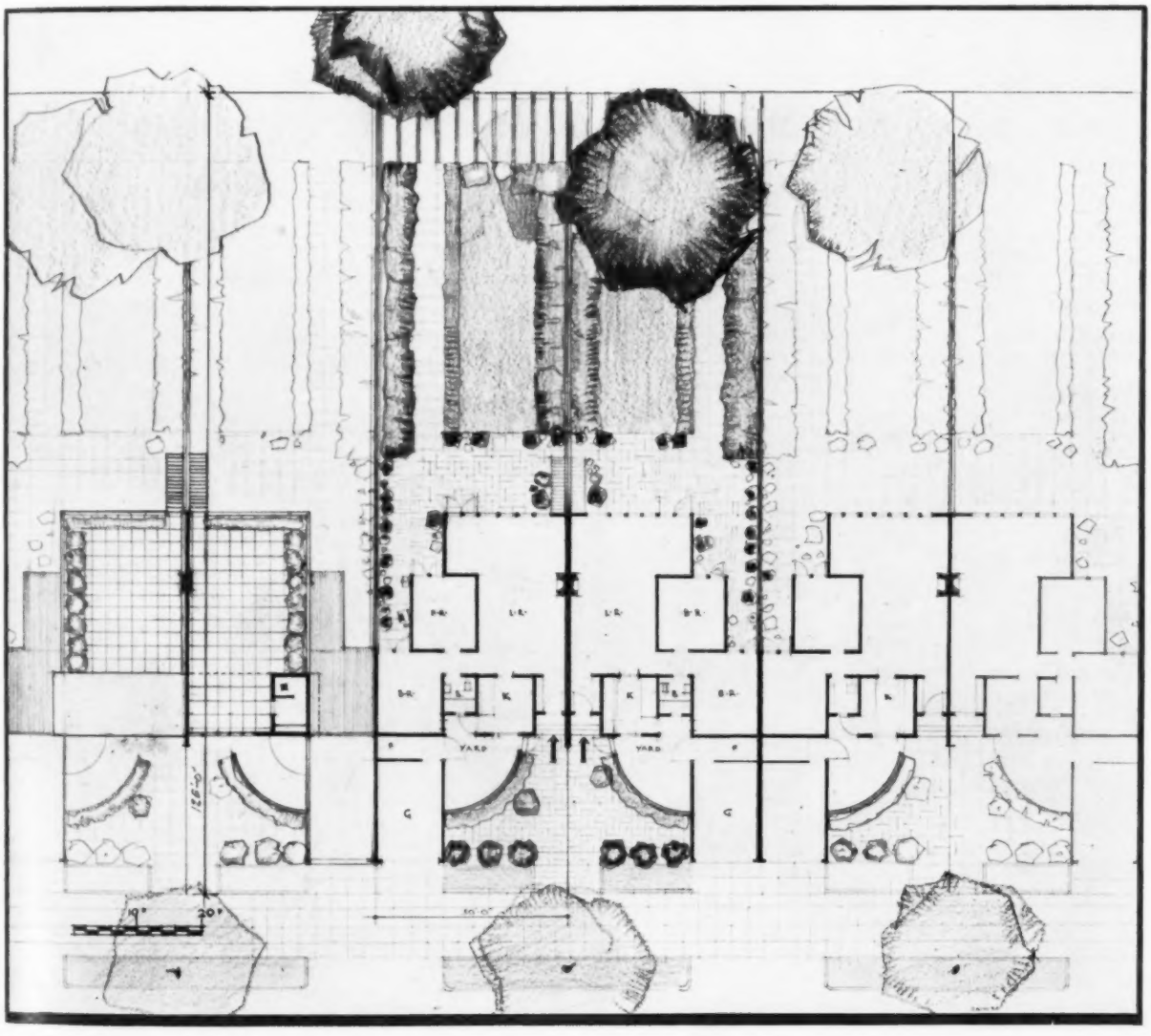
For economy and convenience, all rooms are on one floor with a roof deck for outdoor living in pleasant weather. The kitchen is toward the street because this part of the house is least desirable in row housing. The living room is at rear facing the garden. There is dining space at end of living room near the kitchen or at the end of room with outlook to garden. A heater room is at the rear of garage, reached from the service yard at front. The two bedrooms face toward the garden. There are continuous windows at the rear extending from floor to ceiling and admitting maximum sunlight. Daylighting is controlled by Venetian blinds. All rooms have direct access to garden. The garage is near the street and can serve as an entrance to the house.

There are no windows at the front, other than at roof shelter. Entrance to the house is by way of a glazed door reached through the paved and planted forecourt. The butcher boy and the laundry man reach the service entrance through an inclosed service yard. A private garden yard at the rear is brought into close contact with the house and can be made entirely private by a separating wall.

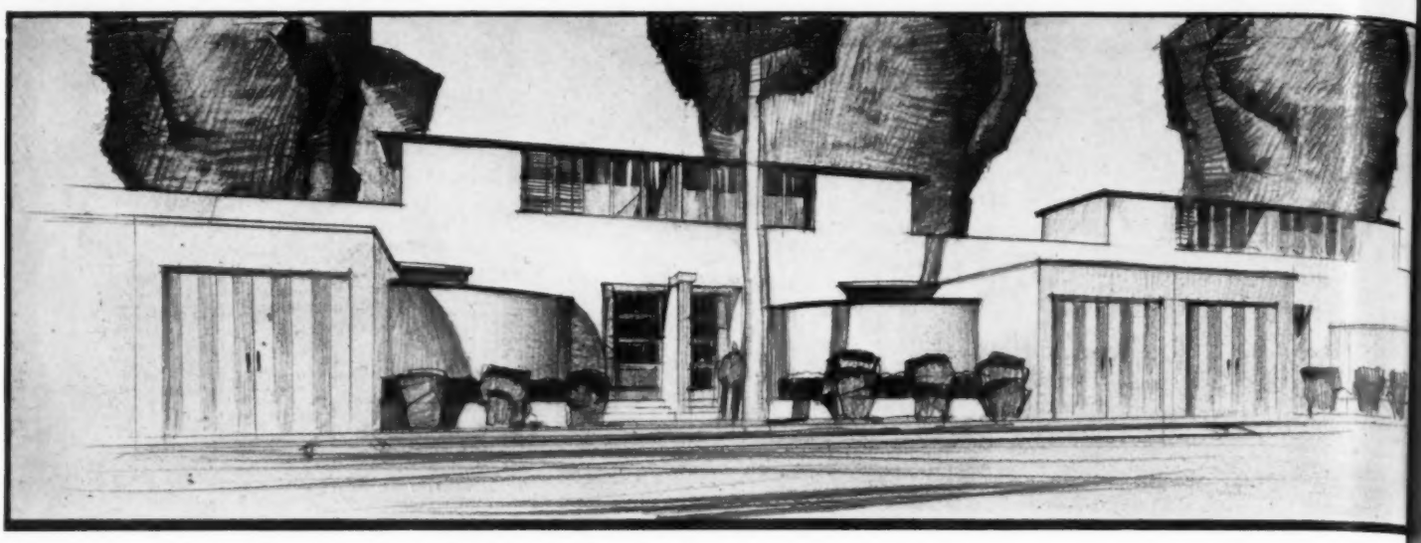
The roof, reached by a ship stairway from garden, is partly exposed to the sky. It also has a part sheltered at one end.



GARDEN ELEVATION OF ROW HOUSES



GROUP PLAN OF ROW HOUSES ON NARROW LOTS
PLAN OF ROOF DECK SHOWN AT LEFT
ERNEST BORN, ARCHITECT



PERSPECTIVE VIEW OF ROW HOUSES SUITED TO CONSTRUCTION WITH IMPROVED CONSTRUCTION METHODS
ERNEST BORN, ARCHITECT

SUMMARY OF CONSTRUCTION SYSTEMS BY ARCHITECTS, ENGINEERS AND COMPANIES

GEORGE FRED KECK and ROBERT PAUL SCHWEIKHER, architects, Chicago. Exterior walls, for proposed apartment building, of large "lightweight insulated blocks, held in place by shelf angles: floor construction of block type, reinforced for a span of approximately 13' 6", all spans uniform; stairs are of steel with cement treads, typical throughout."

WALTER R. McCORNACK, architect, Cleveland. Apartment house proposed with structural system of steel frame with exterior walls of Transite panels, backed with insulation.

S. C. HORSLEY, architect, New York. Interlocking steel wall panels. There is no bolting, riveting or welding on the job. Heating and plumbing equipment incorporated with wall.

RICHARD J. NEUTRA, architect, Los Angeles. Wall and floor panels of air pocketed lime, compressed. Use of suspension principle in construction system.

WALTER W. AHLSCHLAGER, architect, and GUY F. KOTRBATY, inventor, New York. Factory-made structural members of steel and concrete. Method not fully available.

ROBERT TAPPAN. A unit system of construction with steel frame, adjusted to enlargement of plan and exterior finishes as required; standard equipment.

A. LAWRENCE KOCHER and ALBERT FREY, New York. Construction systems illustrated and described on pages 284 and 286.

BUCKMINSTER FULLER. A Duralumin mast at center with floors suspended by wires, with application of principles of suspension and triangulation. Center mast contains heating, wiring, plumbing and air conditioning equipment.

HARRY L. DOVELL, engineer, Chicago. A steel frame system with steel units for floors and roof.

T. J. FOSTER, engineer, Long Island City. Light steel frame with special connections; wall panels of gypsum and insulation fiber; floors of light weight precast concrete slabs and steel beams.

AMERICAN HOUSES, Inc., New York City. Holden, McLaughlin & Associates, architects. House type built at Jeddo, Pa., see page 288. Steel frame, standard wall panels of abestos-cement board for interior and exterior. Roof of rolled steel sheets.

GENERAL HOUSES, Inc., Chicago. Howard T. Fisher, architect. House type built near Chicago, see page 289. Light steel frame, sheet steel exterior walls, backed with cork insulation panels. Sections delivered to site in sections.

J. G. BRILL COMPANY of Philadelphia, a subsidiary of the American Car and Foundry Company. The Brill Service Stations are constructed of steel plates on channels and angles and have an insulated wall 4" thick. They contain 1,200 cubic feet and are built complete with plumbing and electrical work. They are built entirely in the shop in three sections.*

AMERICAN ROLLING MILLS COMPANY (Frameless Steel House), Middletown, Ohio. Manufacturers of a system of construction. Wall and floor units of sheet steel pressed into box-like corrugations. Miles G. Clark, former realtor, was originator. See illustrations and description on pages 281, 282 and 287.

JOHN B. PIERCE FOUNDATION, New York City. Research by Robert L. Davison for Pierce Foundation. Development of standard sectional house elements for bathroom, kitchen, partitions and exterior structure.

A. O. SMITH COMPANY, Milwaukee. Experimental work in development of prefabricated houses. Details of construction are not available.

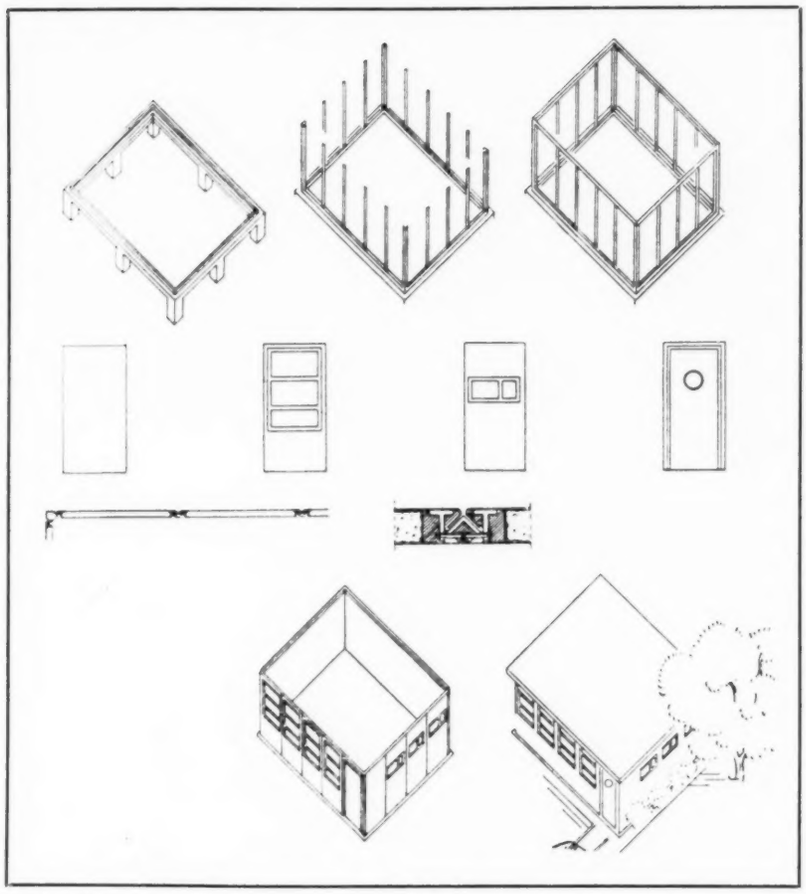
COLUMBIA STEEL TANK COMPANY, Kansas City. A frameless construction with channel-steel wall sections bolted together. Interior faced with insulation board. Sheet steel roof.

NATIONAL STEEL HOMES, Los Angeles. Tubular steel frame and interlocking steel wall panels; Rock wool insulation; partitions and interior walls of insulation board faced with shrunken cotton fabric.

*Peter Stone, *General Building Contractor*, April, 1932. See also *Fortune*, April, 1932, 1933.

HOUSING FOR SHIPYARD WORKERS. OTTO BARTNING, ARCHT., BERLIN, GERMANY

Exterior walls of 2¼" cork panels, surfaced outside with 12-gauge copper bearing sheet steel; inner wall faced with fabric to be painted or papered.

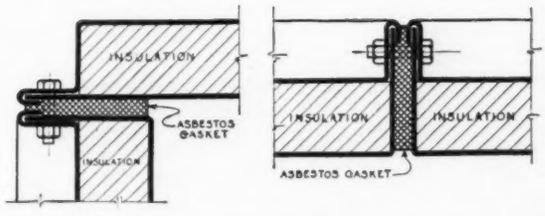


Wasmuth's Monatshefte

ERECTION PROCEDURE

1—Foundation footings and sills of concrete by concrete worker or by house owner.
2—Erection of vertical and horizontal framework.
3—Placement of wall panels.
4—Addition of roof.
Details in center show component units, panels, doors, windows.

GYPSUM PLANK (GYPSTEEL), 2" in thickness, as interior partition. This wall can be painted without other finish. Adapted to exterior construction when protected.



STANDARD UNIT CONSTRUCTION suitable for house walls. Can be dismantled and re-erected in a new location with 100 per cent salvage. The R. C. Mahon Company, Detroit, Mich.

PLANNING FOR CHANGED NEEDS

By ROBERT D. KOHN

A man is indeed audacious or foolhardy to attempt a prophecy at a time like this. But I am willing to take the risk if I can stir up my fellow-architects to use their latent powers to help give to the future a form in which their function will count instead of waiting around for something to happen. Out of this apparently leaderless mess, some order is bound to come and that order is in the making now. My conviction is that in the next few years there will be introduced into our social system the idea of planning. Architects and engineers know what planning means in connection with a building, a machine, a bridge, a road. We have applied that technique as yet only to a structure; only superficially to the physical aspects of a city and not at all to the state or to the nation. Of its social implications we have hardly even thought. My brief theme is this: "The future is to the planners; will the architects be in the vanguard or trail behind as camp followers to be sniped off?"

It is a commonplace to speak of the failures of the "laissez-faire" philosophy of the past. What have we to offer as a substitute? We demand something which will enlist in the common interest the initiative and inventiveness of man and his desire to excel. We want no squeezing of men into a mold. Quite the contrary, their very differences are of the essence of their value. The stock radicalisms do not interest me. I see the world bound to work towards a new order planned to use the varied powers and uniqueness of men. It will come about through cooperation willingly accorded because based on an understanding of functional interdependence. You need not agree with me in this—but you must agree that more of planning must come into the world's affairs.

In its essence, social planning is but an enlargement of that same process which an architect uses when he considers the house he is designing for a particular family. He accommodates in it not only the physical environment, so many rooms, but a relation between the parts which will make a certain kind of living possible and gives to it a form which makes it beautiful. While many techniques will have to contribute to the larger planning to which I refer, the engineers and the architects have the training and the experience that is particularly applicable. It is my belief that architects have a unique contribution to make to the process which gives them both the privilege and the obligation for leadership. For they do not look upon their planning as merely a scientific process. Their problems have to be solved but in their solution is required a deliberate choice of means plus a deep-seated human understanding; in other words, plus the emotion without which no work of art is ever created. That is what we need more than anything else in the world today. Architects have it bred in their bones that not only science but vision is needed to plan anything.

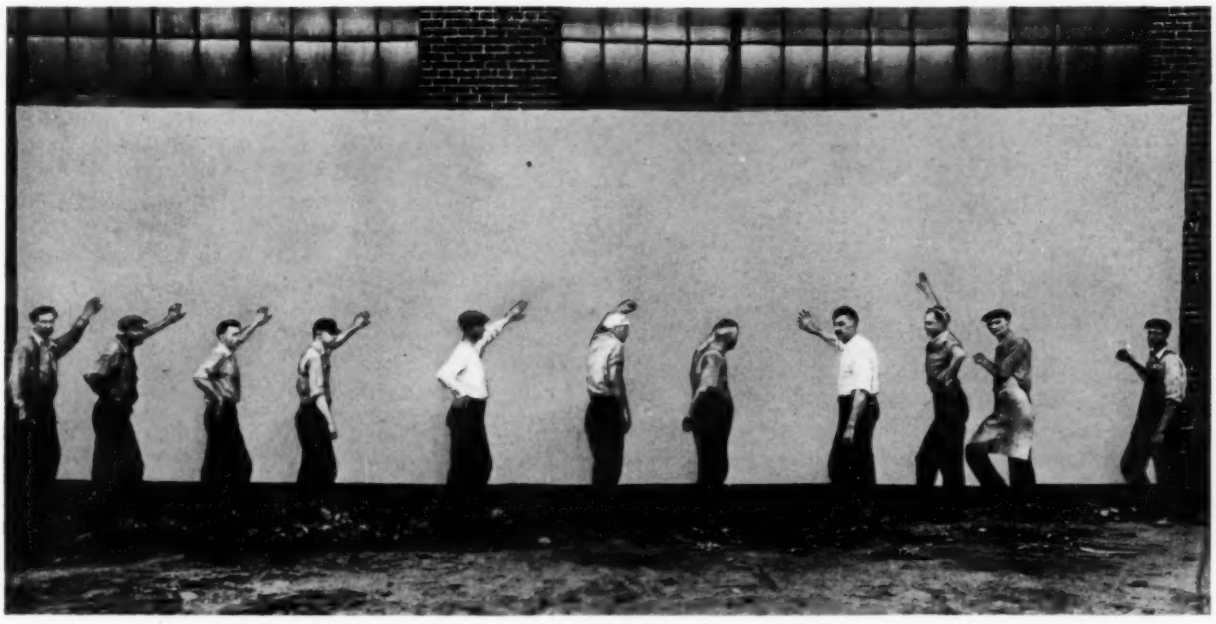
Groups of architects here and there throughout the country are active in their efforts to meet the changing world halfway, and there are some few that realize the opportunity for leadership. But, on the whole, the majority seem to be waiting disconsolately for something to come their way. The great public works relief program with its new opportunity for housing leaves them entirely uninterested. "There is no housing problem in our State," or "The surveys show plenty of empty houses and apartments"; "The Real Estate Board (or the mortgage companies or the bankers or the apartment-house owners) do not want anybody to build any housing." Great Scott! Have we been stricken blind so that we cannot see what is happening? The era of unthinking speculative development has received such a blow that it can not come back—at least not in its old form. Already some among the bankers are saying publicly that the events of the last three years have shown that investments can no longer be made with safety on individual buildings without consideration for the future of the neighborhood. One goes so far as to say, "No investment should be made in housing of any kind unless it is on such a scale that in itself it creates a neighborhood properly related to the city as a whole." And we architects with the inferiority complex acquired from years of waiting for other people to tell us what to do, have not had the courage to grasp the opportunity. We are still worshipers at the shrine of the success (?) investor we still wait for the crumbs to fall from the rich man's table. The dodo is said to have disappeared from the earth when dodo food no longer grew in his vicinity. The dodo never realized that he could eat anything else. There isn't even a bone of him preserved in the Museum of Natural History.

The future is to the planners, of that I am firmly convinced. The same basic technique that we are trained to use in our little problems must be applied eventually to the problems of production in every field. Hundreds of volumes have been written on the need for economic planning but so far I have seen no practical plan for putting it into effect. In my opinion the field of Public Works offers a great opportunity right now for the beginning of an experiment in such nation wide planning. By Public Works I mean that large and comprehensive service which is intended to provide to the greatest possible extent the amenities of living to the people. It is to that end that we must apply ourselves to

(*Continued on page 34, advertising section*)

Note—This editorial, reprinted from the February issue of The Octagon, was written by Past-President Kohn of The American Institute of Architects at the request of President Russell. Both believe that the architectural profession should broaden its view and act accordingly.

TECHNICAL NEWS AND RESEARCH



Large panel of Phemaloid Compound Lumber produced by Haskelite Manufacturing Corporation.

NEW PRODUCTS: WOOD, TEXTILES, PAPER

As plywood has come into widespread use for lightweight construction within recent years, improvements have been steadily made in the veneers, the adhesives and the methods of manufacture. Alternately crossing grains in adjacent sheets of wood veneer gives a product with nearly uniform strength in all directions and adaptable to many purposes. This strength and versatility of plywood has been increased materially by many innovations—waterproof adhesives, metal plies, new surfacings and the like.

These developments are reviewed in this Technical News and Research article, the first of a series describing new products and materials which are being made commercially available for building construction.

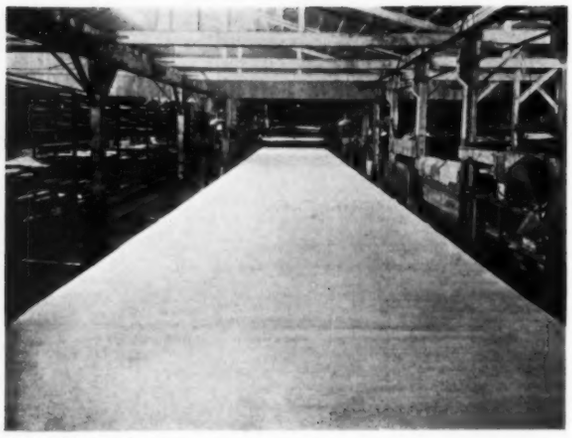
WATERPROOF PLYWOOD: LAMINATING WITH PHENOLIC RESINS

Although wood panels made with the usual casein glues and blood albumin glues are water-resistant, the adhesives are unable to withstand constant immersion in water and are also subject to bacterial deterioration. With the substitution of phenolic resins as adhesives—a process heralded as "revolutionary" in the manufacture of plywood—there is now produced a material said to be absolutely unassailable and applicable for exterior walls of buildings. Such plywoods are already in use for hulls of boats, pontoons of seaplanes, and where similar severe moisture conditions are encountered.

The use of phenolic and other artificial resins involves a long-sought ability to glue wood plies without introducing moisture. The adhesive qualities of the phenolic resins, which are synthetic products derived from the condensation and polymerization of phenol (carbolic acid) and formaldehyde, have been known since the early inventions and patents of Dr. Baekeland, dating about 1909, but until comparatively recently cost considerations have retarded commercial development in the plywood field. Several companies are now marketing these improved laminated panels, and according to H. W. Marsh, editor of *Veneers*, "it is only a matter of time until all plywood will be absolutely waterproof, the glue line actually stopping the progress of moisture."

Manufacture

The resins are applied between two or more plies of wood or other material (1) as a film, (2) as a dry powder, or (3) as a colloidal solution. (A fourth method, as a varnish, has no apparent commercial future because it involves the loss of relatively expensive solvents.) The sheets are then



Jones Photo Co.

Sheet of veneer being "unwound" from giant logs for use in Douglas Fir Plywood.

assembled according to the desired number of plies and the assembly is placed in a hot plate press. A pressure of 150 to 250 pounds a square inch is applied at a temperature which ranges between 280° and 320° F.

The phenolic resins in their reactive state are thermo-plastic, i.e., they become plastic when heat is applied. They are also thermo-setting, i.e., they polymerize or set with the addition of heat. (This behavior is in contrast with that of the usual animal and vegetable glues which require a small amount of water in order to become plastic when heated and which set only by the evaporation of the water.) When a phenolic resin changes, as heat is applied, from its reactive state to its insoluble and infusible state, it tends to bubble and form a multitude of small blisters. Pressure is required to prevent these blisters and to secure a good bonding film between the plies. The greater the pressure, the better the bond. Since there is no "glue squeeze-out" problem, maximum pressures permitted by the wood may be used.

A minimum temperature, on the other hand, must be maintained for a definite time. The temperature must be high enough, under pressure application, to cause the resin to become plastic and set, but not so high as to cause deterioration of the wood by excessive evaporation of its natural moisture content. According to Ericsson H. Merritt,* in a paper describing the phenolic resins and their application to plywood (presented at the November, 1932, meeting of the Wood Industries Division of the American Society of Mechanical Engineers at Jamestown, New York), the ideal adhesive should not require temperatures above 212° F so as to eliminate all chance of blister from formation of steam in the interior of the assembly. Actual requirements exceed this ideal. Although some recommendations give plate temperatures as low at 266° F, it has been found from a large number of tests that glue-line temperatures below 300° F result in loss of strength.

*President of the Merritt Engineering and Sales Company, Inc., and General Manager of Plywood Engineering and Process Company, Lockport, New York.

The duration of the heat and pressure application depends on the distance from the hot plate surface to the innermost glue line. For the usual face veneers of 1/28" or 1/30" thickness only 50 seconds are required.

The thickness of the outer plies must be such that an unreasonable length of time will not be required; for outer wood veneers, according to Mr. Merritt, about 3/16" is a practical maximum. Veneers of this thickness or less show no deterioration from hot pressing at 300° F and 200 pounds per square inch, although four-quarter lumber and thicker plies used as a core are apparently subjected to harmful stresses. Chief progress consequently is being made in the bonding together of veneer measuring 3/16" or less in thickness. Regularly available is 5-ply and 7-ply stock with 1" or 1¼" overall thickness, as well as the conventional thickness in 3 ply and 5 ply. Where no water is applied with the adhesive, the veneers will not curl or swell, and plies as thin as .005" can be produced without difficulty and without danger of staining the face veneer.

Methods of Applying Phenolic Resins

(1) In *the film method*, a thin sheet of paper is impregnated with the resin varnish, the solvent is driven off and the resulting dry film is used as a sheet adhesive placed between each pair of plies. A uniform and constant spread of adhesive is thus obtained. The presence of a definite amount of moisture is necessary in using the film; hence it is impossible to press long panels progressively in a short press since the wood adjacent to the press during the first pressing dries out for a short distance beyond the press, and no bond will result for this distance when the next pressing is made. For this reason the hot presses must have a platen area identical with the largest size panels desired for manufacture.

This film process is sponsored by Tego Gluefilm, Inc., Terre Haute, Indiana. Panels can be furnished in any size up to 8 by 5 feet, ranging from 1/100" to 2" in thickness.

(2) In *the dry powder method* the dry resin is ground into a fine powder passing at least an 80-mesh screen, and deposited uniformly by machine to the surface of the plies which are then assembled and hot-pressed. Care is necessary to hold the powder in the same even layer after being deposited; usually the board surface is slightly moistened before the powder is applied. There is no minimum requirement as to moisture content of the veneers since the resin in the powdered form has a high reactivity and moisture is not required. Consequently, it is possible to press long panels progressively in a short press.

The dry powder method, known as the Dike Dry Gluing process, is offered by the Plywood Engineering and Process Company, Lockport, New York, controlled jointly by the Merritt Engineering and Sales Company, Inc., and I. F. Laucks, Inc., of Seattle, Washington.

(3) In *the colloidal solution method* the wet adhesive undergoes a drying operation leaving a uniform film of dry resin on the surface of the coated plies. The spread of the liquid is controlled as desired. The resin is highly reactive and bonds in a relatively short time under pressure. It is possible to press progressively.

This method, known as the Durez process, is used by General Plastics, North Tonawanda, New York. Panels are available in sizes ranging up to 8 by 30 feet.

Applications

Special modified forms of phenolic resins are used for bonding sheet metal or for bonding wood to metal or to insulating material such as Transite. By the use of phenolic resins many new types and constructions of laminated products are available which were not possible with the old methods because of the technical difficulties involved.

A Bakelite finish which will withstand damage from cigarettes and alcohol can be given to the surface veneer by treating it with the phenolic resin in the same manner as the laminations are made. This application, however, is said to be impractical commercially, since (1) absorption of the resin is not uniform for wood of uneven texture, (2) panels cannot be sanded to a true plane surface and defects result from uneven pressure of the resin film, (3) a film thick enough to be practical is likely to check under temperature changes because of the difference in thermal expansion of the wood and the resin film. It is believed that the ultimate solution of the problem lies in spraying a resin-bonded panel with some of the newer resin baking varnishes and then baking the panel at 250° to 300° F. This process is reported to be cheaper than hot pressing and will produce surfaces with practically the same resistance as the pressed Bakelite surface.

Tests

Severe laboratory tests have been made to determine the degree of proofness against water and against attack by mold, fungi, termites and vermin. The bonds show no deterioration due to moisture. Outside wood plies tend to expand while inner plies hold their shape; the resulting stress does not affect the resin bond and sheer tests show 100% wood failure, demonstrating that the bond exceeds the surrounding material in strength. No moisture penetrates through the glue line although there is some penetration around the ends. Extensive tests fail to show any cracking in the plywood at the ends. Being an organic material, the resin is not subject to corrosion nor is it attacked by weak acids; some types offer considerable resistance to weak alkalies. The set resin does not support combustion and does not begin to char below 450° to 500° F. Prolonged tests show that the bond does not support bacteria cultures. Termites will not attack the wood between bonds except when the bonds are more than 1/10″ apart.

Cost

Plywood panels treated with phenolic resins cost approximately 5 cents a square foot more than panels made with vegetable glues. This relatively higher price is due to lack of production at the present time. The actual increased cost of adhesive is another important economy: since the panels ordinary 3-ply panels. This higher cost per pound of phenolic resin adhesives is offset to a large extent by manufacturing economies. The time factor is another important economy. since the panels require no drying after pressing they can be manufactured and shipped on the same day as ordered.

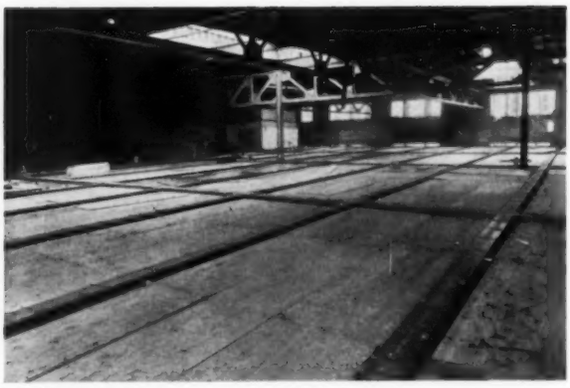
WOOD-METAL PLIES: ELASTIC GLUE

Different coefficients of expansion have made difficult the lamination of wood and metal. Under heat treatment wood tends to contract and metal to expand, with likelihood of failure by (1) ripping of wood fibers, (2) impairing of the metal coating, or (3) breaking of the glue joint.

To overcome these difficulties, an elastic glue made of latex and casein has been developed by the Casein Manufacturing Company of America, New York City. This adhesive varies in expansion directly with the metal. At present its chief application is in the manufacture of wagon sides and truck bodies and other surfaces where extremes of outside temperatures are likely to be met. The rubber glue is relatively light in weight and has a high thermal insulation value.

Howson

Douglas Fir Plywood Wallboard is made in large panels for easy handling and application.



Kaufmann & Fabry

Plywood panels used structurally as forms for concrete floor slabs.

PLYWOOD: CONCRETE FORMS

An important use of plywood at present is in its adaptability for underflooring, inexpensive paneling, and particularly concrete forms. Large plywood units permit easy installation and rapid covering of space. The smooth, wide surface of the boards results in a smooth finish for the concrete, and the plywood can be removed and used repeatedly.

The use of fir* for concrete forms is promoted by Douglas Fir Plywood Manufacturers, Seattle, Washington (Sweet's Architectural Catalogues, 1933, A177-180). Panel surfaces are treated with a water-repelling agent and can be used 7 to 10 times on the average.

A protective hard finish coating which has been developed by the United States Plywood Company, Inc., for its Plycraft panels, allows use of forms as many as 15 times, according to claims. This coating completely eliminates any trace of wood grain on the finished concrete.

A new product, Tempered Presdwood, is offered by Masonite Corporation, Chicago (Sweet's Architectural Catalogues, 1933, A181-194), for concrete forms. It is much denser, less absorptive and stronger structurally than the previously made board; the forms can be reused upward of 20 times, according to the manufacturer. The boards are made of fibers from wood exploded under high steam pressure, and then felted together. The face surface has a smooth semi-polished finish.

FIREPROOF WOOD

New mechanical processes are bringing the cost of fireproof wood very close to the present price range of nonfireproof wood. The relative high price of such treated wood has been the chief obstacle to its general use in the past.

Theoretically, such wood is not fireproof but fire-resisting. It will not flame although it is subject to charring. It does not transmit heat in appreciable degree.

In processing the wood is first dried and then the fibers are impregnated under pressure in steel tanks with any one of a number of saline solutions, the most common of which are ammonium phosphates or chlorides. After the liquid is forced into the wood cells the moisture is then evaporated in dry kilns or in the open air. Fine particles of salt are left in the wood cells where they prevent the entrance of oxygen to support combustion. In case of fire, when the temperature reaches about 400° F, the salt particles react to form a gas which stifles combustion.

Wood Preservatives

A large number of materials can be used to extend the life of wood by reducing the deterioration caused by decay and insect or animal life. In general these preservatives are of two classes: (1) oils, like creosote, which are relatively insoluble in water, and (2) salts which are injected into the wood as water solutions.

Descriptions of the various preservatives now commonly used, together with specifications for their application, are to be found in *Treated Lumber, Its Uses and Economies*, issued by the National Committee on Wood Utilization of the U. S. Department of Commerce, and also in two studies, *Wood Preservatives* and *Methods of Applying Wood Preservatives*, prepared by George M. Hunt, in charge, Section of Wood Preservatives, Forest Products Laboratory of the U. S. Department of Agriculture, Madison, Wisconsin. These studies, together with other data, will be included in a handbook on wood, now in preparation and soon to be published by the Forest Products Laboratory.

FLEXWOOD: NEW ADHESIVE

A new patented cement has been developed by the United States Plywood Company for affixing Flexwood (Sweet's Architectural Catalogues, 1933, B461) to desired surfaces. The cement is neutral in character, neither acid nor alkaline. When first applied it appears as a white paste, but as it dries, it becomes transparent. It has no appreciable stickiness and a strip coated with it adheres only to a surface similarly coated. Pressure by hand tooling of outer Flexwood surface is sufficient to give a permanent bond high in tensile strength. When a treated ply is laid on a desired surface with slight external pressure, the adhesiveness is relatively slight and the ply can be easily removed and then relaid if necessary.

Advantages of this new adhesive include the following:

(1) No expansion of materials after application.
(2) No squeeze-out of glue at joints.
(3) Time of application reduced about half.
(4) Since no moisture is retained in the wall or treated surface, the veneer can be finished immediately after application.

*A new publication—*Douglas-Fir Plywood*, Commercial Standard CS45-33—has just been issued by the U. S. Department of Commerce, giving definitions and specifications for general and detail requirements, concrete-form plywood, door panels, export grades, standard sizes, etc. Copies may be obtained at 5 cents each from the Superintendent of Documents, Washington, D. C.

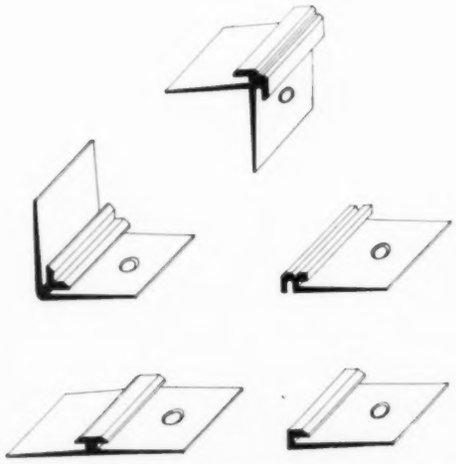
PLYWOOD JOINTS

Usual practice is to cover joints of plywood, when used as wall board, with battens of the plain flat or molded edge type. Where a continuous surface is desired plastic materials are available for filling the joints. New joint fillers, which are powders to be mixed with water, are offered by the Douglas Fir Plywood Manufacturers, Seattle, Washington (Sweet's Architectural Catalogues, 1933, B453-460). In application the joints are filled so that a slight bead is left; after standing overnight the joint filler is thoroughly hardened and the bead can then be sanded off.

Another patented process for eliminating battens has been developed by the Robinson Manufacturing Company of Everett, Washington. By this method plywood sheets are first fastened to studding or directly over old walls by using 4-penny casing nails on 8-inch centers approximately 1/16″ below surface to allow for putty. A uniform opening of approximately 1/16″ is left between abutting pieces of plywood by using a casing nail as a gauge. A specially manufactured tapered wood spline is then inserted and gently tapped into the opening, together with a thin coating of glue. The spline is then ready to be cut down to the ply-wall surface by chiseling and sanding.

Metal Trim

A metal trim designed for walls finished with linoleum, rubber and asphalt tile is also applicable for thin wood or plastic plies. A product of this character has been developed by Wooster Products, Inc., of Wooster, Ohio. The metal wall trim is fastened by means of countersunk screws or special "screwnails" placed 8″ on center in the feather edge flange. The wood plies are then inserted inside protected moldings, sealing the screws or nails and underflange. This wall trim is obtainable in polished or wire-brushed finishes and, if desired, in black, blue, brown, green, red, yellow and gold.



Metal trim developed by Wooster Products, Inc., applicable for plywood joints.

ROBERTSON BONDED METAL

A new form of paneling, introduced by the H. H. Robertson Company of Pittsburgh, offers a multiplicity of permanent finishes. The product consists of a steel sheet to which fibrous layers have been attached by the use of metallic adhesives, heat and pressure. The fibrous-coated sheet is then saturated with a phenolic resin and hot-pressed to produce finishes similar to wood and marble. Surfaces with patterns of fabrics and textiles as well as actual fabric surfaces can also be produced.

Another product fabricated from the bonded metal consists of a thin wood veneer laminated over the saturated base. Such a laminated sheet, it is claimed, gives increased panel strength from the use of the steel, a greatly minimized fire hazard and resistance to widely varying conditions of moisture. It can be furnished with steel cores of varying thickness depending on the conditions of insulation. It can be cut on the job with metal cutting tools and assembled with standard metal moldings.

Wood veneer panels are available in sizes up to 36 by 84 inches. With 24-gauge steel and 1/28″ veneer on each side such panels average 1.37 pounds per square foot in weight; with 18-gauge steel, 2.37 pounds per square foot.

NEW WOOD PRODUCTS

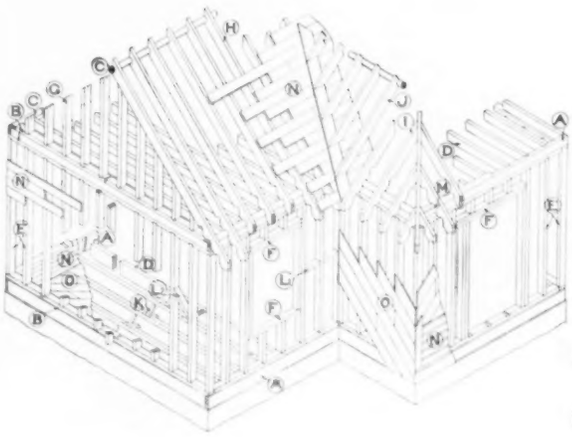
Masonite Cushioned Flooring

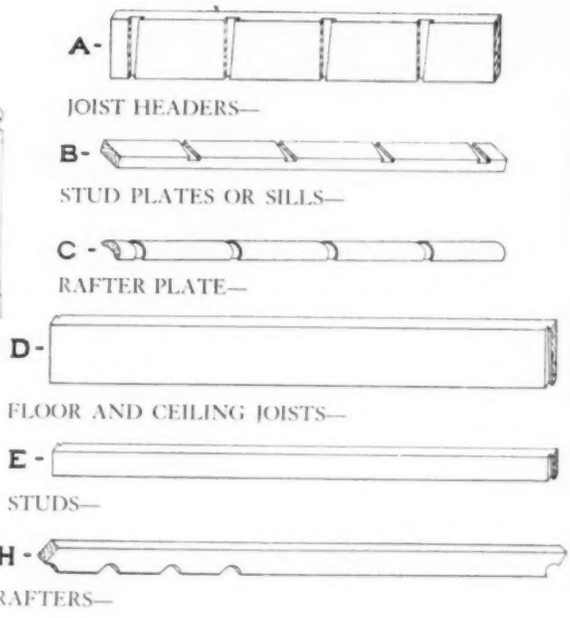
This flooring, made entirely of wood fiber by the patented Mason process, consists of two Tempered Presdwood boards (with polished surface exposed) which are glued on each side of a single thickness of Quartrboard, thus forming a 3-ply board ½ inch in thickness. The Tempered Presdwood wearing surface is much harder than natural wood, of which it is wholly made, and does not dent under furniture loads; the material is nonabsorptive and will not expand or contract under even the most adverse conditions. The center Quartrboard thickness acts as a resilient cushion which absorbs impact shock.

The flooring is made in squares ranging from 6″ x 6″ to 12″ x 12″ and also in strips. Two tones of brown are available. The squares are tongued-and-grooved for installation over concrete or wood subfloor. (For additional information and specifications see Sweet's Architectural Catalogues, 1933, B480-483.)

Solka: Roofing Base

An interlocking mass of flat ribbon-shaped fibers felted together has been developed by the Brown Company of Portland, Maine, as a base for asphalt shingles and prepared roofing. High absorption of the asphalt, flexibility and tight nail grip are advantages claimed for Solka. The product can be crumpled tightly and unrolled without showing evidence of breaking. As a roofing base it is difficult to tear by hand.





"Enterlocking" Fabricated Building Lumber, designed for use in any type of building. Long-Bell Lumber Sales Corporation.

"Enterlocking Fabricated Building Lumber"

By simplifying and standardizing building parts, the Long-Bell Lumber Sales Corporation of Longview, Wash., and Kansas City, Mo., has developed a coordinating system of machined pieces so designed that more than three-quarters of the lumber in usual construction comes ready for use. The manufacturer states that this fabricated lumber should not be confused with ready-cut house construction. Ten basic framing members, nine lengths of square and board stock, and six lengths of diagonal-end sheathing, all precision cut and graded, can be adapted to use in any type of building.*

All framing members go together with a strong patented "enterlocking" joint consisting of a machine-made wedge-shaped dovetail. The spacing of mortised members on headers, sills and plates is on 16-inch centers, automatically assuring correct alignment of all joists and studs. Practically any desired width of building may be obtained with available lengths of floor and ceiling joists.

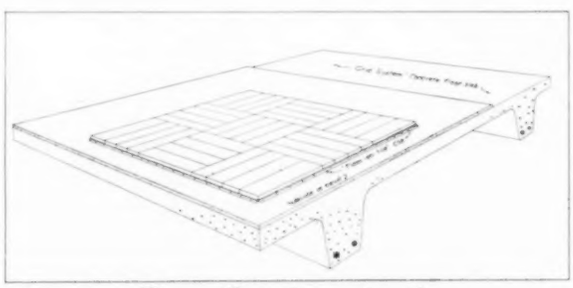
The fabricated lumber is manufactured of Douglas fir and is limited to 2-inch framing and 1-inch board stock. Finish lumber, which does not lend itself to uniform processing, is not available. Only one grade of material, properly seasoned and carefully selected at the factory, is used. Joists, studs and other parts are sawn to a precise length and squareness so that loads and stresses are equally distributed. The interlocking joints wedge the framing parts together, giving stiffness.

*A small-house plan service for $1,000 to $2,000 houses designed by practicing architects and making use of "enterlocking" fabricated lumber is announced by The West Coast Lumbermen's Association, 364 Stuart Building, Seattle, Washington. A brochure containing plans for four houses is available for distribution to architects.

"Floorantile Unit"

The Jones Hardwood Company, Boston, offers wood block panels, made of hard maple, yellow birch, beech, oak or other hard woods, and laminated in plywood form with water-resistant glues or, where exterior use is intended, with phenolic resins. Floor blocks vary from 8" x 8" to 12" x 12" squares or dimensions as desired, finished ⅜" and ½" thick. Wall tiling and wainscoting units are 16" long and 4", 8" or 12" wide. Panels of ⅜" thickness weigh approximately 1.55 pounds per square foot, including splines. The unit blocks can be applied to concrete or wood underfloors evened to a level surface. Patented metal fasteners, consisting of a rolled-steel double-tongued spline cut to length and perforated for nailing, are used. No nail is applied in the wood but only in metal splines. Nailheads are covered by next applied unit and there is no lifting stress on nails.

Wall tiling and wainscoting can be had in natural wood or in colored enamel applied on the wood in three coats. Floor finishes may be applied in the usual manner after laying.



Floorantile unit construction.

"Thin-Type Bloxonend Flooring"

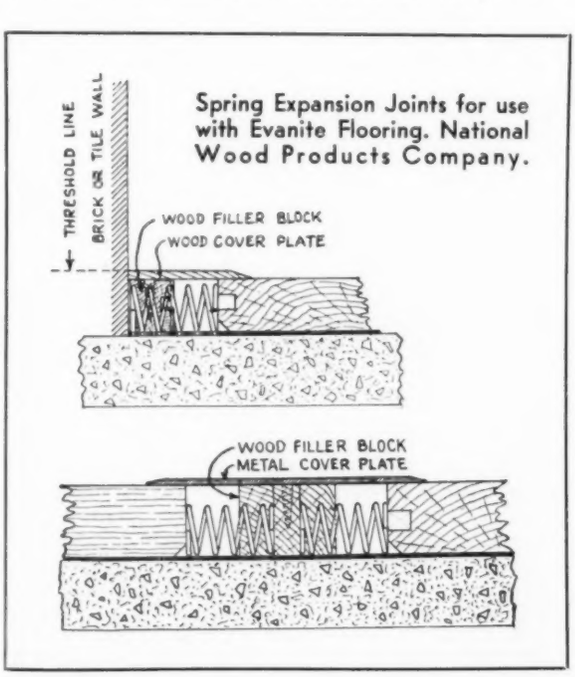
With improved dry kiln and dampproof methods, the yellow pine ingrained blocks furnished as flooring by the Carter Bloxonend Flooring Company of Kansas City, Mo., have been reduced from 1 11/16" to 7/8" in thickness. These thinner blocks are dovetailed to the same thickness of baseboard, 7/8", thus making the total thickness of the built-up section 1¾" instead of 2 9/16", with consequent reduction in manufacturing costs. The flooring is laid with metal splines instead of heavy wood splines as in the case of standard Bloxonend.

The thin pattern is suggested for gymnasiums, schools, shops, department stores, recreation rooms, and light manufacturing plants where usage demands a durable and splinter-proof flooring; the thick standard pattern (Sweet's Architectural Catalogues, 1933, B469) for heavy industrial service.

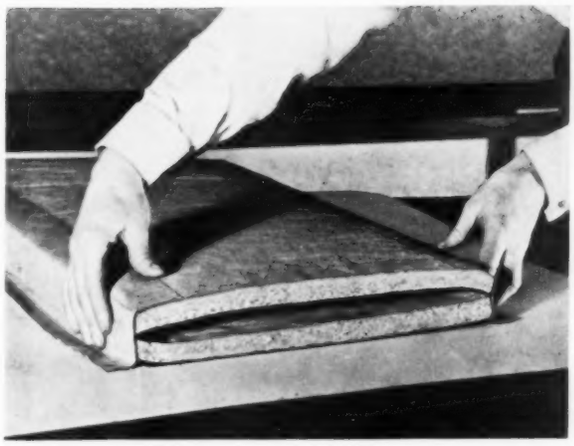
Evanite Spring Expansion Joints

A "full-floating" floor, which is free to move independent of the subfloor structure, is attained by the use of spring expansion joints developed by the National Wood Products Company, Detroit. The joints, which are applied to walls and partitions, have a "push-and-take" effect that closes up any cracks resulting from contraction. The width of the joint and the length of the spring varies with the size of the area involved, requiring a corresponding change in the size of the cover plate. A steel cover plate is preferred to wood or other material because of its greater strength and because it is less affected by alkaline solutions.

Additional expansion joints can be used for exceptionally large areas where the usual expansion joints around walls or partitions are insufficient to prevent buckling under extreme atmospheric conditions. (For additional information see Sweet's Architectural Catalogues, 1933, B484-487.)



Spring Expansion Joints for use with Evanite Flooring. National Wood Products Company.



Wood Conversion Co.

Pocket between blanket layers opens to form air space when tucked in between studs.

Balsam-Wool Insulation

Wall-thick balsam-wool, manufactured by Wood Conversion Company of Cloquet, Minn., has been designed to meet the requirements of air conditioning in house insulation. It is made of two thick layers of balsam-wood, each incased in waterproof asphalted kraft. The product is sealed against moisture and air infiltration and, like the new standard balsam-wool insulating blanket (Sweet's Architectural Catalogues, 1933, B637-640), has flanged edges for easy and economical installation. When installed between studs the two layers spread, forming a sealed air pocket in between, which adds to the heat-stopping qualities. The cost is approximately one-third more than for standard 1-inch balsam-wool.

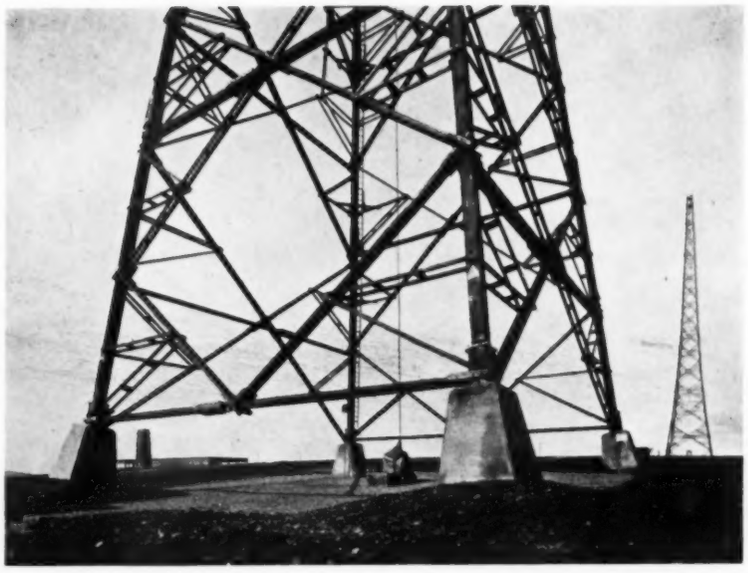
A balsam-wool jacket is also offered by this manufacturer for insulating household hot-water tanks. The jacket comes in two sections of ½" balsam-wool insulating blanket which are wrapped about the tank, covered with fireproof cloth and fastened with metal bands. Savings in fuel expense are claimed for this conservation of heat.

Nu-Wood Bevel-Lap Plank

A wood fiber product of the same composition as bevel-lap tile, insulating board and lath (Sweet's Architectural Catalogues, 1933, B641-644) is now available in 8-foot planks measuring 8", 10", 12" and 15" in width. This product is manufactured by Wood Conversion Company of Cloquet, Minn.

Nu-Wood plank is made in standard bevel and beaded bevel edges for laying with either smooth or rough mat surface exposed. It can be obtained in mixed selections of five tones shading from light tan to wood brown. It obviates the use of lath and plaster in new construction and can be applied over old walls. It insulates against heat, and absorbs and deadens all noise.

Moldings, also made of the same material, come in six stock patterns in the same range of colors and texture.



All-wood radio towers, 330 feet high, at Muhlacher Station, Germany. Modern connectors were used for structural timbers which were imported from the United States.

MODERN CONNECTORS FOR TIMBER CONSTRUCTION

Efforts to promote the use in this country of metal connectors for strengthening critical points of timber construction are sponsored in a handbook, *Modern Connectors for Timber Construction*,* published in March by the National Committee on Wood Utilization, U. S. Department of Commerce, and prepared jointly by Nelson S. Perkins, Construction Engineer, and Peter Landsem, Asst. Construction Engineer, of the Committee and by George W. Thayer, Senior Engineer, of the Forest Products Laboratory, U. S. Forest Service, Department of Agriculture.

Development of Modern Connectors

Modern connectors, designed for increasing the efficiency of timber joints, are a reintroduction into this country of construction principles which were abandoned in crudely developed stages nearly fifty years ago. Renewed impetus was given to the development of connectors in Europe during the World War and the years following, when iron and steel for structural purposes and also the skilled labor required for their erection had become scarce and costly. Timber, particularly in the Scandinavian countries, was easily available, and engineers and builders in the central European and Scandinavian countries began to seek means of improving existing framing methods. Attention was focused mainly on improving the timber joint, a critical link, by devising means for offsetting unfavorable stress distribution with simple bolted joints.

The wide use of these connectors abroad first came to the attention of American industry through Axel H. Oxholm of the Department of Commerce, who learned of the developments from German prisoners while on duty in France at the close of the war. As Director of the National Committee on Wood Utilization he has since continued to bring together available European information.

Types of Connectors

A broad classification of the connectors developed in the period from 1916 to 1922, modified and improved in various degrees during the last decade, comprises the following three types:

(1) Plates with teeth, spikes, or corrugations which are forced into the faces of wood members to be joined.

(2) Plain rings that fit into precut grooves in the wood members or tooth rings that are forced into place.

(3) Discs usually tapered each way from the middle, that fit into precut holes, half in one member and half in the other.

Members are assembled and held by the usual bolt which runs through the centers of the connectors. The bolt is primarily a binder and only secondarily a load-bearing unit. With their larger circumferences the connectors take an increased load for distribution over a larger area of the timbers, thus avoiding undistributed unit "edge stresses" frequently experienced under bolted connections where the small diameter bolt operates against a localized area in the timber face, crushing the timber at this point, and, together with bent bolts, slipping with the consequent sag in structures.

The load-bearing capacity of the joint, on conservative laboratory data, is increased from four to eight times that of the ordinary bolted joints. In some instances strength is increased as high as twelve times.

More than sixty different variations have been patented in Europe, but only some six or eight types are considered important for American practice. Several thousand samples of eight important

*This handbook of 147 pages explains the connectors and their use, giving the fields of utility of the several types as determined by European practice and stress analyses together with American use data. A discussion of stress and load factors is included. The book is bound in paper, has numerous illustrations, and may be obtained at 15¢ a copy from the Superintendent of Documents, Government Printing Office, or the National Committee on Wood Utilization, U. S. Department of Commerce, Washington, D. C.

types of plates, rings and other connectors were obtained and tests conducted at Forest Products Laboratory with an extensive series of analyses on their behavior when employed with our native woods, both green and seasoned. All necessary metallographic studies to determine the properties of the connectors were conducted by the U. S. Bureau of Standards. The experiments and results are described fully in the new publication.

No single type meets all engineering requirements, but according to the investigators it will seldom be necessary to go beyond one or two types for any particular construction project.

Advantages

With the use of modern connectors a larger percentage of the gross cross-sectional area of the structural wood member can be developed at the joint than with older joining methods. Boards and planks can be used in built-up members to replace heavy, solid timbers. Lower grades or weaker species of wood can also be used with consequent decrease in cost of material. Eccentric joint connections with secondary bending stresses are largely eliminated and each framing member functions as a true two-force piece. Where connectors are substituted for a number of bolts in transmitting an equivalent load, the total weight of the connectors is much less than that of the bolts.

Advantages of factory fabrication are naturally realized in preparation of wood members and trusses. All shaping, cutting and boring can be done in the shop according to specifications and with assurance of expert supervision, the parts then assembled and units shipped ready for speedy erection on the job. Only the placing of bolts in prebored holes is then necessary, thus cutting down expensive hand labor in the field.

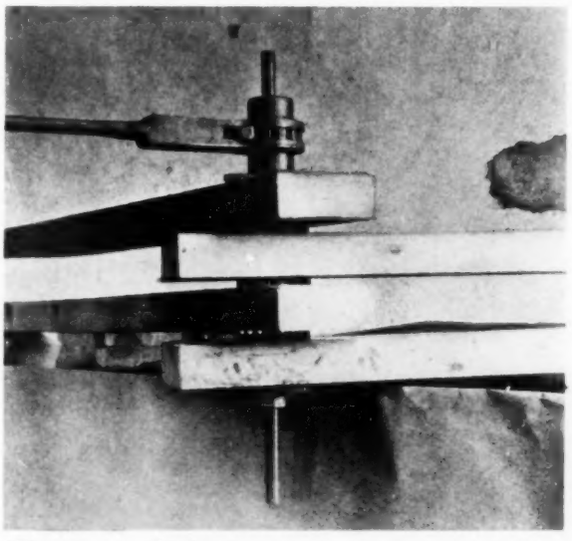
Applications

Hundreds of important wood structures of all kinds have been erected with these connectors in Europe, including radio towers as high as 460 feet, bridges more than 1,000 feet long, an auditorium with seating capacity for 75,000 persons, piers, railroad stations and locomotive shops, warehouses, churches and airplane hangars.

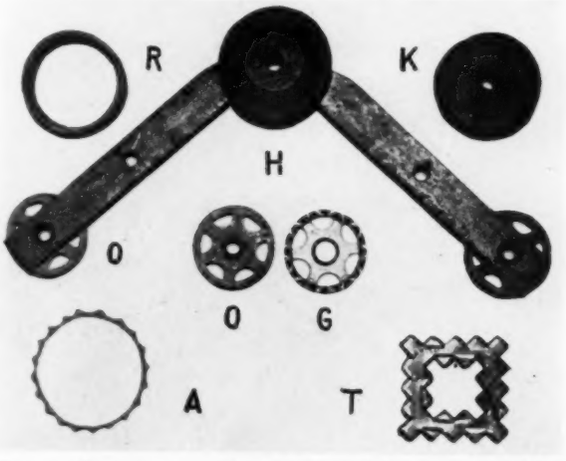
Perfection in design has not yet been reached with any method of application, according to the American investigators. It is expected, however, that the incentive to reduce costs of construction in the United States will further the development of modern connectors to an even higher degree.

The use of connectors has been recommended by F. O. Dufour, vice president, American Society of Civil Engineers; F. Leo Smith, technical secretary, Structural Service Department, American Institute of Architects; B. L. Knowles, construction engineer representing the Associated General Contractors on the special committee appointed by the Secretary of Commerce to sponsor the project; Wilson Compton, president of American Forest Products Industries; as well as other engineers and building authorities.

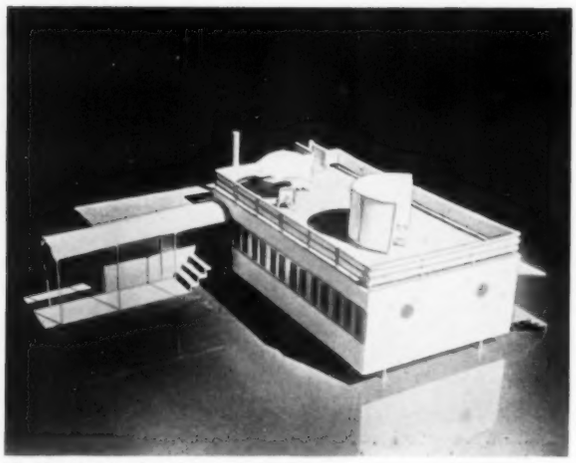
Exhibition hall at Ludwigshafen, Germany. Modern connectors used for all joints of three-hinged 100-foot wood trussed arches spaced 41 feet apart.



Alligator toothed ring connectors pressed into wood members by means of ratchet wrench.

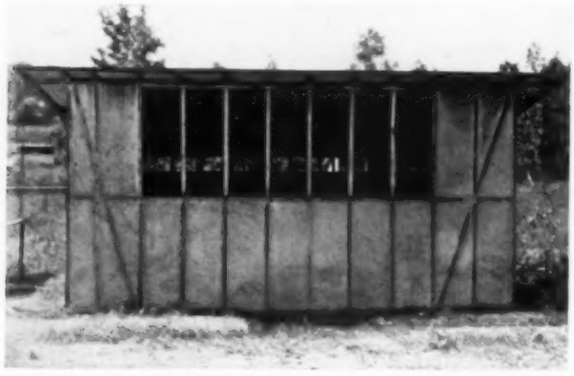


Types of connectors: (R) Locher split ring; (K) Kübler disk; (H) S.B.U. hinge; (O) S.B.U. claw plate, male; (G) S.B.U. claw plate, female; (A) Alligator toothed ring; (T) Bulldog toothed plate. Photographs reproduced by courtesy of National Committee on Wood Utilization, U. S. Department of Commerce.



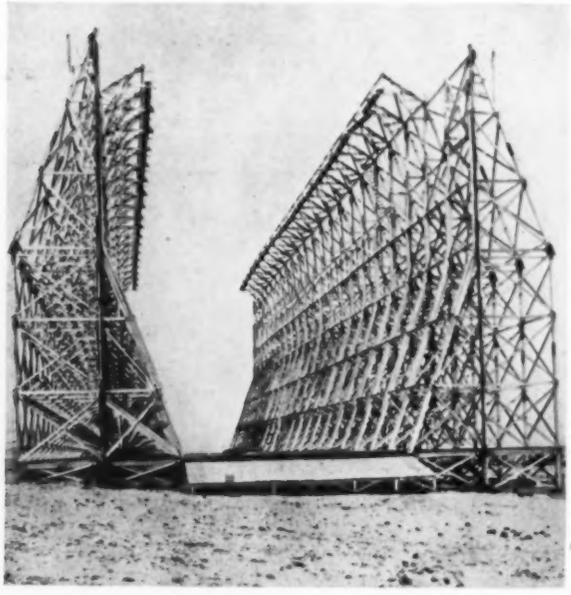
Cotton-Textile Institute

A wood-framed house, sheathed with wood and faced on outside with painted fireproofed canvas. Designed by A. Lawrence Kocher and Albert Frey.



Cotton-Textile Institute

Chicken house made from cotton bags.



Nat. Com. on Wood Utilization, U. S. Dept. of Commerce

Hangar built at Spitzbergen in preparation for Captain Amundsen's flight over North Pole in the dirigible "Norge." Modern toothed connectors used at joints. Hangar covered with canvas when in use. Sides are guyed and tied together by wires at top.

TEXTILE RESEARCH

Technical research directed toward the development of new products has attained increasing importance in the textile industry during the past two or three years.

New Products

The new textiles have found their chief application in clothing, furniture and novelties, but it is expected that they will soon find increased use in the building field.

The 1933 annual of *Textile World* describes some of the more recent research developments, including the following:

(1) Lastex, a yarn-covered latex core thread produced by U. S. Rubber Company, New York City. Now used for semi-sheer elastic garments.

(2) "Seemingly seamless" rug developed by Collins and Aikman Corporation.

(3) A nonwoven floor covering developed by Lea Fabrics, Inc.

(4) "Doe-tex," a suede-like fabric offered by du Pont and Company.

(5) Crease-resistant cotton and rayon piece goods, developed by Tootal, Broadhurst & Lee of England and soon to be made in this country.

(6) A cotton fabric with wool-like appearance and handle, announced by Bellman-Brook Bleachery.

(7) Cotton felts and fabrics treated to absorb hydrogen sulphide.

(8) "Endurette," a new type of waterproofed silk. Used for raincoats, sun suits, greenhouse windows, and gas masks.

(9) Metallized fabrics formed by spraying molten metal on textiles.

(10) New cotton and spun silk yarns for electrical insulation, developed by Western Electric Company. These yarns, treated by special purifying processes, have an insulation resistance 200 to 350 times greater than normal yarn.

(11) Balloon cloth, consisting of two very light cotton fabrics vulcanized together with a thin ply of rubber. The two layers of cloth are placed so that yarns in one fabric are at a 45° angle with those of the other. It is a strong, light textile material, easily fabricated and impervious to gases.

(12) A filter cloth made of spun nitrocellulose, suitable for filtering strong acids.

New Applications of Cotton

Cotton has found increased use as a wall covering either alone or in conjunction with wood veneer. Play tents, sun bath tents and dressing tents, where seasonal use requires light and easily removable construction, constitute a large field for the use of textiles. Chicken houses have been constructed of cotton sheeting over a wood framework.

Recently a cotton fabric has been developed by the American Woolen Company for the purpose of improving acoustics in broadcasting studios.

Experiments also are being made in the use of canvas for exterior surfaces of buildings. A wood-framed house, sheathed with wood and faced on exterior with painted fireproof canvas has been designed by A. Lawrence Kocher and Albert Frey for the Cotton Textile Institute. Details of wall and floor construction are shown on page 286.

As a bonding material cotton fabric has demonstrated its value in road construction. This application consists of placing an open-mesh fabric over a graded highway of the "top-soil" variety which has been lightly tarred; the fabric is then treated with hot asphaltic oil, and sand or gravel spread as top surfacing. The cotton fabric acts as a binder and waterproof blanket which serves to keep the road in good condition.

SAFETY CLOTH: FIREPROOF COTTON FABRICS

A new process for fireproofing cotton fabric has been developed by the Fireproof Fabric Sales Corporation of Philadelphia. The process is applicable to all kinds of cotton fabrics ranging from very light airplane cloth to the heaviest duck. In addition to giving fire resistance it makes the fabric waterproof and provides protection from mildew, sunlight, and acid fumes, a property especially important where canvas is exposed to the destructive sulphur fumes resulting from the burning of certain kinds of fuel. Exposure to rain and weather does not impair its fire resistance. According to tests, the tensile strength of treated cloth exposed to the sun is affected substantially less than other treated or dyed canvas.

Important economies are claimed in the use of noncombustible fabrics for purposes now served by heavier and more expensive structural material. Awnings and canopies which suffer frequently from carelessly discarded cigarettes and matches represent an important use. The process is considered especially suitable for cotton fabric used in roofing and in the construction of temporary booths, farm buildings and similar structures.

Cotton-Textile Institute

Spreading cotton fabric membrane on highway. The fabric is then treated with hot asphaltic oil, and sand or gravel is spread as a top surfacing.

Samples of Revolite.

REVOLITE: FLEXIBLE WATERPROOF CLOTH

About a year ago the Drybak Band Aid, a waterproof surgical dressing, was introduced by the Johnson & Johnson Company, manufacturers of surgical supplies. The same process of manufacture, with some slight variations, has been adopted for a flexible waterproof fabric produced by the Revolite Corporation of New Brunswick, N. J., a subsidiary of Johnson & Johnson Company and the Bakelite Corporation.

The cloth is treated with a special flexible Bakelite resinoid material which gives resistance to water, oil and most cleaning compounds. The product is made in several different weights and is available in a variety of metallic finishes, patent leather and printed designs. According to the manufacturer, it does not deteriorate with age and if wrinkled in use can be ironed. It is adaptable for use as curtains, valances, wall coverings, shower curtains, and the like.

CHASE SEAMLOC CARPET

A new, all-wool carpet has been produced by Sanford Mills of Sanford, Maine, with a backing of special composition instead of the jute or other customary filler material. This backing locks every pile tuft securely into the weave and allows the carpet to be cut in any direction without raveling. Sections can be cut and then joined together with a tape and special cement. Tensile tests show that Seamloc joints are stronger than sewn seams in withstanding a pull of more than 70 lb. to the square inch. No sewing is necessary: since the carpet does not ravel the edges do not have to be bound or serged. Consequently, 80 per cent of the usual carpet waste is eliminated, and special designs and color combinations are possible.

Alterations can be easily made after the carpet is laid, if it becomes necessary to replace damaged sections. Sections may also be added to fit larger rooms. (See Sweet's Architectural Catalogues, 1933, C588-589, for additional information.)

ERICON: RESIN-FACED SHEET VENEER

A thin, semi-flexible sheet material with a phenolic resin face and a backing filled with treated material which makes it easy to glue under pressure to any base by the usual cold gluing pressures, has been recently marketed by Merritt Engineering and Sales Company, Inc., Lockport, N. Y. It is sold in thin sheets ready for application, or as a face veneer bonded to birch panels of any desired thickness. A variety of plain colors, wood or marble effects, and any number of textile designs can be furnished in this sheet stock.

Although phenolic resin laminated sheet stock such as Micarta, Formica, Texalite, etc., have been commercially available heretofore, this is the first resin-faced sheet of paper and cloth, according to the manufacturer, which is not impregnated throughout with the resin. Ease in gluing to a base where the surface is not impregnated with resin is claimed.

NEW SELF-POLISHING LEATHER

A new leather which requires no applications of dressing and only slight rubbing to maintain its polish has now been developed by the Mellon Institute of Industrial Research, Pittsburgh. The product is reported to be the outstanding development in this field since the production of vici leather in the 1880's. The research was conducted by C. H. Geister for Robert H. Foederer, Inc., of Philadelphia.

In processing, the skin is impregnated with filling agents which support and lubricate the fibers, tending to prevent their breaking down under wear. The new leather can be made in all colors. According to claims, it is practically scuff-proof, soft and pliable yet shape-holding, durable and water-resistant. Although developed primarily as a shoe leather, the product is stated to be eminently fitted for upholstering, for special finishes in building and for desk fittings.

PAPER PRODUCTS

Within recent years the great economies possible in paper manufacturing have brought many new products and new uses, particularly in the packaging field, where shipping containers and crates made of paper board are competing with crates. The February *Industrial Bulletin* of Arthur D. Little, Inc., Cambridge, Mass., described this new versatility of paper.

Sheets made of brownwood paper stock ¼" thick have found use as insulating board for buildings. Fiber conduits for underground cables are also made from paper stock. Artificial wool has been made from the same fibers as are used for paper, and special processing has made possible products which are close imitations of chamois, suede and other leathers. Many products are possible in the combination of paper with other substances, as for example a roofing paper-felt saturated and coated with asphalt and covered on one side with slate granules.

Latex-Impregnated Paper

Much attention has been given to the incorporation of substances like rubber latex and synthetic resins in the beater before the paper sheet is formed, since any treatment of paper after the sheet is formed, such as saturation or coating, involves additional manufacturing steps. Latex-impregnated paper offers new characteristics.

The use of latex with paper, as summarized in an article "Liquid Latex and the Paper Industry" by George D. Kratz, published in *Paper Trade Journal* (July 7, 1932), may be considered in three general classifications: (1) incorporation with the pulp while in the beater, (2) surface coating of sheet stocks, and (3) impregnation of sheet stocks. In the first method the pulp is beaten and the latex, greatly diluted, is then added and thoroughly mixed with the pulp; a coagulating agent, such as acetic acid, is added and the material run through a paper-making machine in the regular way. This continuous sheet process offers high efficiency and low cost of production. The paper has great tensile strength, high resistance to abrasion and is able to withstand repeated bending while under tension. A discouraging factor in the early processing was found in the poor aging quality of paper prepared by this method, owing to the resinification of the incorporated rubber, but continued improvements are being made in the beater process, and the recently developed rubber anti-oxidants are expected to correct this deficiency.

Impregnation is required only to the extent of penetrating the paper sufficiently to hold the surface film. Absorbent papers impregnated with compounded latex solutions have been used for some time by the shoe manufacturers. Latex-coated paper is also well adapted for the manufacture of paper raincoats, umbrellas, windbreakers and other purposes where water resistance is desired. Artificial leathers composed of paper pulp and a textile are being made available for upholstery, and heavier products suitable for floor coverings are under investigation.

Latex-treated paper may be colored as desired. It is water-resisting and involves no fire risk.

STANDARD OF MEASURE

Unlike portland cements, the various brands of mason's cements on the market today differ widely in raw materials used, in processes of manufacture and in their physical and chemical characteristics. . . There are several excellent mortar materials which can be mixed with sand alone. And yet *none* of them combine to such a high degree the plasticity, strength and waterproofing quality, the freedom from efflorescence and fading of colors, which have made *Brixment* the standard of *all* mason's cements—and because of which *Brixment* leads all others in sales by a wide margin.

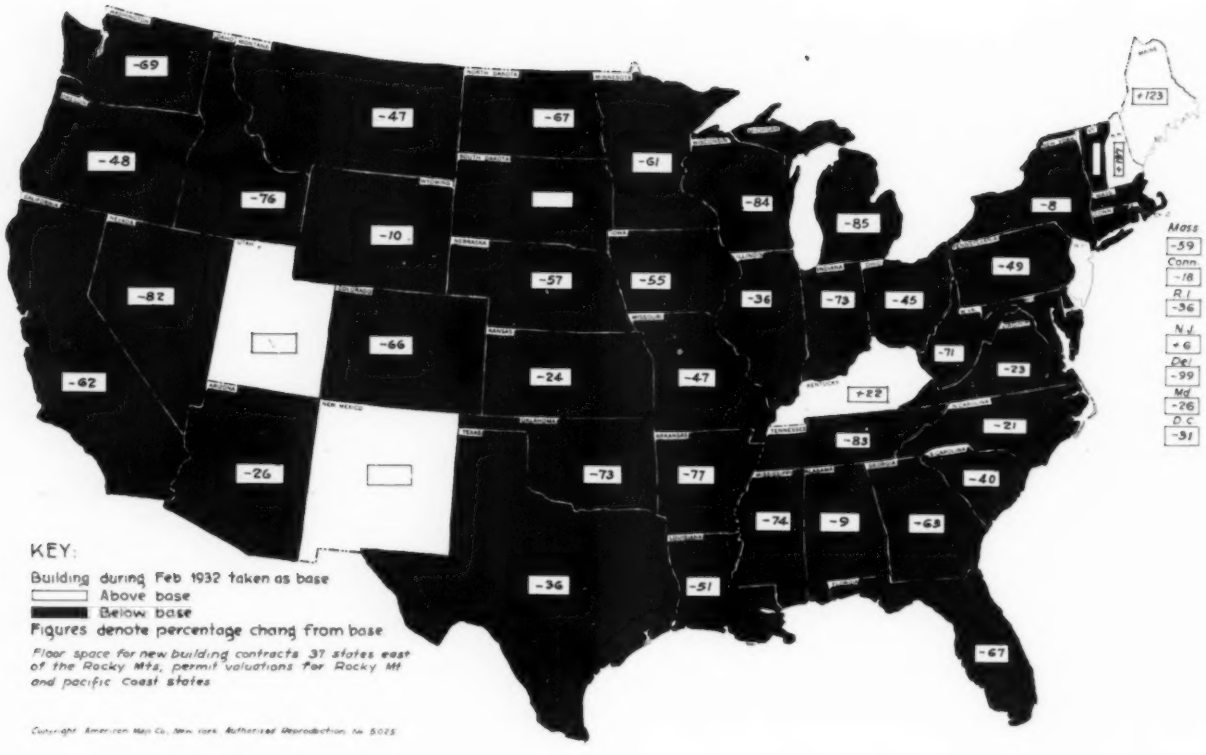
LOUISVILLE CEMENT COMPANY, *Incorporated*, LOUISVILLE, KY.

District Sales Offices: 1657 Builders Bldg., *Chicago;* 600 Murphy Bldg., *Detroit;* 101 Park Ave., *New York*

Mills: Brixment, N. Y. and Speed, Ind.

BRIXMENT

A Cement for Masonry and Stucco



BUILDING TRENDS AND OUTLOOK

By L. SETH SCHNITMAN

February construction awards in the 37 eastern states totaled $52,712,300 as compared with $83,356,000 for January and $89,045,800 for February, 1932. Declines in contracts from the preceding month were reported for each of the four major construction divisions; the loss in residential building was only nominal, but the declines in nonresidential buildings, public works and public utilities were substantial. Contrasted with February totals of 1932, declines were registered in each of the principal divisions; relatively, public works fared best while public utilities made the poorest showing.

Contracts for construction awarded in February showed a gain over a year ago in Upstate New York; losses were reported in each of the remaining twelve districts. Residential building awards in February were larger in Texas than a year ago; all other districts reported declines in this type of work. Nonresidential building awards during February showed gains over a year ago for the Metropolitan Area of New York and Upstate New York territories; all other areas reported losses. For public works February contracts were larger than those shown in February, 1932, in the New England, Metropolitan Area of New York, Middle Atlantic, Southeastern, New Orleans, and Texas districts; all other districts recorded declines from a year ago.

MATERIAL PRICE MEASURING ROD*

The prices in this tabulation enable one to visualize at a glance the main trend of the material market. Their significance does not extend beyond that point, and the explanation below should be read carefully.

F. W. Dodge Corporation Composite Prices as Indicated in Explanation—

Material	This Month	Month Ago	Year Ago
Portland Cement..	$2.05	$2.05	$1.94
Common Brick....	11.70	11.70	11.93
Structural Steel...	1.60	1.60	1.50
Lumber.....	15.48	15.47	16.10

Prices given in this comparison are composite and do not in all cases refer to one item. For instance, the price of structural steel is the composite of prices of shapes and plates f.o.b. Pittsburgh; the price of lumber is a composite of five items of Southern pine and five items of Douglas fir f.o.b. mill; the price of cement is a composite of prices in fourteen different cities per barrel, carload lots, to contractors; price of brick is composite in fourteen cities per M, delivered on the job.

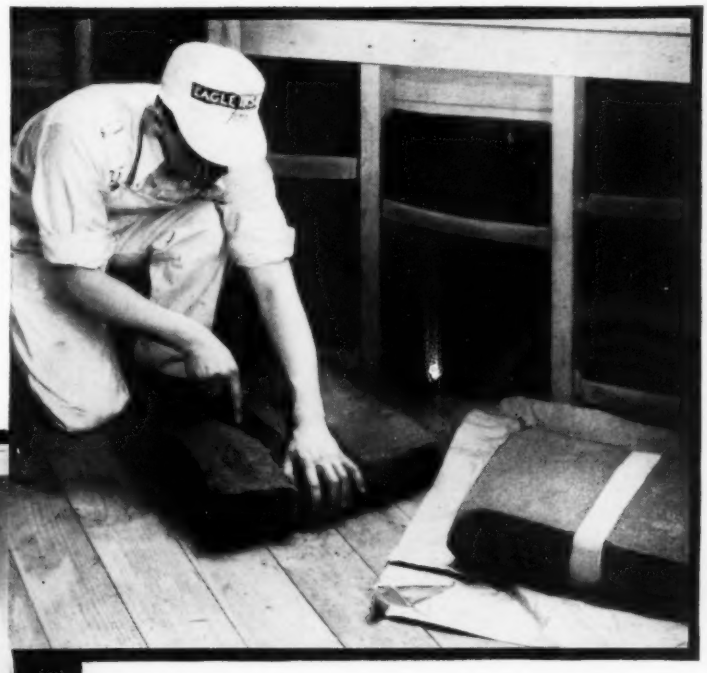
*As previously published in *General Building Contractor.*

TWO WAYS

TO SECURE THICK, FIREPROOF INSULATION

1 *With Eagle Bats*

For new construction, Eagle Home Insulation comes in the form of Bats—insulating "pillows," 15 inches by 18 inches in size, 3⅝ inches thick. Quickly applied between wall studdings, and between joists in the attic. Provides thick fireproof insulation of a vastly superior kind. Greatly increases living comfort, and decreases fuel costs.



2 *With Eagle Home Insulation*

—applied pneumatically ● For old construction, this is the convenient, easy, economical way to effect honest insulation. The application is made by a skilled operator, whose machine blows the "wool" into the empty wall and ceiling spaces, without muss, in little time, and at very reasonable cost.

● Both of these methods of applying Eagle Home Insulation result in remarkably increased home comfort—and fuel savings.

Eagle Home Insulation is *thick*—to be really and truly insulation. It is *fireproof*. It is easy to handle, clean. It is vermin proof.

You should have in your files full information—and free samples—of both forms of Eagle Home Insulation. The coupon will bring you this material without obligation.

The Eagle-Picher Lead Company, Dept. AR4, Cincinnati, Ohio. Please send me booklets and free samples of both forms of Eagle Home Insulation.

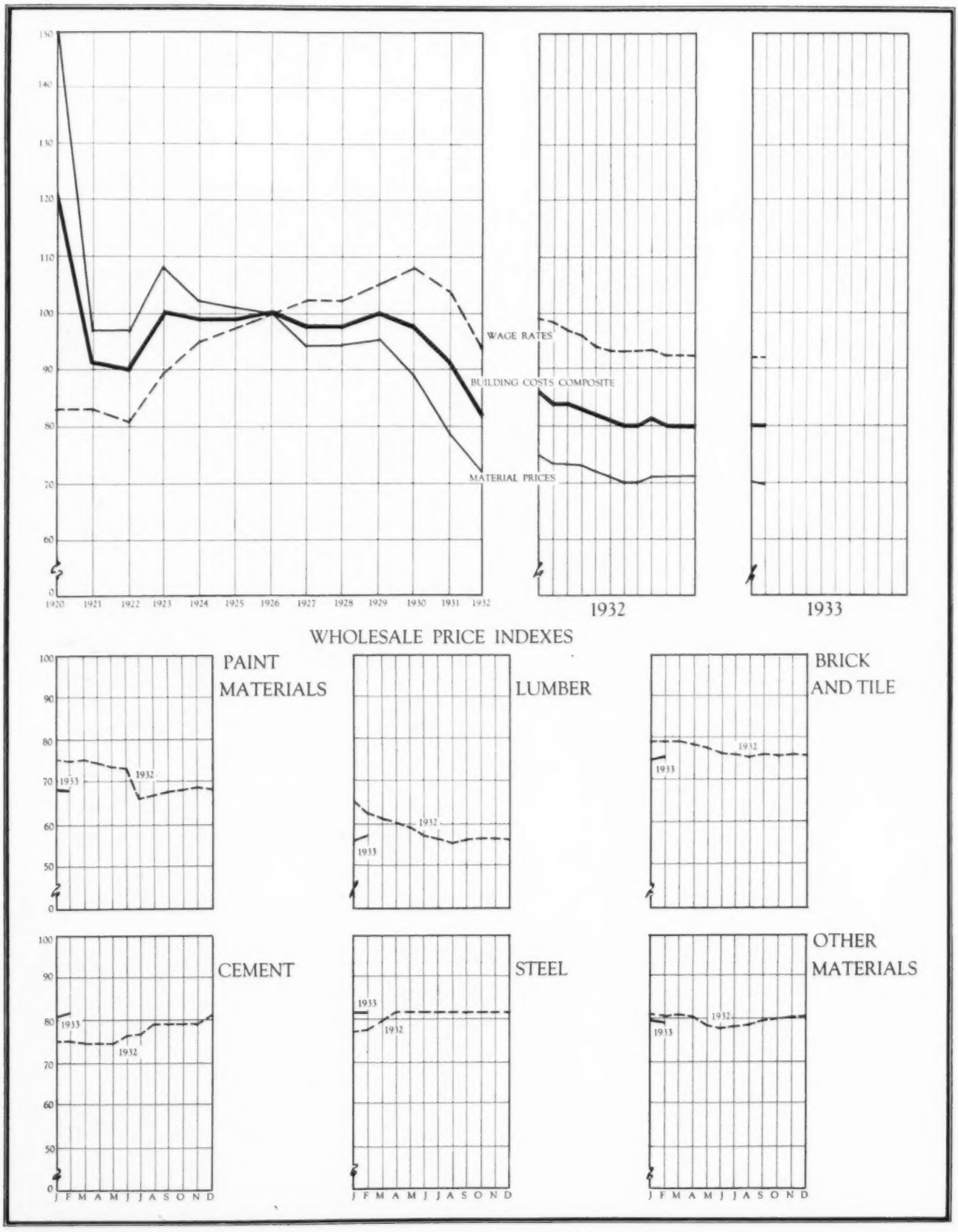
NAME_____

ADDRESS_____

CITY_____ STATE_____

MATERIAL PRICES, BUILDING WAGE RATES AND BUILDING COSTS COMPARED

1926 Monthly Average — 100



CLYDE R. PLACE
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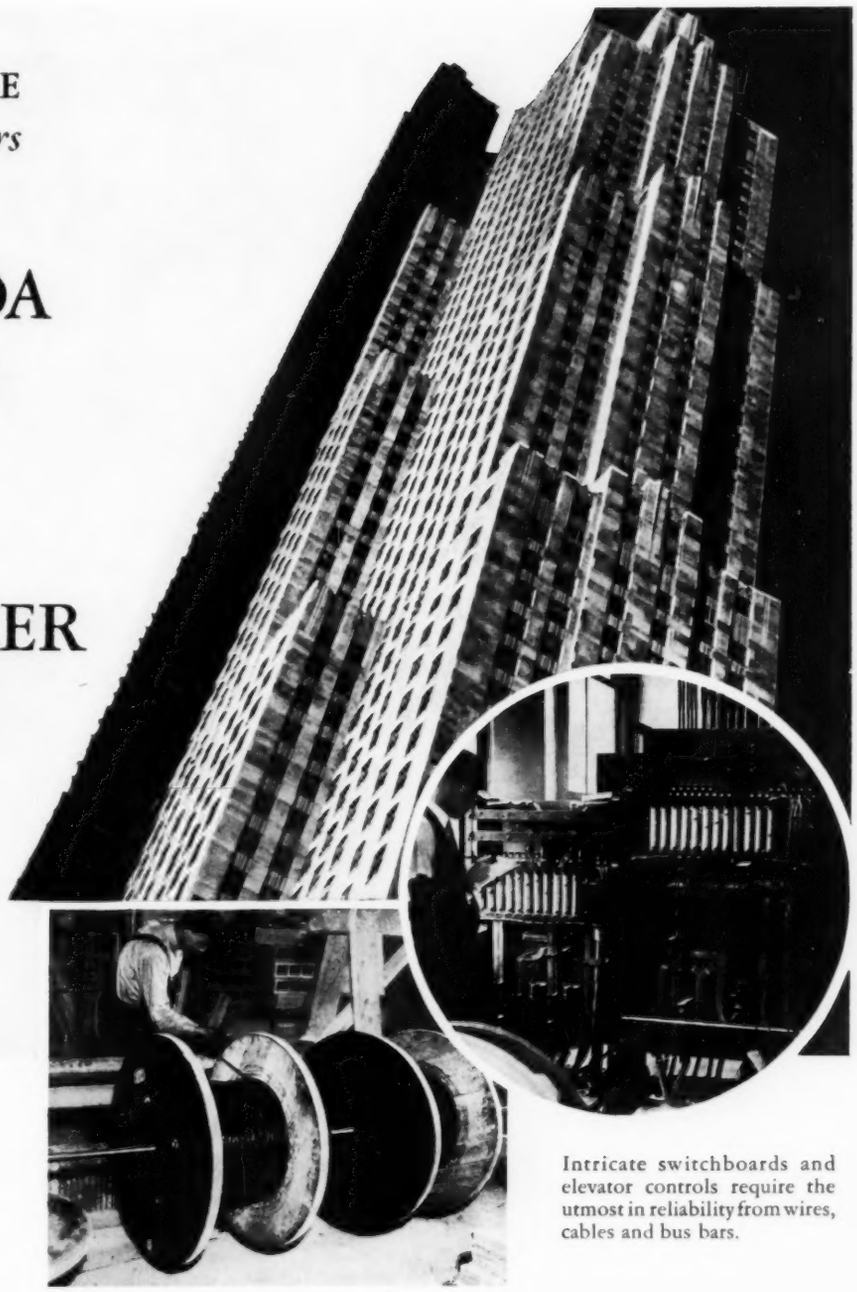
selected

ANACONDA Wires *and* Cables *for* ROCKEFELLER CENTER



Architects: Reinhard & Hofmeister; Corbett, Harrison & MacMurray; Hood & Fouilhoux. *Managers:* Todd & Brown, Inc.

Intricate switchboards and elevator controls require the utmost in reliability from wires, cables and bus bars.

WIRE for the lights that shine from countless windows, power cable that gives elevators life and motion, other wires, other cables . . . containing hundreds of thousands of pounds of copper . . . all necessary to the mammoth Rockefeller Center enterprise . . . *and all supplied by Anaconda.* There was romance in the order, not by reason of its complexity and size alone, but more because every foot of wire and cable was delivered as the contractors required it . . . "on time," and in complete conformity with Clyde R. Place's rigid specifications.

That Anaconda was singled out to supply wires and cables for the entire installation, that it did so without a "hitch," is a tribute to Anaconda service and Anaconda quality—a combination without which no installation, large or small, can progress smoothly and according to schedule.

There is a complete line of Anaconda Wires and Cables for every building requirement.

ANACONDA WIRE & CABLE COMPANY

ANACONDA
from mine to consumer

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WAGE SCALES IN THE BUILDING TRADES

Information Furnished by National Association of Builders Exchanges and Compiled by Division of Statistics and Research, F. W. Dodge Corporation, as of March 15, 1933

	Asbestos Workers	Bricklayers	Bricklayers' Tenders	Carpenters	Cement Finishers	Electricians	Hoisting Engineers	Iron Workers—Ornamental	Iron Workers—Structural	Laborers	Lathers	Painters	Plasterers	Plasterers' Tenders	Plumbers	Roofers—Composition	Roofers—Slate & Tile	Sheet Metal Workers	Steamfitters	Stone Masons	Tile Setters	Tile Setters' Helpers
Akron	$1.00	$1.25	$0.45	$0.70	$0.70	$0.75	$0.70	$0.60	$0.60	$0.40	*$0.87½	$0.65	*$1.00	$0.62½	$0.85	$0.80	$0.80	$0.80	$0.85	*$1.25	*$1.25	*$0.50
Atlanta	1.00	1.25 1.40	.30 .45	.70	1.25	.90 1.10	.60 1.00	.35 1.85	1.25	.25 .35	1.00 1.25	.75	1.25	.30 .45	1.25	.80	.80	.90 1.00	1.25	1.00 1.25	1.25	.40
Baltimore	1.12½	*1.25	1.00	*1.00	*1.25	*1.12½	*1.25	*1.65	*1.65	.20 .30	*1.50	*.90	*1.25	1.00	*1.00	1.00	1.00	*1.12½	*1.25	1.25	1.25	.72
Boston	1.25	*1.30	.70	*1.17½	1.17½	*1.25	1.17½	*1.20	*1.20	.70	*1.25	*1.12½	*1.37½	*.95	*1.25	*1.17½	*1.05	1.17½	*1.25	*1.30	*1.30	*.95
Buffalo	1.12½	*1.25		*1.00	1.12½	*1.30	1.00	1.12½	1.12½	.30 .60	1.12½	*1.00	1.25		1.25	.85	1.10	1.10	*1.25	*1.25	*1.18¾	
Chicago	1.37½	*1.37½		*1.31¼	1.31¼		1.31¼			.82½	*1.37½		*1.37½		1.37½	1.37½	1.40	1.37½	1.37½	1.37¼	1.37½	1.00
Cincinnati*	1.15	1.37½	.70	1.20	1.02½	1.25	.80 1.25	1.25	1.25	.45	1.31¼	1.15	1.37½	.70	1.25	.92½	1.07½	1.07½	1.25		1.25	
Cleveland*	1.17½	1.37½		1.12½	1.12½	1.65 1.25	1.12½	1.25	1.25	.72	1.37½	1.12½			1.25	1.15	1.37½	1.12½	1.25		1.25	
Columbus	1.00	1.30	.62½	1.00	.80	1.00	1.15	1.25	1.25	.40	1.00	.80	1.00	.62½	1.00	.80	1.00	.80	1.00	1.30	1.25	.50
Dallas††	10.50	10.00	.50	8.00	10.00	*11.00	10.00	10.00	10.00	.35	10.00	*9.00	*10.00	*.50	12.00	8.00	9.00	*10.00	12.00	10.00	*12.00	†*.75
Dayton*	1.25	1.30	.80	1.00	1.15	1.55	1.25	1.35	1.35	.35	1.10	1.00	1.25	.80	1.15½	.85	1.00	1.00	1.15½	1.30	1.50	.60
Denver††	9.00	12.00 *13.00	6.50 7.00	10.00	10.00 11.00	10.00 11.00	10.00	10.00 11.00	10.00 11.00	4.00 5.00	11.00	*10.00	12.00	7.00	11.00	7.00 8.00	7.00 8.00	9.00	9.50	12.00 13.00	10.50	†.62½
Des Moines	1.00	1.25	.65	1.00	1.00	1.00	1.00	1.00	1.00	.55	1.00	1.00	1.25	.75	1.25	1.12½	1.12½	1.12½	1.25	1.50	1.25	.80
Detroit	1.37½	1.25 max.	.55 .60	.80 1.00	.70 .90	1.25 1.40	.60 1.00	1.00 1.20	1.00 1.25	.50 .55	1.37½	.80 1.00	1.00 1.25	.70 .80	1.00 1.50	.70 .90	.80 1.00	.80 1.00	1.25 1.50	1.25 1.50	1.00 1.25	.80
Duluth	.85	1.00	.35 .45	.75	.75 .85	.90	.80	.80	.90	.35 .45	.85	.75	1.10	1.00	1.00	.70	.70	.75	.95	1.00	1.25	.80
Erie	.80 .90	1.31¼	.50 .60	.75 1.00	1.00	1.00 *1.15	1.12½	.60 .90	1.10 1.12½	.35	1.12½	.75 .90	1.31¼	.50 .60	1.18¾	.60 .70	1.00	1.00	*1.18¾	1.31¼	1.00	.50 .60
Grand Rapids	.65 .80	1.25	.40	.60	.65	.90	.75	.80	1.00	.35	.80	.60	.80	.40	.90	.50	.70	.70	.90	1.25	1.25	.50
Houston	1.00	1.00		1.00	1.00	.95	1.00			.50	1.00	.62½	1.00		.75	60	1.00	1.00	1.00	1.00	1.00	
Indianapolis	1.32½	1.62½	.90	1.22½	1.17½	1.50	1.37½	1.45	1.45	.40 .45	1.37½	1.25	1.57½	1.00	1.00	.60 .90	1.27½	1.22½	1.50	1.62½	1.50	.60
Kansas City	1.05	1.32½	.80	1.12½	1.12½	1.50	1.12½	1.12½	1.12½	.70	1.25	1.12½	1.32½	.80	1.25	.92½	.92½	1.12½	1.25	1.12½	1.25	.75
Los Angeles††	10.00	8.00	6.00	7.00	8.00	7.00	8.00	9.00	10.00	4.00	10.00	7.00	9.00	6.00	9.00	7.00	7.00	8.00	10.00	8.00	6.00	†.75
Louisville	1.12½	1.25	.50	.80	1.00	1.00	1.00	1.00	1.00	.25 .35	1.12½	.90	1.00	.50	1.12½	.30 .50	.85	.85	1.12½	1.25	1.00	.50
Memphis	1.00	1.37½	.50	.50	.50	1.00	.75	.75	.75	.20	1.00	.75	1.25	.50	1.25	.25 .40	1.12½	1.12½	*1.25	1.37½	1.25	.50
Milwaukee	1.00	1.00	.90	.85	1.00	1.25	1.15	1.05	1.05	.50	1.00	1.00	1.00	.90	1.00	1.00	.92½	.92½	1.00	1.00	1.00	.65
Minneapolis	1.06¼	1.10	.55 .65	.75 .85	.75 .85	.90	.80	.90	.90	.45	.75 .85	.80	1.10	.70	.95	.70	.70	.80	.95	1.10	1.25	.65
Nashville	1.00	1.00		.65		1.00				.30	1.00	.80	1.00	.30	1.00	.65	.65	.65	1.00	.90	1.25	
New Haven*		1.40	.50 .60	.80 1.06¼	1.40	.80 1.00	1.16¾ 1.27½	1.37½	1.37½	.50 .60	1.27½	.80 1.00	1.40	.50 .60	1.06¼	.65	1.50	1.06¼	1.06¼	1.40	1.40	
New Orleans	.65 .80	1.25	.85	.55 .75	1.00	1.25	1.25	1.25	1.25	.35 .50	1.25	.75 .90	1.25	.75	1.00 1.25	.40	.90 1.15	.90	1.05 1.25	1.50	1.25	.35
New York City††	11.20	13.20	8.80	11.20	c11.20	13.20	13.20	11.20	13.20	6.60	11.20	11.20	12.00	8.50	c12.00	10.28	12.62	11.20	11.20	13.20	11.50	8.50
Oakland††	6.40	9.00	5.60	7.20	7.20	8.00	9.00	7.20	9.60	5.00	8.00	7.00	8.80	6.00	8.00	7.00	7.00	7.50	9.00	9.00	8.00	5.00
Oklahoma City††	8.00	8.00	4.00	6.00 8.00	8.00	6.00 8.00	8.00	8.00	8.00	3.50	.80	7.00 8.00	.80	4.00	.80	6.00	6.00	8.00			11.00	†.62½
Omaha	1.32	1.00	.45	.80	.90	1.00	1.00	.90	.90	.35	1.00	.80	1.00	.45	1.00	.72½	.87½	.87½	1.00	.90	1.00	.50 .60
Philadelphia	1.00	1.50		1.00	1.05	1.25	1.18½	1.25 1.37½	1.00 1.37½	35 .40	1.37½‡	.80	*1.37½	.90	1.04	1.00	1.25	1.25	1.04	1.25	1.25	6.00
Pittsburgh	*1.50	*1.50		*1.25		*1.56¼	1.37½ 1.43¾	*1.37½	1.37½	.70	*1.50	*1.18¾	*1.50		1.50	*1.25	*1.50	*1.31¼	*1.50	*1.40	1.33¾	88.
Portland, Ore.††	8.00	*12.00	4.80	7.20	*7.20	*8.00	6.40 9.60	6.80	8.80	7.20	*8.80	7.04	*9.60	*7.20	*8.80	7.20	10.00	*8.00	*8.80	*10.00	10.00	6.00
Reading	.70 .80	.90	.75	.75	.85	.75				.35	.75	.70	.85	.75	.90		.80	.80	.90	.75	.90	.50
Richmond	.60 .65	1.25	.25 .40	.90	1.00	.80	1.25	1.50	1.50	.25 to .40	1.25	60	.80		1.00	1.00	1.00	1.00	1.00	1.25	1.25	.35 to .50
Rochester	.91	1 12½	.55	*.90	*1.12½	*1.15½	.90	.80-*1.00	.80-1.00	.55	.90	*.90	*1.12½	.55	*1.17½	*.80	*.80	.90	*1.17½	*1.12½	1.12½	.47½
Salt Lake††	6.50 7.20	J.00	.62½	.90	1.00	1.00	1.00	1.00	1.00	1.50	8.00	7.00	1.25	.80¼	1.00	.90	1.00	1.00	1.00	1.12½	8.00	4.00
San Antonio††	6.00 10.00	6.00 10.00	2.00 3.00	2.00 7.00	3.00 8.00	3.00 7.00	4.00 7.00	1.75 4.50	5.00 10.00	1.50 2.50	4.00 7.00	3.00 7.00	4.00 8.00	2.00 3.00	5.00 8.00	5.00 6.00	4.00 6.00	3.00 7.00	5.00 8.00	3.50 8.00	4.00 10.00	2.00 3.00
San Francisco	6.40	9.00	7.00	7.20	7.20	9.00	9.00		9.60	5.00	8.00	7.00	8.80	7.50	8.00	8.00	8.00	7.20	8.00		8.00	5.00
Seattle††	8.00	9.60	5.28	7.20	7.20	*8.80	8.00	8.00	8.80	4.75	*8.80	*7.20	*9.60	*6.40	*8.80	7.20	7.20	8.00	*8.80	9.60	8.00	
Sioux City	.90	1.00		.75	.75	1.00		1.00	1.00	.35	.90	.60 .90	1.00		1.00	.60 1.00	.60 1.00	.90		1.25	.60 1.00	
St. Louis	1.25	1.50	1.00	1.25	1.31¼	1.67½	1.35- 1.47	1.47	1.47	.78¾	1.25	1.25	1.50	1.06¼	1.43¾	1.17½	1.25	1.25	1.43¾	1.25	1.25	.76½
St. Paul	1.18	1.10		.75 .85	.75 .85	.90	.80	.90	.90	.45	.75 .85	.80	1.10	.70	.95	.70	.70	.80	.95	1.10	1.25	
Washington, D.C.	*1.50	1.75	.50 .75	*1.37½	1.25	*1.65	*1.37½	*1.65	*1.65	.75	*1.62½	*1.37	*1.75	*.75	*1.50	*1.37½	*1.37½	*1.50	*1.50	*1.25	*1.50	.75
Wichita	.60	.75 1.25	.25 .40	.40 .75	.40 1.00	.50 .87½	.30 .75	.40 1.00	.40 1.00	.20 .40	.50 1.25	.50 .87½	.60 1.25	.25 .50	1.00	.50 1.00	.50 1 00	.50 1.00	.75 1.12½	.75 1.25	.50 1.00	.25 .40
Youngstown††	*1.37½	12.00	6.80	10.00	9.00	11.00	10.00	12.00	12.00		12.00	10.00	12.00	6.80	11.00	10.20		10.00			10.00	.70

NOTE.—Where two figures are shown they are the minimum and maximum. All figures are for hour rates except as indicated. ††8-hour day. †Rate per hour. *On 5-day week basis. e Correction. Asterisk after city indicates all trades on five-day week basis.

ABOVE DATA ARE WAGE SCALES AND DO NOT NECESSARILY INDICATE ACTUAL WAGE RATES BEING PAID IN THE RESPECTIVE TRADES.

MANUFACTURERS' ANNOUNCEMENTS

THE EDITORS INVITE YOU TO USE THE COUPON ON THIS PAGE AS A CONVENIENT WAY TO OBTAIN MANUFACTURERS' PUBLICATIONS DESCRIBING IN DETAIL THE PRODUCTS AND MATERIALS MENTIONED.

401

NEW TYPE OF ELECTRIC CLOCK

An electric clock which eliminates the dial with hands and substitutes large numerals visible through small windows in the front plate of the clock has been developed by the General Electric Company. Time is read directly in hours and minutes, and the second hand is replaced by a rotating dial which indicates the time in seconds. The numerals are illuminated by a small Mazda lamp which provides sufficient light to read the figures in the dark.

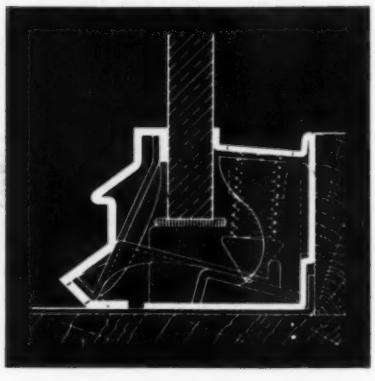
The clock, of the cyclometer type, is operated by a small synchronous motor connected by a gear arrangement to three revolving wheels having numerals indicating the time. There are no complicated moving parts, and no oil or attention is required.

402

KAWNEER SASH

A new sash for store fronts has been developed by The Kawneer Company of Niles, Michigan. It is perforated for drainage and, when desired, is equipped with a slide for controlling ventilation. With the new construction, an extra wide grip is secured on the glass which can vary from 3/16" to 5/16" in thickness. A trough of large capacity drains moisture from inside condensation on the glass.

FULL SIZE SECTION



403

A LIGHT AND ECONOMICAL OVERHEAD STEEL DOOR

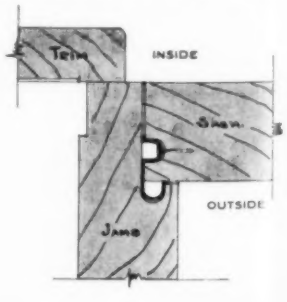
An overhead acting door made of tubular steel, scarcely heavier than wood overhead acting doors and almost as economical, has been developed by the Cornell Iron Works of Long Island City. It is called the Float-Over door. Among its noteworthy features are: wicket door, feather-touch self-adjusting weatherstrip of interlocking steel channels, ball-bearing rolling mechanism. Tests made by Columbia University prove the Float-Over door to be perfectly counterbalanced, wind proof, fireproof and burglar proof.

404

WEATHERTIGHT CASEMENT UNIT

An inswinging casement sash which does not leak is offered by Segelke & Kohlhaus Company of LaCrosse, Wisconsin. Inswinging sash can be cleaned on the outer side without leaving the room. Regular exterior screens and storm sash are used on inswinging casements in place of special screens and storm sash which must be of same wood as interior finish and consequently much higher in price. Screens are on the outside of sash where there is no danger of their soiling the curtains and draperies.

Awnings can be used with inswinging casements with no difficulty. Expensive and complicated hardware is not needed.



To Obtain Further Information

about any products mentioned, indicate the number or name of product and send to THE ARCHITECTURAL RECORD, 119 West 40th Street, New York, N. Y.

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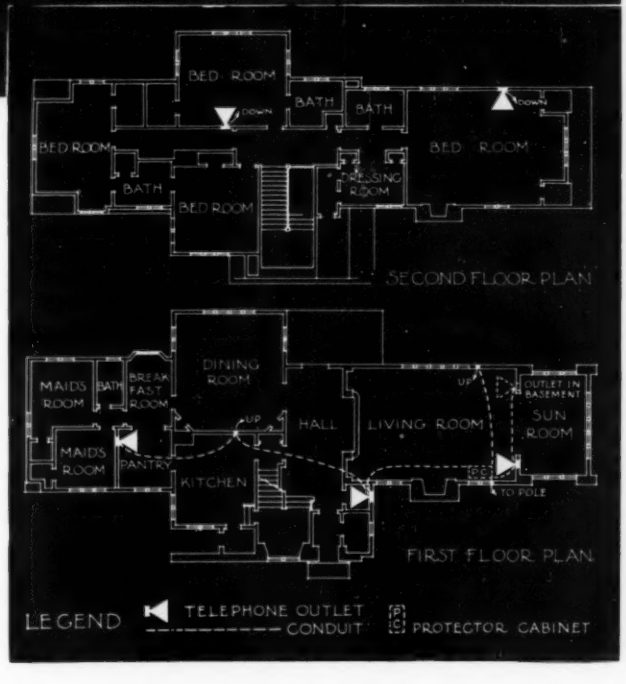
Name .....

Street Address .....

City and State .....

Trained telephone engineers are always at your service

The residence of Mr. E. J. Loranger, 14 Wildwood Circle, Pryor Manor, Larchmont, New York, is equipped for telephone convenience with built-in conduit connecting six outlets, including one in the basement card room. PHILIP RESNYK, *Architect, New York City.*

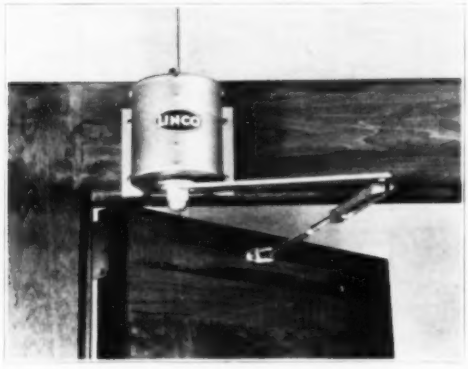


SOCIAL and business life today depends so completely upon the telephone that no home is quite modern without adequate telephone facilities. Many architects provide for them as carefully as for electric lights or heating systems. And to assist in this preplanning, telephone companies offer the service of trained technical staffs, without charge.

Co-operation between architect and telephone engineer is highly desirable for a number of reasons. Telephone conduit costs much less to install during construction than later. Extra outlets can be located in anticipation of future needs. Then as children grow up and families change, it is easy and economical to extend telephone service without defacing walls and floors, or exposing wiring.

Feel free to make full use of your telephone company's specialized knowledge. It will save money for the owners of the homes you design or remodel —will make those homes more comfortable, more efficient. Just call the Business Office and ask for "Architects' and Builders' Service."

MANUFACTURERS ANNOUNCEMENTS



405

LINCO DOOR CHECK WITHSTANDS TESTS

The Linco Door Check, which recently appeared on the market, survived in perfect condition a series of severe field tests. Quoting the testing engineers' report, "The check is a spring friction type without hydraulic features, contains no liquids and is not subject to change due to evaporation, leaks or temperature variations. It can be installed on the right or left, on the door or frame as conditions require. The check is simple to manufacture but has a mechanical perfectness which makes it capable of doing the work equal to elaborate and more expensive checks. It can be made in sizes to control all types of doors, from screen doors to heavy factory and office doors."

406

K-FIN BENTUBE HEATER

The Griscom-Russell Company announces a new indirect heating surface to be known as the K-Fin Bentube Heater, for use in heating and ventilating, air conditioning and cooling systems. The K-Fins composing the extended surface of this tubing are attached by an exclusive mechanical process which provides a continuous metallic contact between fins and tubes. The resulting bond is complete and permanent without requiring the use of solder or tinning. The construction is therefore suitable for high temperatures, and is adapted to practically any kind of material for special requirements.

An additional feature is the use of initially bowed tubes which accentuate their curvature on increase of temperature. This patented Bentube design has also been widely used in various types of Griscom-Russell heat transfer apparatus. In the K-Fin Bentube Heater, each tube is free to expand and change its curvature independently of all other tubes without the possibility of binding or interference.

These units are substantially built but light in weight, and are furnished complete and self-contained in a range of sizes and lengths. They are distributed exclusively through Hitchen Engineering Co., Inc., 155 East 44th Street, New York City, from whom further information and performance data can be obtained upon request.

When Should I Use Duriron?

You, as an architect, need Duriron in nearly every type of building construction except small residences.

Acids are used in so many ways, even in commercial and office buildings, that it is advisable to guard against their unremitting destructive action by meeting them at every point with Acid-Proof Duriron.

In certain types of buildings, Duriron Acid-Proof Drain-Pipe is indispensable. These are:

- Hospitals and Institutions
- High School and College Laboratories
- Laboratories of Industrial Buildings
- Kitchens of Hotels and Restaurants
- Photographic Studios and Engraving Plants
- Battery Stations and Emergency Lighting Rooms
- Soda Fountains, Where Carbonated Water Is Used
- Cinder Fills, Where Corrosion Is Outside the Pipe

Where acid wastes come in contact with the drains, cheap measures don't pay. The upkeep expense is too great . . . trouble is sure to appear.

Besides Duriron Acid-Proof Drain-Pipe and Fittings, there are also Duriron floor drains, traps, vents, sinks, and exhaust fans. All are described in Sweet's Catalog.

THE DURIRON COMPANY, Inc.
404 N. Findlay Street Dayton, Ohio

DURIRON ACID PROOF DRAIN PIPE

407

THE DUO-VENT WINDOW

Important advantages in the use and maintenance of windows are inherent in the Duo-Vent Window, product of the Duo-Vent Window Company in Boston. Both the upper and lower half of this window can be placed in a horizontal position. The outside surface can thereby be cleaned from inside the building permitting economies in labor costs and insurance. Another feature in favor of the Duo-Vent design is the indirect ventilation made possible by tilting the windows, both upper and lower shafts, to a draft-deflecting angle. Aside from the healthful aspects of a more even flow of air this draft control feature eliminates the disorder of deck papers occasioned by sudden drafts.

View demonstrating ease of cleaning window panes.

408

NEW METHOD OF ELECTRIC WELDING

A new development in arc welding, particularly suited to the joining of heavy plates, is announced by the Metal & Thermit Corporation.

Known as Murex Straight Gap Welding, the new process does away with need for "veeing" or grooving of plate edges. Plates may be used just as they come from the mill. Greater welding speed, as well as reductions in cost, are claimed. The process is said to cut welding time in half. At the same time, the above company announces an addition to its line of Murex Heavy Mineral Coated Electrodes. The new unit, Murex Universal, is for use on mild steel and may be employed in either flat, vertical, or overhead work. Smooth, clean deposits of unusually high tensile strength and ductility are obtained consistently, it is said, on any of these classes of work.

409

NEW ONE-PIECE CLOSET COMBINATION

The Crane Company has produced a one-piece closet combination for which a number of improvements in sanitation and operation are claimed: absence of ledges or sharp corners eliminates dirt pockets; full siphon jet with vigorous action without objectionable water rise in bowl; tank and bowl are cast integral; operation unusually quiet.

SIMPLE *as*

1-2-3

To Get a HARD FINISH Concrete Floor

Scaling or dusting of concrete floors is out of date. It just won't happen if the topping mix is right. Here's the modern way to make a topping that will produce the floor the owner wants:

FIRST: Put two parts of coarse aggregate (⅛" to ⅜" size) in your topping mix, with one part portland cement and one part coarse-grain sand.

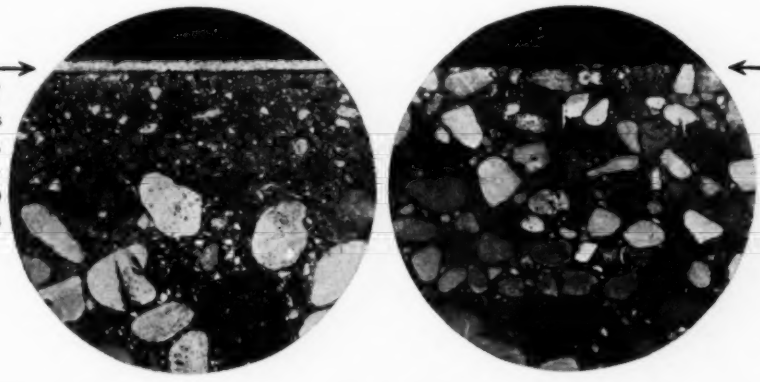
SECOND: Go easy on mixing water—not more than 5 gallons per sack.

THIRD: Float at once, but don't steel trowel until absolutely necessary (under average conditions, 30 to 40 minutes). Trowel only enough to produce a true, even surface. When hard, cure under wet cover.

That's all there is to it—and the right way usually costs no more than the old-fashioned way. Write the Portland Cement Association if you want more information. It's yours —for the asking.

Wrong

See that white line? It's a "dust on" type of finish, too soft, too porous to stand the gaff of wear. Picture shows a cross-section cut from a slab that crazed in ten days after finishing.



Right

See the coarse material in the surface of this section? This is the kind of concrete floor that gives lasting satisfaction. Yet it is simple to lay and ordinarily costs no more than the old-fashioned method.

PORTLAND CEMENT ASSOCIATION

33 WEST GRAND AVENUE, CHICAGO ★ CONCRETE FOR PERMANENCE

410

SOOT BLOWER MAKES NEW ECONOMIES POSSIBLE IN FUEL, LABOR AND FLOOR SPACE

An ingenious device produced by the Diamond Power Specialty Company and called the Diamond Automatic Air Puff Soot Blower cleans the heating surfaces of boilers more efficiently and more economically than the makeshift manual method. It is designed for use where low operating pressure prevents the use of steam as a cleaning agent. Systems are available both for fire tube boilers and water tube boilers. They are actuated by motor driven air compressors. Operation is extremely simple requiring only the pressing of a button to put the blower in motion. Savings in fuel, floor space and labor costs as well as assurance of more uniform heating are the advantages quite plausibly claimed for this product.

411

GENERAL ELECTRIC ANNOUNCES NEW VENTILATING FAN

The General Electric Company, Merchandise Department, Bridgeport, Connecticut, has added to its electric fan line a new Wall Cabinet Ventilating Fan designed especially for permanent kitchen installation in homes or apartments being built or remodeled. A special feature of this unit is the newly designed, deep-pitched fan blade which moves large volumes of air with exceptional quietness. Air delivery—500 cubic feet a minute—is sufficient to renew air in average-sized kitchens in from 3 to 5 minutes. The fan is controlled by means of a convenient pendant chain within the kitchen. Outside shutters (see illustration) close automatically when fan is turned off to prevent entrance of snow, rain, dust, etc.

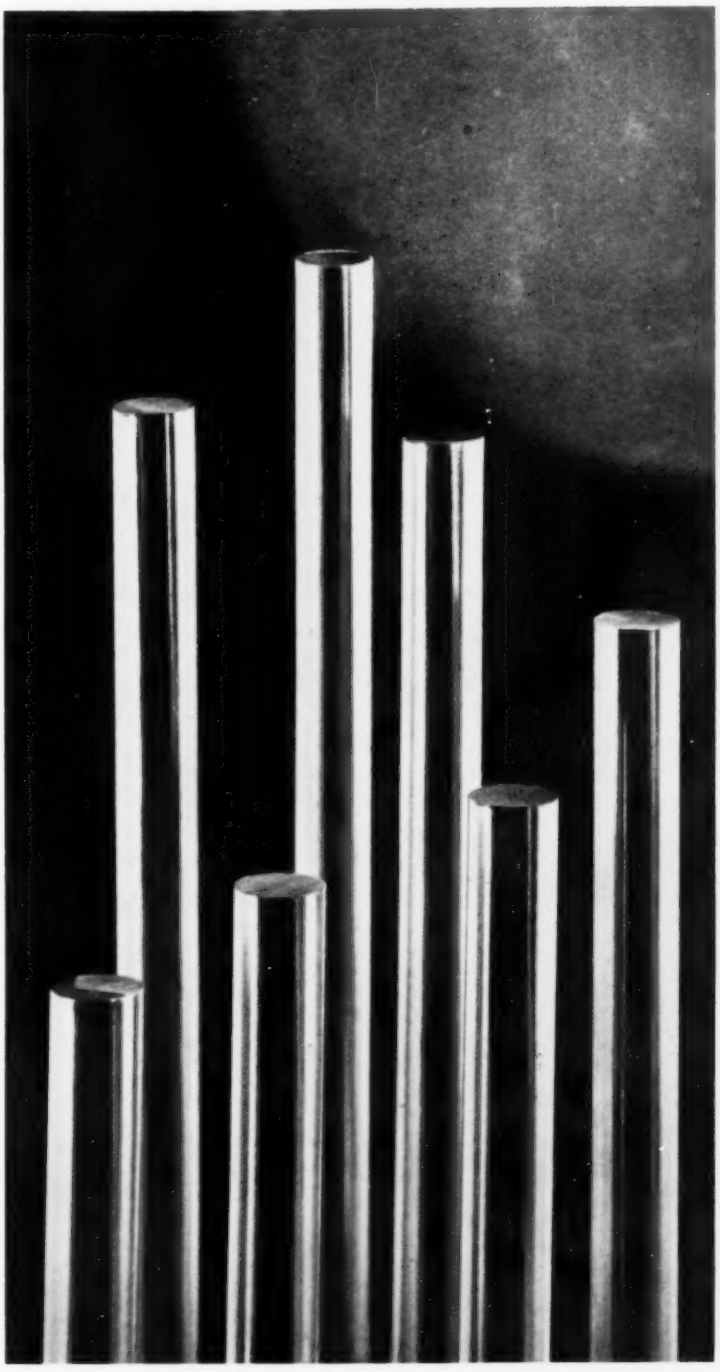
Outside view of the new Wall Cabinet Ventilating Fan.

412

SINGLE SUCTION SELF-PRIMING PUMP

With the introduction last year by Buffalo Pumps, Inc., Buffalo, N. Y., of Buffalo Self-Priming Double Suction Pumps for general service and sewage work, a considerable number of inquiries for a single suction pump were received. Because existing designs did not lend themselves to economical adaptation, a completely new single suction pump was designed with built-in self-primer. The self-primer is built under license from the Nash Engineering Co., and is exactly the same type as built by them for a number of years past.

The pump is furnished complete with all necessary fittings and is built in several sizes in capacities up to 450 G.P.M. and for heads up to 150 feet



Picking

THE ONE STAINLESS STEEL THAT BEST MEETS YOUR NEEDS

In this day when public demand for stainless steel has become so insistent, manufacturers are faced with the task of selecting from the many types of Stainless Steel, the one most ideally suited to specific needs.

Such selection involves consideration of the variation in corrosion resistant characteristics of the various types as well as careful analysis of the physical characteristics as to strength and workability.

Our metallurgists will be glad to work with you in the necessary studies and in specifying the ideal (USS) Stainless (and Heat Resisting) Steel for your requirements.

Illinois Steel Company
CHICAGO, ILLINOIS

CARNEGIE STEEL COMPANY
PITTSBURGH, PA.

SUBSIDIARIES OF
UNITED STATES STEEL CORPORATION

USS 17 for a Wide Range of Applications

USS 17 is entirely permanent in ordinary atmosphere provided the surface is well polished and free from foreign particles. No special heat-treatment is necessary to assure its retention of corrosion resistance.

It is ductile and malleable, though less suitable than USS 18-8 for severe forming operations.

It may be used with impunity at continuous temperatures as high as 1550 degrees F. It is not much affected by moderate sulphur content in gases at high temperature and is not subject to intergranular attack.

Other grades of USS Stainless and Heat Resisting Steels are:

USS 18-8 **USS 18-12**
USS 12 and 12Z **USS 25-12**
USS 27

USS STAINLESS AND HEAT RESISTING STEELS

U S S CHROMIUM-NICKEL ALLOY STEELS ARE PRODUCED UNDER LICENSES OF THE CHEMICAL FOUNDATION, INC., NEW YORK, AND FRIED. KRUPP A. G. OF GERMANY

GENERAL AIR CONDITIONING CO.

The formation of the General Air Conditioning Company, Inc., of New York is announced. M. Hitchen, President, and A. H. Clogston, Vice-President, were both former executives of the Cooling & Air Conditioning Corporation, resigning their positions to assume active direction of the new Company. David H. Knowles is Secretary of the new organization, which will maintain the main office at 155 East 44th Street, New York City, and will offer complete engineering service in the design and installation of all classes of industrial air conditioning, air cooling and drying systems, as well as for the correct application of apparatus to such systems.

PLANNING FOR CHANGED NEEDS

By ROBERT D. KOHN

(Continued from page 294, editorial section)

use the thought and the labor of men. The process of development can only be gradual. There is no approach to it which, in my opinion, offers so excellent a microcosm of the larger problem as does the study of the shelter of the individual family so related to the community with its concomitant opportunities for work, for education, and for recreation and such a relation of that community to the city or state as will make possible not alone a greater measure of material well-being but give opportunity for the development of the high capacities of men, as men.

"Visionary and impractical" somebody called me. Well, many of the hard-boiled "practical" men are now as poor in dollars. Ideals and ideas are the only assets left to any of us. I venture, then, this prophecy. We shall have, of necessity, a decade of public works construction and rebuilding of our cities and the building up of new and smaller industrial centers, all on a scale never before realized. I hope it will be organized on the basis of long-term nation wide planning, so that it may give self respecting work to the unemployed and use that work for the good of all in those places which offer the greatest promise of a decent working life for the maximum number of people. I hope it will be developed so as to teach us how to attack the other economic problems of production and distribution with which we are faced. Above all, I hope the architects of the country will forget the old "big business" leaders, seize their opportunity before it is too late, take the initiative, and join with other essential techniques to bring order out of chaos at least in this one field.

If I thought that things could come back to the 1927 basis I would indeed be downcast. It is because I am convinced that we are in an era of change for the better that I have courage to go on. Whatever may be the measure of that change, the function of the planner will be more in demand than ever. But we must make ourselves much more capable of exercising it to the full. It is only "where there is no vision" that "the people perish."