

"ITS LOVELINESS INCREASES . . ."

St. Peter's Hospital, Bristol, England, withstood the ravages of time from the 12th Century until destroyed by the German Luftwaffe. But great architecture never dies. It lives on in men's minds, in men's records as in this distinguished Eldorado drawing.

TECHNIQUE USED —

Five Typhonite Eldorado pencils were used to capture this complex subject: 2B, 3B, HB, 2H and 4H. Shadow areas were bound together by an over-all wash of 2H and 4H pencils. A coarse sketch paper was used.

This is the first in a series of drawings of century-old historic landmarks which have been demolished by the ruthless Nazi Blitzkrieg.

Pencil Sales Department 225-J5

JOSEPH DIXON CRUCIBLE COMPANY, JERSEY CITY, NEW JERSEY.

THE *Story* BEHIND THE

Warner Brothers' Whitehall Theatre

BRENTWOOD, PITTSBURGH

VICTOR A. RIGAUMONT

Architect

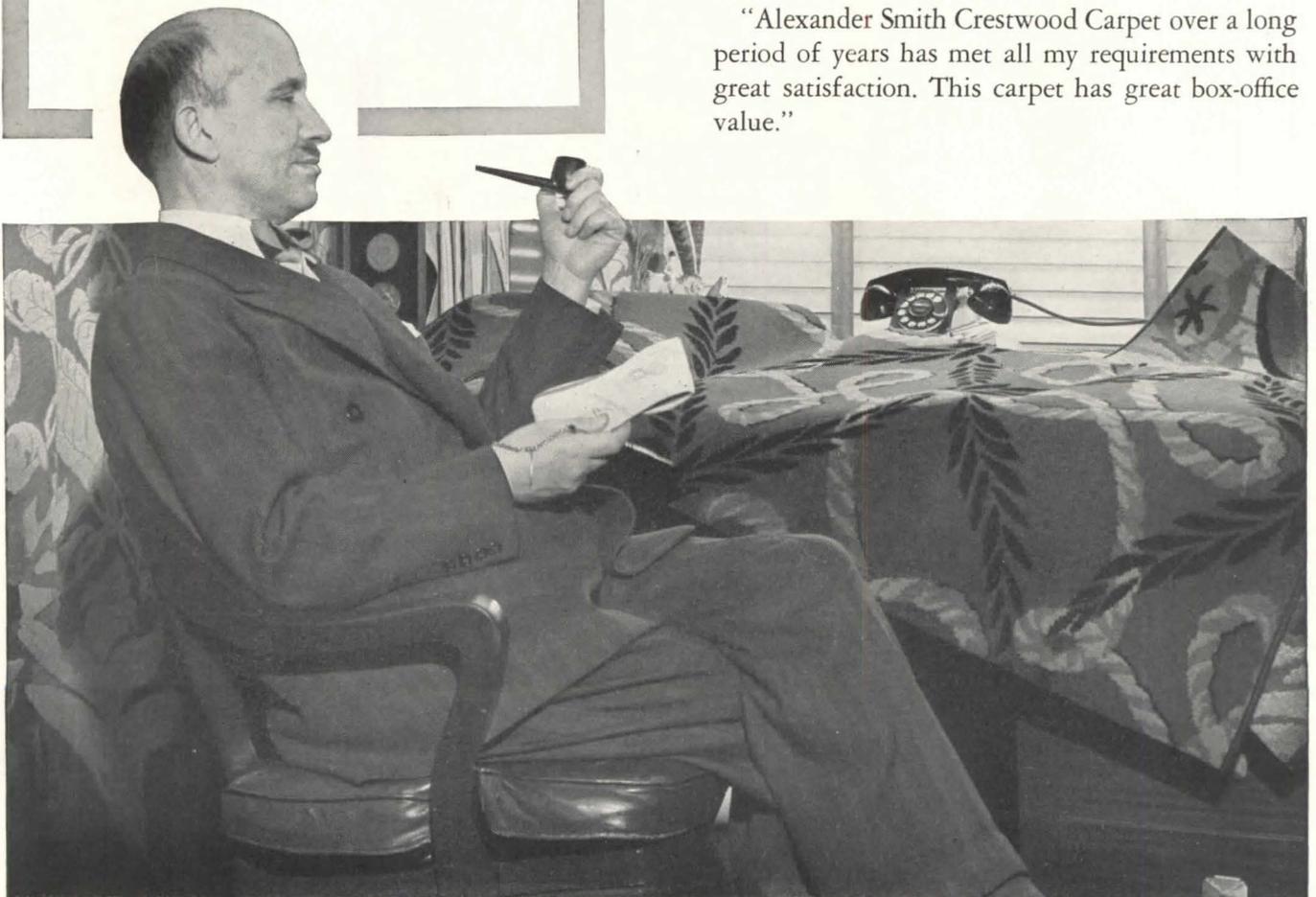
Victor A. Rigaumont, prominent Pittsburgh architect, is the designer of Warner Brothers' Whitehall Theatre. Mr. Rigaumont is a graduate of American and French schools of architecture and has received Beaux Arts medals for a number of his works. In addition to Warner Brothers theatres, he has designed theatres for five other theatre chains in this country. He is shown here examining the Alexander Smith Crestwood Carpet used in the Whitehall Theatre.

Mr. Rigaumont has this to say about carpets:

"The Alexander Smith Crestwood Carpet used in the Whitehall Theatre is made to take the terrific punishment of constant traffic, snow, mud, chewing gum, and cleaning. First of all, it is tough. Then it possesses design and color consistent with the architectural and decorative concept.

"Under today's war conditions it is a great satisfaction for me—as it must be for other architects—to know that I can rely upon the assistance of the Contract Department of Alexander Smith. Their service is always available for their clients, not only for new installations but also for upkeep and maintenance.

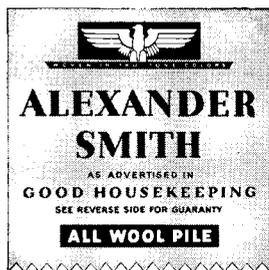
"Alexander Smith Crestwood Carpet over a long period of years has met all my requirements with great satisfaction. This carpet has great box-office value."



CARPET

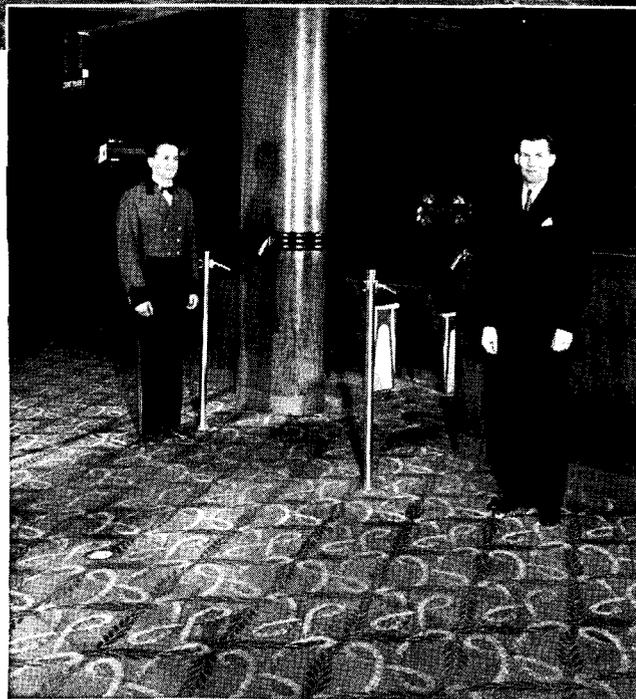


Herman Maier, Supervisor of Construction and General Purchasing Agent for Warner Brothers Theatres, says that Alexander Smith Crestwood Carpet used in the Whitehall Theatre and in many other Warner Brothers theatres over the country has proved highly satisfactory. He finds that it fully meets his stringent requirements and he stresses the assistance given him by the Alexander Smith Contract Department on colors, patterns, textures and costs.



ALEXANDER SMITH CARPET

• For information about Alexander Smith Carpet and for complimentary copy of our comprehensively illustrated book, "Nearly Right Won't Do in Contract Carpets," write Alexander Smith & Sons Carpet Company, 295 Fifth Avenue, New York.



Charles W. Ollcutt, manager of the Whitehall, who says that Alexander Smith Carpet helps provide the pleasant surroundings which bring patrons into the theatre.

Above: Interior of the Whitehall looking towards the proscenium arch.

RADIANT HEATING

meets 3 essential needs in essential construction

With all the Nation's resources concentrated in one united effort, architects and engineers are using a new yard-stick in selecting materials. Speed of construction, dependability, and economy in the use of strategic metals, are the measures of value today.

To meet these requirements, the engineers of Bassler-Carter Company, Detroit, Michigan, designed a radiant heating system for a new office building. The Austin Company were the building contractors.

Radiant Heating is getting renewed consideration now, because conditions have magnified its advantages. Prefabricated coils are used, and the necessary connec-

tions speedily made with field welds. Pouring of the floor slab practically completes the installation except for boiler setting and hook-up.

Heating efficiency has been convincingly demonstrated in more than 400 installations already operating. One concern with a radiant heated office called it "the most comfortable building we ever worked in." An oil consumption of only one-third that estimated for a conventional system was also reported.

Probably the greatest of radiant heating's present advantages is its moderate material requirements. A comparative check recently

made on the metal required for heating a small structure, exclusive of the boiler, showed Radiant Heating, 850 lbs.; conventional hot water system, 1700 lbs.; 2-pipe steam, 1200 lbs.

The use of Byers Wrought Iron in Radiant Heating Systems reinforces these advantages. Wrought Iron is unusually resistant to the corrosive conditions involved, as its wide-spread use will testify. It has the thermal properties needed for effective and trouble-free service, and it can be easily formed, welded, threaded and fabricated, which controls installation cost. For complete and helpful information, ask for our technical bulletin, "Byers Wrought Iron for Radiant Heating Installations."

A. M. Byers Co., Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Chicago, St. Louis, Houston, Seattle, San Francisco.

Corrosion costs you more than Wrought Iron

BYERS WROUGHT IRON

BYERS GENUINE WROUGHT IRON
TUBULAR AND HOT ROLLED PRODUCTS
STEEL TUBULAR PRODUCTS

ARCHITECTURAL RECORD

COMBINED WITH AMERICAN ARCHITECT AND ARCHITECTURE

VOL. 91

MAY 1942

NO. 5

NEXT MONTH

THE ALL-OUT EFFORT of the construction industry to do its part in winning the war means that the planners of buildings are concentrating their attention on two major types of buildings: the *factory*, and necessary *housing for the factory workers*.

Next month's RECORD parallels this concentration of interest in presenting several factories for war production. Two were designed in the office of Albert Kahn. Voluntary censorship precludes our mentioning either the names of the companies or the locations of the plants. This does not detract from their interest as examples of up-to-the-minute factory architecture and construction.

In addition, the Building Types Study for June presents the most advanced thinking on practical considerations for the mechanical plant of new factories and plant additions. This Study considers in detail the latest advances in the fields of factory heating, ventilating and air conditioning, power distribution, fire protection, communication and signal systems, and the oft-neglected item of maintenance and cleaning.

The Time-Saver Standards are also devoted to quick reference data on factory heating, ventilating and power distribution.

On the housing side, remodeling in defense areas takes on new importance and our June article shows the what, when and where of the remodeling of a typical small suburban house. There are several other small houses interesting in plan and construction.

The RECORD, also reports further, in June, on the integration of the architectural and engineering professions and presents a number of other timely features.

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Manuscripts, photographs, and drawings which conform to RECORD'S editorial aims are welcomed. Every effort will be made to return material (if accompanied by stamped, addressed envelope); but the editors will not be responsible for losses.

Other Dodge Services: REAL ESTATE RECORD AND BUILDERS' GUIDE, SWEET'S CATALOG FILES, HOME OWNER'S CATALOGS, DODGE REPORTS, and DODGE STATISTICAL RESEARCH SERVICE.

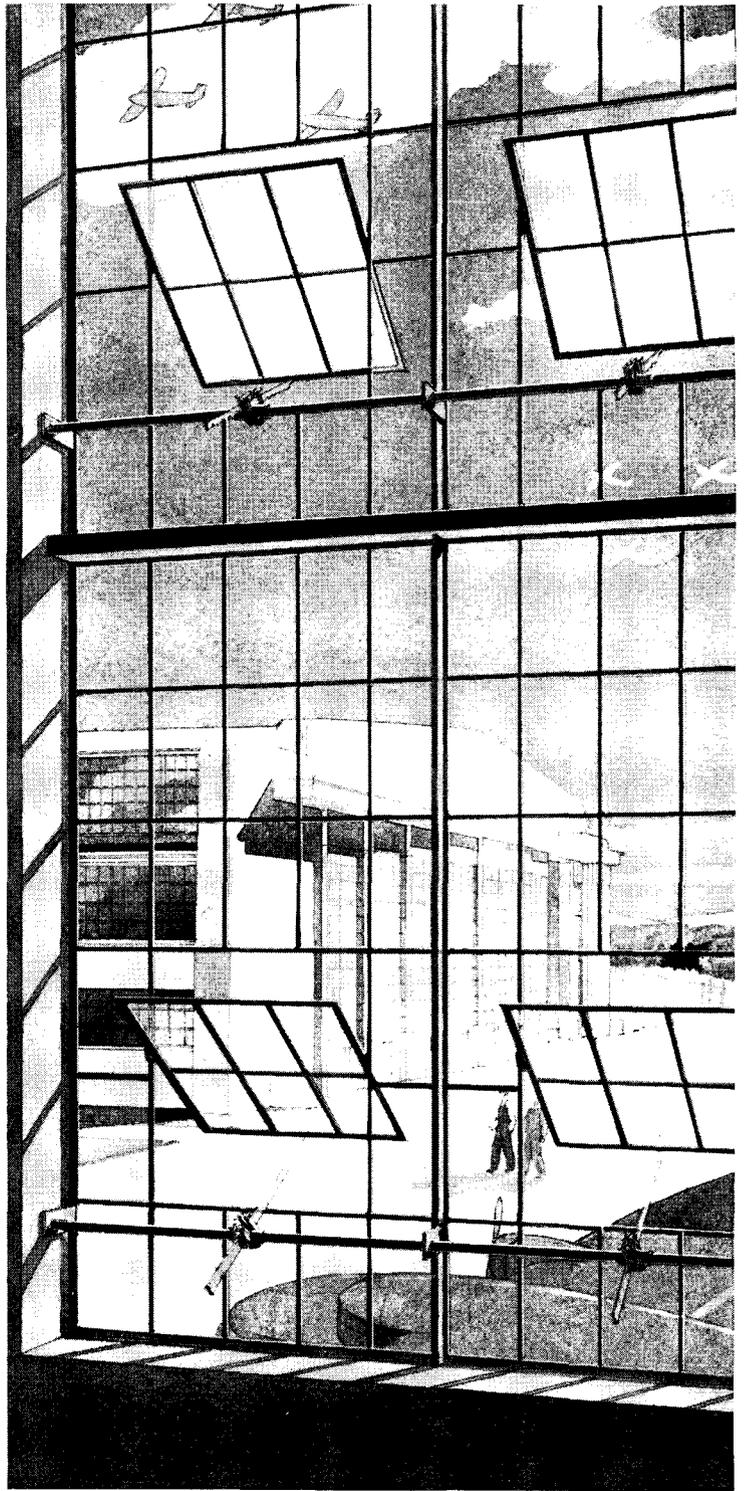
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You can read the dramatic story in today's headlines. But the Lupton Steel Hangar Doors and Windows being installed today are the product of long experience. Constructed to meet the most exacting requirements of dependability and service. You can have this same assurance of correct design and high standard of manufacture in every type of war construction by specifying Lupton Products.

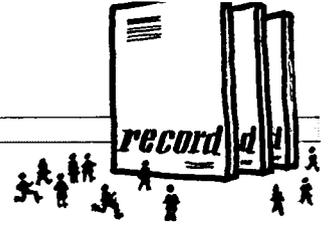
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LUPTON

METAL WINDOWS



Conservation of Critical Materials Stressed by Producers' Council

ARCHITECTS must design essential projects with the critical material situation foremost in mind, *Lessing J. Rosenwald*, Chief of the Bureau of Industrial Conservation of WPB, told a meeting of the Producers' Council Club in Washington March 27. The meeting was held in cooperation with the National Producers' Council and was arranged by *J. M. Follin*, Managing Director. *Richmond H. Shreve*, President of AIA, presided.

"We find that architects and engineers generally have not been designing these various projects with the critical material situation foremost in mind," Mr. Rosenwald said. "Consequently, after the projects are on paper and all designed, it is necessary for us to make numerous changes which, if undertaken originally, would not have been necessary. I do not entirely lay the blame on the architects and the engineers, because oftentimes they did not have information readily available to tell just what materials to use and how to use them under existing circumstances."

Mr. Rosenwald mentioned as aids in this connection the Defense Housing Critical List, Critical List for General Building Construction, Critical List for Highways and Critical List covering Water Works, Sewage Plants and Drainage Systems.

Recommendations of the American Standards Association for higher allowable design stresses for structural steel structures, that will conserve the use of steel, will shortly be in the hands of the Bureau of Industrial Conservation, he said.

Stephen F. Voobees, now Special Advisor to the Construction Branch, Production Division, WPB, underlined Mr. Rosenwald's emphasis on the saving of materials.

"The designer can use the old and well-tried method of determination which is still valid. It embraces three considerations: first, elimination. Do you have to use this material? If the answer is 'yes,' then second, can you by any chance defer its use by putting

in something of a temporary nature? . . . And if the answer to that is 'no,' then third, substitution becomes the important and only out.

"I was impressed," Mr. Voorhees continued, "with Mr. Rosenwald's statement that the Bureau of Industrial Conservation is receiving many designs that give evidence that the designer has not had at the top of his mind this necessity of conservation. The time to start to make real conservation is the time when you start the design.

He cited the substitution of wood trusses as the sort of thing that can be done only before the design is put on paper.

Colonel *Raymond F. Fowler*, Chief of the Supply Division, Corps of Engineers, U. S. Army, told how engineers are cooperating, and Captain *L. B. Combs* (CED) U.S.N., Assistant Chief, Bureau of Yards and Docks, Navy Department, stressed the needs of the Navy. *D. W. Kimball*, President of the Associated General Contractors of America, spoke of the part his members are playing in saving materials, manpower and time. *F. J. Plimpton*, President of The Producer's Council, Inc., pointed to the extensive

exhibition of building products and equipment as illustration of the conservation efforts of many leading manufacturers.

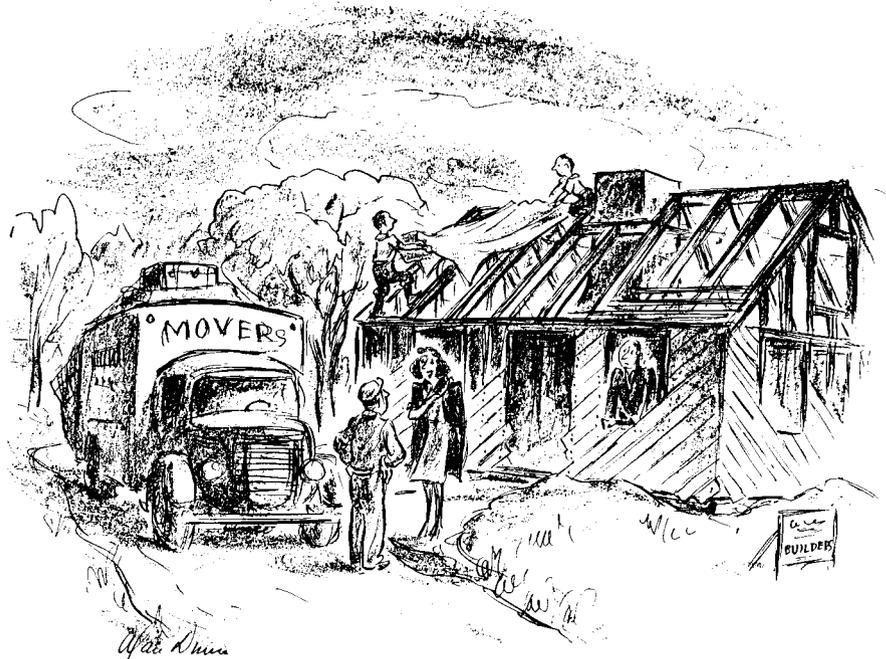
Awards

To *J. Floyd Yewell* and *Louis C. Rosenberg* the Architectural League of New York awarded Birch Burdette Long Memorial Prizes of \$100. Mr. Yewell submitted examples of "distinguished and varied types of presentation" in water color. Mr. Rosenberg entered a group of pencil drawings. Honorable mention went to the pencil drawings of *William Jensen*.

The League also announced awards of the \$50 Henry O. Avery Prize for small sculpture to *Aristide B. Cianfarani*, for his small figure entitled Air Raid, and to *Donald de Lue* for a small model of Lafayette. A bronze entitled Cock Crow brought honorable mention to *Katharine W. Lane*.

* * *

FOR his scheme showing how to decorate a four-room defense housing unit with modern furniture on a budget of \$466.22, *John E. Maier* of Brooklyn, (continued on page 10)



"We decided to live in it anyway."

—Drawn for the RECORD by Alan Dunn

UNCLE SAM NEEDS THIS

Take a look at remodeled VICTORY HOUSE, Schenectady, N. Y.—the kind of house Uncle Sam wants more of in a hurry for every area that needs war worker housing. Scarcely over a fortnight ago it was a big old dwelling that housed *one* family. Today, after remodeling, *four* families live there—each in their own apartment with ample accommodations and modern conveniences, including electric kitchens!

Financed through the FHA Plan, and remodeled by a local builder, Victory House is already making history as an important solution to housing shortages in vital defense areas.

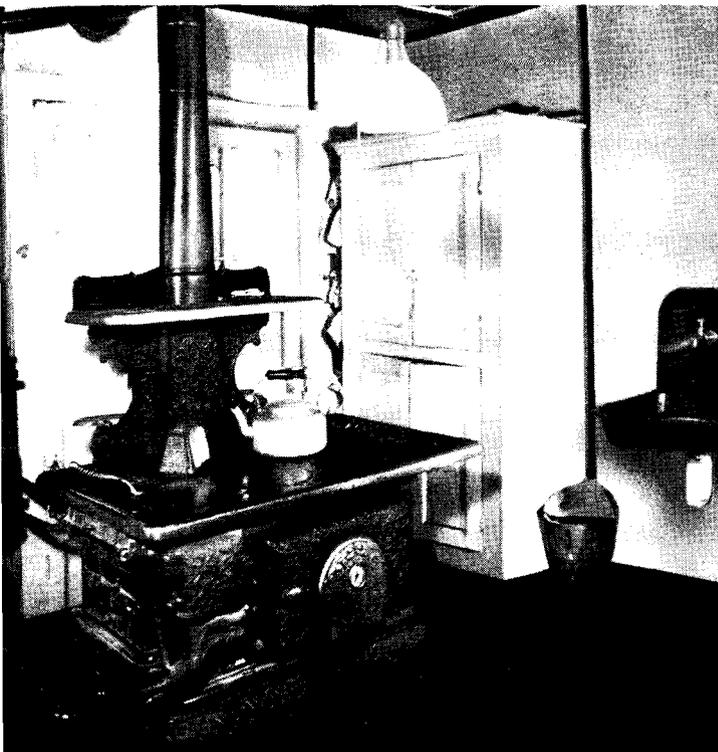
Houses like this can be “made over” *fast*, they *use less* of the vital materials needed for war production, and they mean profitable business for YOU.

Uncle Sam wants architects, builders and contractors in local defense areas to get busy NOW on these remodeling jobs. For details, get in touch with the nearest FHA office in your locality, or, write to FHA, Washington, D. C.

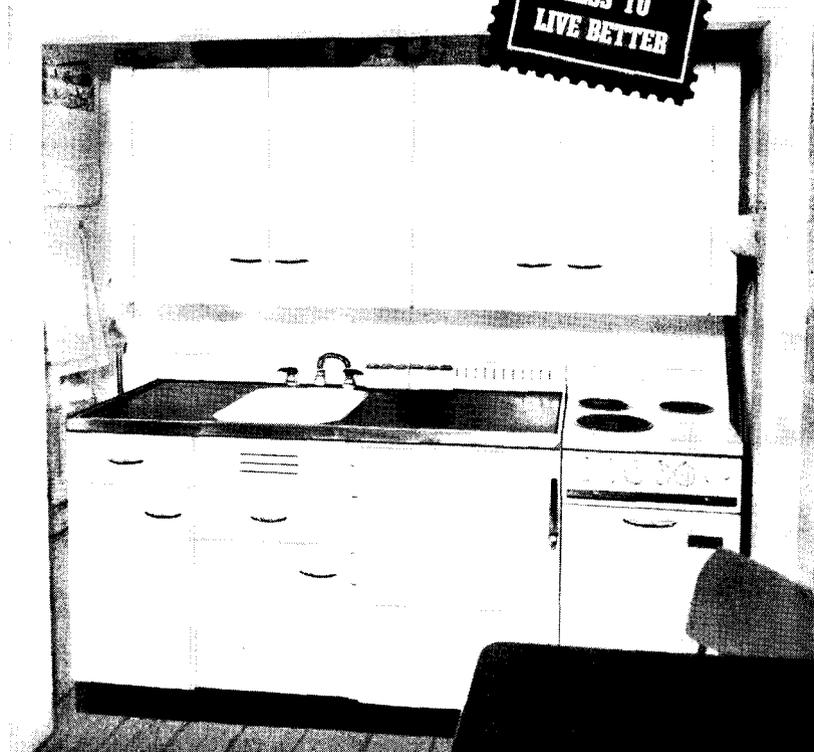


When planning and figuring on remodeling jobs, remember—the war worker tenant needs most the lower operating costs that are possible only with efficient, high grade household equipment.

*Actually
IT CAN COST
LESS TO
LIVE BETTER*

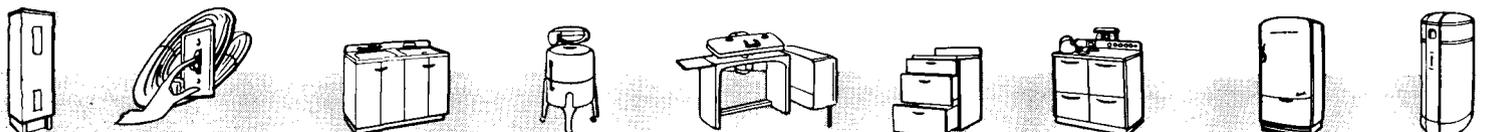


BEFORE Victory House was remodeled, its old-fashioned, “marathon” kitchen looked something like this. It tells its own story of inefficiency, waste space, endless drudgery.



AFTER remodeling, the four new kitchens in Victory House look like this—streamlined, efficient, step-saving, *thrifty*. Units include Refrigerator, Electric Range, Cabinets.

GENERAL ELECTRIC

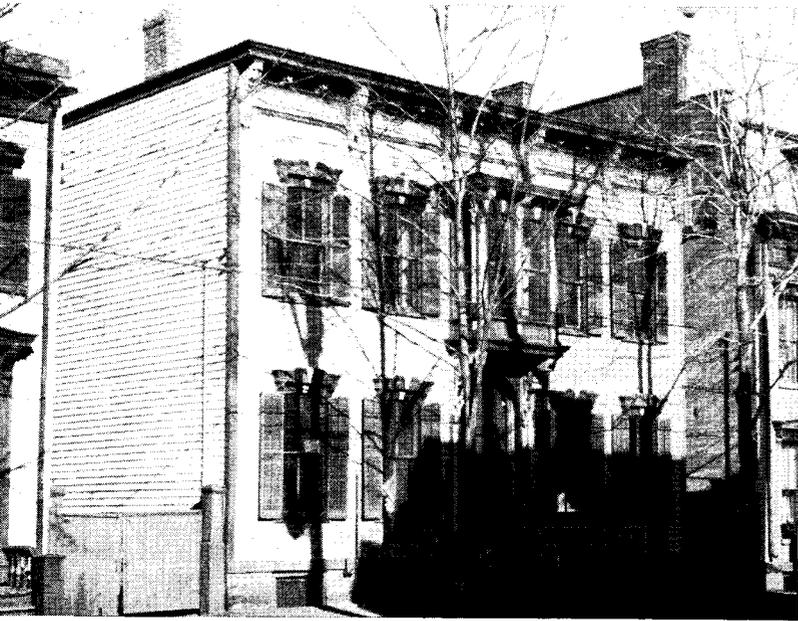


KIND OF BUSINESS.....

ED



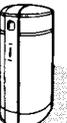
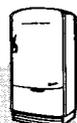
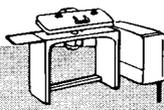
VICTORY HOUSE, 105 Front St., Schenectady, New York, on opening day, January 24, 1942, just after remodeling. The famed M-3 type Tank is the official escort. Men like those who help produce the tanks are tenants of Victory House.



BEFORE remodeling, a down-at-the-heels, 70-year old dwelling that formerly housed but *one* family. A "white elephant" on anybody's hands!



AFTER remodeling, Victory House emerges as a 4-apartment dwelling with modern conveniences for *four* families. Architect, Giles Van der Bogart, Schenectady.



(continued from page 7)



N. Y. received a prize of \$250 and a Defense Housing Medal in the competition sponsored jointly by the magazine *Interior Design and Decoration*, the Institute of Interior Decorators and the Public Buildings Administration. The second prize of \$150 went to *Bill Atkinson* of Manlius, N. Y., for his modern decorative scheme costing \$812.48, and the Early American decorative plan of *Deering Davis*, AID, of Minneapolis, took third award of \$100.

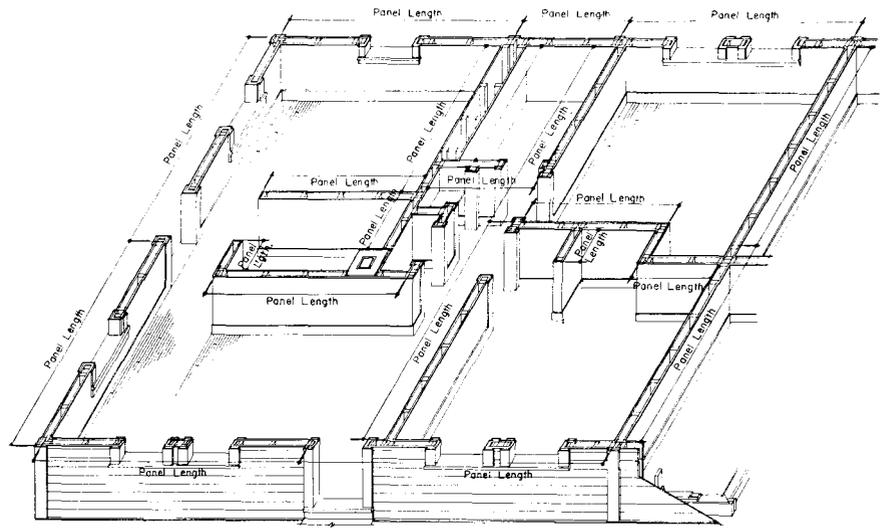
Close to 500 full-color drawings were submitted by contestants, all professionally engaged in interior design, and the complete furnishing schemes ranged in cost from \$246.51 to \$1,200. On the jury of award were *Harry V. Anderson*, publisher of *Interior Design and Decoration*, chairman, Commissioner *W. E. Reynolds*, *Nancy V. McClelland*, President AID, *Gladys Miller*, *Virginia Conner*, *Edward Rowan*, *Gilbert Stanley Underwood*, *Spence Wildey*, *Frederick Rabr*.

Architects Wanted

THE Civil Service Commission at Washington needs architects to fill Federal positions in the war program in the fields of design, specifications and estimating, it is announced. The salaries range from \$2,000 for junior architects to \$3,200 for associate architects, and qualifications will be determined from applicants' training and experience.

Architects appointed in design will survey work under construction and do research in the factors affecting architectural design. Persons working in specifications will write architectural specifications requiring knowledge of all classes of craftsmanship and materials. The duties of persons appointed for estimating work will be estimating from sketches the costs involved in all phases of building.

Qualified architects are urged to obtain application forms at once from the Commission or from first- and second-class post offices.



DETAILS for Modular Layout of Field Fabrication: In designing panels it is suggested consideration should be given to weight involved, and design should be limited to sizes that can be easily handled without special equipment; also that a four-inch nominal module be maintained throughout design of unit plan. A key or system of labeling panels, to indicate position and order of erection necessary, is recommended

Site Prefabrication Simplified

A SET of nine working drawings for site fabrication of war housing projects has been released by the Federal Public Housing Authority, for the use of architects and contractors who are participating in the construction of homes for war workers. Copies may be obtained from the National Housing Agency, Federal Public Housing Authority, Washington, D. C.

The process of *site* fabrication outlined in the drawings is one of two prefabrication processes being used by FPHA for speedy erection of homes to meet pressing emergency needs. The other process is *factory* fabrication, by which panels and sections of houses are prefabricated in a factory or shop not located on the site where the houses will be erected. FPHA is currently building more than 45,000 homes by factory fabrication.

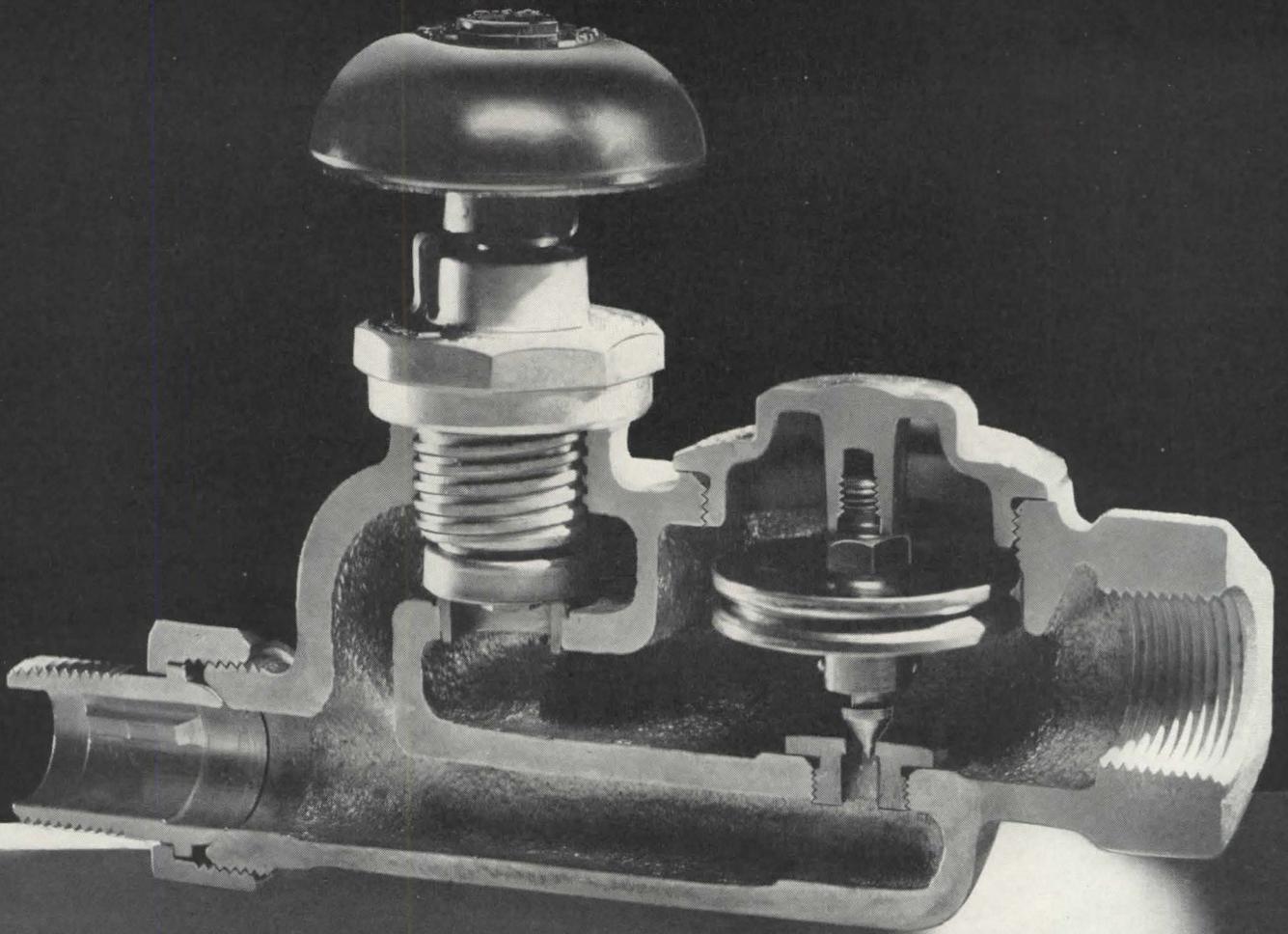
Site fabrication takes place on the housing site, rather than in a factory. Both prefabrication methods are being used both for temporary housing to last the duration of the war, and for permanent homes to be used now by war workers and their families.

Advantages claimed for the simpli-

fied method of designing a building layout shown are: reduction of drafting and construction time; elimination of repetitive redrawing of structural assembly details; simplification of design resulting from application of a single dimensional unit, both vertically and horizontally, to the building structure, openings and finish; accuracy in the assembly of each unit and for ease in the coordinated assembly of the whole; greater accuracy and less chance for error in estimating by the elimination of fractional inches; greater speed and lower cost of field erection; opportunity for developing organized building practice with better control of field operations.

Competitions

NINE final competitors were chosen for the cash prize in architecture which is offered this year, as last, in lieu of the usual American Academy in Rome award of a two-year travel fellowship. Finalists, picked from 46 competitors, each received \$25 and an opportunity to win a cash prize of \$1,000, \$100, \$50 or \$25. They are: *Charles S. Bicksler* and *Charles Goldberg*, Penn-
(continued on page 12)



The Webster Double-Service Valve incorporates a Webster Thermostatic Trap and a Webster Radiator Supply Valve in a single compact unit. The trap part keeps a down-feed supply riser cleared of condensate, discharging it into the radiator. The valve part governs steam admission to the radiator.

"—saves six fittings"

Every time a Webster Double-Service Valve is used it replaces two units—a trap *and* a valve.

Saves six or more items of pipe and fittings.

Saves critical materials.

Saves pipe and steamfitter's time.

That is why keen-minded engineers have called for unprecedented quantities of this Webster device in connection with cantonments, military

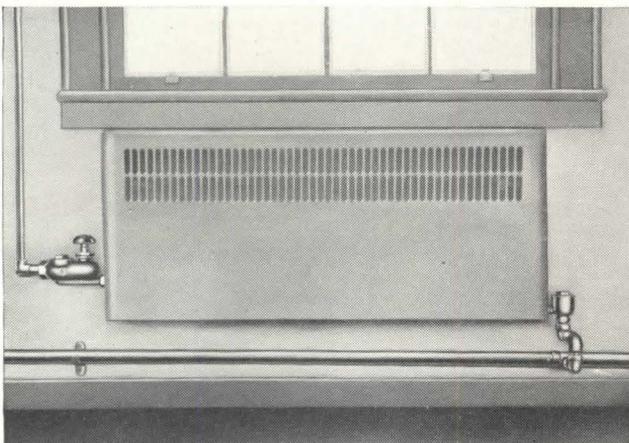
hospitals, ordnance plants and other war production plants of one-story construction.

The Webster Double-Service Valve fits splendidly wherever there is a downfeed supply to a direct radiator or convector.

In addition to the other savings, the cast iron body of the Double-Service Valve conserves needed brass.

Dimensions and other information on the Webster Double-Service Valve are given in Bulletin 722-D, sent on request. Good deliveries for military and war production requirements on appropriate priorities.

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View shows downfeed supply riser, Webster Double-Service Valve, convector radiator and Webster Radiator Trap as installed in a U. S. Army Air Corps Hospital.

- since 1888
Webster
Systems of
Steam Heating

WITH RECORD READERS

(continued from page 10)

sylvania State College; *Edward L. Burch*, *Karl J. Holzinger*, *Andrew E. Kuby, Jr.* and *Hollis Lyon Logue, Jr.*, University of Illinois; *Raoul A. Ibarguen*, University of Pennsylvania; *Allen R. Kramer*, Cornell University; *Walter S. V. Litwin*, Catholic University of America and Armour Institute. Problem: Design for Permanent Officers' Quarters and Recreation Center at a military base on a large island in the Far East. Members of the jury of award were *Eric Gugler*, chairman, *William Pope Barney, Jr.*, *Andre Fouilhoux*, *Ernest A. Grunsfeld, Jr.*, *Alfred Easton Poor*.

* * *

SCHOLARSHIPS to the College of Fine Arts, Syracuse University, to be awarded by competition on July 11, include one \$400 and four \$200 awards. Applications must be made to Director of Admissions *Dr. F. N. Bryant* not later than June 25.

Courses

A TWO-YEAR graduate course in Industrial Design is offered by the California Institute of Technology in Pasadena as part of the regular program of instruction, according to announcement by *Antonin Heythum* of the Industrial Design Section. Earning a professional degree, the course includes design techniques; workshop; non-metallic materials; design trends; technical trends in design; history of art; business economics; cost analysis; social and buying psychology.

For 1942-43 a limited number of assistantships are available, carrying an annual stipend of \$460, \$360 of which is deducted for tuition.

* * *

THE USUAL two Summer sessions are announced by the School of Design, Chicago, *L. Moholy-Nagy*, Director, one to be held in the School at 247 East Ontario Street, the other on the School Farm in Somonauk, Ill., beginning June 22. Both sessions will offer a full semester's work in condensed form. *George Kepes* is scheduled to instruct both sessions in "Principles of Camouflage," and *Dr. Sigfried Giedion*, author of "Space, Time and Architecture," is scheduled to instruct in "Space, Time and Architecture." (continued on page 14)



For WAR CONSTRUCTION

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It is an authentic record of the performance of automatic sprinkler fire protection in actual air raids... and it shows that *no premises fully protected with sprinkler systems and dependable water supply have been destroyed by incendiary bomb fires in England!*

250 incendiary bomb "incidents" in sprinkler-equipped buildings throughout industrial Britain form the basis of this report. In 12 closely-printed pages, typical buildings, their protective equipment, bomb

locations and extent of damage are described in detail. A summary of all "incidents" is included.

Reprinted for the first time in this country, this bulletin gives architects the most up-to-date information on protective measures against impending bombings here. It is offered to help you give your clients positive protection!

Write for complimentary copy of this important study, now made available by Grinnell... pioneers and consistent leaders in automatic sprinkler fire protection. Grinnell Company, Inc., Executive Offices, Providence, Rhode Island.



CONTENTS

Sprinklers Completely Successful in 82% of Incendiary Bombing "Incidents."



Air Raid Fires: High Explosive Compared with Incendiary.



One Plant . . . Two Enemy Visits — Five Fires Extinguished by Sprinklers.

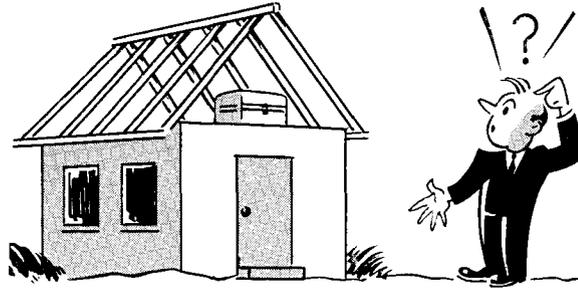


Sprinklered Premises Saved Twice in Fourteen Days.

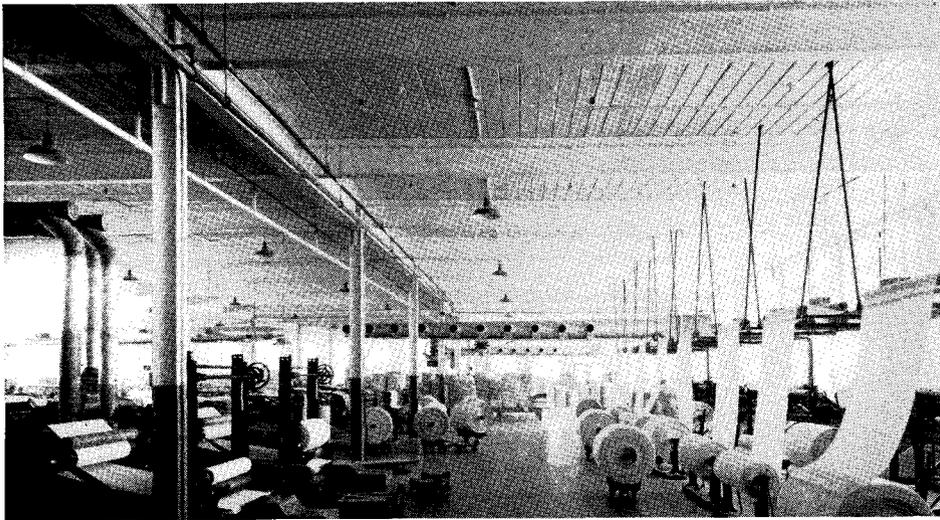


(Also other case histories and detailed facts that are highly pertinent to building protection in wartime.)

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SEVERAL TIMES LONGER LIFE!
That's a real performance record. But it's not an unusual feat for CZC — in textile mills, housing projects, and defense construction, this type of treated lumber is busy making records.

Lumber treated with CZC is decay resistant and termite repellent. It also gives the plus advantages of lumber that's fire retardant, clean, odorless, and paintable.

CZC treated lumber provides an added factor of safety wherever it is used — by extending the *full strength* of the lumber over a much longer life. It also speeds construction because it is one type of permanent structural material still readily available. Plants equipped to render this service are located throughout the country. E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Department, Wilmington, Delaware.

SPECIFY LUMBER TREATED WITH



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CHROMATED ZINC CHLORIDE

WITH RECORD READERS

(continued from page 12)

chitecture," will hold a seminar on "The Spirit of Invention."

* * *

DEPARTMENT of Architecture of Pratt Institute, Brooklyn, N. Y., will offer an optional Summer term of architecture beginning June 2. Announcement is also made by *James C. Boudreau*, Director of the Pratt Art School, that the department of architecture will henceforth operate three terms of 16 weeks, instead of two terms of 18 weeks.

* * *

COLLEGE of Architecture and Design of the University of Michigan will offer a full Summer semester program of 15 weeks, during which, Dean *Wells I. Bennett* announces, all essential required courses in the curriculum will be available.

* * *

HARVARD Graduate School of Design will hold two Summer terms beginning June 29 and August 10. The curriculum will include courses in architectural design and building construction, architectural design and professional practice, post-war planning and building problems, landscape design and construction.

AIA

G. CORNER FENHAGEN of Baltimore and *Kenneth E. Wischmeyer* of St. Louis have been elected directors of AIA. Mr. Fenhagen, succeeding *FredERIC A. Fletcher* of Baltimore, will represent the Institute in the Middle Atlantic District. Mr. Wischmeyer replaces *Benedict Farrar* in administration of the Central States District. Both Mr. Fletcher and Mr. Farrar resigned to devote their time to war work in Washington.

* * *

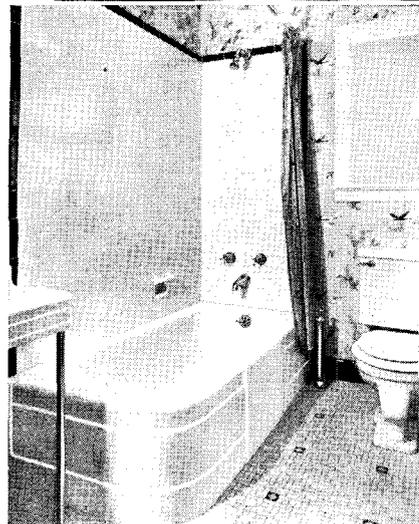
LEOPOLD ARNAUD, dean of the Columbia School of Architecture, has been appointed chairman of the Division of Pan-American Affairs of AIA. Named with him as members of the Division—which will function in association with the Institute's Committee on Foreign Relations, headed by *Philip Goodwin* of New York—were *Julian Clarence Levi* and *Harold R. Sleeper* of New York and *George Harwell Bond* of Atlanta.

Write "CRANE"

IN YOUR DEFENSE HOUSE SPECIFICATIONS

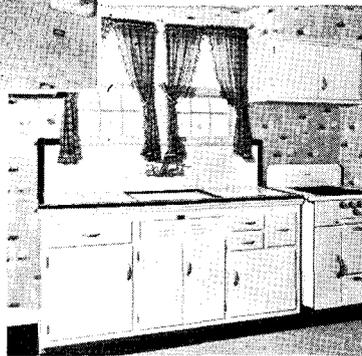
Defense housing projects mean low costs—they mean speedy construction—but they should also mean quality, for these homes will play an important part in the post-war life of America. That architects recognize this responsibility is evident by the large number of defense workers' homes in which Crane plumbing has been installed.

The Crane line includes a range of fixtures especially designed and manufactured for low-cost homes. You will find that these fixtures are priced to meet the cost requirements of your defense housing projects, and "Crane" written into your specifications is your assurance that the houses you design will give longer—better service. Be sure to check your Crane Architects' Catalog or talk to the Crane Salesman on any defense housing project you are planning.

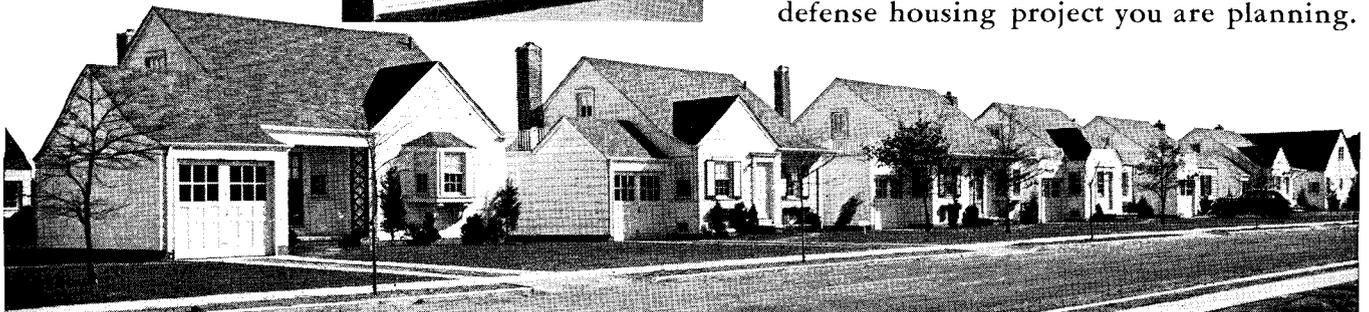


↑
One of the homes in the Gibson Defense Housing Project at Valley Stream, Long Island, N.Y. These homes are built to sell for \$4,800 complete, including lot and are equipped throughout with Crane plumbing and heating.

This charming kitchen in one of the Gibson homes has a Crane flat rim sink installed in a tile counter top.



↑
Crane bathrooms in one of the Gibson homes. The bathtub is the Coronova complete with shower. The lavatory is the Neuday and the closet the Neuton.



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By RAYMOND R. DICKEY

DRASTIC STOP-BUILDING ORDER TO BE ENFORCED

Construction Freeze Order . . . Essential Maintenance and Repair Aided . . . Inventory Accumulation Prevented . . . Priority Violations Attacked . . . FHA Mortgage Insurance Restrictions Liberalized

LONG AWAITED, the "Stop Building Order" as it was finally issued on April 8 makes it virtually impossible to do any construction without Government authorization. It was a much more drastic Order than had been anticipated—and it will be enforced.

Under the Order (L-41) the only private residential construction allowed to be started is that which costs less than \$500. Construction under way at the time the order was issued may be completed. But no priority assistance will, necessarily, be granted to complete even those houses on which construction had been started. If the materials are on hand, the house can be completed. If not, the builder or owner may or may not get priority assistance in obtaining materials.

But residential building is only one part of the Order. No other construction, including commercial, industrial, recreational, institutional, highway, roadway, sub-surface and utilities construction, whether publicly or privately financed, may be initiated without permission if the cost of the project amounts to \$5,000 or more. Nor may any new agricultural construction be begun if the estimated cost is \$1,000 or more for the particular building or project involved.

The term "cost" as used in the Order covers not only material but also equipment, architects', engineers' and contractors' fees, insurance charges and financing costs.

The only permitted construction, without special WPB authorization, is that falling within:

(1) Construction to be the property of the Army or Navy, Maritime Commission, Panama Canal, Coast and Geodetic Survey, Coast Guard, Civil Aeronautics Society, Office of Scientific Research and Development.

(2) Construction used directly in the discovery, development or depletion of mineral deposits.

(3) Construction which falls with-

in provisions of the M-68 series of preference rating orders relating to permissible construction and materials usage for the production and distribution of petroleum.

(4) Construction to reconstruct or restore residential construction damaged or destroyed after December 31, 1941, by fire, flood, tornado, earthquake, act of God or the public enemy.

(5) Construction which has been or is hereafter authorized by the Director of Priorities of OPM or the Director of Industry Operations, WPB, by the issuance of one of a list of preference ratings named in the Order and attached thereto.

Special authority

It should be noted that special authority may be granted by the Director of Industry Operations to begin construction of a house or other construction, even though it is otherwise prohibited. This is how that is done: If the applicant needs priority assistance to get the materials for the requested construction, it is useless to apply unless the project falls under one of the classes for which a priority plan has been devised (as listed in Schedule A of the Order). If the applicant does not need such assistance, he should file on Forms PD-200 and PD-200A for permission to begin construction. In addition, he should file a statement showing (1) that no priorities assistance is needed, (2) whether any previous application for authorization has been denied, and if so the reason, and (3) the total value of all construction on the particular building structure or project in the preceding twelve-month period. These forms with the information should be filed with the field office of the local FHA.

The Order is so broad that it takes precedence over local regulations. For example, WPB has ruled that where an owner has been ordered by city

building inspectors to install a fire escape on an apartment before his housing permit will be renewed, and the cost of installation is more than \$500, the owner must get authorization from WPB before he can proceed.

The WPB urges the public to *file only emergency applications* for permission to begin construction for the next few months, since "it is anticipated that authorization will be given only for emergency projects." Even on such projects, authority to begin construction will be given only when the design and specifications conform with the standards established for the minimum use of critical materials (minimum FHA standards embody this principle).

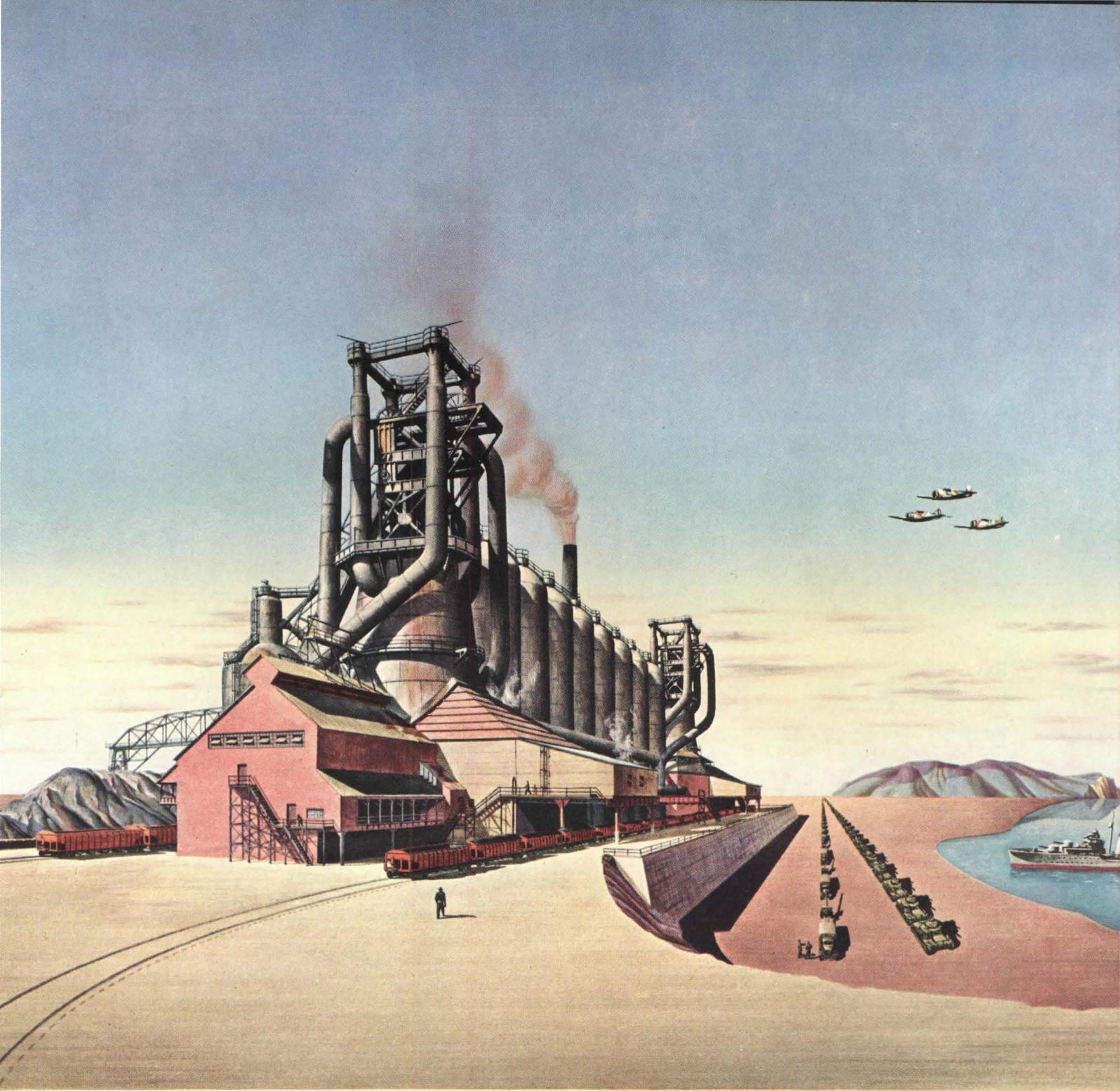
An appeal is possible if the application is denied by the local FHA office responsible for the initial OK or rejection. An appeals board consisting of the administrator of the order, a representative of labor and a third member representing the end product branch of the WPB within whose jurisdiction the class of project or construction would fall will decide cases which are appealed from an unfavorable decision of the FHA local field office.

There is a strong probability that some projects not affected by the terms of the Order may be stopped if scarce materials to be used in them can be put to more effective use in the war program. WPB has announced that although the order applies only to construction not yet commenced, projects already under construction are being carefully examined on an individual basis with such a step in mind.

Maintenance and repair

The day following the construction freeze, the Government showed its intention of aiding builders to get materials for maintenance and repair of housing necessary to the war effort. Effective April 9, an A-5 preference rating was granted for deliveries of materials to builders and subcontractors working on low-cost remodeling projects in defense areas (Order P-110). It is limited to projects for

(continued on page 20)



Steel Is More Precious Than Gold

At the most critical moment in our history, we bury our gold in some mid-western field, and work frantically to produce more and more of the steel which is far more precious to us *now*, than gold.

This is a *steel war*. The greatest hope of mankind is the fact that America alone can produce 50% more steel than all the Axis-dominated countries.

The process of steel-making starts at the blast furnace, and a blast furnace needs enormous quantities of coke. Censorship forbids us to tell how greatly coke produc-

tion has been increased with new Koppers coke ovens, but it is a heart-warming figure.

These ovens convert millions of tons of coal into coke, gas and other products, vast quantities of which are further processed by Koppers into chemicals used in the explosives, plastics, synthetics, rubber, dyes and drugs now so important to military success.

Among the many products Koppers has furnished for years to the steel industry are Fast's self-aligning couplings; special D-H-S Bronze for gears, slippers, segments,

housing nuts, and bearings; iron gate valves; pressure-treated ties and timber; roofing, waterproofing and road materials; piston rings; deodorants and disinfectants.

These products help make it possible to produce ever-increasing quantities of steel for tanks, guns, planes, ships and munitions. *It's up to American Industry.* Koppers Company, Pittsburgh, Pa.

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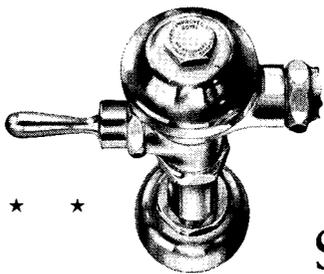
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* *

Sloan equipped homes are the ultimate in convenience, health and economy. Remember: there are more Sloan Flush Valves sold than all other makes combined.

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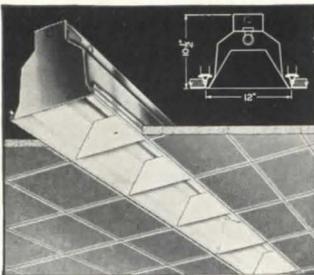
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49A

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(continued from page 16)

which the cost of materials which are on the Defense Housing Critical List does not exceed an average of \$100 per room for each dwelling unit. The scarce materials cannot cost more than \$800 per house. Builders must apply for the rating on this type of work on Form PD-406 and file it in the local FHA office. Remodeling projects rated under P-110 are exempted from the prohibitions contained in the construction freeze order discussed before.

FHA splits up into regions

As this is being written, it has been announced that the NHA will decentralize into 10 virtually autonomous operating regions. No details are available yet as to what the regions are to be or who is to head each of them. The idea is to shift responsibility for the program more closely to the communities where its segments will be put into effect. NHA is still in the process of being shaken down into a well-knit organization. Delineation of authority is not yet clear cut and the administrative picture appears still somewhat obscure. However, Administrator Blandford appears to be taking hold firmly. The tendency in the agency seems to be toward site fabrication rather than prefabrication. The reason usually given for site fabrication is that the transportation system is laboring under such stress that prefabricated units would use up too much freight car space. Another reason advanced is that NHA is not absolutely sure that the prefabricators can deliver according to promised schedules. It is no secret in the industry the big reason is more concerned with labor policies and the effect that decisions regarding prefabrication might have on the possible attitude and action of the labor unions now engaged in war housing. A policy that seemed to change or weaken the status of building crafts might have far-reaching effects on the housing program.

FHA emergency liberalizations

In line with the Government housing drive a bill has been introduced (H. R. 6927) to liberalize the mortgage insurance restrictions under which FHA is now operating under its Title

VI. The major changes are substantially as forecast (See ARCHITECTURAL RECORD, March, p.88) with the exception that the bill calls for increasing the volume of insurance which FHA can handle under Title VI to \$800,000,000 (from the present \$300,000,000) rather than to one billion. This downward revision of original plans is reported to have been made due to the increased amount of publicly financed housing projects.

The new bill increases the allowable mortgage insurance on a single family dwelling under Title VI from \$4,000 to \$5,400; on a two-family dwelling from \$6,000 to \$7,500; on a three-family dwelling from \$8,000 to \$9,500 and on a four-family dwelling from \$10,500 to \$12,000. Net effect of these changes is to allow FHA to insure up to 90 per cent of the value. The mortgage term on such insured loans is also extended from 20 years to 25 years.

Provision is also made for insuring up to 90 per cent of the value of approved rental housing projects up to \$5,000,000. Advances on such mortgages during construction are authorized. The mortgage insured under this provision must be amortized by periodic payment and bear interest (exclusive of premium charges for insurance) at not to exceed 4½ per cent per annum on the amount of the principal obligation outstanding. If the owner fails to meet the payment under the mortgage, the mortgage holder is entitled to receive the insurance from FHA after 30 days have passed from the date of default. Within that 30-day period, if the mortgagee pays, then no default will be considered and the insurance will not be paid—the mortgage running as before. The amendments also give the Administrator much broader power in determining when he shall accept a mortgage for FHA insurance. It provides that the Administrator may accept a mortgage for insurance when he "finds that the project with respect to which the mortgage is executed is an acceptable risk in view of the emergency" (war needs for housing).

There will be considerable opposition to this new program from those

advocates of public housing who feel that only public housing can do the tremendous job necessary to house war workers. This opposition has already been shown although the bill was only introduced on April 14. On the other hand, private builders who have been stripped of all but war housing will put up a tremendous drive to effectuate this new program, which will make financing easier than ever and limit capital risk to a minimum.

Distributors' inventories checked

In last month's RECORD there was a discussion of the new PD-1X form of priority assistance for distributors. The accompanying order which allows the PD-1X to be used has now been issued by WPB.

Basic idea behind the order is to prevent inventory accumulation through the aid of PD-1X. WPB realized that it was necessary to give suppliers assistance in getting necessary goods because that fanned out the distribution through existing organizations. Thus it created the plan of PD-1X. But it did not want PD-1X used as an unconscious—or deliberate—tool for hoarding. Thus this new inventory order (L-63).

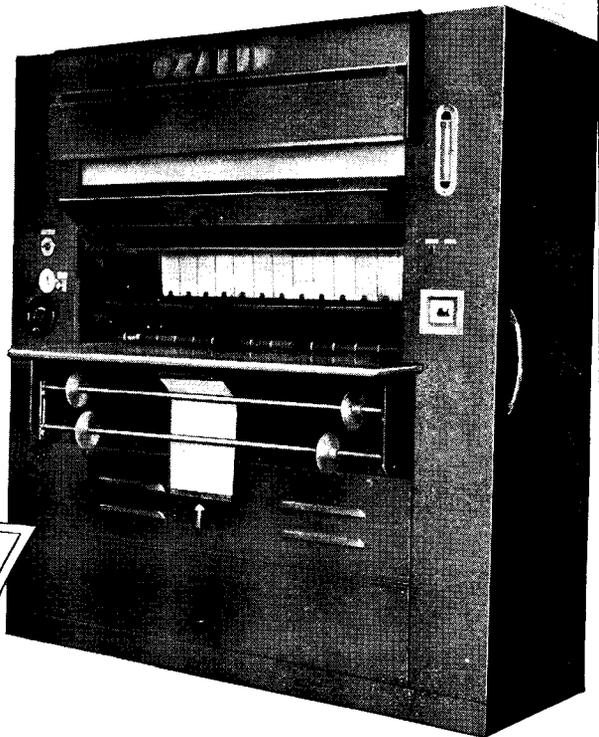
Priority violations attacked

An important sign of the grim earnestness with which the war agencies are tackling their job can be seen in the increasing number of compliance cases being brought by WPB and OPA. A tire dealer was sent to jail for a year and a half and fined \$500 for violating rationing regulations. One of the largest household appliance manufacturers was cut off from vital supplies because of violating priority orders. Most recent indication of this "we're-not-fooling boys" attitude was the action against Carnegie-Illinois and Jones & Laughlin Steel Companies. The WPB turned over to the Department of Justice "for appropriate action" a bill of complaint charging the two companies with "repeated and deliberate" violations of priority regulations to the detriment of war orders allegedly left unfilled while unrated or lower rated civilian orders were put through.



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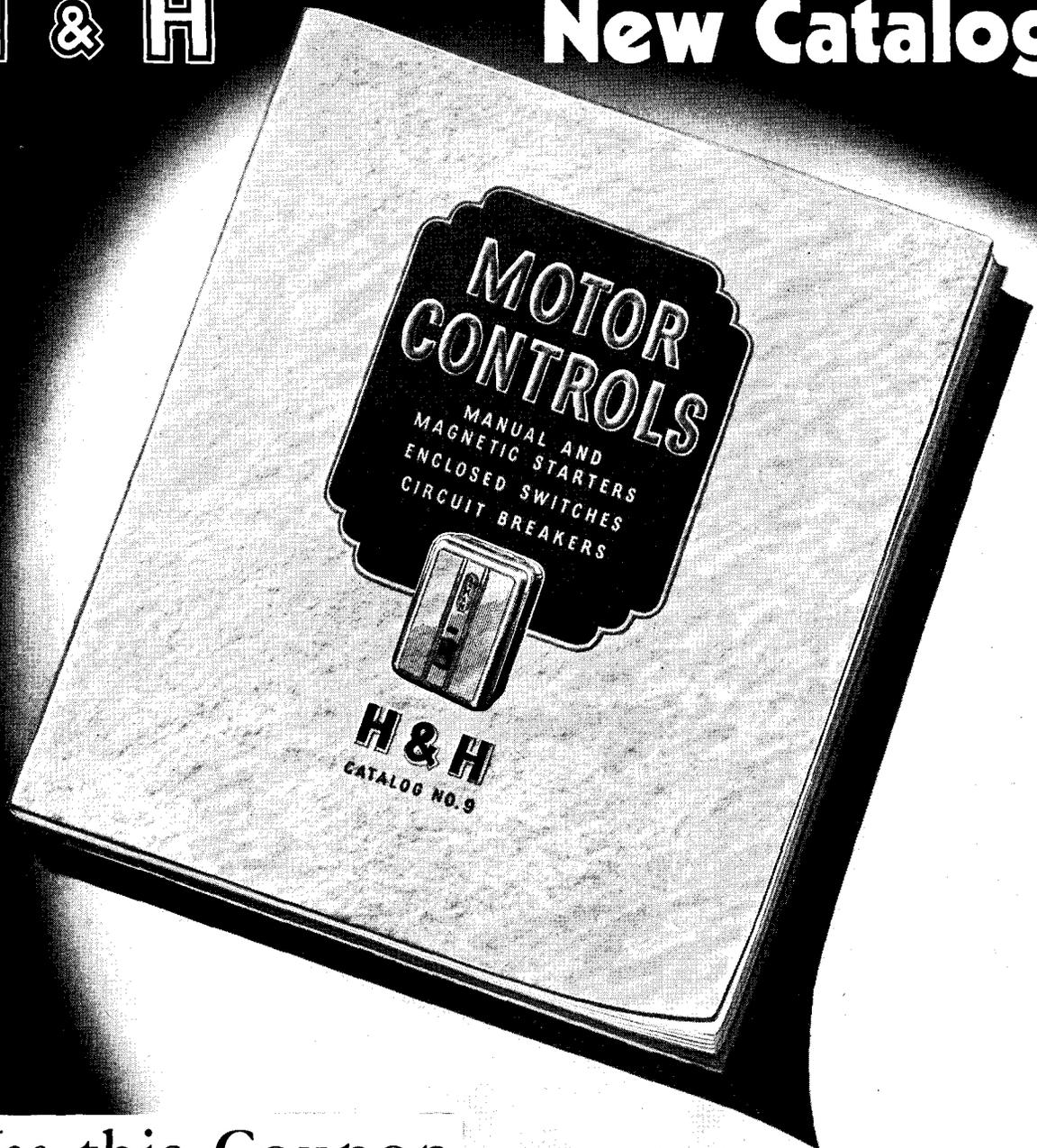
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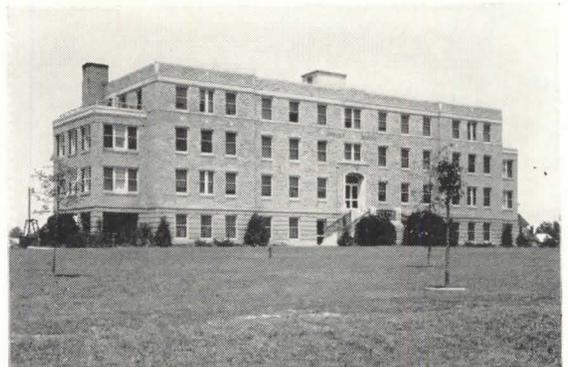
Provide fire-safety, speed construction
by using Bethlehem Open-Web Joists

Many war-time production communities have sprung up almost overnight with the result that hospitals and other types of buildings essential to public health and welfare are in many cases urgently needed. When you are designing a building to fill any of these needs make it a better building and speed up construction besides, by taking advantage of Bethlehem Open-Web Joists.

These joists, while light in weight, are remarkably strong. Because they don't shrink or sag, they cut down the chances of cracks, open baseboards and squeaky floors.

When used in combination with a floor slab of concrete and a plaster ceiling, Bethlehem Open-Web Joists form a floor structure that is fire-safe and sound-resistant. Moreover, the large openings in the web structure are handy for installing pipes and ducts.

In addition to their other advantages, Bethlehem Open-Web Steel Joists speed erection. That's because they are completely shop-fabricated,



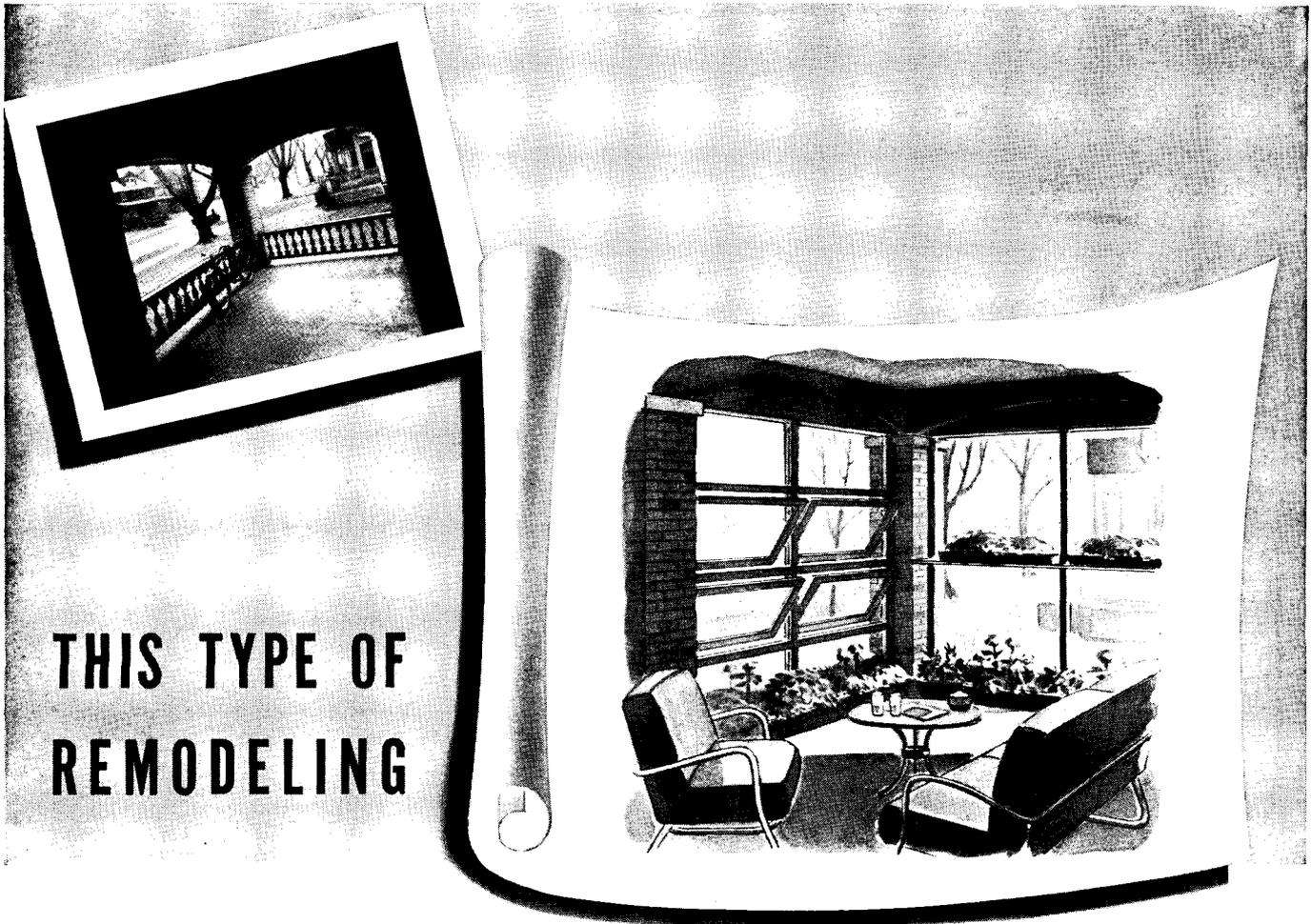
The Lowrance Hospital, Mooresville, N. C., was built with Bethlehem Open-Web Joists. Architects: Charles C. and Walter W. Hock; Contractors: C. A. Morrison and Son.

clearly marked for quick placing, and light enough to permit placing them by hand, with the aid of only a light gin pole.

For additional information about these open-web joists, write for catalog showing typical installations and giving design data. Address: Bethlehem Steel Company, Bethlehem, Pa.



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**THIS TYPE OF
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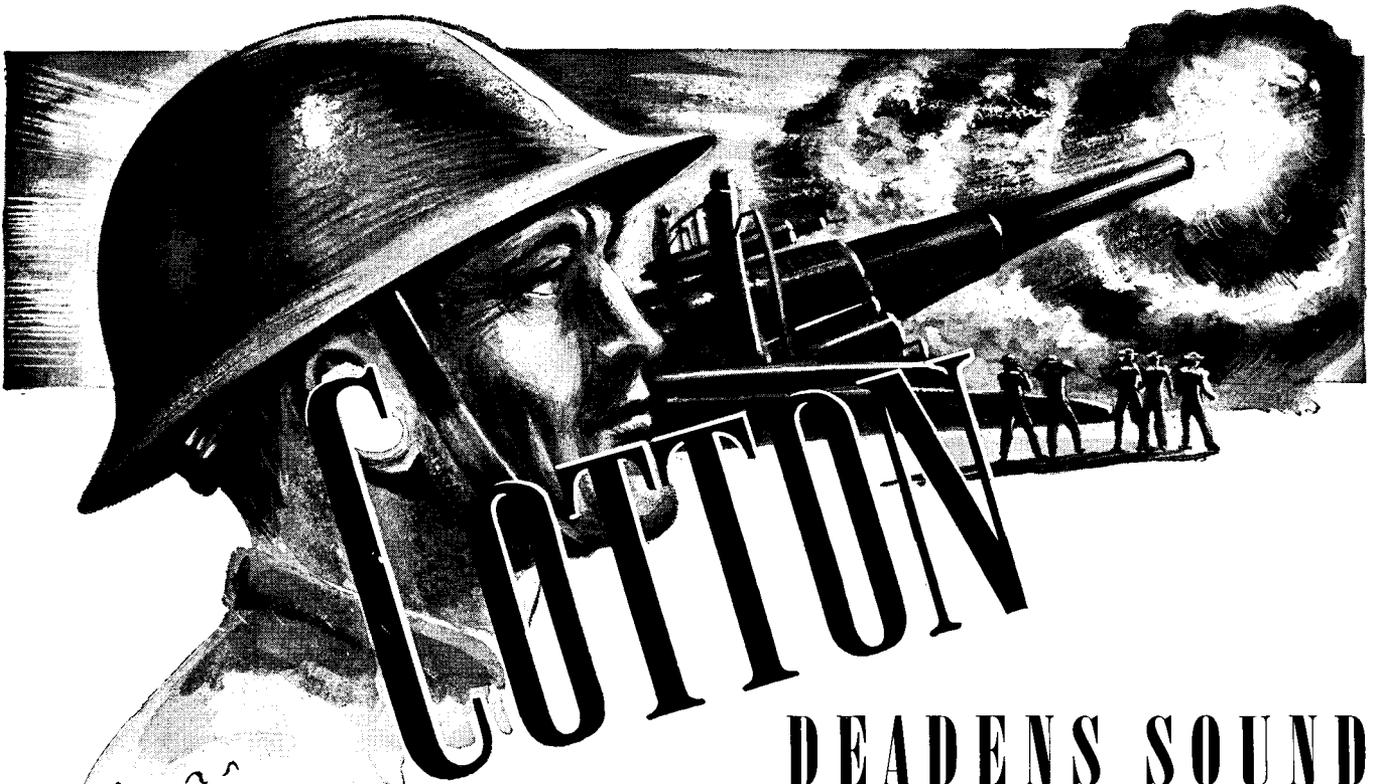
Here the architect has taken the porch of Anyone's Home and converted it into a modern, pleasant livable room. It's a simple idea which can be enjoyed by thousands of homes. It is significant of the modern architectural use of glass.

This glass feature is typical of scores of ideas that Libbey·Owens·Ford has recently incorporated into an unusual new book entitled, "Practical Glass Ideas for Today's Homes." This book is designed for homeowners to increase their appreciation for the new livability they can add to their homes through Glass Features.

We think, from an idea standpoint, that Architects and Builders will find much of interest in this book. A complimentary copy will be forwarded upon request. Just write Libbey·Owens·Ford Glass Company, 1222 Nicholas Building, Toledo, Ohio.



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DEADENS SOUND

When the big guns roar it does things to the delicate membranes of the ear. Military men know that a bit of cotton helps mightily to absorb sound.

Here is a dramatic illustration of one of the many advantages of Reyn-o-cell Insulation. Because it is made of cotton, its sound-deadening qualities are extremely high. Thus Reyn-o-cell provides sound isolation in partitions, floors, and ceilings in addition to its other outstanding advantages of *Low Thermal Conductivity, Negligible Heat Storage, Fire Resistance, Water Repellance, Resilience, Light Weight, Cleanliness, Economy of Installation, Federal, State and Municipal Acceptance.*

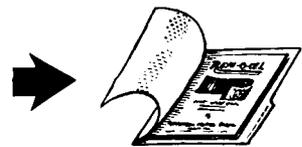
Reyn-o-cell Insulation is manufactured in strict accordance with U. S. Department of Agriculture specifications and inspected to assure uniform insulation value, thickness, flame proofing, vermin proofing and density.

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is one of the most efficient sound deadening materials in commercial use. These elaborate tests were conducted by the National Bureau of Standards, Washington, D. C. and by the Electrical Research Products, Inc. of Hollywood, California.

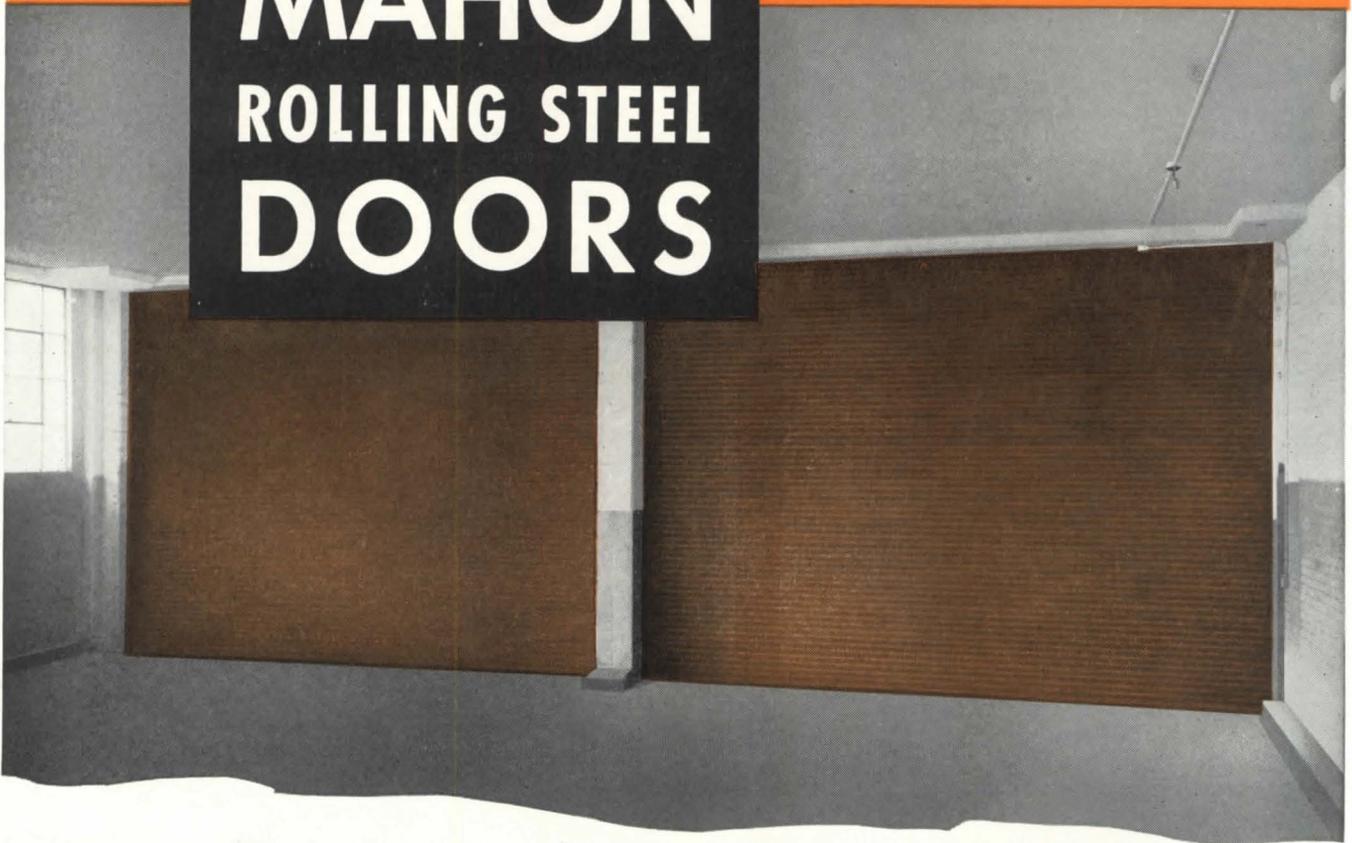
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It is equally important that this same protection be assured for the openings on *inside walls* (interior partitions, dividing fire walls, corridor walls, elevator shafts, etc.) Under present war production conditions, fire and damage hazards are increasingly greater.

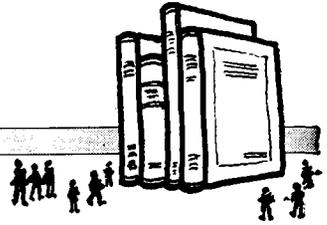
Frequently, too, it is essential that certain departments be kept segregated, without interfering with the inter-department movement of materials and authorized employees.

The practical answer is either Mahon *non-labeled* Doors or Mahon Underwriters' *labeled* Doors, for automatic closing in the event of fire. Mahon engineers will gladly assist you in the planning of any construction project and furnish you estimates—promptly. The new Mahon Rolling Steel Door catalog—or Sweet's—describes in detail the many improvements and advantages of Mahon construction and operation. If you haven't a copy, send for one today.

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MAHON



By Elisabeth Coit, AIA

ON BEING AN ARCHITECT. By William Lescaze. New York, Putnam's, 1942. 287 pp. 5½ by 8¼ in. Illus. \$3.00

THIS is a book which all lovers of architecture will wish to see given the widest circulation. For in rapid-rolling sentences, punctuated by occasional telegraphese, Mr. Lescaze talks convincingly about architecture—what it is, what it does, and what effect it has had on man; and about the architect—what he needs to know and to feel, how he learns those things, and what are the difficulties and the satisfactions he may expect: the whole humanized by references to well-known architectural monuments, on the one hand, and, on the other, to the life and times of a successful Swiss-American architect who takes himself and his profession seriously, but—or rather *and*—with a sense of proportion and with humor.

Much of the last section, that addressed to fellow architects, has an astringent flavor of immediacy, and will have relatively limited, though powerful appeal. Similarly, the middle section, treating in sympathetic detail training, discipline of mind and taste, and how to get a commission and "run" it, will appeal especially to the student, to whom, indeed, it is addressed. But whoever reads the first part, written for the layman, will read all, and may perhaps even do something toward informing the public at large . . . that architecture is an art, and the architect an artist . . . as well as a well-informed man of affairs.

"People take words so seriously; we do not try to visualize who might have written them." So a fine judge of labels, as he discards the inexact and the obsolete, and interprets the worthy.

SPACE FOR TEACHING. By William Wayne Caudill. College Station, Texas, 1941. 124 pp. 8½ by 11 in. Illus. (Texas Engineering Expt. Sta. Ser. No. 59. Bulletin of the Agr. and Mech. College . . . V. 12, No. 9)

SUBTITLED "an approach to the design of elementary schools for Texas," this work contains in every section much material valuable for schools other than elementary and in regions quite different even from the wide range found in Texas' extensive area, while offering a model for kindred studies.

Clear statement, dramatic arrangement of large types and of varied expressive photographs and diagrams, with blank space for notes and for relief, make for easy and pleasurable reading, while copious marginal quotations give a satisfying feeling of authority.

Sections on educational trends and on the school in the community are followed by an interpretation of nineteen aims of modern education in terms of architecture, an account of space uses and the logical equipment for those uses, with a concluding chapter on utilization of natural environment: a study of temperature, rainfall, elevation, materials available within the state, velocity and direction of prevailing winds, and suggestions as to orientation, design, materials, planting, etc., to enhance or correct as need be natural and man-made environments.

RICHARD NORMAN SHAW: A STUDY. By Sir Reginald Blomfield, R.A. London, Batsford, 1940. 115 pp. 6 by 9 in. Illus. 12 s. 6 d

A SHORT ACCOUNT of "incontestably the most famous architect of his day in England," by a disciple who carried out some of the master's designs.

The work is pleasantly personal and chatty in complexion, with illustrations and descriptions of some two score of the subject's more important achievements.

Many readers will ask for more: for many more—and more detailed—plans; for some serious description of those "good reasonable little houses," designed three score and something years ago yet in essentials today's small one-family home; and, for the larger houses, more interior detail, even at the expense of some of the many great halls shown.

As it is, there is enough to show Shaw's versatility and fertility and his highly triumphal progress through Tudor Gothic half-timbered, Queen Anne, and William and Mary country houses, via the Dutch Renaissance of New Scotland Yard, business buildings and town houses—varied with a bow window now and then—to the neo-classic of the Quadrant. The whole is strangely modern: the many-

storied early Oriels, close kin to today's glass-walled staircase; the handy, harmonious Bedford Park house and tavern and shop; and the narrow-fronted city home admired in its own day, and lending itself to profitable modernization in a later one.

THE ARCH LECTURES. By Claude Bragdon. New York, Creative Age Press, 1942. 239 pp. Illus. \$2.00

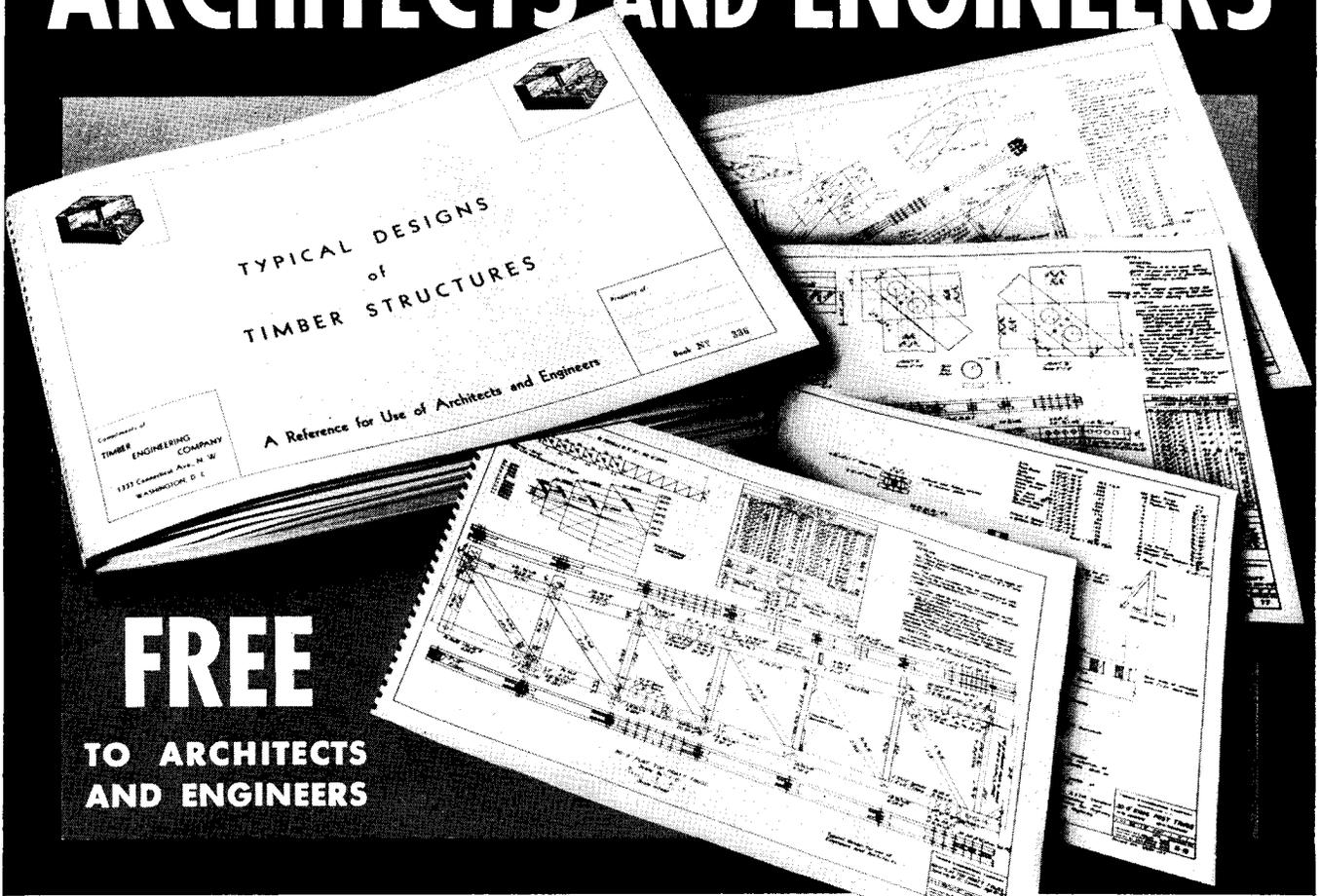
ARCH is not intended to mean architecture but to suggest the bridge connecting thoughts on several creative arts, on education, and on philosophy, by an FAIA non-practicing architect, who acknowledges to the publisher of a dozen of his fourteen earlier books some material contained in the lectures adapted from this book. Although theater, philosophy, and painting have occupied Mr. Bragdon since he abandoned architecture, probably many readers will vote best in this purple and gold volume the chapters on Skyscrapers and on Art in the Machine Age, inspired by his first love. A few statements of fact, good and true several years ago, need to be brought up to date.

HOMES TO LIVE IN. By Elizabeth Ogg and Harold Sandbank. New York, Public Affairs Committee, 1942. 31 pp. 5¾ by 8¾ in. Illus. \$.10

A PAMPHLET drawn from "Principles of Space Planning and Space Organization in Dwelling Units," a preliminary report of a study by the A.P.H.A. Committee on the Hygiene of Housing. The work is thoroughly practical in its advice on financing, building, buying, and on how to make the best of ready-made quarters: arrangement of furniture and other equipment, simple helps inexpensive to buy or to make.

If the edition reaches the average of other P.A.C. pamphlets, almost 50,000 copies will reach readers often poignantly interested in these matters. It is regrettable, therefore, that the authors have not given dimensions of usual pieces of equipment and of room and storage areas which would permit of good arrangement of equipment and reasonable comfort in use. Many people are unable to calculate for
(continued on page 30)

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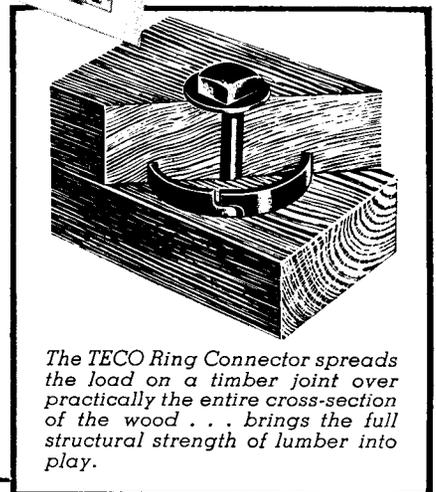


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REVIEWS OF CURRENT LITERATURE

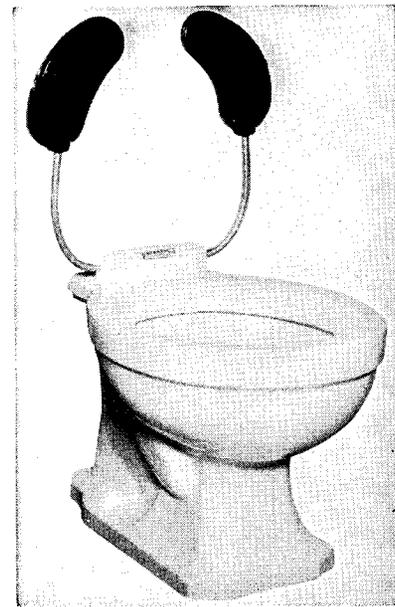
(continued from page 28)

themselves these figures, possession of which would not only save many individual disappointing misfits but would also help form that interested public opinion about design without which recommendations of architects and other housing experts are comparatively ineffectual.

TYPICAL DESIGNS OF TIMBER STRUCTURES. Washington, D. C., Timber Engineering Co., 1942. 70 sheets. 7 1/4 by 1 1/4 in. Illus.

FORTY-FIVE of the typical plans which TECO, a subsidiary of the National Lumber Manufacturers Association, has worked out for architects and en-

gineers. Particularly timely because of the practically negligible amount of priorities-exempt material required, this book of designs ranges from the smaller one-family home, through trusses of various designs for market, grand stand, airplane hangar, and others, with dimensions up to 100 ft., as well as tank, look-out, signal, radio, and searchlight towers 300 ft. high: all presented in workmanlike style with bills of materials, dimensions and weight tables, and decimal equivalents.



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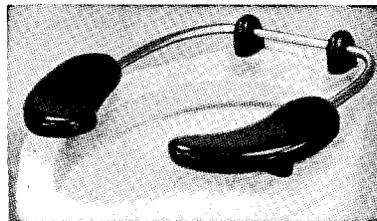
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Harley-Davidson Co.	Twin City Ordnance Plant

PERIODICAL LITERATURE

LOUIS A. SIMON. THE SIMON ERA . . .
The Federal Architect, Washington, D. C., Jan.-Mar. 1942, pp. 7-13. Illus.

APPRECIATION of 45 years' service, beginning before the turn of the century and including the Triangle, "the greatest building venture in history," and last year's War Department Building. To be continued, it is hoped, in a later number, for the account stops short some fifteen years ago and in the middle of a sentence: to invite readers to work out the value of π beyond the 707 places recorded in 1872.

ARMCO DESIGNS CULVERT TO CONSERVE CRITICAL MATERIAL. Engineering News-Record, New York, April 9, 1942, p. 68. Illus.

THE PIPE designed by this Middleton, Ohio, firm is octagonal in section, composed of segments varying in thickness with the diameter of the pipe required, and put together with wooden dowels. It is prepared in 12-ft. lengths, easily joined in the field; and, whereas the ordinary wooden box culvert is rigid, this is flexible. Scrap lumber can be used and the pieces can be sawn in any shop.

HOUSING AS USUAL. Business Week, New York, March 28, 1942, pp. 24, 28-9

A SUMMARY of public housing's story from the 1937 Wagner slum clearance law and the creation of the USHA, via
(continued on page 32)

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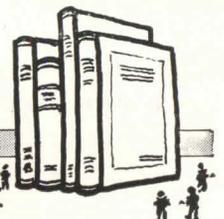
AMERICAN PENCIL COMPANY, Dept. B-2, 500 Willow Avenue, Hoboken, N. J.

REVIEWS OF CURRENT LITERATURE

(continued from page 30)

the FWA, distribution of production to RFC, Army, Navy, TVA, FSA, and on to NHA. (*Time*, April 13, p. 20, says there were 16 agencies.) To NHA there is no war housing problem . . . war housing will be treated as a continuation . . . of a long-range program. The trend will be toward local con-

trol . . . "A mysterious belligerency permeates the whole subject of housing, and despite the new centralization (of all Federal housing construction in the FPHA branch of NHA) a fresh fight is shaping." This is a battle between NHA and WPB for control of housing priorities.



MIDDLE AMERICAN ARCHAEOLOGY. Bulletin of the Museum of Art, R. I. School of Design, Providence, c.1942. V. 29, No. 1-2. 75 pp. Illus.

A DOUBLE NUMBER devoted to two papers: "The Greater Cultures" by Alfred M. Tozzer, and "The Lesser Cultures" by Samuel K. Lothrop. These show the similarity of culture through a territory covering about 30 degrees of latitude from Mexico south, the entire area knit together even in the earliest times by well-paved roads and water trade routes. In 73 figures—photographs from the air and from the ground, reconstructed models in various museums, drawings, etc.—are shown with a wealth of detail many pyramidal temples, gigantic tombs and other spectacular monuments.

HARVARD'S AIR CONDITIONED RARE BOOK LIBRARY. Heating and Ventilating, New York, April 1942, p. 24

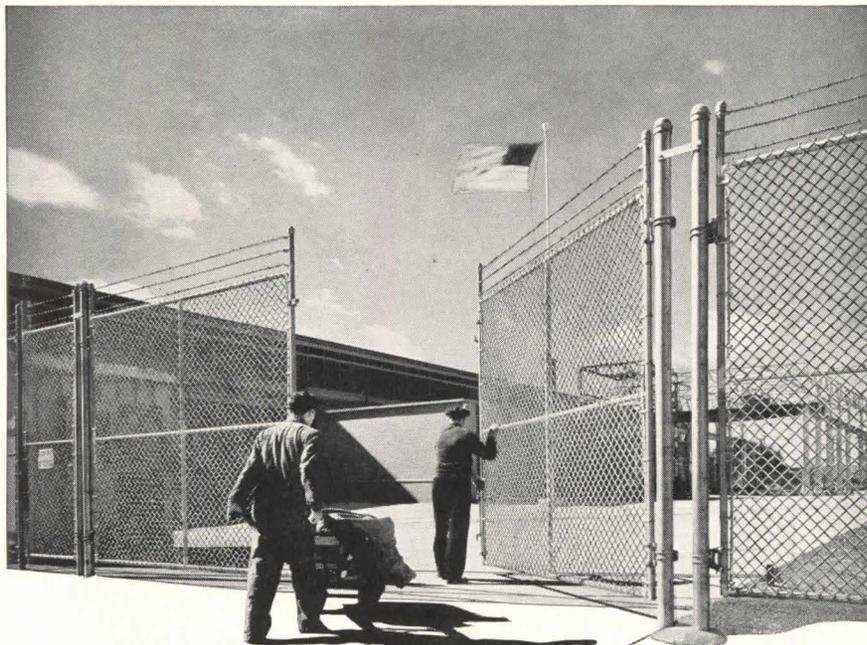
SUMMER TEMPERATURES of 78° to 80° F maximum dry bulb, and 45 relative humidity are provided in the new library given by Arthur Amory Houghton, Jr., to house the Harvard University million dollars' worth of rarest and most valuable books. The Georgian building in brick and limestone has thick walls insulated by one inch of cork, double glazed windows, glass wool insulation in the roof. The ducts in the up-to-the-minute equipment are lined for a 20-ft. distance with sound-absorbing material, and well water at 55° F supplies the pre-cooling coil.

WHY DREARY HOUSING PROJECTS? By Albert Mayer. Survey Graphic, New York, Feb. 1942, pp. 82-4, 93-4. Illus.

THE GENERALLY DEPRESSING architectural character of most of the large scale housing being built (private as well as public), the mechanistic rather than human quality are . . . alienating people and communities, or at least leaving them indifferent. Large developments offer opportunity, usually neglected, for charm in planning: groups of dwellings, shopping centers, community houses, etc., permit of variety. Widely publicizing successful achievements of able designers, Mr. Mayer thinks, might induce the less resourceful to copy them.

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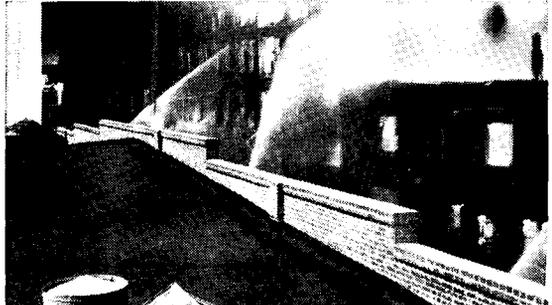


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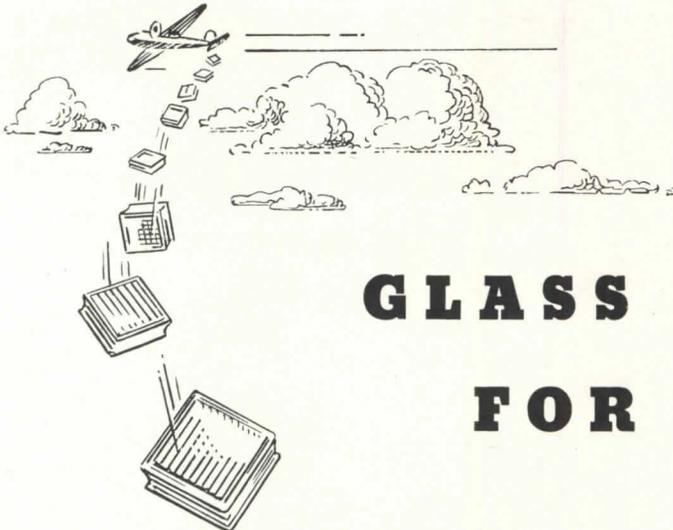
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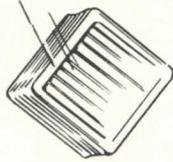


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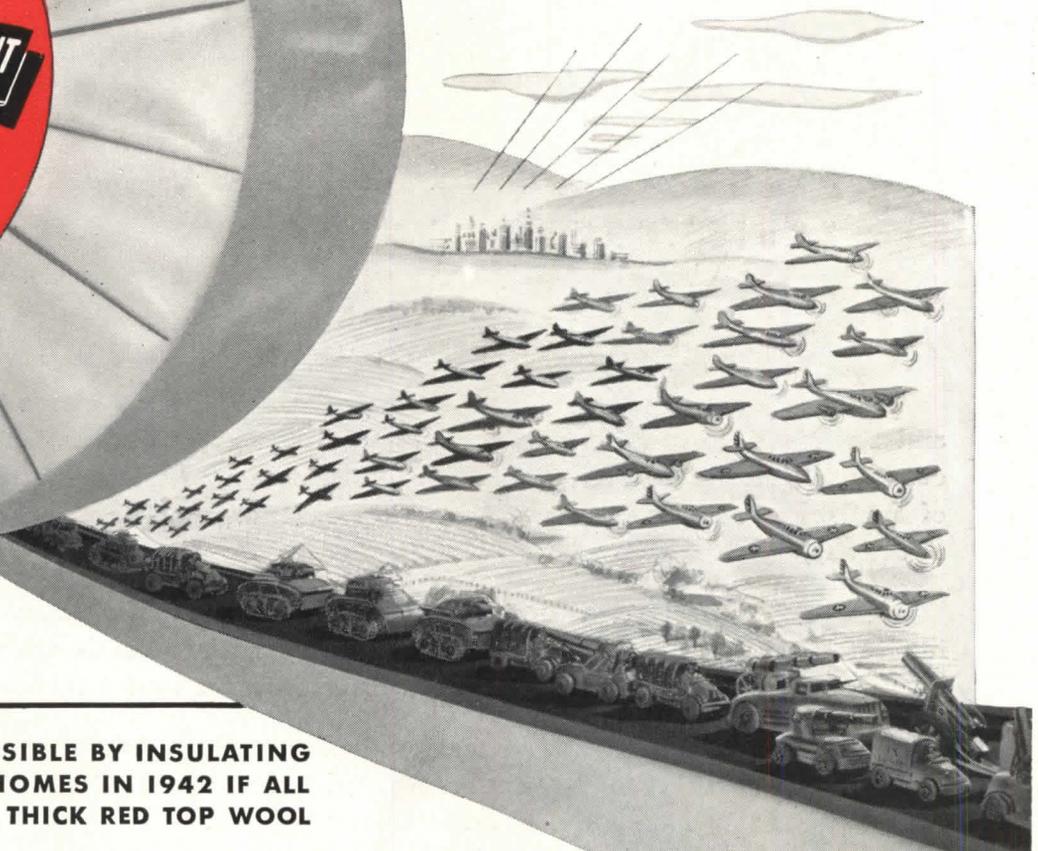
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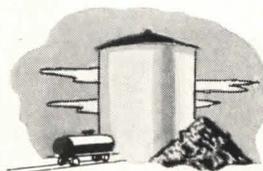
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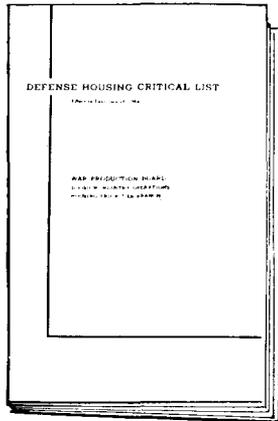
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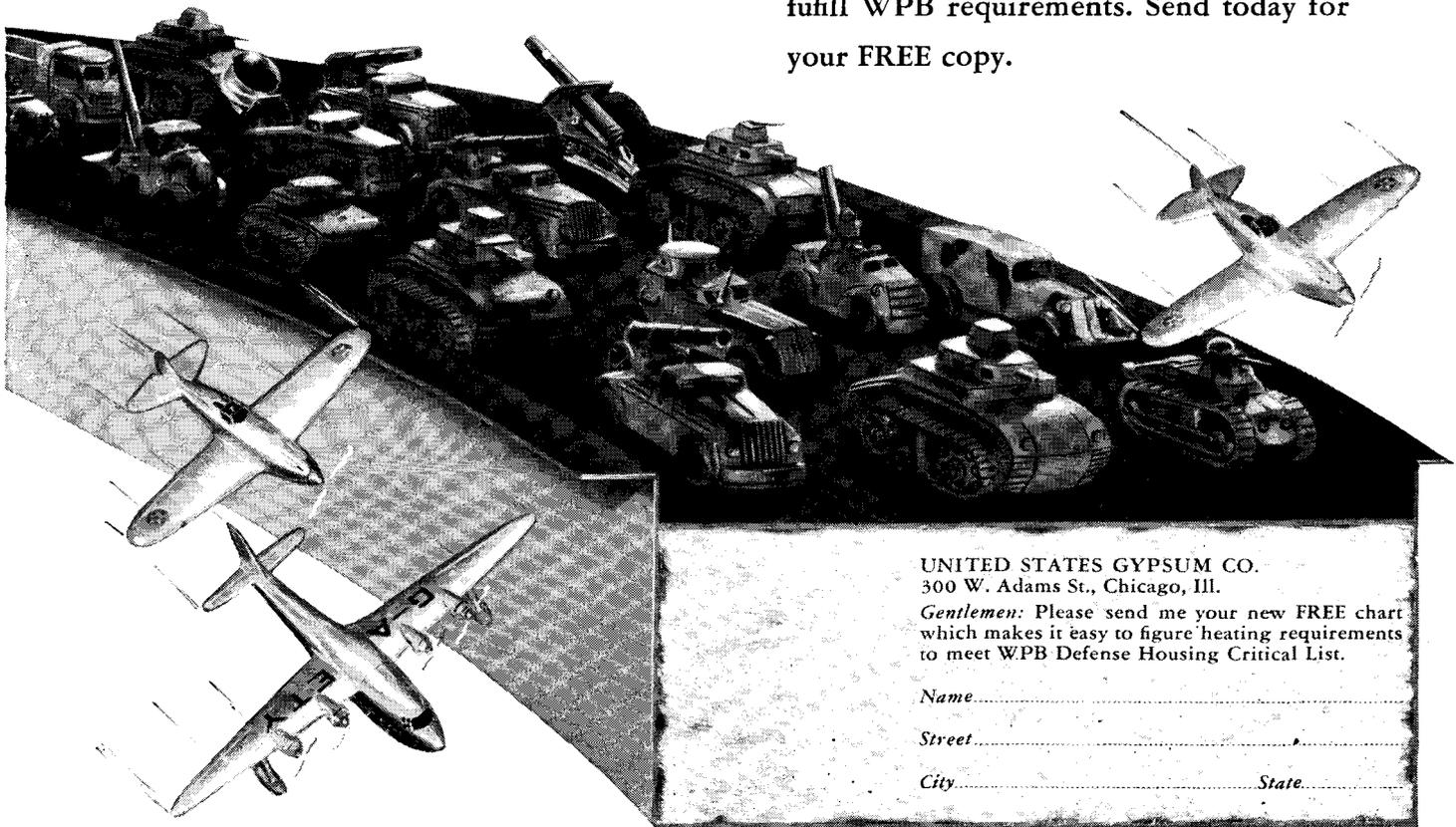
of meeting these requirements.

By thorough insulation, more metal is available for ammunition, tanks and jeeps. Fuel saved releases cars for busy railroads. Saves tires. Dollars saved can go into War

Bonds, virtually making ammunition with insulation... and helping our war effort.

The Government urges insulation for old houses, as well as new. Red Top Insulating Wool, "Made of Fiberglas," is a product you can go "all out" with for this work; and Red Top Wool enables you to do it because it is "Precision" made and tailored to fit buildings. Thus it assures peak insulation efficiency and heat savings.

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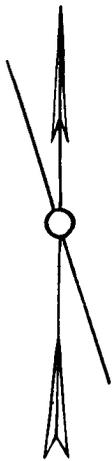
WHEN you convert your present plant for all out war production, or build a new plant, remember that faster production and conservation of raw materials, demand efficient heating. Efficient heating and processing mean automatic control, with its elimination of waste. Automatic

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CHARTING YOUR COURSE



THERE is a twenty-knot wind blowing off the Potomac for those fortunate enough or far-sighted enough to manoeuver their craft into the stream of factory and industrial work—and a strong but gusty breeze is blowing from all directions on the sea of housing. The latter drives full speed ahead for a few in its path for a time, then there is that calm again when the local squall is over. The normal trade-winds of building have been stopped for the duration, their pent-up energies will not be felt again until this war is over, though they then should break full force and stronger than ever known before. What little breeze there was in the sails of many smaller offices has died down with the order banning all but war building.

Charting a course in this calm is a task we all face—as individuals and as a professional group. Most skippers, as they must, will seek “any old port in a calm,” to paraphrase a proverb. When our sails no longer draw with our tacking back and forth, it is time to prime the auxiliary kicker and get to port under power by making for the nearest harbor, or, if we can, by heading for the ripples that show where there is a breeze, to join the ships that are sailing under full canvas.

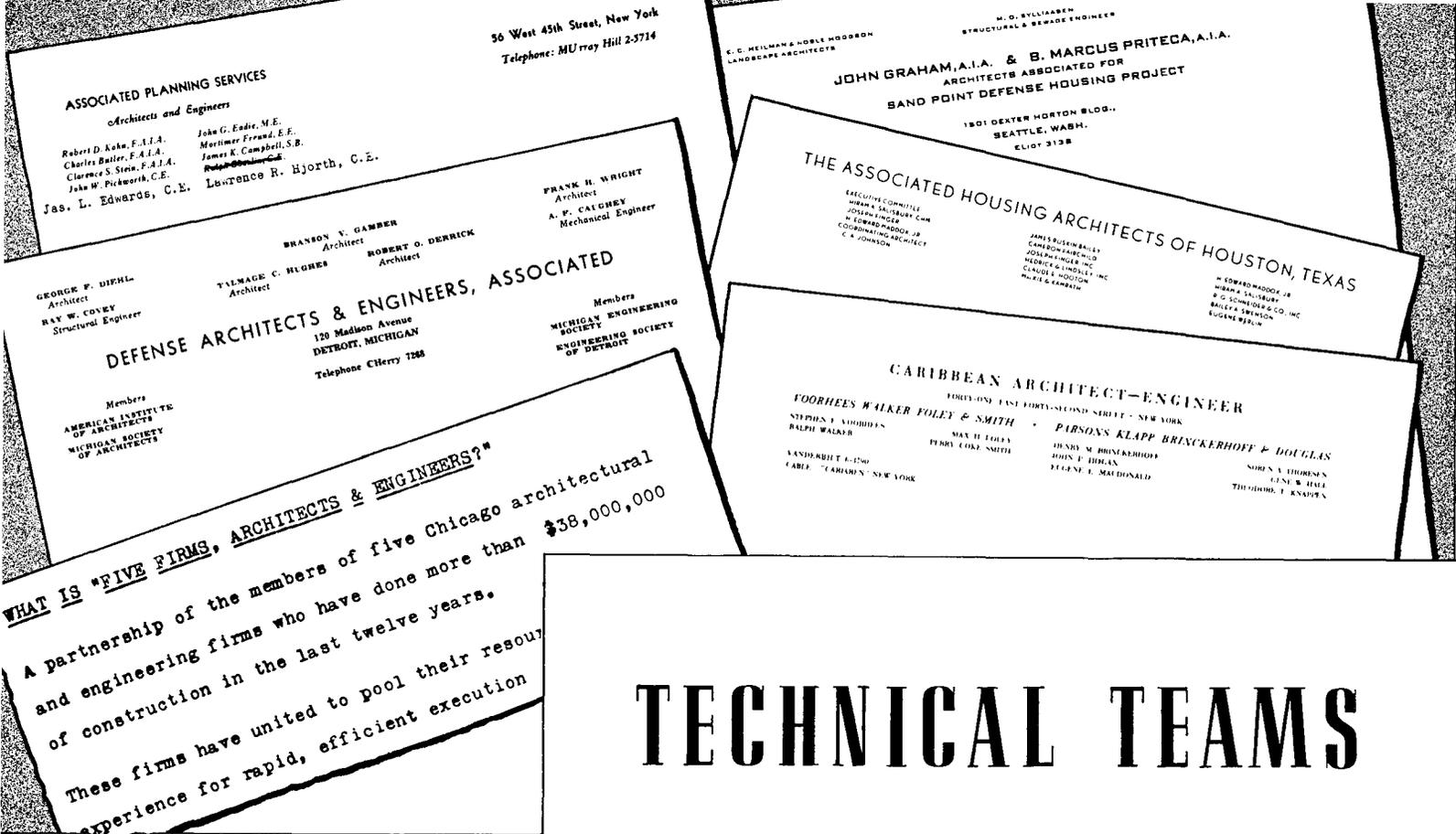
These are the two courses. The latter means that architects and engineers join forces to present a strong and efficient unit to obtain war contracts from the Government, or join such units as employees. They will have to learn new ropes, respond to new orders and listen to the shrill bo’sun’s pipe.

The former means heading for the ports of commissions or enlistments in the Army, Navy or Air Corps—either with the fighting forces or in the branches where architectural and engineering ability can be utilized in planning, construction, supervision, camouflage. Or there are the ports of Civil Service, of other civilian Governmental departments, of post-war planning or research, of conversion to war industry. Such ports may mean being landlubbers again, without the salt spray and zest of more familiar seas.

Thus making port or joining the crew of stronger ships does not mean abandoning one’s own craft, though it may, perforce, be hauled out on the ways for the duration. Wise skippers will be planning ways and means of putting the old craft in better shape against the time that is surely coming when she can be launched again, as she must be, in sleeker form, in better balance, newly powered. They will study more closely the tides and trends, the new charts of professional techniques, new materials and methods and coming opportunities. New ships too will be planned, to be put into commission as soon as this calm is over, and to take advantage of the flood tide of building needs that then will see them launched. The albatross of the past must not be found hanging about the necks of the mariners who set forth in the greater future which lies ahead!

Kenneth K. Stowell

EDITOR-IN-CHIEF



TECHNICAL TEAMS

IN THE CATAclysmic UPSETS of a mobilization for all-out war, there is nothing unique in the strange situation now confronting the architectural profession. It has any number of parallels in industry and in other professional groups. But it is nevertheless a bit important, not alone in the present but also in the future.

Much discussed in architectural offices are such questions as: What will be the outcome of a situation in which the larger, well-integrated offices are terribly busy while the smaller firms or individuals find their practice arbitrarily cut off? Granted that it is the war emergency that suddenly concentrates all work in the hands of the large organizations, is there more to it than just war conditions? In other words, in what degree will the same demand for thoroughly integrated architectural and engineering services be continued in the post-war period? Or, does the war merely bring to a quick focus a trend that was slowly developing in peace times?

More directly still: Is the strictly professional status threatened by the events of today? And tomorrow? Will architects as a group necessarily have to turn to a new type of professional relationship, such as has long existed in the engineering field, for example, where relatively few practice as independent professional men?

And, what is probably more to the point right now: What is to become of the small architectural office? Must it simply close up, the partners taking salaried positions? Can it hibernate till a warmer day, and then take up where it left off?

If some of these questions have a familiar ring, the war gives them new emphasis. And if they cannot be answered definitely now, that is not surprising. They are topics that the RECORD is currently investigating.

This first article focusses on one noteworthy current development—the combination or consolidation of smaller offices into the larger, broader organizations needed for the war effort. The "war conversion," in other words, of the smaller architectural and engineering offices. Outside of war housing, Uncle Sam's war needs call for comprehensive organizations of architectural and engineering abilities, capable of speedily handling jobs of tremendous magnitude and wide scope.

Many war conversion combinations of architect-engineer offices have already been effected, and work is on the boards. Many others have been arranged, but in some instances the work is still at the other end of the rainbow. And other combinations of offices are now in the formative stages. More information, particularly in specific instances, will be available in next

month's issue of the RECORD.

Right now, the important thing is how best to arrange a combination to get Government work, and what the major Government agencies want in the combinations.

What the Navy wants

As for the Navy Department, it welcomes these combinations of offices, but it has a few pointed remarks about the kind of combinations that will be given preference in Navy contracts. It has already received many applications from newly consolidated offices, has scrutinized them carefully, and has awarded some contracts. It expresses a willingness to consider new combinations of capable designers.

The Navy Department has found, however, that strong leadership is an essential to a successful combination. Such leadership was not always present in the earlier groups. From the architect's standpoint it is natural and desirable to preserve the identity of individual offices making up a group. But from the Government agency's position, it is important to the speed of all present work that there be a responsible head who can cut through discussion and settle matters expeditiously. At any rate, the firms or combinations that the Navy has rated the best have been those with an outstanding central figure.

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FOR WAR WORK

Mere size is the least important objective in consolidation of offices. While naturally it takes extensive personnel to handle big jobs in a hurry, official Washington takes the view that a simple banding together of residential architects serves no purpose. Rightly or wrongly, the military departments take the position that the grouping of designers relatively inexperienced in their type of work does not strengthen the qualifications; indeed they almost put it the other way 'round.

What is called for, of course, is a well-rounded organization from the standpoint of technical capabilities. The specialties of the individuals should be complementary. And the group should have a strong representation of engineers. What the military departments want—must have—is a complete package of architectural and engineering abilities. And the organization must have sufficient personnel to work with terrific speed.

The Navy Department welcomes applications from associations so arranged, is getting several such now, and is giving them work. A newly associated group should file its applications and statement of qualifications as a group, even though individuals may already have filed their own information. The liaison officer is Lt. John J. White, CEC, USN, Bureau of

Yards and Docks, Navy Building, Washington. Also helpful are contacts with the Navy's local Public Works Officers, though final authority on all contracts rests in Washington.

Combinations for the Army

The War Department takes a somewhat different position as to combined architect-engineer offices, though the Army also needs large and well-rounded organizations for its jobs. Indeed Army work runs to even larger projects than those of the Navy.

The point is that it is not so simple to arrange just the group the Army wants. And for that reason the War Department tends to take the initiative in the forming of groups. It works this way: From its files of applications for work it selects architects and engineers whose records show the desired experience for a particular job, especially a large contract. Then it may arrange an over-all design group comprising just the architects and just the engineers it wants.

Army jobs cover a wide range of building types and engineering and construction projects. Short of the very large architect-engineer firms it would be virtually impossible to find assembled the peculiar desired combination, according to the Construction Contract Board, which is the source of all large Army contracts, and thus it

is just as well for architects and engineers to file their qualifications as individuals.

Nevertheless, the Construction Contract Board is interested in the idea of combination offices, and it would certainly do no harm to keep them apprised of any formal consolidations of offices.

Perhaps more important, as regards Army work, is that all but the very big jobs (over \$5,000,000) are now given out by District Engineers. While the application files in Washington are still the master control in the selection of designers and contractors, contact with the local District Engineer is plainly indicated.

The War Department's A-E-M contract (page 42) seems to suggest a tie-up with a contractor as well as engineers, but that part of it is definitely arranged by the Contract Construction Board. In other words, while the final contract might be arranged under the A-E-M system, involving a contractor in the organization, the chances of having the right contractor already in a pre-arranged group would be extremely slim.

Time is of the essence in any plans to develop new organizations. There is still much work to be given out, but the Government has the throttle wide open, and will put out the rest as fast as possible, if not faster.

GOVERNMENT CONTRACTS



Photo from Erving Gallery

New War Department Building, whence come building's biggest contracts

WITH THE LAST DOUBTS removed that the construction industries are now concentrated exclusively on the war effort (see page 16), it is clear that Uncle Sam is, directly or indirectly, the sole surviving client. A colossal client, as everybody knows, and a terribly earnest and busy one, who is making all the rules, giving out all the contracts, to one glorious purpose.

To the thousands of architects and engineers already working for this client, to those who have been through the reception desk line-up in the new War Department Building in Washington, it is no news that Uncle Sam as a client knows his stuff. There has been some confusion, of course, and some investigations, and some shifts in procedures and types of contracts, but miracles of accomplishment are becoming commonplace. And contract procedures are now well established. For architects and engineers not already familiar with Government contracts, the RECORD has just checked it all with Army, Navy and housing officials.

Working for the Army

In March the Corps of Engineers, which handles all Army work, completed some changes in modus operandi. These involved decentralization of much of the work to the field agencies, and the reorganization and consolidation of facilities in the office of the Chief of Engineers, for the handling of the few contracts still issued from Washington.

In general, Army contracts for less than \$5,000,000 are let through Division or District Engineers in some 65 field offices. Only larger contracts and some special ones are now negotiated in Washington. However, the

Washington office still has final authority over the selection of architects, engineers and contractors, though the District Engineers are important in this respect. Officially it is stated: "The local field agency will, in general, be charged with all steps covering the execution of assigned work (except for the larger or special projects), including preparation of plans and specifications and other bidding documents, issue of requests for bids in the case of advertised contracts, and the submitting of recommendations for selection of contractors and the negotiation of contracts to be awarded on a negotiated lump sum, negotiated unit price or negotiated cost-plus-fixed-fee basis. Recommendations for selection of contractors and architect-engineers submitted by Division and District Engineers will be cleared by the Construction Contract Board, prior to approval by the Office, Chief of Engineers."

The Construction Contract Board is a consolidation of two offices, the Construction Advisory Committee and the Contract Negotiation Board. The Board takes over the duties of both. And, important to architect-engineers, it also takes over the files of the former Construction Advisory Committee, so that those who had filed their qualifications need not file again.

Wherever possible the Army is swinging back to competitive bidding, and cost-plus-fixed-fee contracts are anything but popular. That does not mean that negotiated contracts will not be used, but that wherever possible jobs will be broken down into parts that can be handled by competitive bidding, using negotiated contracts only for the special parts of the job.

When there is insufficient time to prepare plans and specifications in enough detail for competitive bidding, contracts will be negotiated on the basis of lump sum, unit price or cost-plus-fixed-fee.

The A-E-M contract

Much speculation has been aroused by the Army's new so-called Architect-Engineer-Manager, or A-E-M, contract and its applications (see ARCHITECTURAL RECORD, March, 1942, page 5 and April, 1942, page 16). Briefly the A-E-M contract ties a contractor with the architect-engineer firm. While nominally the single firm undertakes a large construction project, say a TNT plant, actually the purpose of the contract arrangement is to break a big job into parts. The A-E-M contractor is a manager for the War Department, doing the design work and some of the actual construction, but recommending sub-contracting for many of the separate parts of the job.

Such piecemeal technique makes it possible to use competitive bidding on many separate parts of the job, leaving for the cost-plus-fixed-fee contract only those parts which are special with regard to cost or speed of operation.

In actual practice the architect-engineer firm works as it always has, except that it submits plans and specifications in piecemeal fashion for the separate portions, which are then let out directly by the Engineer Corps (not by the prime contractor).

So, as it works, the A-E-M arrangement permits both increased use of the competitive bidding principle and the spreading of work to smaller contractors. It does not necessarily mean, however, that Army jobs will be spread out to a number of smaller design firms. For while the scheme works in almost any type of construction project, it will be used principally on the larger jobs, the ones negotiated in Washington.

In explaining the working of the contract, M. J. Madigan, who developed this arrangement as special adviser on construction to the Under Secretary of War, pointed out that time is an important element, as well

AND CONTACTS



as cost. In any large program, he said, there is one part of the project that is the controlling element as to time. In a TNT plant, for example, it might be the power plant. Individual buildings, or roadways, or what not, could be completed earlier, but the whole operation depends on the power plant. Thus that is taken as the control in all scheduling. The A-E-M contract would be given to the firm building the power plant, and sub-contracts for the rest would be tied to his schedule.

As a matter of fact, says Mr. Madigan, the A-E-M contract is new in name only; actually it represents normal procedure on any large construction project. Or normal procedure before the Army's own rush upset things.

While, it is said, the contract arrangement works very well, it might easily result in some strange combinations in the A-E-M firm. The War Department has not found ready-made combinations capable of doing all its many types of jobs, and so is directing its own combinations of designing and contracting firms. (page 40).

There are still some very large jobs to be given out by the Engineer Corps, and smaller (!) ones (less than \$5,000,000) by the District Engineers. But remember that time is short.

Working for the Navy

The Bureau of Yards and Docks, which handles building construction for the Navy Department, is also giving out many jobs to architects and engineers. While it would have preferred to handle its own design work, as in peace times, the rush of construction is such that most of its new jobs are now being given out to independent architects and engineers, although it still tries to keep as closely as possible to standard plans.

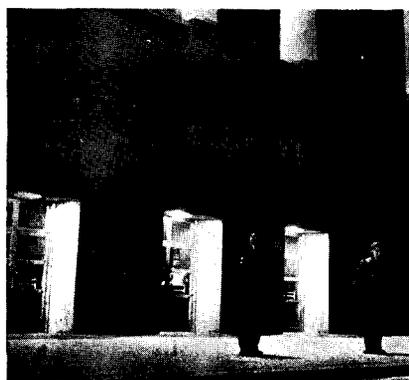
The Navy does not make any effort to tie designers with contractors, preferring "to regard architects and engineers as professional men." And in Navy work architects and engineers work just as they would for a normal client, except that they must adapt themselves and their organization to the exigencies of the situation.

Nor does the Navy separate its jobs on a cost basis. While the Navy's District Public Works Officers do have much to say in the selection of design firms, final authority on all jobs is in Washington. There is considerable decentralization in the handling of contracts and supervision, nevertheless, and contact with local Public Works Officers is just as important as in the case of the War Department. Contracts are usually on cost-plus-fixed-fee.

Architects and engineers who are anxious to undertake Navy work should file qualifications with the Bureau of Yards and Docks if they have not already done so. The Navy welcomes applications from competent firms. And it particularly welcomes applications from combined firms of architects and engineers; is receiving many of them, and giving out work.

Navy jobs in general run smaller than Army work; \$5,000,000 is a large project, though a few are running up to \$35,000,000. In general, quite obviously, their "shore construction" is near the shore. But if that sounds a bit Irish it means that the Navy Department does not build many great ordnance plants; though it does build some ordnance plants and some warehouses in interior locations. Greatest in number are such projects as operational bases in shore locations.

There is a considerable volume yet to be done, and the Navy will need architects and engineers on virtually all of it. The rush in it all is considerable, which means standard plans and specifications where possible.



Entrance is not easy, night or day

With housing for war workers still a great unfilled need, client Uncle Sam will still have much business in this department. As to contracts for housing, many of the questions that grew out of the recent consolidation still remain unanswered. A few recent comments of housing officials, however, may point the trend.

As to the argument between private and public building of war housing, official Washington says this squabble is disappearing in the rush. Nobody cares particularly, in other words, who does the housing so long as it gets done. The Government does want all possible help. The urgency, however, leaves a question mark opposite private building: Assuming private enterprise is willing to undertake projects, is it willing to guarantee quantities, price levels, and completion dates? Private enterprise is dependent on market conditions, and customarily must test the market as it goes. In such a case as the Ford bomber plant, however, if there is any gamble at all, it must be taken all at one gulp. In any case, Uncle Sam must have pretty positive assurance that a private project will meet all time schedules and guarantees before it can expect the Government to give assurances of protection.

The FPHA says there will be no change in its old USHA policy of using local architects for housing projects. The press of time may be expected to have its effect on this work, however, and rush housing erected rather than fully developed permanent communities. Indeed, with the War Production Board getting tighter and tighter in materials allocations, it may develop that the controlling factor in all war housing will be municipal facilities already available.

Questions about the prefabricated house program and its current status after the housing consolidation have been disposed of officially by FPHA Commissioner Herbert Emmerich. He reports the program as including 46,518 units for 61 localities, to be fabricated by 55 companies. Changes in the War Department plans necessitated abandonment of projects for some 3,600 houses; the houses ordered will be diverted to other locations. Otherwise the program will go ahead.

If Uncle Sam is, then, sole arbiter of all construction, he is a client of such stature as has never been known before. He needs plenty of help from designers who can do the job with the hell-bent hurry now required.



BUILDING for VICTORY and

BUILDING FOR VICTORY, according to the scheduled program of the War Production Board, consists in producing in the United States during the year 1942 a greater volume of construction than ever before, in record time, and working against unusual difficulties with respect to labor supply, deliveries of materials and acute shortages of some highly important items. With the long-expected order forbidding all civilian construction, except that which is licensed as essential, the industry is 100 per cent on a war basis. Like other war industries, the producing units in the construction industry are being obliged either to convert their facilities to war work, to secure prime contracts or subcontracts, to give up their private business and seek employment in war construction organizations either private or Governmental, or go out of business. If the war construction program increases as anticipated by the War Production Board, there will be enough work during the remainder of this year and most of 1943 to employ practically all the facilities and practically all the technically

competent people in the industry, provided the conversion to war purposes is promptly and adequately made.

Conversion to war work

The construction industry has been frequently called a backward industry; criticized for its apparent lack of standardized procedures, its reputed lack of modern factory methods, its failure to resemble in all particulars the automotive industry. However, the most significant fact about the modern building industry, which has enabled it to make its great contributions to the country in peace and in war, is its immediate adaptability to new requirements and its capacity to turn itself at once to new kinds of jobs, a flexibility largely due to its lack of rigidly standardized and fully mechanized procedures. It is an industry which, for conversion from peacetime production to wartime production, requires only a retooling of minds, which is for many of its members a continuous procedure.

Architects and engineers who are engaged on war projects are sharp-

ening their minds on new design problems of various kinds. They are having to work to a new criterion of economy, economy in the use of metals and metal products. They are having to acquaint themselves with substitute materials and alternative methods. They are having to work under previously undreamed-of business arrangements with new kinds of clients. Undoubtedly these far-reaching technical changes have a great significance for future architecture and architectural practice.

However, streamlined technical facility and changed building industry procedures will have little scope unless our post-war world is one of expanding opportunity and of economic and social progress. The prerequisite is victory. Defeat is unthinkable; it is possible, if our war effort is half-hearted, but its result would be, for us, a slave economy under totalitarian overlords.

Unfounded fears

Yet there are today appreciable numbers of honest and patriotic American men and women who seem to



Photo by F.S.A

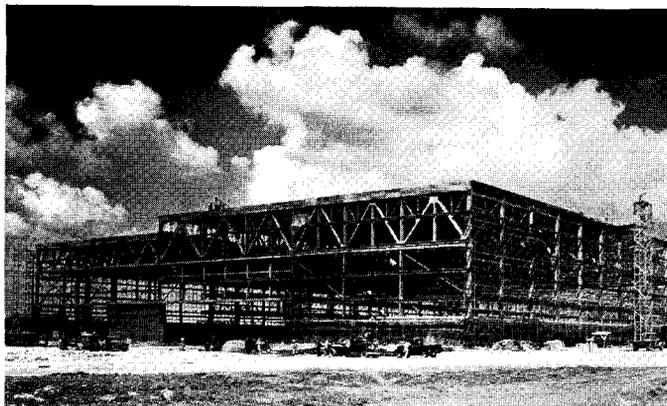


Photo by Eric J. Baker

the FUTURE

By THOMAS S. HOLDEN,
PRESIDENT, F. W. DODGE CORPORATION

dread the consequences of victory. It seems to me that these pessimistic people are beset by understandable but basically unfounded fears. They fear that a public debt mounting to fabulous totals will bring about either a financial collapse, or at best an intolerable burden of taxation upon future generations. They fear that the United States will slide into some form of national socialism. Many fear, arguing upon what I believe to be false analogies to past situations, that a great and prolonged depression will be the inevitable result of this greatest of all war efforts. I cannot give you circumstantial proofs that these things are not to be, but I will try to sketch for you the reasons why I am not fearful.

Being no expert in finance, the best that I can contribute to the discussion of that problem is to list certain observations relative to the situation. First, the Government is financing this war at 2½ per cent, instead of 4¼ per cent as in World War I. At 2½ per cent, the annual interest item in our national budget to service a total debt of 200 billion dollars amounts to

five billions; this is a very large sum relative to a national income of 40 to 60 billions but much less burdensome relative to a national income of 100 billion dollars or more. It is generally believed that the Government can and must adopt policies that will maintain national income at 100 billions or better in the post-war period. Furthermore, the debt we are now piling up is entirely an internal debt owed to ourselves; payments on interest and on principal represent transfers of funds from American taxpayers to American bondholders, which may very considerably affect the fortunes of particular individuals and institutions, but not the total wealth or income of the country. Unless we are defeated and have to pay tribute to a conqueror, the debt imposes upon us no necessity of transferring real wealth, goods or services to other nations. Government debt has become very different from the thing it was when medieval monarchs pawned the crown jewels to raise funds to feed and pay their armies. Today, it is a matter of using national credit, principally

for the purpose of stimulating maximum production. A very sizable proportion of current expenditures is devoted to new productive facilities.

While war finance today deals in figures that are almost beyond comprehension, we must remember that dollars are only claim checks for goods and services; ultimately we pay for what we get out of our resources and our productive activity. Debts and taxation will impose problems of stupendous magnitude, but I believe they will be manageable problems.

With respect to the fear that this country will adopt some form of state socialism after the war, I can only say that among the more important Government economists who are studying post-war problems the prevailing thought is maximum stimulation to private enterprise. Responsible Government administrators, who have gained intimate acquaintance with our productive system in their conduct of the war program, have come to realize, if they did not already do so, that, in order to maintain the four freedoms we talk about so much, we must maintain a fifth one, essential to all the rest—freedom of enterprise. Enlightened labor leaders are of the same mind.

The fear that is perhaps most widely held by those who view the post-war future with great misgivings is based on the belief that the biggest war effort of all time must inevitably result in the biggest post-war depression of all time. This theory of the inevitability of a great post-war depression seems to be based in large part upon the notion that the depression of the 1930's was simply and solely the outcome of World War I. To my mind, such an explanation of our last big depression is wholly inadequate. In 1929 and the years that followed, this nation went broke because it was rich, not because it was poor.

Booms Follow Wars

The decade of the 1930's was not a period of ordinary depression; it represented an historic turning point in the nation's economic growth. The immediate effect of World War I upon our economy was, in the 1920's a short period of price deflation followed by a great wave of prosperity. Trouble came from failure to understand and control the boom and from failure to take into account basic economic changes of historic importance.

These basic factors included: (1) the change of status from a debtor to

a creditor nation; (2) a lessened rate of population growth, ushered in by immigration restriction in 1924; (3) completion of our railroad system, with respect to mileage, and other factors previously dominant in our extensive economic expansion; (4) rapid growth and coming-of-age of the automotive industry; (5) the revolutionary impacts of all these factors upon real estate and the fundamentals of construction demand; (6) growth and collapse of foreign trade based upon unsound and unrealistic financing; and (7) perhaps most important of all, failure of the American nation to accept its responsibilities as an adult nation, and, on the basis of its economic and financial status, as a world power.

Twenty-three years ago circumstances made us the most powerful nation in the world. We shrank away from the responsibility; a whole generation got lost trying to run away from its destiny. The postman is ringing twice; opportunity again knocks at the door. But, in giving us a second chance, destiny is saying to us this time, "Make good or bust." In my opinion, an inseparable corollary of belief in a system of free government and free enterprise is the conviction that economic trends result from mass-decisions of men, not from blind forces of nature; that no statistical charts of the past need to serve as blueprints for the future. No, the only inevitability that free men have to recognize (except death) is the grim necessity of paying for their mistakes, whether their mistakes be the wrong things that they do or the right things that they leave undone. The only things we ought to fear are disunity, halfheartedness, bungling efforts in the war and wrong judgments when we try to win the peace.

Prosperity and problems of peace

Believing these things to be true, I hold the strong conviction that, in the period which will follow victory for us in World War II, the people of the United States can enjoy a greater and a more widely distributed prosperity than ever before in their history. The post-war world will be no Utopia, nor will the potential prosperity that is in prospect be achieved cheaply, easily, automatically.

The political and economic arrangements made at the peace table will affect our post-war economy greatly. Arrangements for policing the world and for maintaining peace will determine

the size of the military establishment the United States will maintain during the post-war era. It is unthinkable that we should disarm to the extent we did the last time, or that we should again so completely dismantle our arsenal of democracy. A certain amount of war production will doubtless continue. The reconstruction needs of the world will be tremendous and will require large-scale assistance by the United States. These matters of national policy and peace-table diplomacy are beyond the immediate concern of the building industry but the developments that will take place in the international field will profoundly affect our internal economy and will play a part in determining the extent of internal prosperity and construction activity that we shall enjoy.

National policies affecting more directly our domestic economy are, however, of direct interest to most people in the building industry. They will require wisdom and good management, too. Financial and tax policies will be all-important. It will be necessary that they be so well managed that we escape any such serious price deflation as brought about the shortlived though serious depression of 1920 and 1921. It will be necessary to maintain national income at one hundred billion dollars or more, in order that the big debt load can be carried and that as nearly as possible full employment be maintained. If private enterprise is to carry the maximum possible share of post-war activity, future tax programs of Federal State and local Governments must be so devised that, while they will produce public revenues adequate to carry the total debt service and to meet currently necessary public expenditures, they will not be so repressive as to eliminate business profits and stifle incentive. It will be no easy task to devise such taxes. A national tax study is one of the most urgent pieces of unfinished national business on our agenda and needs to be undertaken at once.

Of great importance will be the policies adopted with reference to disposal of surplus industrial and housing facilities. That is a fairly big problem, too, but it also ought to be a manageable one. Some of the new facilities will be needed for continued production of war materials on the appropriate peacetime scale. Such new and expanded industries as aviation and house prefabrication will be readily converted to peacetime users. Al-

ready airplanes are carrying freight to points all over the world, one indication of potential commercial expansion.

Post-war demands for construction

Following victory, there will be immediate demands for all kinds of goods and services resulting from the curtailments and postponements of the war period. The magnitude of such pent-up demands will naturally depend upon the duration of the period of curtailment. In spite of taxes, there will be purchasing power, since the great mass of people in this country is now being forced to save or to invest in defense bonds that portion of its income which cannot at this time purchase non-existent goods.

It would be unrealistic for the building industry to ignore the probability of a substantial decline in volume after the peak of the war construction program is reached, perhaps sometime in 1943. But, I believe it is vitally necessary for us to appraise as best we can all the long-range possibilities of the situation, to see whether we are fighting for mere survival or for greater objectives and for the promise of great rewards. The dictators of the Axis powers have inspired their peoples, and particularly the younger generation, with glowing promises of a better world built out of the spoils of conquest. This country seeks no spoils of conquest, no domination of others by force, but its destiny requires that it assume leadership in a world that will provide broader opportunities for individuals and peoples than any that history has yet recorded.

If the post-war prosperity which I visualize as the possible—or rather the probable—result of victory becomes an actuality, the demand for construction, as measured in annual dollar volume, is likely to be greater than anything we ever had before. There will be a large accumulated demand for houses and commercial buildings and public improvements caused by current postponements. There will be new needs incidental to the expansion of our economic activities. Work will be resumed on our highways and parkways; in all likelihood slum redevelopment, a necessary and long-awaited program, will be undertaken in many of our large cities. Post-war planning-studies of Governmental and private agencies alike assign a major role to construction.

(continued on page 88)



COMMUNITY FACILITIES

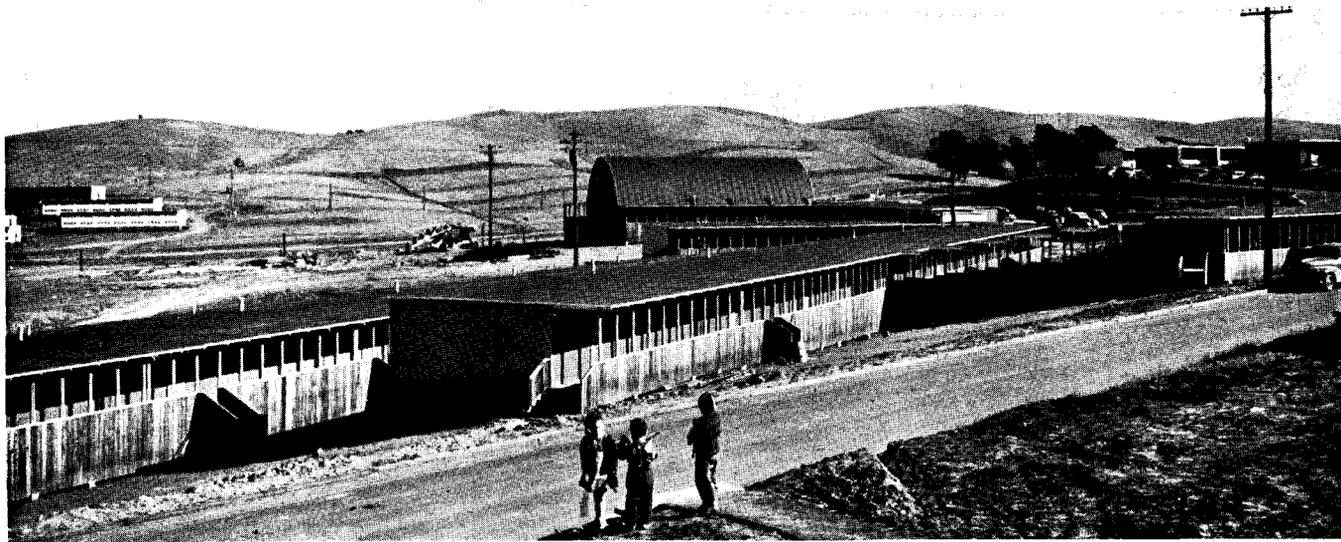


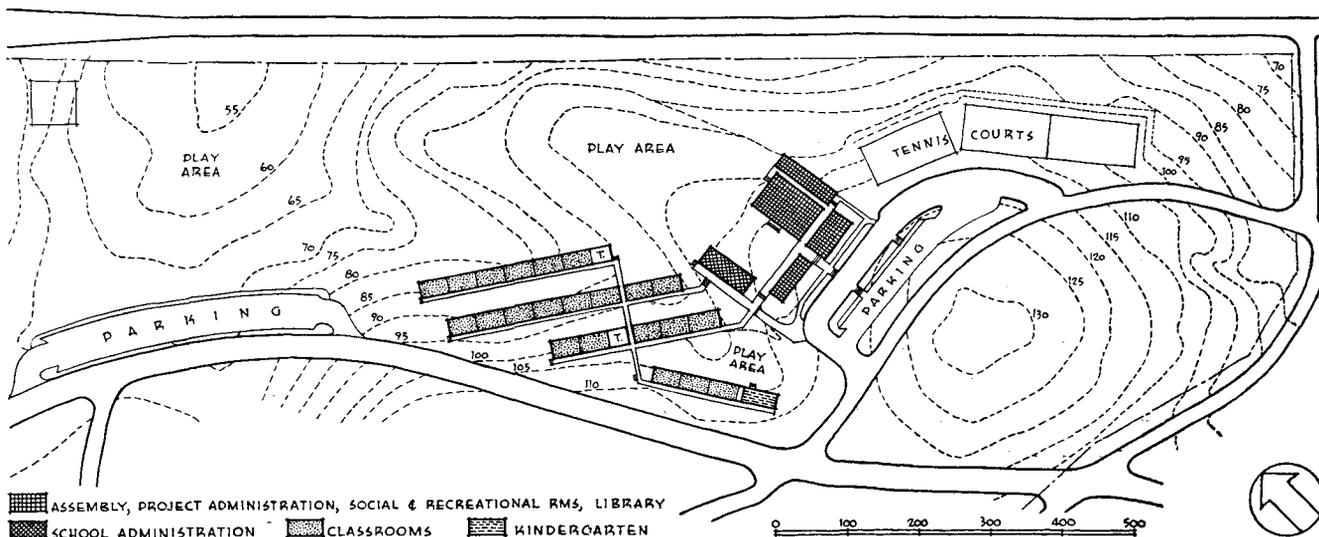
Photo by FWA

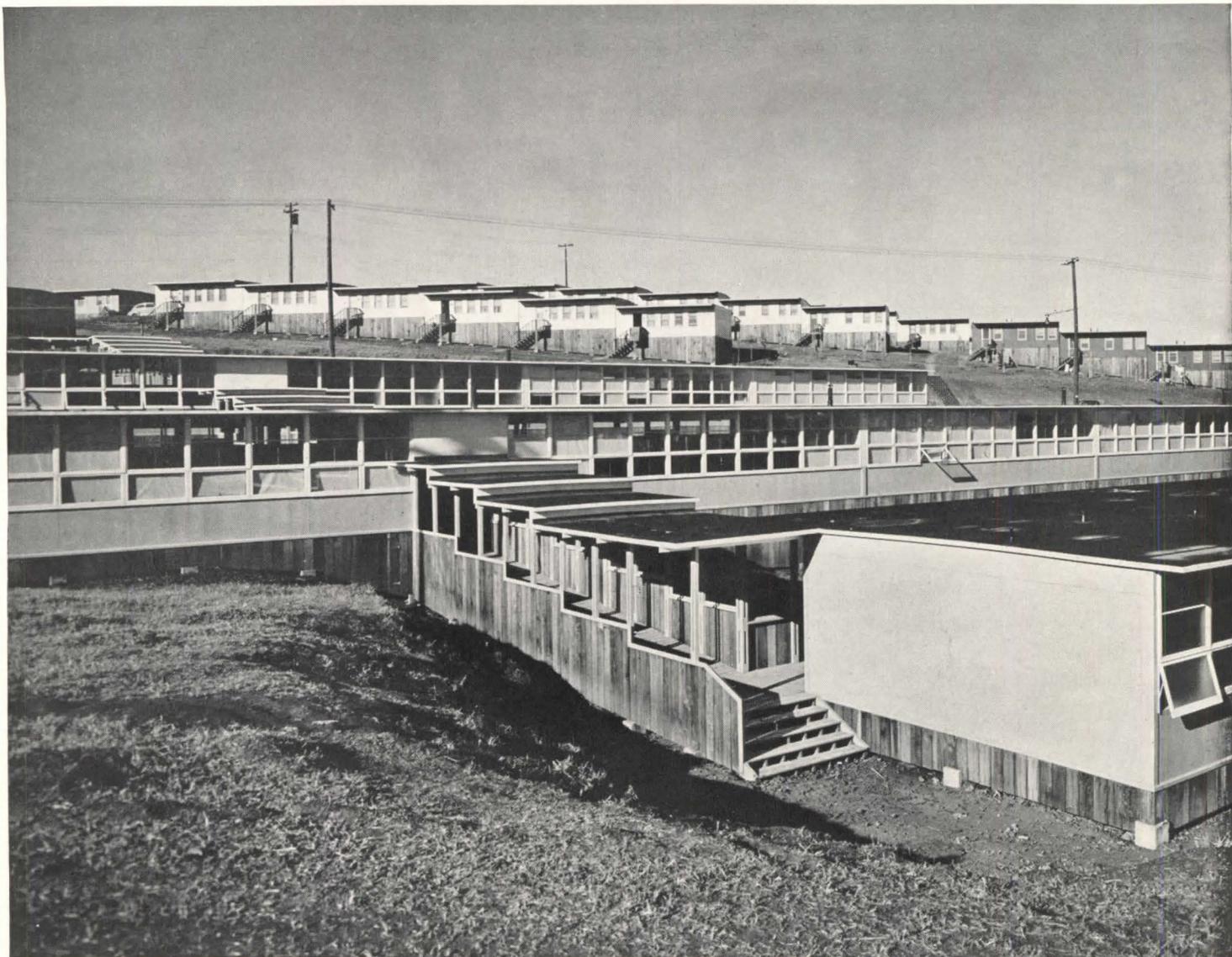
In the foreground are the rows of classroom units. The curved roof line of the auditorium appears in the background, center. Covered exterior corridors and passageways join all elements

SCHOOL

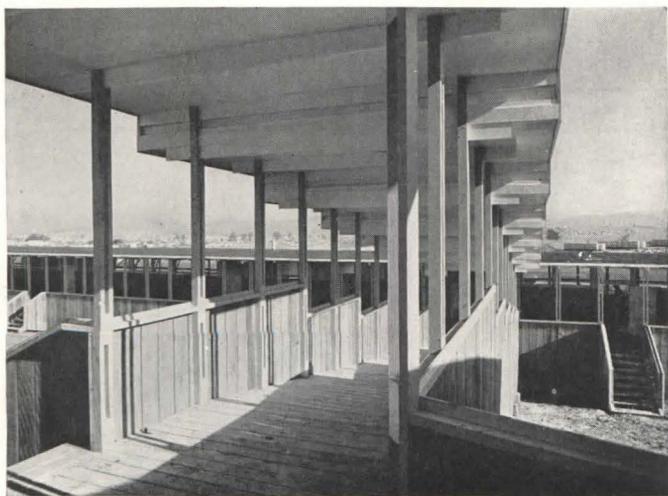
CARQUINEZ HEIGHTS SCHOOL (FWA), VALLEJO, CALIF. FRANKLIN & KUMP, ARCHITECTS. WILLIAM WILSON WURSTER, CONSULTANT ARCHITECT. Prefabricated * * * demountable * * * low in cost * * * constructed with a minimum of critical materials * * * this extraordinary school and community group is one of the most newsworthy design and structural performances yet produced by the emergency. Serving the 1,692 families of the adjoining war industry housing project, the 24 classrooms can care for 1,000 elementary school children. Construction time, 80 working days; cost including utilities, \$167,751.75.

A bold concept, the school group spreads out over a wide area. Sizable parking areas and play fields are an integral part of the layout. Note that kindergarten has its own play area

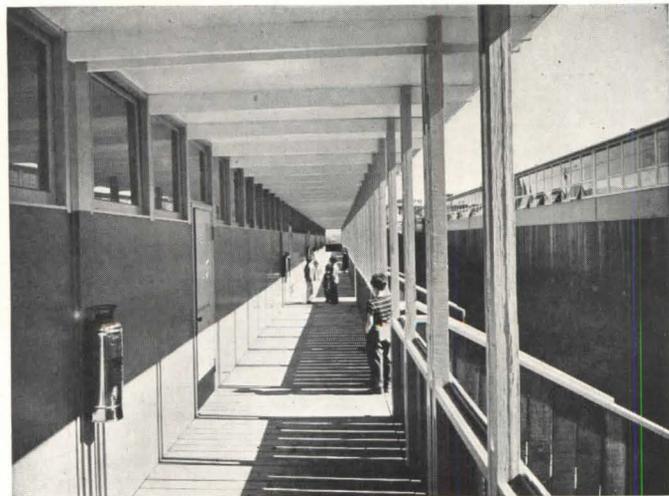




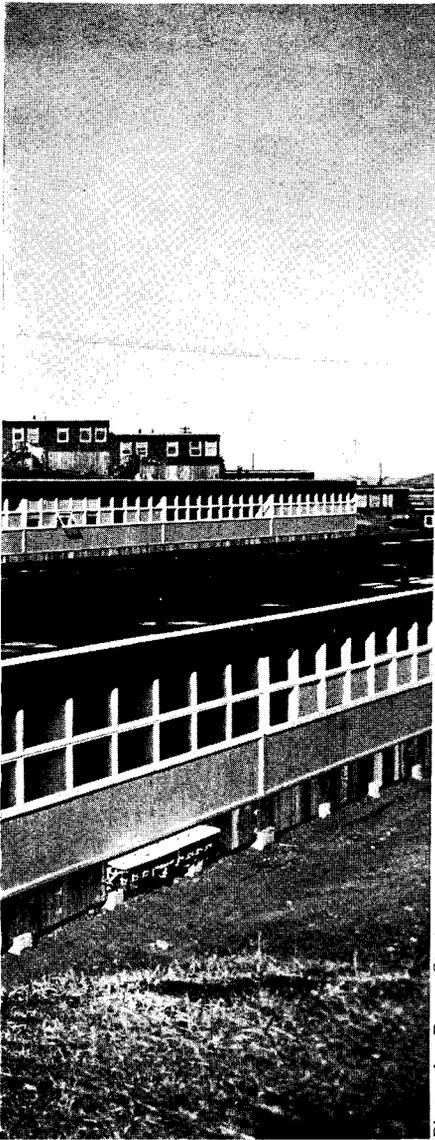
CLASSROOM BUILDINGS are oriented toward the north. Each room is a structurally independent unit; after the "duration" buildings may be moved as entire units or demounted and reassembled



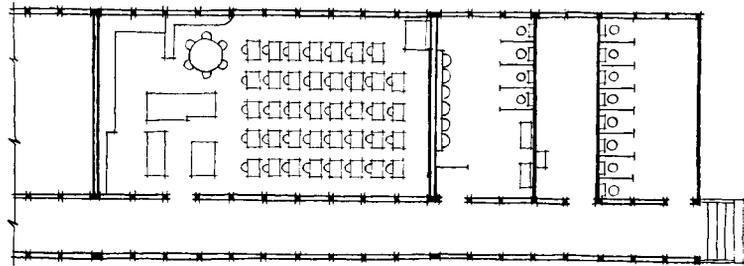
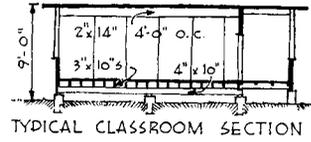
OUTSIDE CORRIDORS connect all units of the group. The corridor floors are made of prefabricated panels surfaced with slat flooring



SOUTH WALLS border exterior corridors. High windows, shielded from sun glare by roof overhang, provide bi-lateral room lighting



Photos by Roger Sturtevant



CLASSROOM UNITS

ALL BUILDINGS in the entire group are constructed of prefabricated plywood panels—floors, walls and roof—and are of demountable construction. For details of the system see the Building Types section, where a similar group by the same architects and using the same detailing is illustrated. The 24 classrooms provide for carrying on a modern, elementary school teaching program in activity-type classrooms. Age groups range from the kindergarten to the sixth grade. The rooms are 22 ft. clear width inside, spanned by 2- by 16-in. joists, 4 ft. on centers. The clear ceiling height is 9 ft. All of the wall, floor and roof panels were prefabricated in the shop 40 miles from the job site. All structural joists and girders were precut to proper size. The building process at the site, therefore, was essentially one of assembly. The prefabricated work was handled in the shop in nine days.

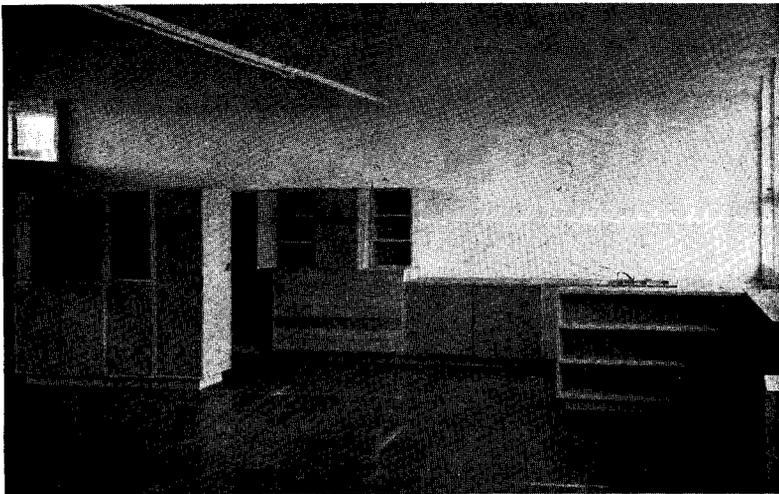
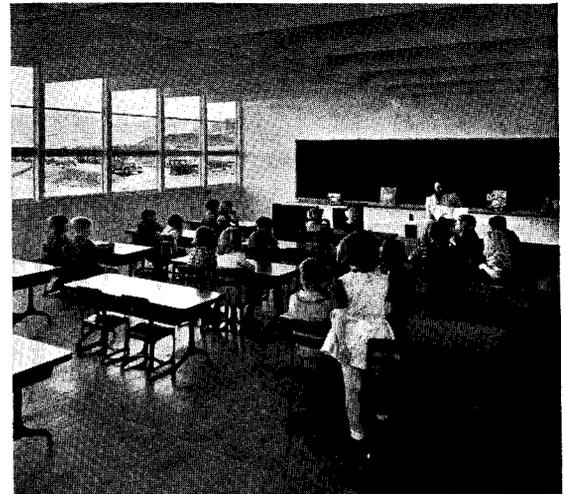


Photo by Miles Berné

UNIT-TYPE INTERCHANGEABLE CABINETS provide diversified storage space. Their placement, which defines the activity areas, may be changed at will



WINDOW WALL to the north plus high, shaded southern windows produce an even, diffused light throughout

AUDITORIUM and PROJECT CENTER

Prefabricated and demountable like all other units of the Carquinez Heights group, the auditorium and administration buildings are designed to serve the community as well as the school. Arrangement of the units facilitates this multiple use. In addition to the functions of the school educational program, the buildings house adult education classes, PTA meetings, movies, social and athletic events.

The auditorium, semi-circular in cross section, is spanned by timber arch-rib trusses and roofed with prefabricated plywood panels, which are surfaced with mineral-surfaced roll roofing. Both interior and exterior surfaces of wall panels are painted. Natural lighting comes from large windows in each end wall. The ceiling height permits the building's use as either gymnasium or auditorium.

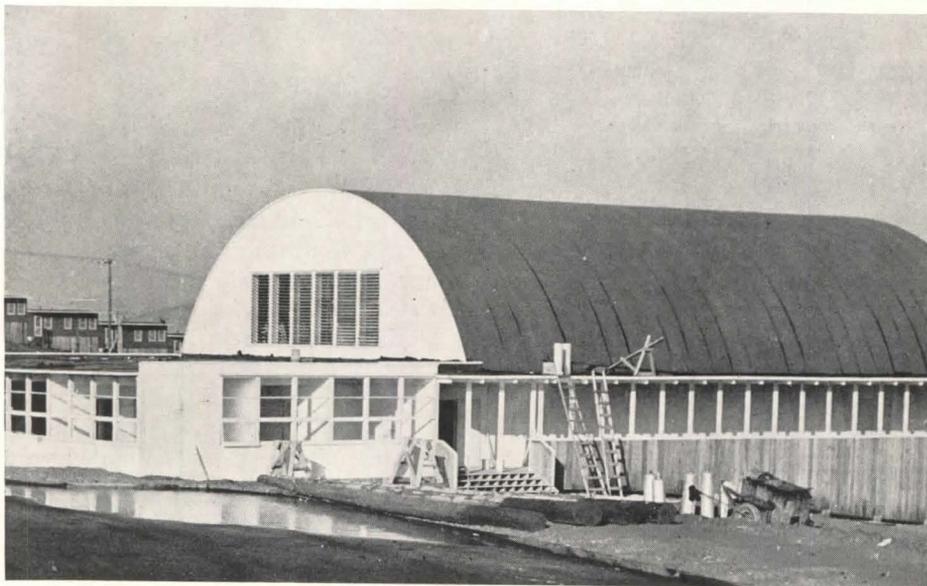
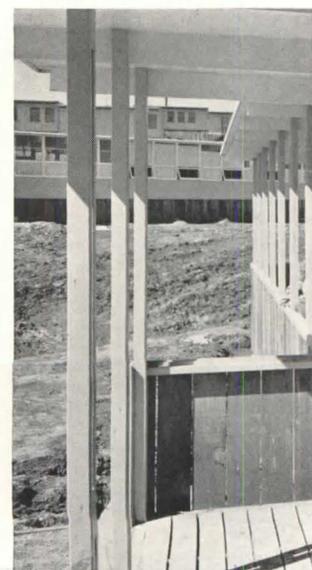
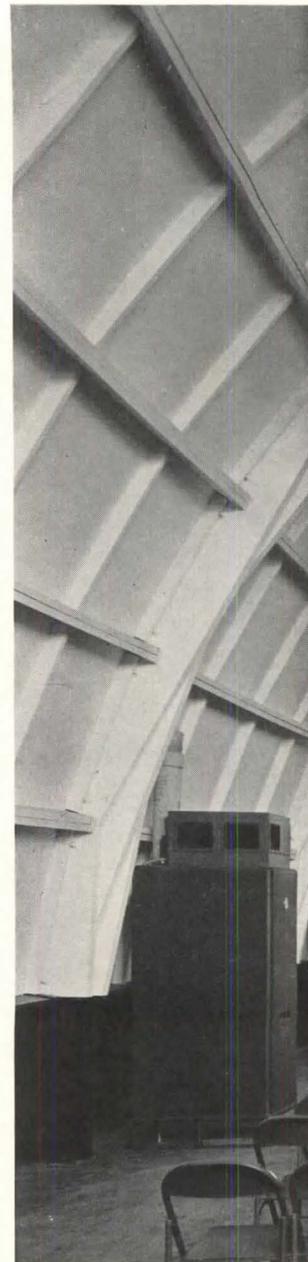


Photo by FWA

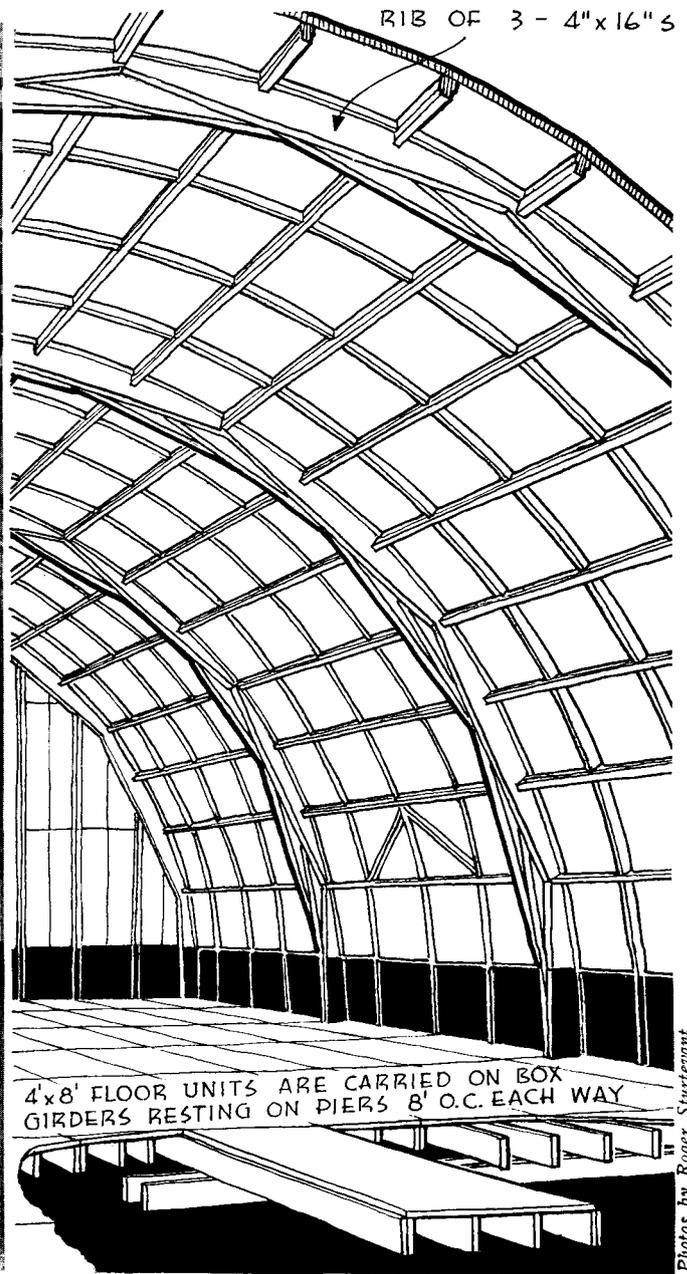
AUDITORIUM GROUP. Outside louvered jalousie controls window light from open to blackout



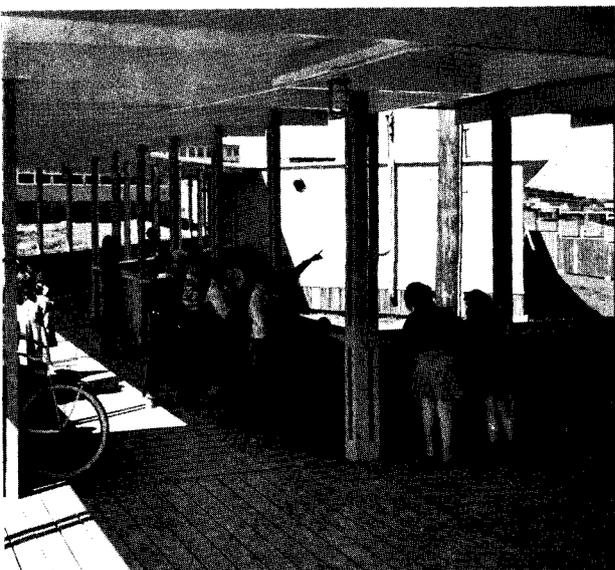
EXTERIOR WALLS are painted; the roof is mineral-surfaced composition roofing rolls



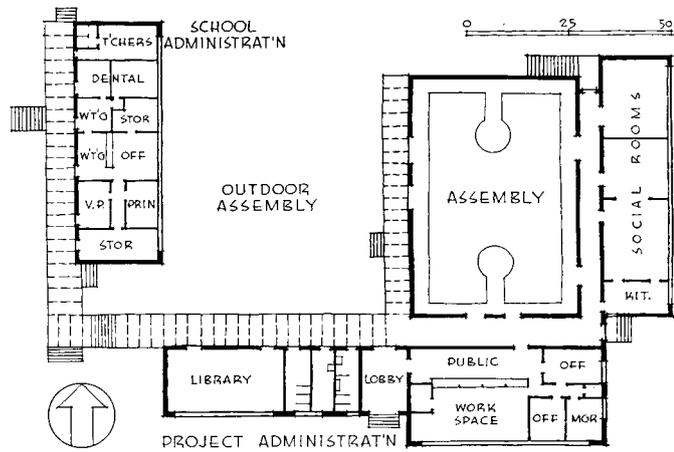
OUTDOOR CORRIDOR



Photos by Roger Sturtevant



leading from administration building to classroom units



THE PLAN. For ease of control and supervision, the school administration office is centrally located between classrooms and auditorium

SIX USO BUILDINGS Typical of the service recreation centers being built all over the country, the six shown here range from standard types of frame construction to remodeled buildings to new structures that were planned to meet local conditions.



Brownwood, Texas



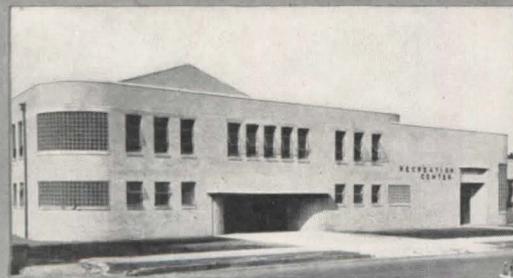
La Jolla, California



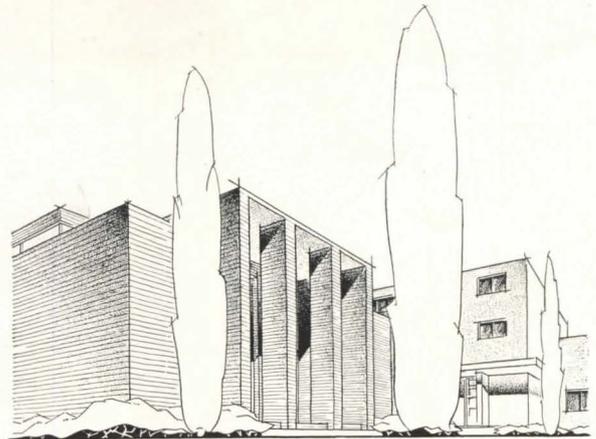
Edgewood, Maryland



Spring Lake, North Carolina



Anniston, Alabama

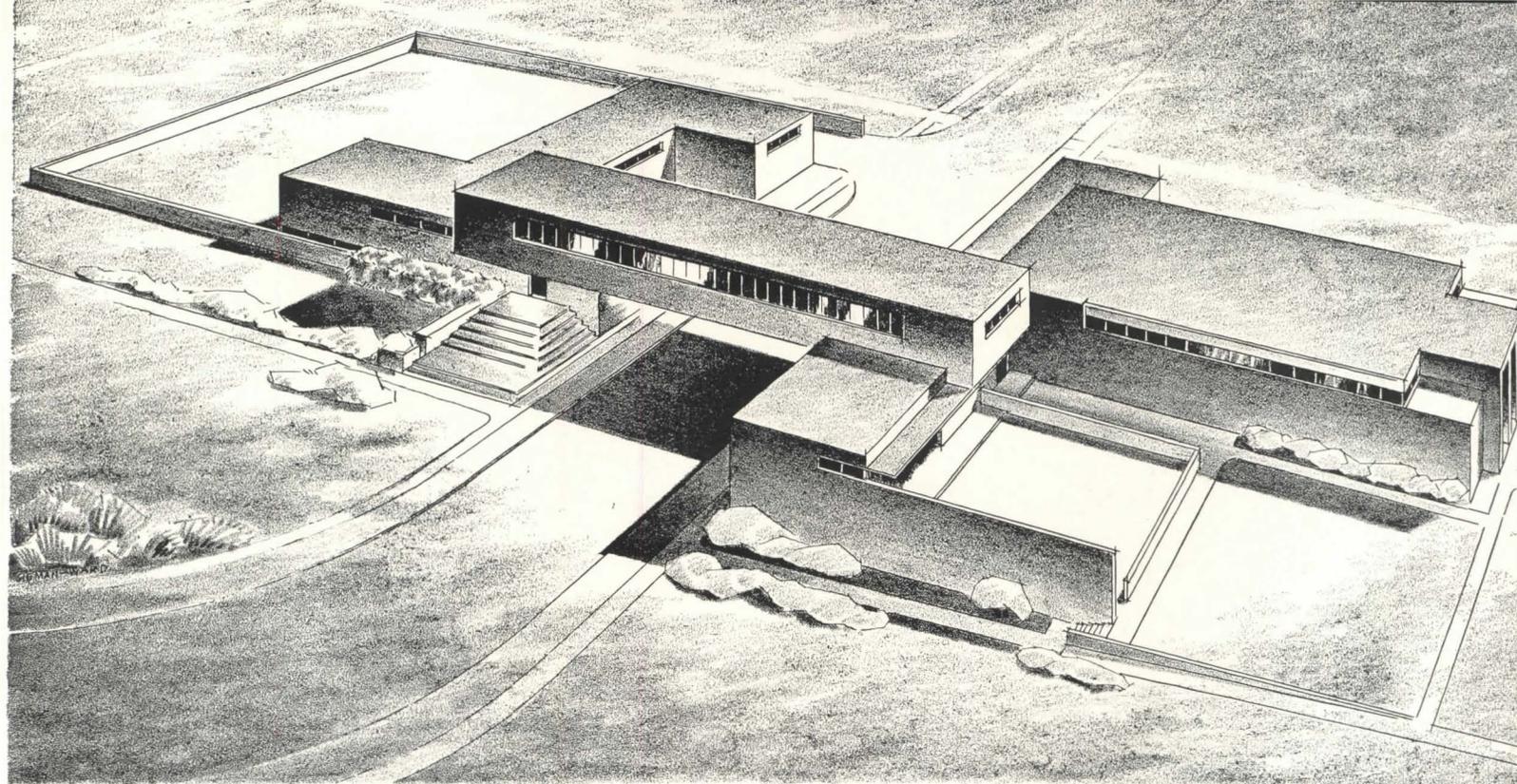


ASSOCIATED HOUSING ARCHITECTS OF HOUSTON, TEXAS.
James Ruskin Bailey; Cameron Fairchild; Joseph Finger, Inc.; Hedrick & Lindsley, Inc.; Claude E. Hooton; MacKie & Kamrath; H. Edward Maddox, Jr.; Hiram A. Salisbury; R. G. Schneider & Co., Inc.; Bailey A. Swenson; Eugene Werlin, Coordinating Architect; C. A. Johnson. Design Committee: MacKie & Kamrath; Claude E. Hooton; Eugene Werlin. Executive Committee: Hiram A. Salisbury; Joseph Finger; H. Edward Maddox, Jr.

PROJECT CENTER

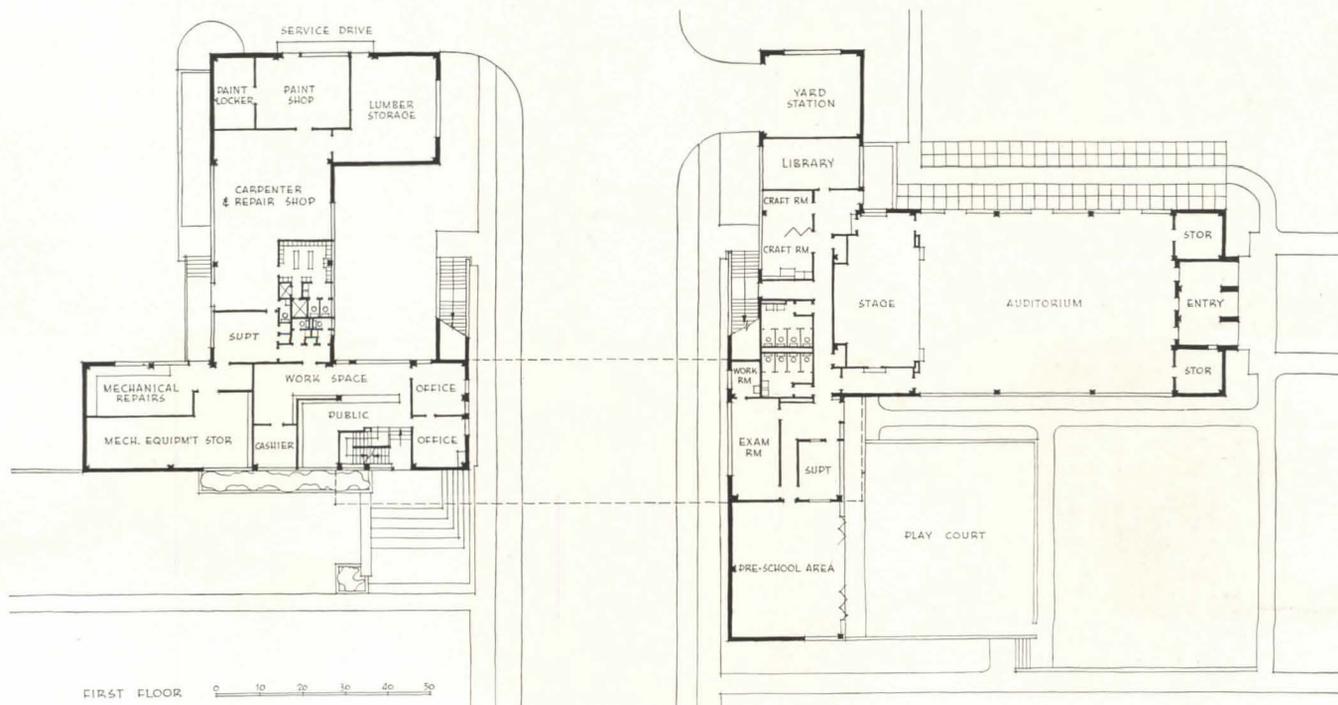
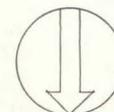
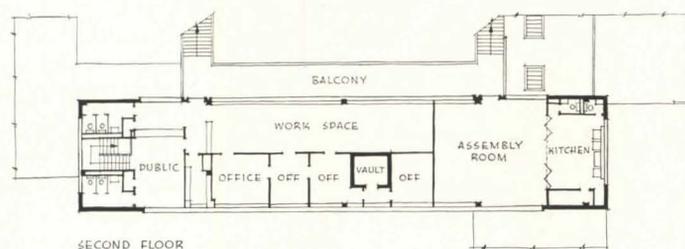
PLANNED TO SERVE San Felipe Courts, 1,000-unit low-cost housing project at Houston, Texas (ARCHITECTURAL RECORD, April, 1942), this remarkable scheme for a community center bridges the single street that cuts across the project site. Another unique aspect of the building is that the plan includes the business and administrative offices not only for the San Felipe project but for all of Houston's housing projects. Construction has currently been suspended in order to conserve essential materials; because the design has so many features of special interest, however, and because it contains facilities for almost every type of activity, we include it in this study.

In addition to the administration area and public rooms, space is provided for rental offices, storage space for tenants and a series of project maintenance shops—carpentry, painting and mechanical repair. Among the social facilities are the large auditorium with its own exterior entrance, a large assembly room, craft rooms, a clinic and a pre-school room. The auditorium with its stage is designed to house large gatherings, such as community discussions, public lectures, dramatics, dances or other community entertainment. The assembly room on the second floor was planned as a home demonstration workroom and as a meeting place for scout troops. Note the folding wall between the assembly room and its kitchen, which gives the area use flexibility. The clinic (adjoining the pre-school room on the first floor) is planned as a public health center. Also provided is a project library and reading room. The pre-school room and adjacent play court are for the care of children who are left there by working parents.



BUILDING

THE PLAN. Maintenance and business office areas occupy the eastern portion of the first floor. Serving the repair shops is a trucking dock with access drive from the street. In the right-hand area are rooms for community use. Outside stairways and a balcony allow safe foot passage from one part of the project to the other



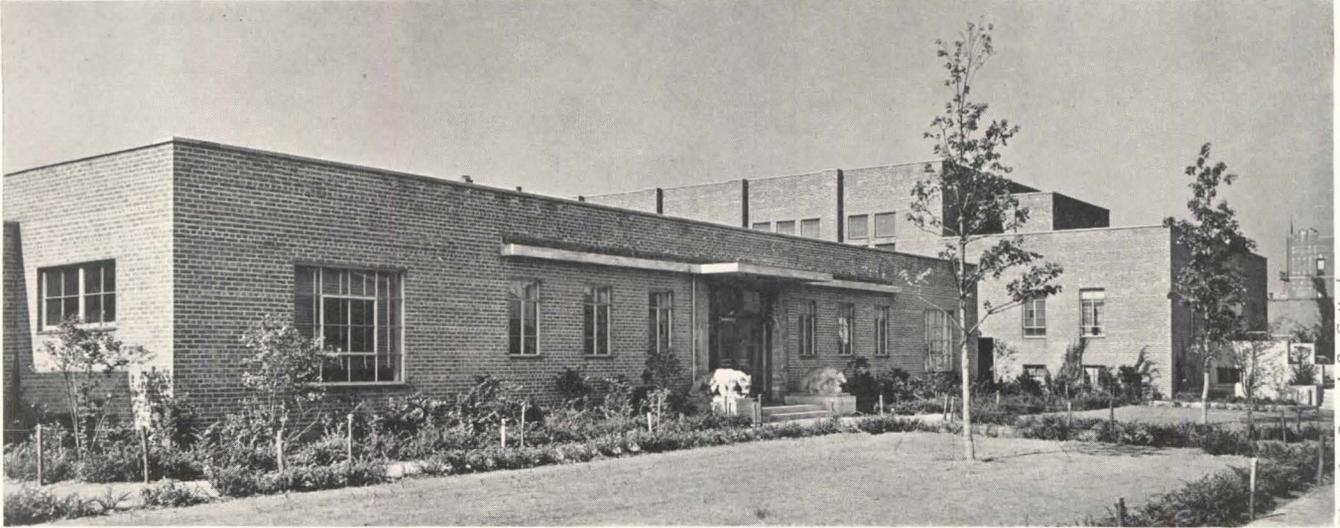
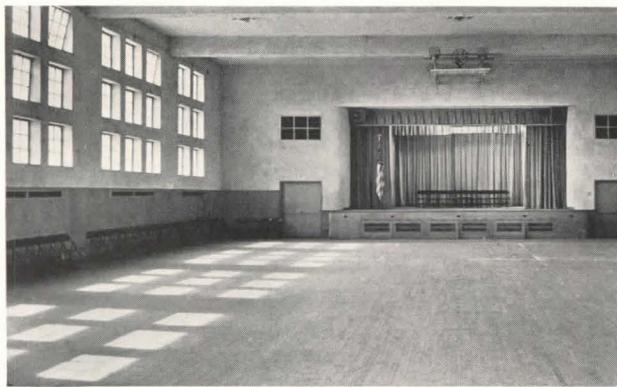


Photo by Samuel S. Gottscho

RED HOOK CENTER. Nursery at left; assembly hall, right



ASSEMBLY HALL. Work- and classrooms are in the basement



THE AUDITORIUM. Floor is wood; the dado, plywood



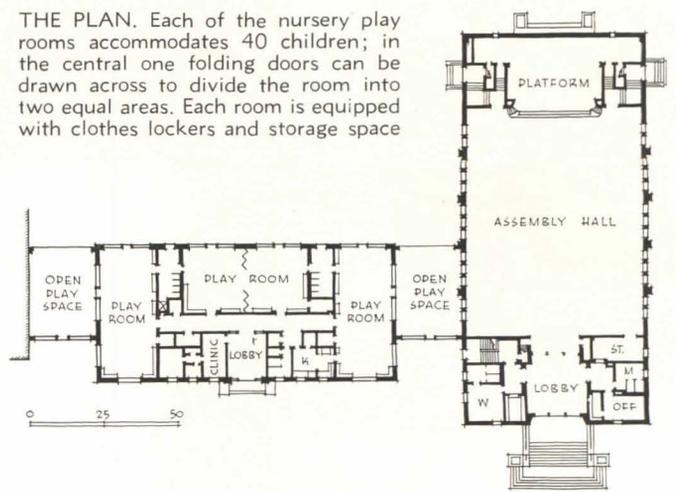
CLASSROOM. One of the project activities in session

THREE COMMUNITY

RED HOOK HOUSES, BROOKLYN, N. Y.

COMMUNITY AND NURSERY BUILDINGS. RED HOOK PROJECT ASSOCIATED ARCHITECTS: ALFRED EASTON POOR, CHIEF ARCHITECT; W. F. DOMINICK, W. I. HOHAUSER, E. D. LITCHFIELD, W. T. McCARTHY, J. MOSCOWITZ, E. J. ROBIN. Built for a large New York City housing project, this pair of buildings—and particularly the nursery—merits careful study by those charged with providing community facilities for the larger wartime housing projects. The assembly hall has seating space for 500 persons; in the basement of this building are various work and classrooms for educational and craft work. The nursery unit is an entirely separate building, joined only by the wall of one of the outdoor play areas. Spaces are provided for both activity and clinical work. Note that doors to the outside occur in each playroom.

THE PLAN. Each of the nursery play rooms accommodates 40 children; in the central one folding doors can be drawn across to divide the room into two equal areas. Each room is equipped with clothes lockers and storage space



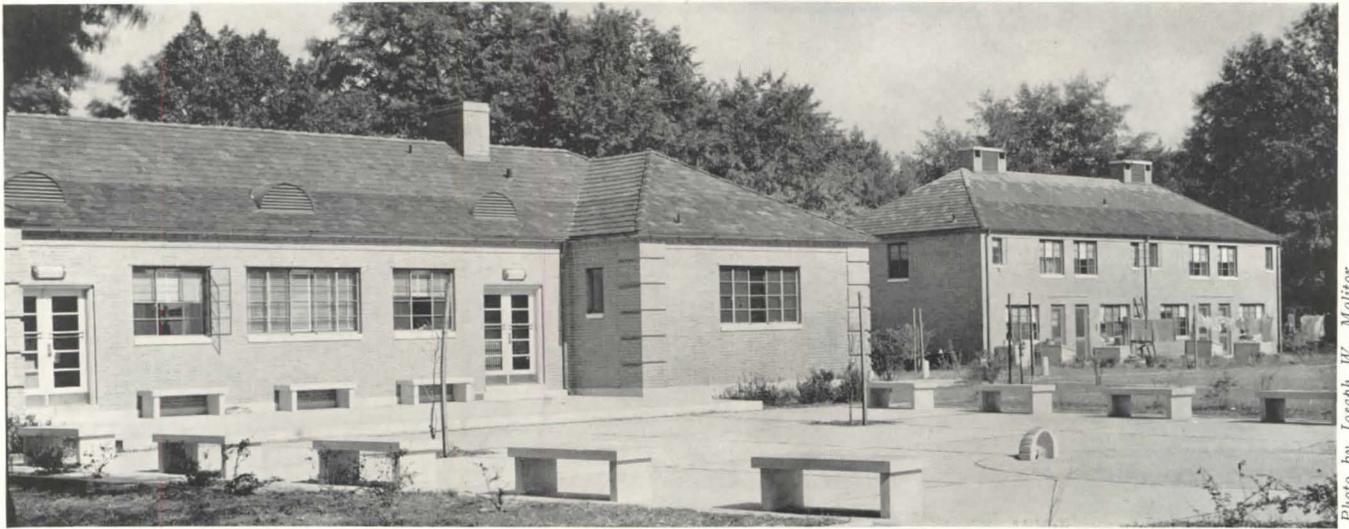


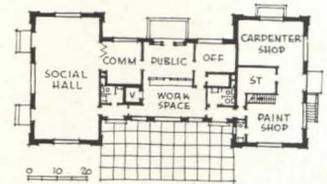
Photo by Joseph W. Molitor

SIMON BRIGHT COMMUNITY HOUSE. Terrace front

BUILDINGS

SIMON BRIGHT HOMES, KINSTON, NORTH CAROLINA

COMMUNITY HOUSE. THE LATE A. MITCHELL WOOTEN, ARCHITECT; JOHN J. ROWLAND, ASSOCIATE ARCHITECT. Situated beside a community playground area, this center combines the usual utility, recreational and educational functions. In actual operation, it appears that placement of the work space immediately next to the terrace and playground is not altogether happy, the conflict arising between desirable quiet for the former area and the customary absence of it in the latter.



THE PLAN. Entrance from the street front leads directly to either business offices or social rooms; rear—or terrace—entrances give access to the service shops as well. The latter are also served by a side or loading-platform entrance. The terrace is of concrete marked with square scoring

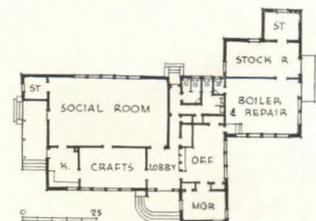


Waters & Hainlin Studios

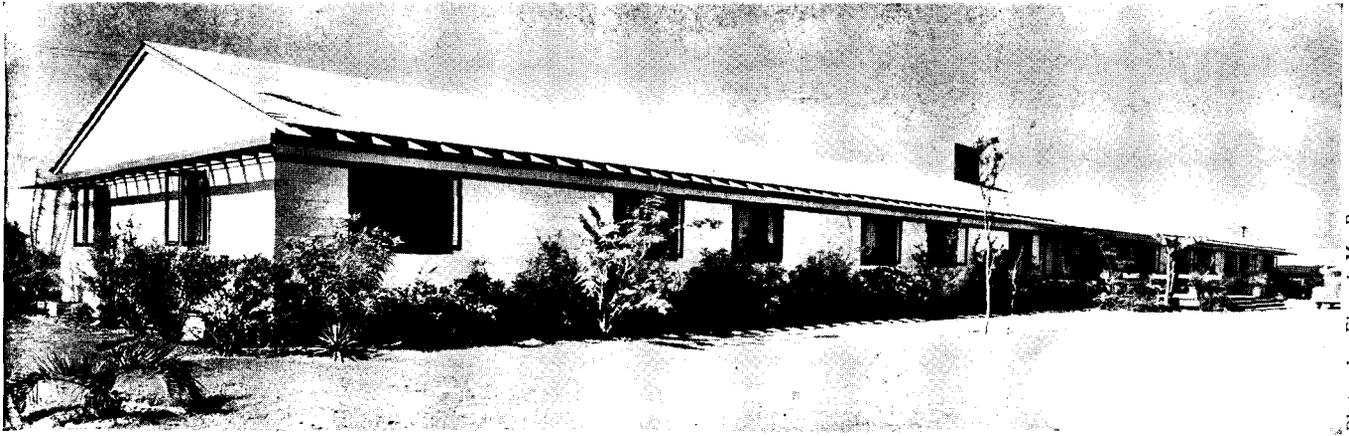
WOODSTOCK ADMINISTRATION BUILDING. End porch faces south

WOODSTOCK, ALAMEDA, CALIFORNIA

ADMINISTRATION BUILDING, ANDREW T. HASS, ARCHITECT; CARL I. WARNECKE, ASSOCIATE ARCHITECT. This simple frame structure houses the community rooms, offices and project-maintenance shops for a 200-family West Coast war housing project (see ARCHITECTURAL RECORD, April, 1942). Built on poured-in-place concrete foundations, the building is finished in redwood rustic boards over building paper. The wood shingle roof is left to weather naturally; walls are painted.

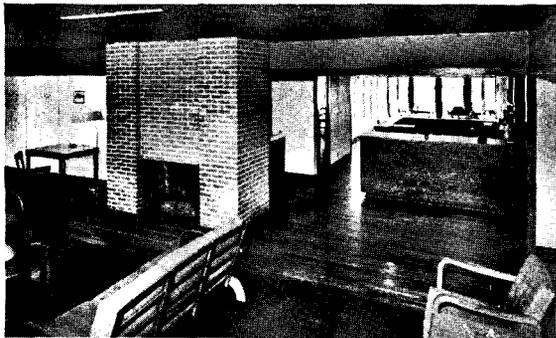


THE PLAN. Separation of the three use areas—social, administrative and service—is clearly defined. Directly off the stock room and repair shop is a concrete trucking platform bordering the street curb. In the public-use area, the kitchen serves directly both the large social and smaller crafts room



Photos by Erwood M. Payne

Construction time: three weeks. Facilitated by simple detailing and materials



LOBBY AND DESK. Walls and ceilings are of fiberboard

HOTEL

HOTEL FOR A WAR-INDUSTRY COMMUNITY, FREEPORT, TEXAS. ALDEN B. DOW, ARCHITECT. A community facility that is frequently a serious lack in mushrooming war-production areas is a modern, low-cost transient hotel such as the one shown here. In this case, speed of construction was of the essence, and the building was actually completed in three weeks' time. In structure, the building consists of poured concrete-ring foundations and piers, supporting a termite-proofed wood platform. Walls are of standard stud construction, diagonally sheathed and surfaced with asbestos siding; windows are wood casements fitted with storm shutters. The roofing is of white asbestos shingles laid over two plies 15# felt and matched roof boards on wood rafters. All interior walls and ceilings are finished with fiberboard, with V joints. Walls and ceilings of bathrooms are surfaced with a recessed-joint wall board. Finish floors of the hotel are red oak, except in kitchens and baths where linoleum was used.



DINING ROOM. Full length windows on three walls



KITCHEN. The equipment is all electric

THE PLAN. Symmetrically arranged around the lobby are the two bedroom wings. Provision of closets with a minimum of construction is notable

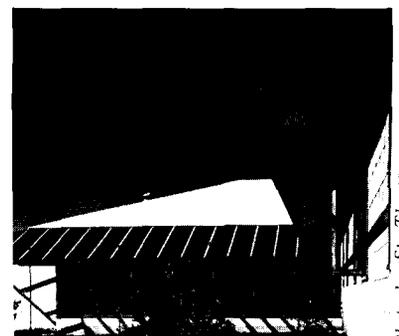
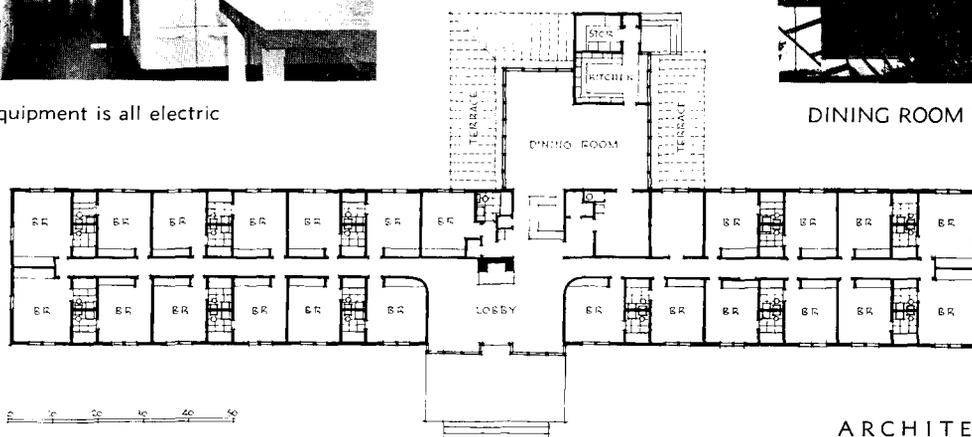


Photo by St. Thomas

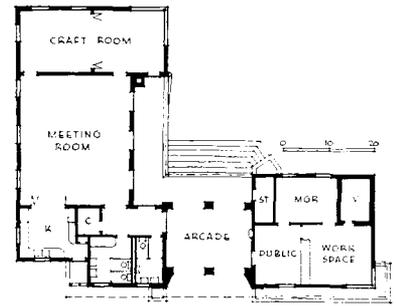
DINING ROOM WING. Roof detail





Photos by Ernst Kasowitz

Sand Point Housing Project Community Building

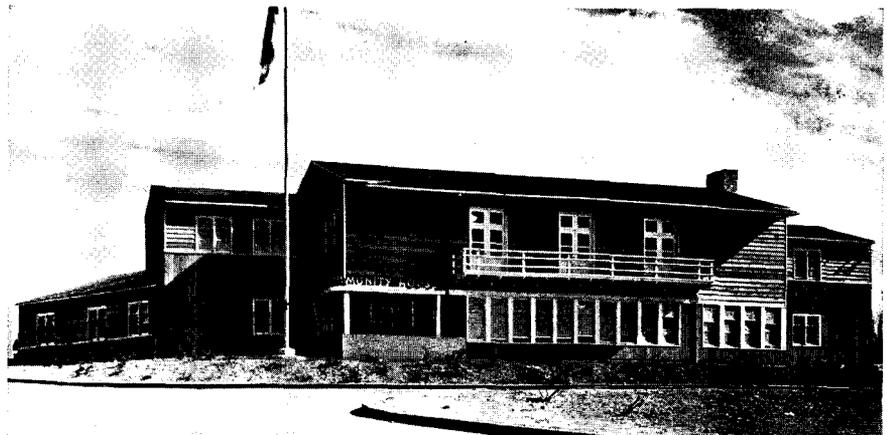


THE PLAN. In the basement, largely above grade under the meeting room wing, are the heater room, stock and supply rooms and repair shop

TWO PROJECT CENTERS

ABOVE: COMMUNITY BUILDING, SAND POINT HOMES, SEATTLE, WASH. GRAHAM & PRITECA, ARCHITECTS.

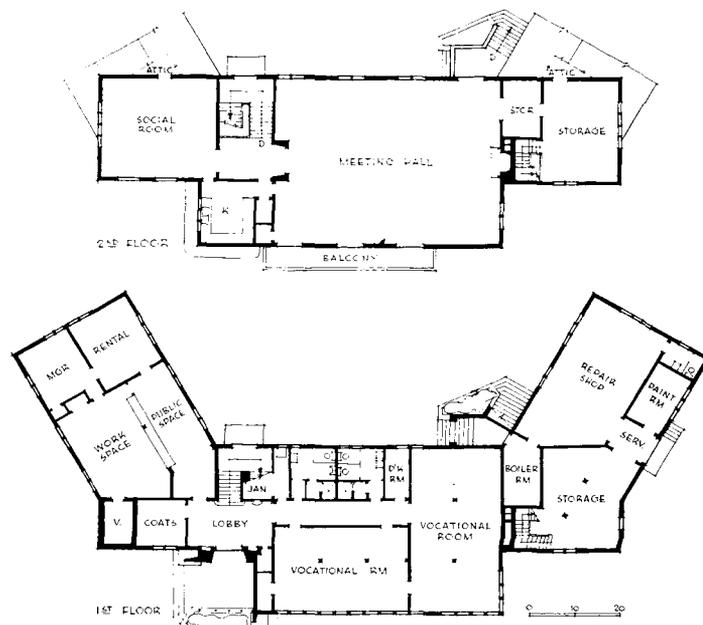
This informal structure is the headquarters and social center for the 150-family war housing project shown in the April RECORD. Business offices and public-use rooms are separated by an arcade, in which community mail-boxes are located. Construction is of frame with brick piers and details. Wall shingles are laid 10 in. to the weather; gable ends are surfaced with cedar boards; the sash are of steel.



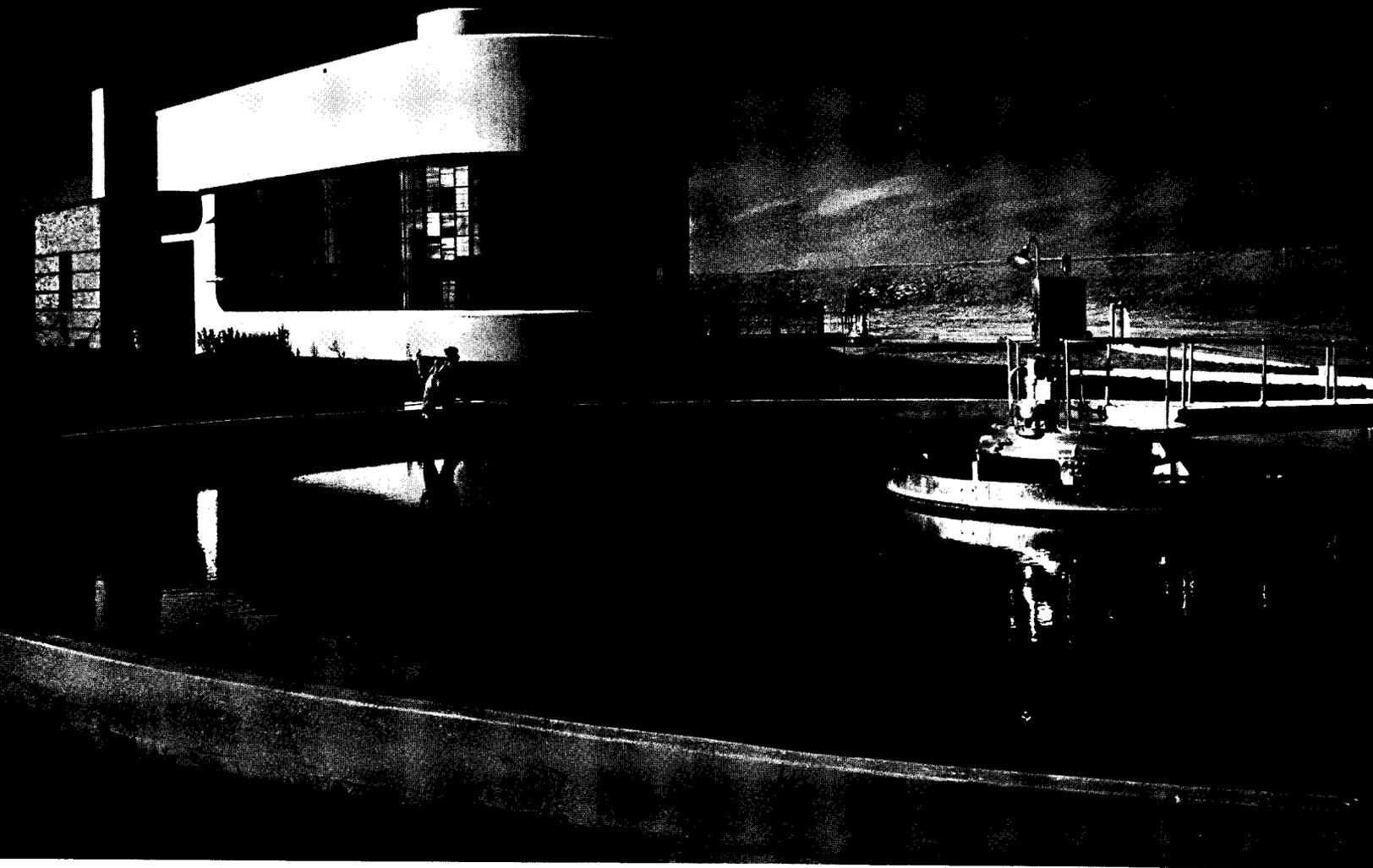
Meeting room windows and balcony face southwest

AT RIGHT: EASTPARK COMMUNITY BUILDING, BREMERTON, WASH. NARAMORE, GRAINGER & JOHANSON, ARCHITECTS.

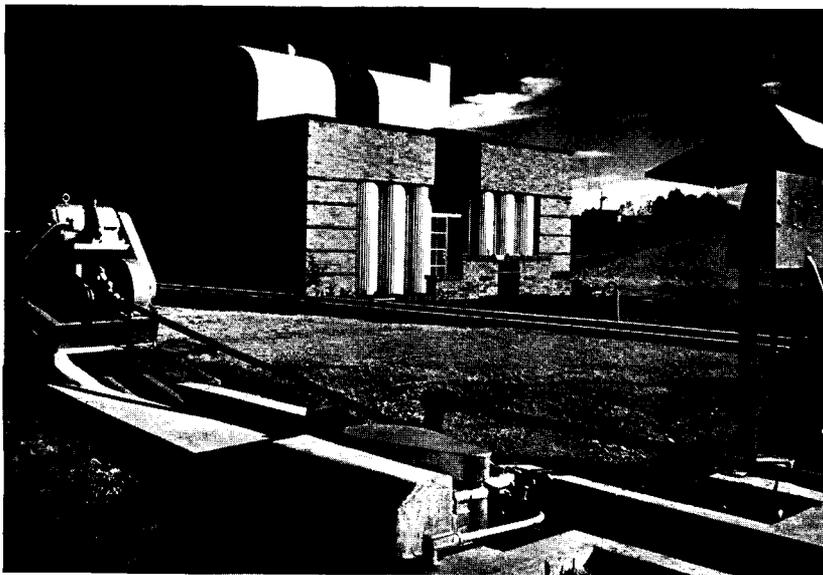
Another newsworthy community building for a war housing project in the Northwest, this interesting structure serves a community of 260 permanent and 300 demountable units. Large vocational rooms, the business offices and community service shops occupy the first floor; above, where a widespread view is gained, is the meeting hall and adjacent storage rooms and kitchen. The building exterior is finished with light-gray cedar boards and shingles.



THE PLAN. The site slopes up to the rear, where exterior access to the meeting room is provided by an outside stairway. Note also stair connection between the first and second floor storage rooms

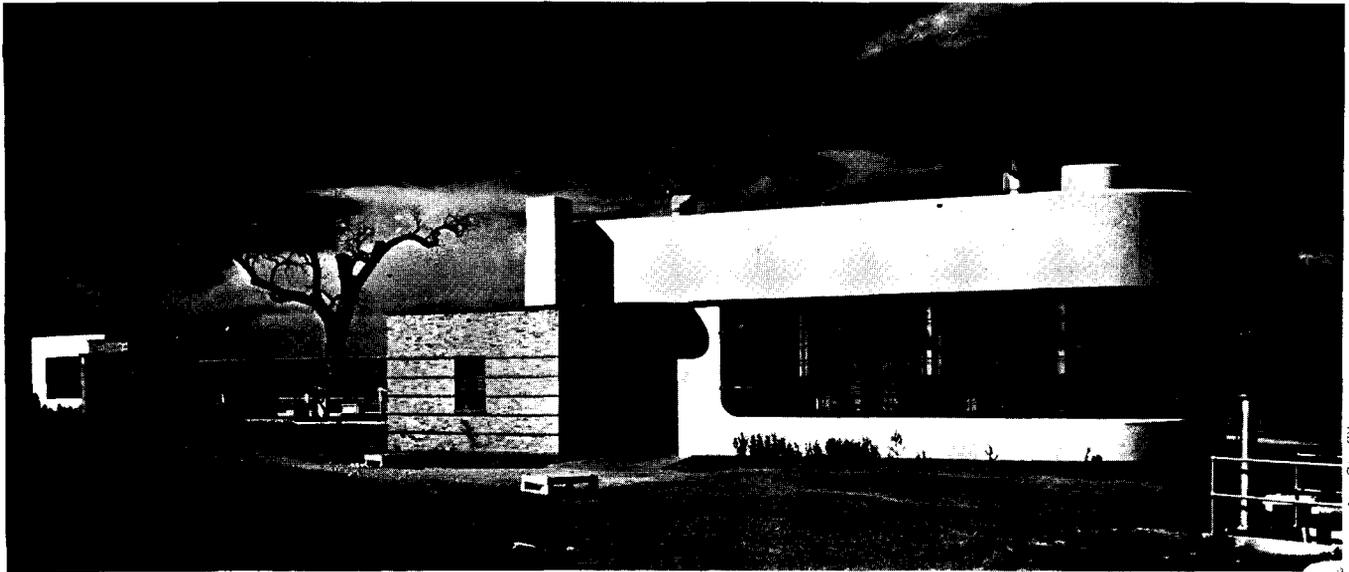


SEWAGE TREATMENT PLANT



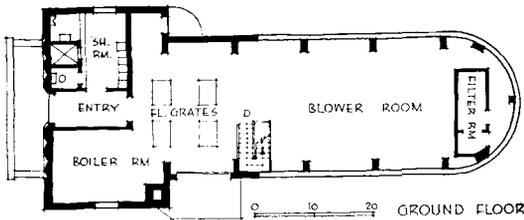
Terrace and entrance to blower building

CITY OF AUSTIN, TEXAS, SEWAGE TREATMENT PLANT. CITY ENGINEERING DEPARTMENT. L. C. PAGE, CONSULTING ENGINEER. A municipal sewage treatment plant involves highly specialized technical processes with which relatively few building designers are familiar. As a result, all too frequently the structures that are built to house these facilities have little to recommend them except insofar as they keep out the weather. In the case of the Austin plant, however, exceptional study has been made of the needs which these structures are designed to serve; and vital, functional architectural forms have arisen. Now, when new communities are being built to implement the war and old communities must revamp long-range plans, such a plant has special interest.

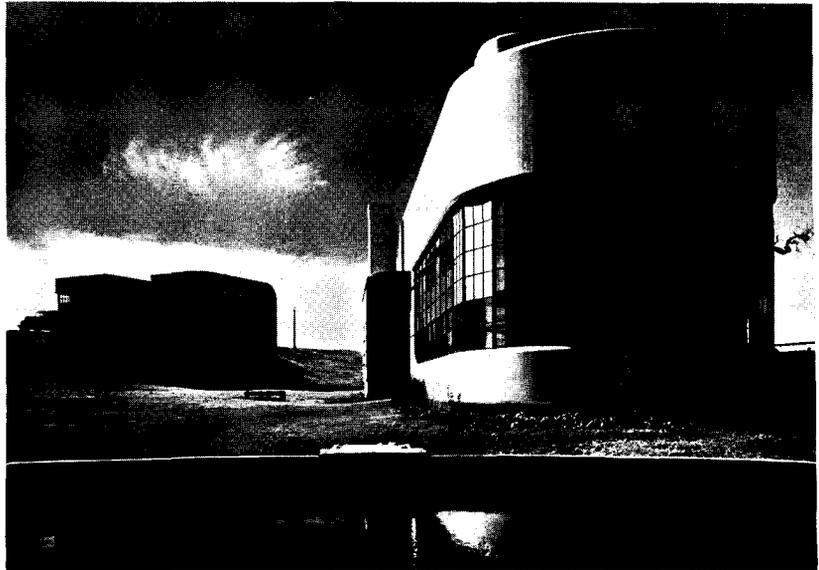


Photos by St. Thomas

A window wall surrounds the machine room of the blower building



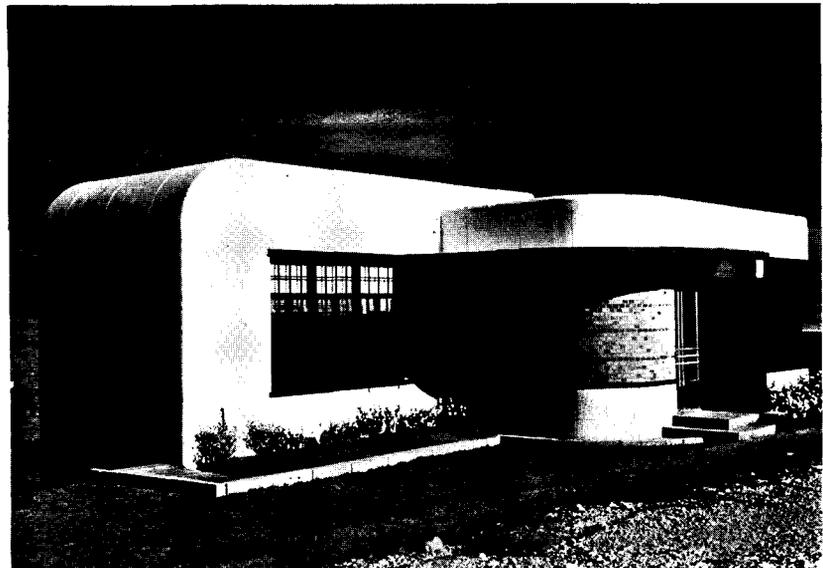
BLOWER BUILDING PLAN. This central structure houses the pumps, air compressors and measuring and recording devices



Office-laboratory building at left; blower building at right

THE TREATMENT PLANT, employing the activated sludge process of clarification, consists of a number of tanks, a blower building and an office and laboratory building. The latter two units are shown on these pages.

Upon entering the plant, sewage flows through a venturi meter, where it is measured, and thence to a bar screen where rags, wood, etc., are removed. From here it goes through a detritor for removal of sand; then travels into a primary clarifier, remaining for about two hours, during which the heavier settleable solids are collected and pumped to primary sludge tanks. The partially clarified sewage now goes to aeration tanks, where, during a ten-hour period, air is blown through it. This aerated sewage flows to the final clarifier tanks for further processing. After six to eight weeks of treatment, the sludge is pumped onto sand beds for drying. The dried sludge is then ground and sold as fertilizer; gas collected from the sludge tanks is used for plant-heating purposes.

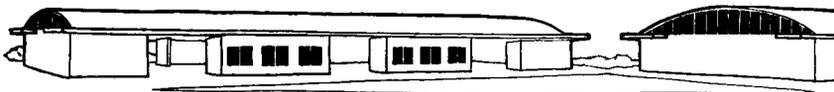
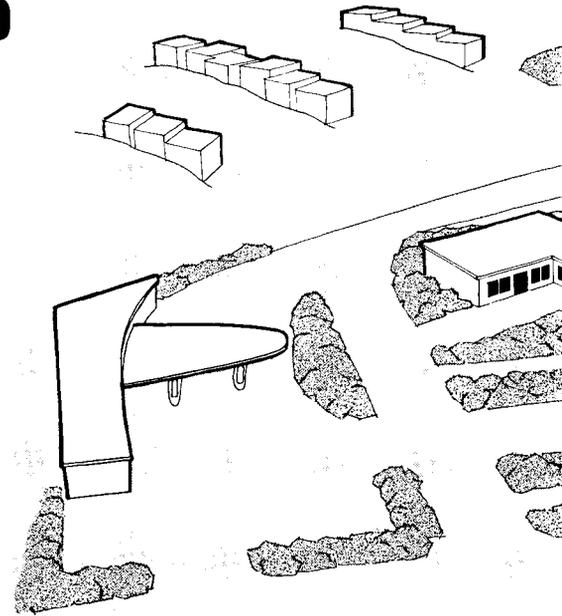


Office and laboratory building detail

TWO SHOPPING CENTERS

1. VALLEJO, CALIFORNIA

PROPOSED COMMERCIAL DEVELOPMENT, CARQUINEZ HEIGHTS HOUSING PROJECT. FRANCIS JOSEPH McCARTHY, ARCHITECT. Planned to service a large West Coast war housing project (see elementary school, pages 47-51), this scheme suggests a number of thought-provoking departures from standard practice. Auto traffic is kept entirely outside the shopping area; stores that are most likely to remain open late—or all night—are grouped around the theater, thus concentrating the night-lighted (and inviting) area in one spot. The small store units step up a slope, the offset arrangement permitting use of the side of the units for sign space. As the Government lease on the property extends for only five years, demountable construction is basic to the buildings' design.



MARKET



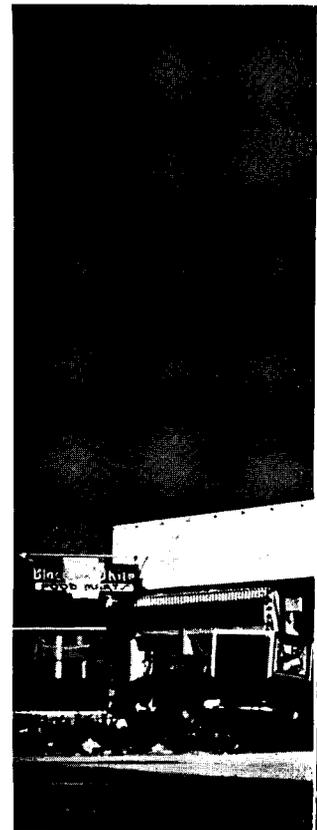
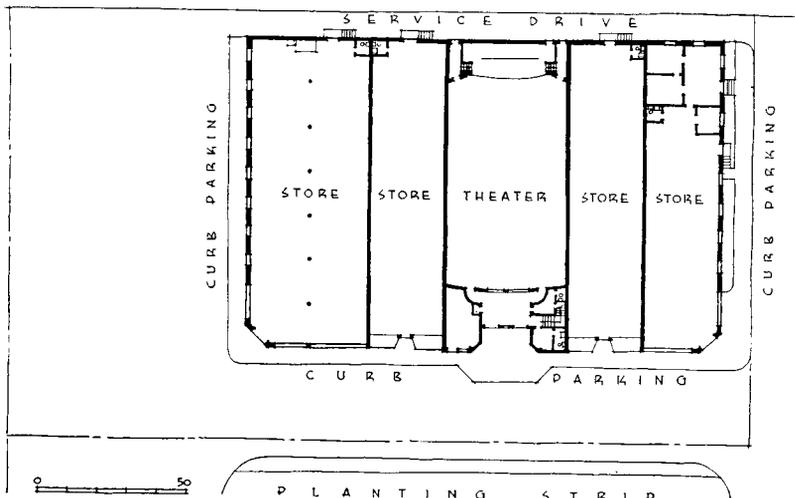
SHOP GROUP

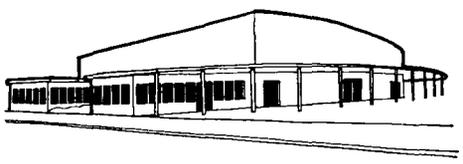
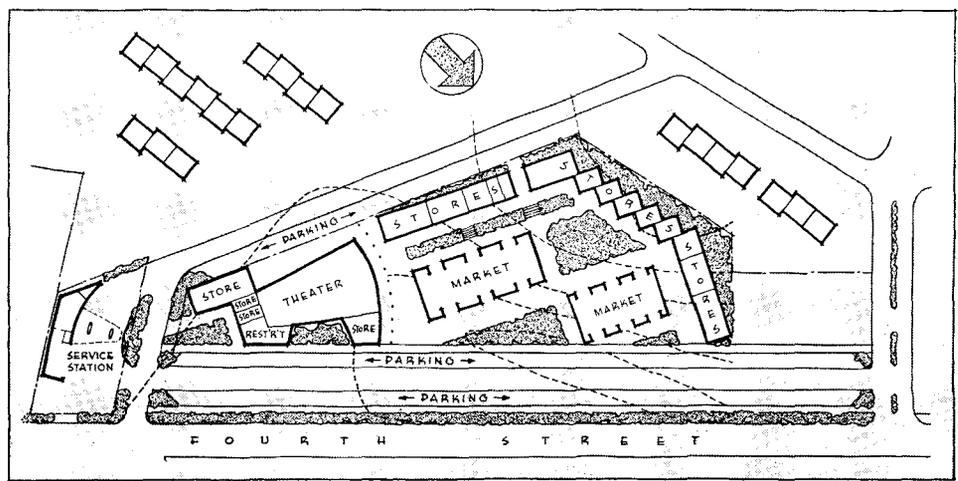
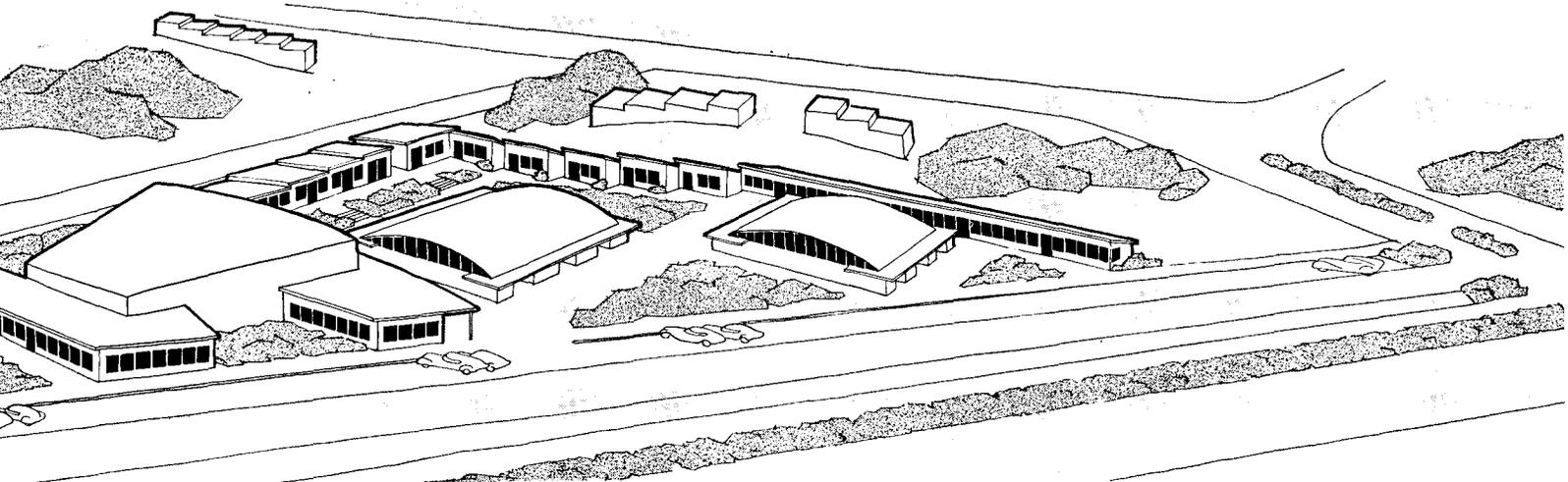
2. NORTH LITTLE ROCK, ARKANSAS

SHOPS AND THEATER, PARK HILL. BRUEGGEMAN, SWAIM AND ALLEN, ARCHITECTS. A common need in many recently built war housing projects is an adequate, near-at-hand commercial center. The one illustrated, actually a small, suburban shopping center, offers a simple, straightforward solution. Particularly to be noted is the traffic circulation around the building and provision of off-the-street parking.



AUDITORIUM seats 638

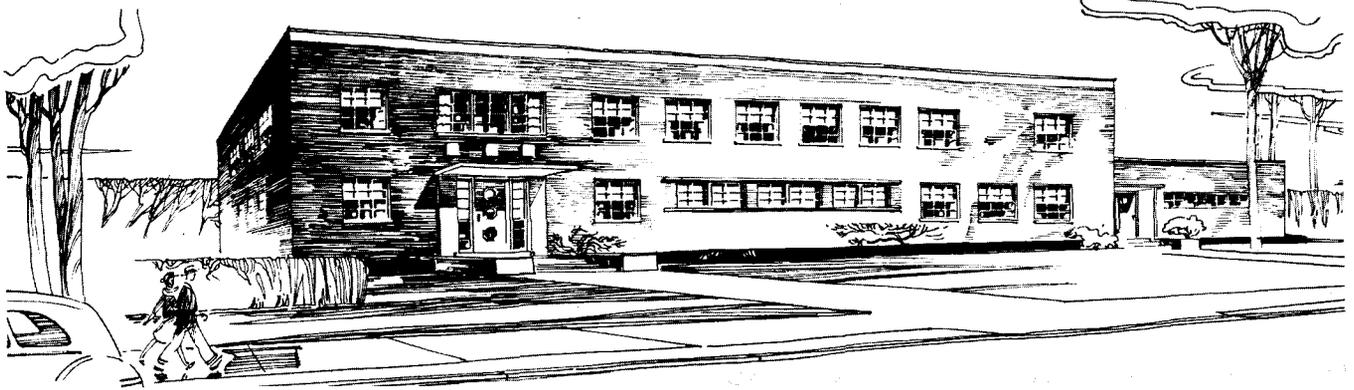




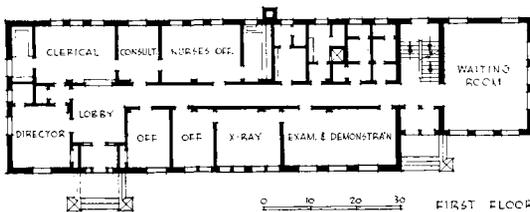
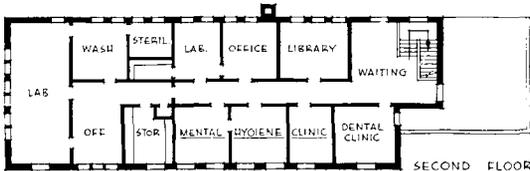
THEATER



Photos by St. Thomas



Champaign-Urbana Public Health District Building



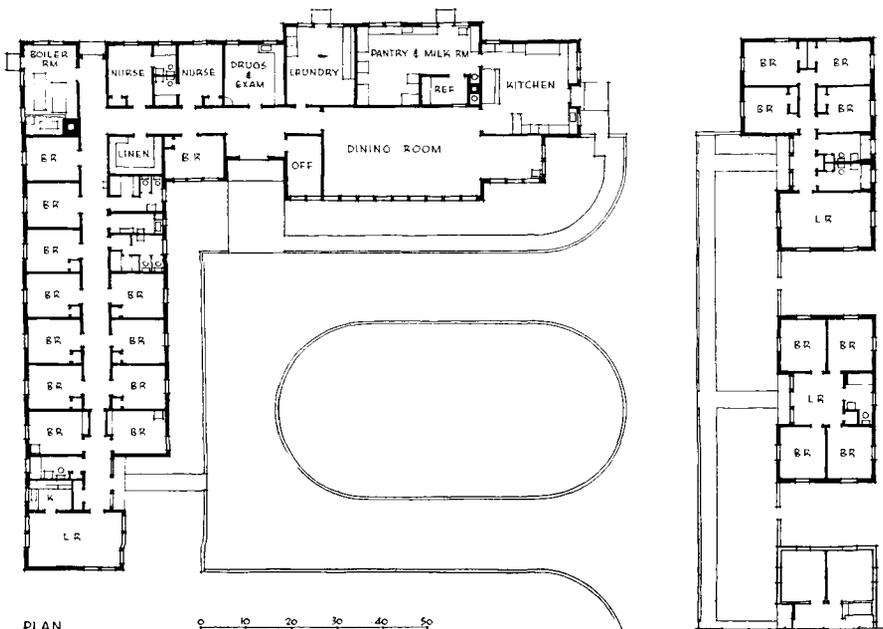
TWO PUBLIC HEALTH CENTERS

Clinic space may be used as one large demonstration room or as several screen-divided examination rooms



Walls are of hollow-tile-backed face brick built on concrete footings and floor slab

ABOVE: CHAMPAIGN-URBANA PUBLIC HEALTH DISTRICT BUILDING, CHAMPAIGN, ILL. GEO. E. RAMEY & CO., ARCHITECTS. The center serves not only the established populations of Champaign and Urbana but a wide area that has recently been greatly augmented by war personnel. Some of its activities—such as tuberculosis and social disease programs—extend throughout the county. Clinic facilities include pre-natal, well-baby, and pre-school child care; sight and hearing testing, school immunization and dental programs. Here also are offices for milk inspection and restaurant control. On the second floor, the State Department of Health has a branch laboratory.



AT LEFT: KLAMATH COUNTY INFIRMARY, OREGON. HOWARD R. PERRIN, ARCHITECT. The infirmary includes housing for approximately 50 patients (in both main building and cottages), the superintendent's apartment (in main building) and an employees' cottage (at right of main dining room). Additional wards and cottages are contemplated. The one-floor scheme obviates both the danger and inconvenience of stairs and an institutional appearance.

IN THE HOUSING PICTURE . . .



Photo by Albert Ferris

Viewing one phase of the present housing picture as presented at the dramatic and dynamic Exhibition of Wartime Housing at the Museum of Modern Art, New York, are **John B. Blandford, Jr.**, (left) National Housing Agency Administrator; **Mrs. Samuel I. Rosenman**, Chairman of the National Committee on the Housing Emergency, which collaborated with the Museum in presenting the exhibition, and **John Hay Whitney**, President of the Museum of Modern Art.

The exhibition shows graphically why adequate housing designed by the country's best architects is necessary to help America win the war. It presents various new methods for producing such housing with maximum speed and economy according to contemporary design.

The exhibition has a twofold purpose: 1. To show that war materials can be produced in sufficient volume to assure victory only if workers are available to man the plants. Workers must have living quarters; therefore housing is essential to the war production program. 2. To show that housing is not a one-man job but that it requires careful planning by many people to insure a good future for the whole community. Only in this way can we be sure that the wartime housing will not become slums or ghost towns after the war. The exhibition tells its story in a series of scenes presented by movie shorts, blown-up photographs and architectural models. In addition to this visual presentation each scene is accompanied by voices which dramatize the idea of the exhibition scene by scene.

Eliot F. Noyes, Director of the Museum's Department of Industrial Design, has assembled the material and designed the installation with the help of Alice Carson of the same Department, and Don Hatch, New York architect retained by the Museum as special consultant for the exhibition. The illustrations on the following pages show portions of the Exhibition.

. . . three things are in sharp focus—the urgent need, the terrific complications and the necessity for speed. Administrator Blandford's first broadcast paints here only the broad outlines of his policy and program. Less clear are the details of just how the needs will be met, what kinds of housing will go where, who will finance and plan and build in the shortest time.

REOrganization takes time. Time was when housers had the time to consider, plan, cogitate, review and then proceed. Now time is short and art is long—and a multitude of conflicting interests slows the work.

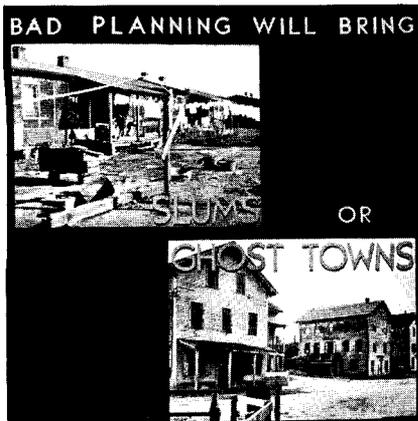
The Federal Housing Agency must take its sites where it finds them, each with its particular problems. Areas for defense housing are defined by their proximity to factory sites selected by the War Production Board. Early war housing could be at a "reasonable" commuting distance from the factory. That distance is contracting, for rubber tires will not stretch many more months and other means of transportation than private automobiles will have to be provided, and the newer housing placed nearer the factories.

Public utilities are too often lacking close to the new war plants and water supply, sewage disposal, light, fuel and telephone facilities must be included in the building program. Schools, churches, shops, playgrounds and recreational facilities likewise are necessary in the new housing areas. Police and fire protection add further to the headaches of those who must plan and produce with the utmost speed.

As if this were not enough, the hopes and the prides and prejudices of nearby municipalities add their quota of problems. Local politics and vested interests play an important part, so the problem of enlisting active local support of realtors, bankers, builders, planning authorities and the general public in each community is not the smallest problem of the Federal Housing Agency.

Mrs. Samuel I. Rosenman summed up this phase of the problem in her broadcast at the opening of the Wartime Housing Exhibition at the Museum of Modern Art, when she said:

"Supply of war housing has been impeded by a lack of public appreciation of the dependence of all-out production of materials of war upon an adequate supply of houses. From east to west and north to south assembly lines are steadily forming. To feed the assembly lines with man-



Slums or ghost towns from war housing?

power there must be homes in which men can live. And yet community upon community fights against a war housing program. . . . They fight against war housing because they do not realize its relation to war production. There must be a willingness on the part of all citizens to recognize the need and to see that it is met. Often people are misled because, personally unfamiliar with the problem, they are ready targets for biased information. If business-as-usual propagandists were to advise that experimentation with synthetic rubber be held up while the rubber industry makes an attempt to get rubber from Malay, you would be outraged. It is just as outrageous to ask for delays in Government war housing construction while we wait for the conventional methods of financing and production."

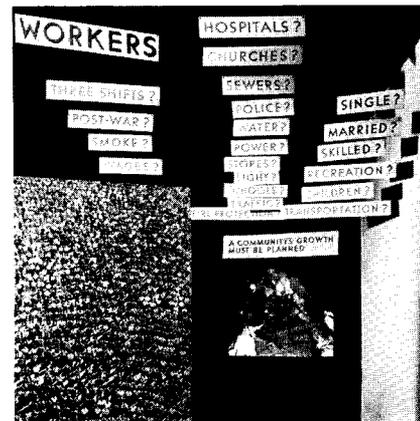
The decisions as to the type of housing to be built rest on national at-

titudes as well as local. The power of the two great national labor organizations is felt in their attitudes toward the introduction of newer types of construction—prefabrication and demountable houses.

Everything is being done to interest private capital to invest in new housing and to convert present sub-standard housing into homes for workers. The latter endeavor is necessarily piecemeal and subject to delays. In spite of more liberal FHA requirements, private capital is loath to take the risk involved in providing rental housing. When houses were built for sale, the entrepreneur could complete his transaction and the worker assumed the obligations of ownership. With the unknown factors of the extent or nature of competitive Government housing that might be erected, plus the unknown rental period or possible permanency of employment, private capital finds it hard to solve a rental housing equation with a satisfactory answer in probable profits.

Builders and contractors of housing will have their problems too in finding necessary materials and equipment for the buildings, for priorities mean little unless their orders for materials can be filled—and promptly.

The need for speed gives new voice to those who advocate barracks for workers on the cantonment plan, with centralized mess-halls and facilities, rather than the creation of new-planned communities for families. The claimed advantages are that such shelter is simple, cheap, fast—and uses the



Good housing is not a one-man job

least critical material because of the concentration of utilities. Also, with the families staying where they are, no new schools and community buildings would be required, and local tax situations would not be disrupted.

The negative side of this solution would be the increased labor turnover and discontent, for workers will not willingly leave their families for more than a short time, and most skilled workers are family men.

All these things are well known to Administrator Blandford, as he organizes his corps of experts and executives who undertake to solve these problems. With broad strokes, he outlined his policy in his first public broadcast, saying:

"The National Housing Agency is a war-forged instrument of the Federal Government. At this time it has the single objective of providing housing for war workers. NHA must meet



Speed, accuracy and efficiency are sacrificed when workers must live like this



Photos by Samuel S. Gottscho

Housing is speeded by new techniques in prefabrication and demountable houses

this need within a definite framework of law and reality. The Congress determines the broad policy of war housing and provides the authorizations and appropriations to implement the program. The War Production Board determines the location of war industries, guides the pattern of labor supply and consequently creates a major part of the need for war housing. The War Production Board has jurisdiction over the materials and the equipment out of which housing is built.

"Because of the identity of interest of the War Production Board and the National Housing Agency, we have recently joined in a statement of objectives. In this statement there is a firm agreement that war housing is absolutely essential to the war program and that materials for this housing must be made available. There is a clear realization that a shortage of housing may cause a shortage of labor and a shortage of production.

"The necessity of conserving materials requires that war housing be limited to that required to meet the need arising out of the essential in-migration of war workers from beyond the distance of a feasible transportation into localities of intensive war production. The War Production Board endeavors to reduce this in-migration by guiding war contracts into localities where there is a labor supply and housing, by full utilization of local labor, by sub-contracting and by conversion. The National Housing Agency attempts to reduce the need for new

housing by promoting a Home Utilization and War Guest Program, and by encouraging the conversion, repair and improvement of existing dwellings.

"Private enterprise is called upon to meet a major part of the need for permanent family units. An increasing part of these units is programmed for rental housing. Administrative regulations with respect to sale price, rents and location attempt to focus this private housing clearly on the need of war workers.

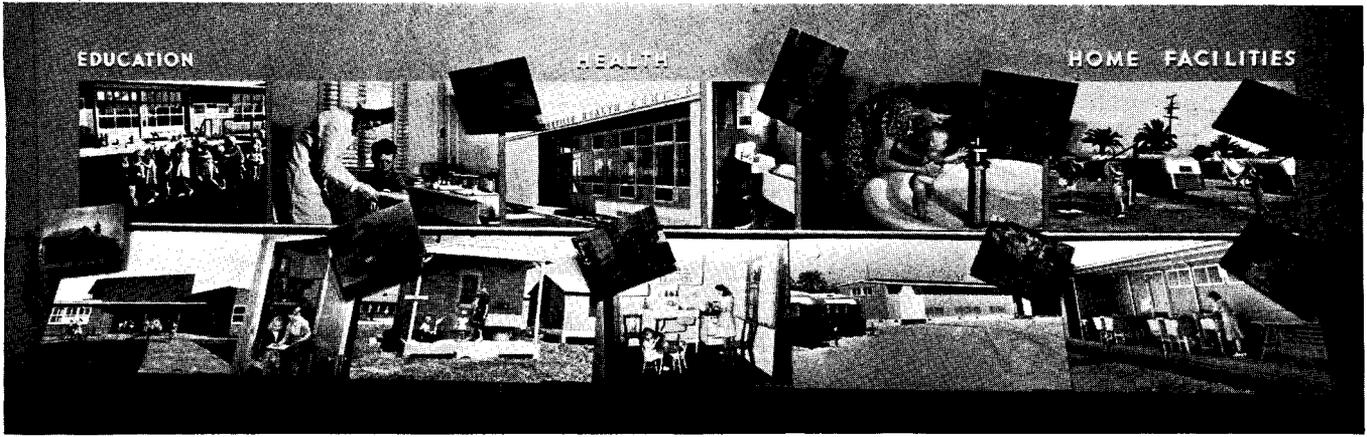
"After private enterprise has exhausted its contribution, there remains a large housing need for lower income

war workers and for temporary needs for which public funds are required. Public housing includes a substantial amount of family units of permanent construction and a larger amount of demountable family units, temporary "war apartments" of small housekeeping units, and dormitories for single persons who may for a time leave their families at home. Stop-gap housing such as trailers is provided only where absolutely essential to provide some type of shelter until standard housing can be built.

"For all types of housing, it is intended that every ingenuity be exercised to minimize the use of critical



What makes a planned community? 1. Adequate public service plus . . .



Photos by Samuel S. Götsche

Provisions for education, health, home life and recreation are integral parts of planned communities

materials, and housing is to be so located as to conserve to the maximum rubber and gasoline and materials for utilities and transportation and equipment.

"With this background and on this platform, the National Housing Agency tackles its job. The National Housing Agency consists of the Administrator's office and three principal divisions—the Federal Home Loan Bank Administration, the Federal Housing Administration and the Federal Public Housing Authority. As we have divided up the job during the war period, the Administrator's office assumes responsibility for programming—for determining the need for war housing. In this field it works closely with the War Production Board, the Federal Works Agency, the Office of Defense Health and Welfare, Office of Defense Transportation, and National Resources Planning Board.

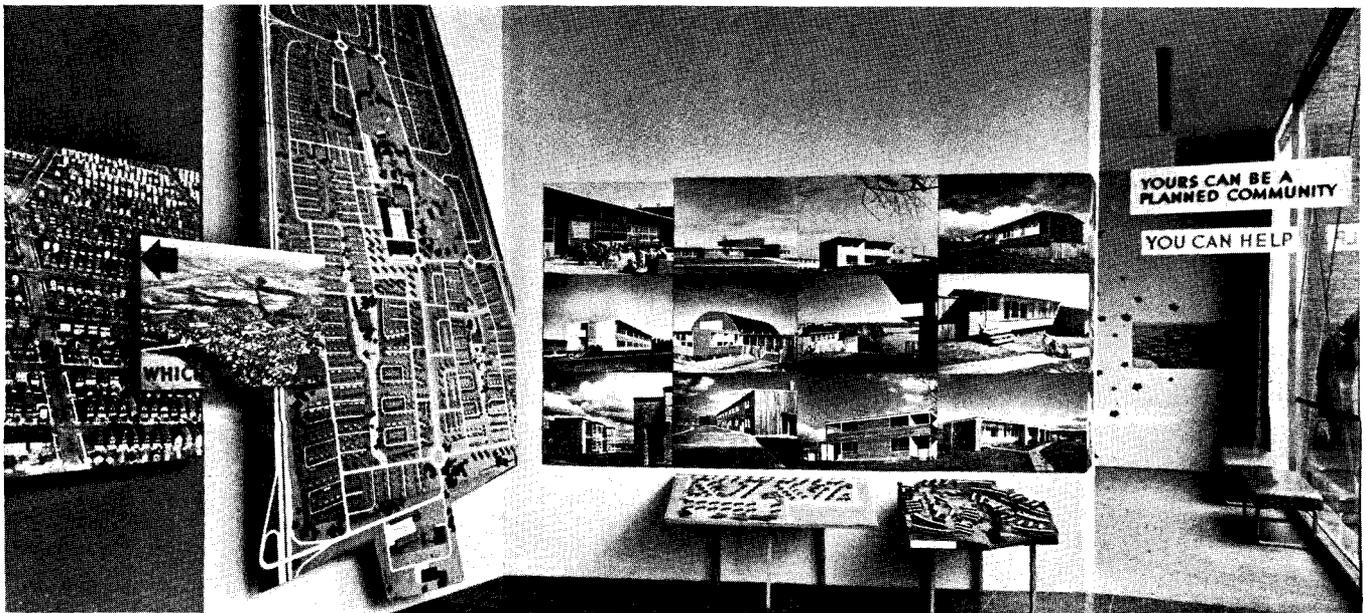
"The responsibility for executing the program is placed squarely upon the three principal divisions of the National Housing Agency. Each of the three divisions has so ordered its house that it is prepared to discharge its accumulated normal peacetime responsibilities with a minimum of attention, and is now able increasingly to concentrate a major part of its resources on war housing.

"As we each do our bit we are guided by a present policy of decentralization, or in other terms a democratic policy of widening and increasing participation through a passing down of responsibility. The Administrator's office plans to do the programming job out in the field, out in the communities, in intimate cooperation with local officials, local organizations and labor representatives.

"Similarly, the Federal Home Loan Bank Administration is working with

the savings and loans institutions; the Federal Housing Administration is cooperating with lending institutions in the field of mortgage insurance; and the Federal Public Housing Authority is passing its job of site selection, design, contract letting and management out into the regions and down into the communities. . . . Time is short, and labor and material must be conserved. We will all do the best job possible. There may be errors of judgment, but not of intent.

"When this war is won, when victory is clearly within our reach, we will then face the constructive task of clearing up the ravages of war and take up the stimulating task of rehousing Americans. For this job we will be better equipped because of the experience gained, because we will have learned to work together, because we will have wider horizons and a better feel for the things that are important."



Good planning means alert, contented workers, more and better production



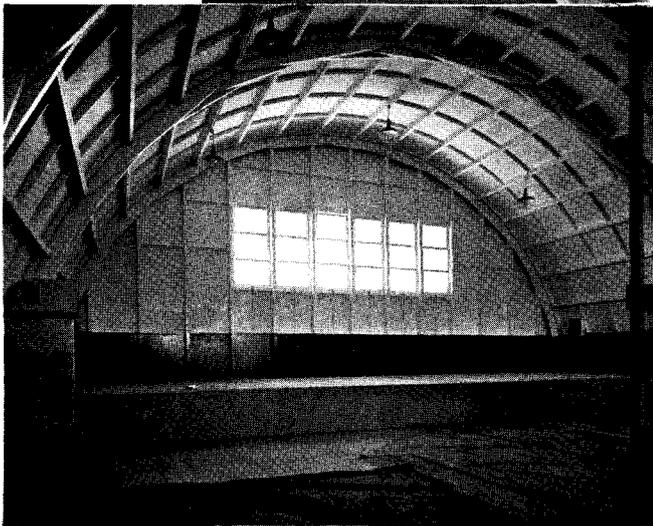
Photo by Miles Berné

Prefabricated school, San Diego, Calif., Franklin & Kump, architects (see overpage→)

CONSTRUCTION OF SMALLER BUILDINGS

THE SAME WARTIME CONDITIONS that restrict some small-building types bring an urgent demand for new ones. And material shortages force the use of light construction for many buildings directly or indirectly necessary to war. Buildings such as schools, hospitals, health centers, recreation centers, fire and police stations, canteens—not to mention war housing and cantonments. As for community facilities, FWA specifies that "all buildings, wherever possible, will be of standard timber construction for installations to meet temporary needs, or of fireproof, bomb-resistant masonry units." Buildings erected under the Defense Public Works program are limited to one- and two-story masonry and one-story wooden structures. Meanwhile the frantic urge for speed and economy challenges all designers to a new ingenuity in construction techniques as well as architectural concepts. No crystal ball is required to see that the war necessity will mother important advances in wood and concrete construction, and will speed the acceptance of many progressive techniques already available to architects, engineers and contractors. The basic guide posts assembled in the following pages may help point the way.

A BUILDING TYPES STUDY



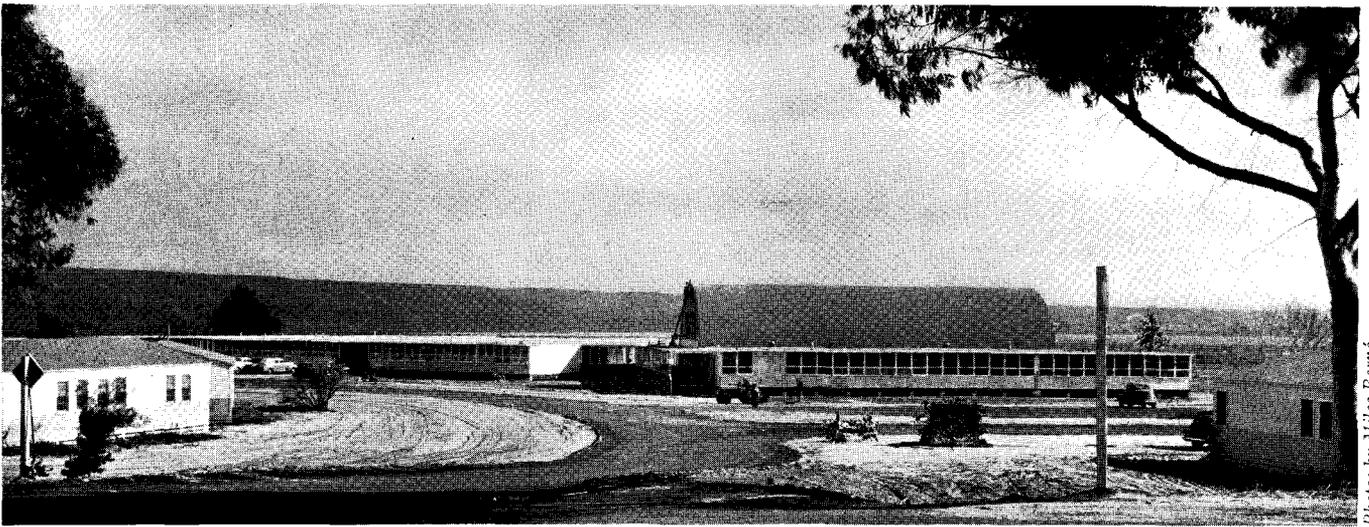
DEMOUNTABLE SCHOOL

PREFABRICATED SCHOOL FOR FWA, PACIFIC BEACH,
SAN DIEGO, CALIF. FRANKLIN & KUMP, ARCHITECTS

A single sheet of plywood, fabricated with roof members, forms a roof panel for the auditorium-gymnasium. Roof is semi-circular, with arch-rib trusses



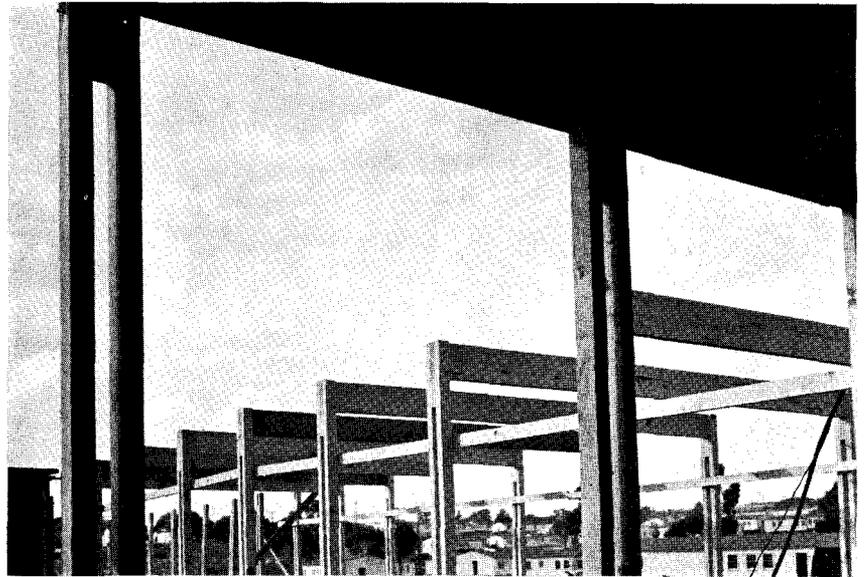
For wall panels two sheets of plywood are used, on $\frac{3}{4}$ by $2\frac{5}{8}$ in. framing. Panels are shop fabricated for quick assembly on the job, and for demountability



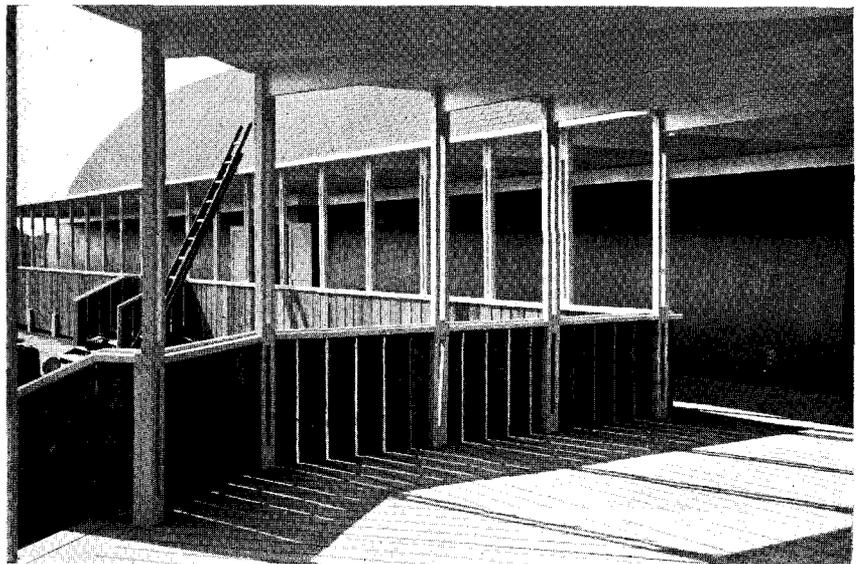
Photos by Miles Berné

Advanced technique in wood construction for wartime buildings makes a temporary, completely demountable group of school buildings for a large housing development

SOMETHING NEW in wood construction is this prefabricated demountable school for a war housing area. Plywood panels for walls of all building units are 4 by 9 ft., of $\frac{3}{8}$ in. exterior grade plywood on one side, $\frac{1}{4}$ in. on the other, with $\frac{3}{4}$ by $2\frac{5}{8}$ in. framing members. Roof panels are 4 by 8 ft., with $1\frac{1}{4}$ in. members. Classrooms have a clear inside width of 22 ft., spanned above by 2 by 16 in. joists. Floors are prefabricated panels of $\frac{5}{8}$ in. plywood, 4 by 8 ft., with 2 by 6 in. joists. Exterior floors are prefabricated panels, 4 ft. by 6 ft. 6 in., with $1\frac{1}{4}$ in. o.p. slat flooring. The auditorium is spanned by timber arch-rib trusses. Natural lighting is from windows at both end walls. These windows have exterior jalousie shutters which permit the light to be controlled or provide for blackouts at night. Each unit, such as classrooms, kindergarten, administration offices, library, auditorium, etc., is a structurally independent unit, without any party walls; thus, after the war the buildings may be moved as entire units or demounted and reassembled. Inexpensive construction of this type is intended to last "for the duration or for five years." For a similar project, by the same architects, see page 47.



ABOVE: Roof members for exterior corridors between the several buildings, BELOW: Finished exterior corridor and porch, which, like the buildings, are demountable



CONSTRUCTION OF SMALLER BUILDINGS

By WILLIAM H. HAYES

ASSISTANT PROFESSOR OF ARCHITECTURE,
COLUMBIA UNIVERSITY



The Community Building at Waverly, Minn., a fine example of architectural and construction possibilities in smaller buildings of concrete. Walter Dennis, architect



Another recent building done in concrete, this one in precast architectural slabs. It is the Faribault, Minn., water filtration plant. Long and Thorshov, architects



And here is another type of building necessary to "health and safety" of civilians. This is the City Hall and Fire Department, Oxford, Miss. James T. Canizaro, architect

THE WAR'S IMPACT on building, imposing ever closer controls, calls for a new scrutiny of construction techniques, especially for smaller buildings. The current military program includes many buildings of light construction—war community buildings, recreation halls and canteens for service men and war industry workers, volunteer service centers and many others necessary in connection with Army and Navy establishments and war housing developments. While such buildings rate priority assistance, they are under rigid control as to materials and equipment.

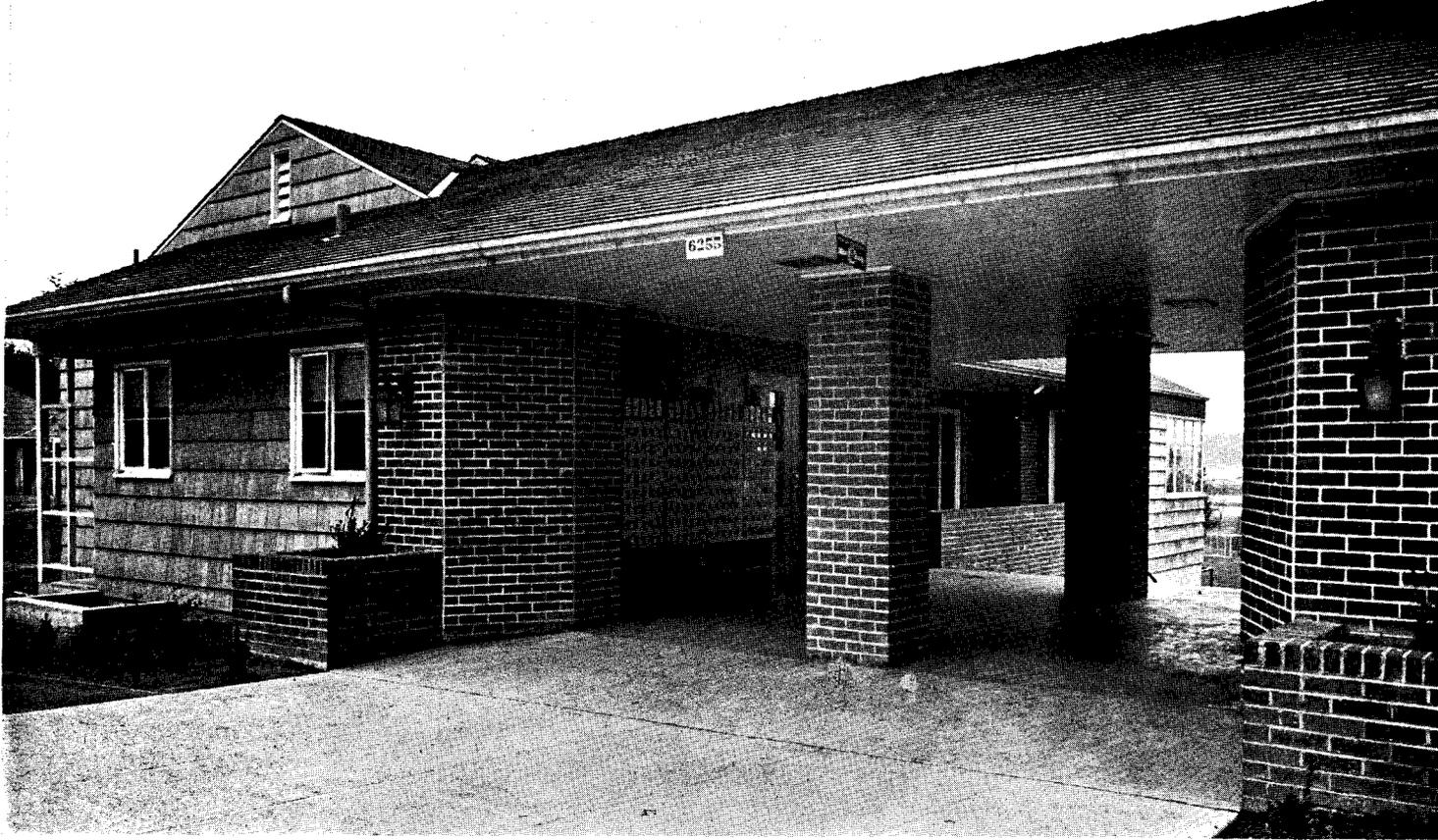
This situation calls for an even greater use of American ingenuity than in the past. We must, 1: adapt *wood* systems of construction and *mass masonry* construction to present conditions, and 2: develop *new methods* and *techniques* of assembly, and satisfactory *substitute materials*.

The first objective may be realized at once; there is still plenty of lumber and masonry available, though none, of course, to be wasted. The second objective means research and long-range planning, involving factors whose changes no one can foresee. Our first attention, therefore, should be focussed on wood and masonry construction, so that we may build these buildings immediately, with maximum speed and minimum consumption of precious materials.

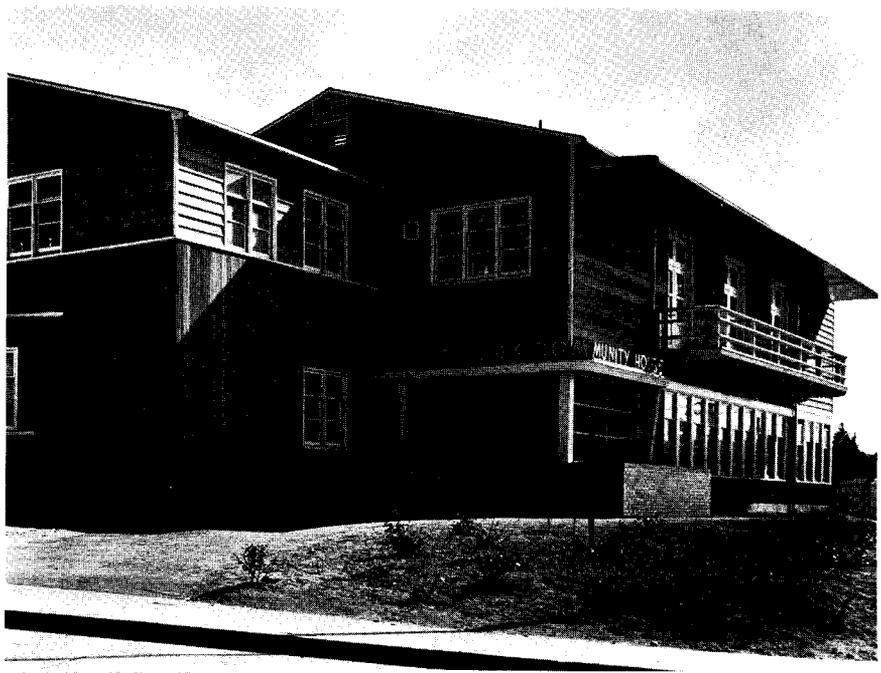
FOUNDATIONS

SINCE MOST of these buildings will be small (one-story wood, two-story masonry), gravity-type plain concrete or concrete block foundations will be adequate unless an especially poor soil condition is encountered. To decrease the unit of pressure on the soil, a stepped mass concrete footing may be used, in which each step acts as a cantilever beam of a length equal to its projection beyond the next step above. As the stress in plain concrete is distributed at an angle of approximately 45°, the slope or pitch of the steps is about 60° to assure stability.

For extremely bad soil conditions, pilings of creosoted poles may serve



A type of building indirectly essential to the war effort, and blessed with official approval—provided it is built of wood or masonry—is the community center for a war housing project. This one is at Sand Point Homes, Seattle, by Graham & Priteca, architects. Plan, page 57



A larger community building, for a larger housing project. This fresh and interesting use of wood construction is by Naramore, Grainger & Johanson, architects, for the Eastpark war housing project at Bremerton, Wash. It is more fully described on page 57



Photos by Ernst Kasseritz

(see T.S.S. drawings on footings). For very light structures on good soil a simple trench foundation of poured concrete will do, or, for light all-wood buildings, masonry piers or even creosoted posts, as circumstances permit, rather than a continuous foundation (see comment on building codes, below). Since metal termite shields will not be available, wood exposed to this hazard should be chemically protected.

WALLS

Wood. The usual stud-and-sheathing wall, of course, may be used. But to save materials and time, the forward-looking designer will give greater attention than in the past to rigid wall sections, prefabricated or built on the job. Today's waterproof and water-resistant glues make plywood almost uniquely suited to such construction, since it becomes possible to save on nails and other metal fastenings, as well as to gain speed. The great variety of wallboards—wood, cane, asbestos-cement, etc., permit many quick solutions of finish and insulating problems. Insulation becomes doubly important in view of the current fuel situation. Fill, bat or rigid insulation (reflective foil is obviously out for the time being) mean that an interior vapor seal will be required if condensation and possible rot within the wall are to be avoided.

Masonry. Concrete, cinder-concrete block, brick or stone walls may be used, stuccoed or not. For the small community buildings such as may be erected in the immediate future, high allowable working stresses are not required. Ordinary concrete mixes producing 1,500 to 2,000 lb. concrete will be adequate in most cases, provided the usual care is taken in mixing, placing and curing. Remember that more water is needed to obtain even a reasonable degree of workability than to complete the chemical action of water and cement; therefore "wet mixes" are to be avoided if maximum strength is to be obtained. The use of vibrators facilitates the placing of "dry mixes." In T.S.S. (page 77) three mixes for ordinary concrete are given. Precast wall panels, slabs or blocks are indicated in cases where form work, mixing and pouring are impractical.

The practice, in some localities, of using boulders as part of the aggregate may be justified in the interest of speed and economy, but their use

should be confined to low walls not subject to large axial or lateral loads. Whenever boulders are used, their greatest horizontal dimension should be less than the thickness of the wall. Furthermore, in bearing walls and walls resisting lateral pressure, the top and bottom surfaces of large stones should be approximately horizontal; otherwise, due to a lack of bond between the cementitious material and the stone a weak plane is created which may fracture should an unexpected axial or lateral load be applied.

All concrete, block or other masonry walls require precautions against water penetration and interior condensation. Furring out of interior finish must not be neglected, unless the wall is completely insulated and waterproofed.

If poured concrete walls are used provision must be made to overcome the effects of expansion and contraction due to temperature and moisture changes. Expansion joints at intervals of 30 to 50 ft. are recommended. "Weakened plane" joints have been used to good advantage to allow for expansion and contraction.*

STRUCTURE

LIMITATIONS of span and form which have in the past governed the design of wood framing are rapidly being broadened by the development of laminated structural members and high density plywood. Due to high-strength cold-setting glues, giant beams, arches and long spans are possible. Small, easily-handled inexpensive materials can be used; little metal (nails, hangers) is needed; the assembly is not

* See Architectural Concrete, Vol. 5, #2, published by the Portland Cement Association.

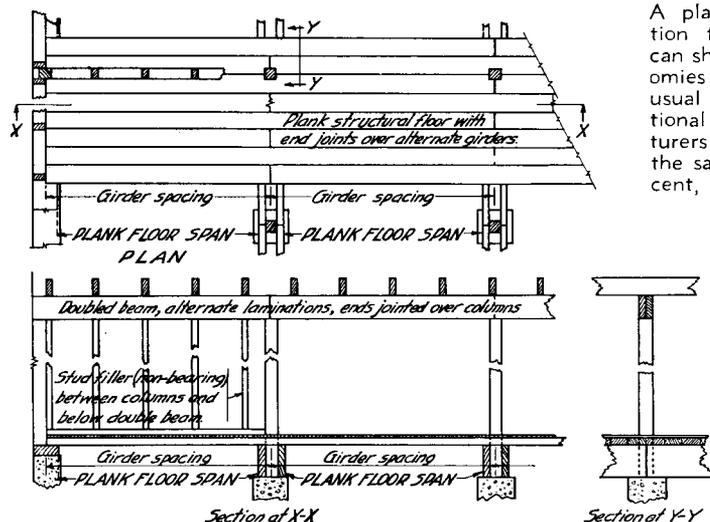
subject to serious checking under moisture content changes; erection is quick; and finally, the whole construction is statically more dependable because minor defects in the individual pieces of lumber are cancelled out by the averaging effect of the laminations.

The method of manufacturing high density plywood is such that control of the characteristics of the product is possible to the extent that its ultimate physical strength may be predetermined. In other words, low grade soft woods may be "densified" to become as strong as, or stronger than, plain structural woods. The "ability to adjust plywood construction according to anticipated stresses will become increasingly valuable . . . as further studies become available in this field. This is of too recent development to have accumulated adequate data on the strength factors of the great variety of constructions that are possible.

"This favorable change in plywood strength characteristics, through increase of density by pressure, is somewhat analogous to the alloying and heat treatment of metals to improve their qualities . . . It gives . . . an opportunity to meet design requirements that are far beyond the range of normal wood or normal plywood." (*Modern Plywood*, by Thomas D. Perry)

Conventional systems of light wood framing, where suitable, need no comment beyond a note on fire hazard. The use of fire-retarding paint, chemicals or sheathings of asbestos-gypsum combinations may be indicated, as well as fire stops and the planning of maximum fire exits.

Industrial heavy timber construction is readily adaptable for auditoria, gymnasias and the like. Heavy timbers, even without treatment, char slowly



A plank floor construction for small buildings can show important economies in relation to the usual joist system. National Lumber Manufacturers Association calls the savings: labor 26 per cent, lumber 15 per cent

in burning, leaving the heart of the wood effective for a long time. This type is dealt with extensively in the RECORD's T.S.S. for January, 1942 on "Wood Factory Construction."

FLOORS

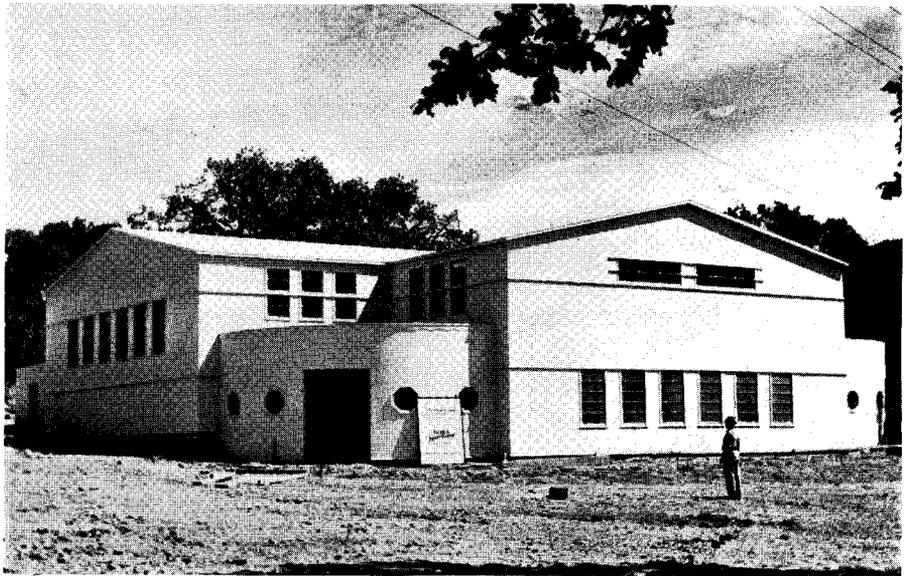
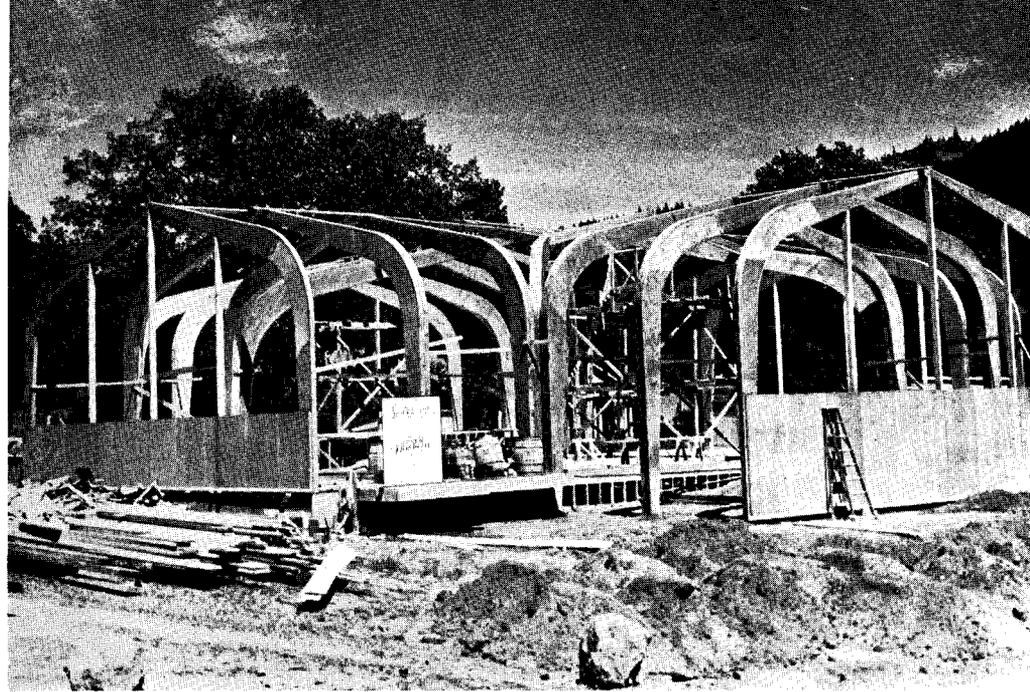
Plank Floor Construction. Study of economy in wood assembly has led to the adaptation of mill-type floor construction in smaller buildings, with resulting savings in labor and material costs and with increased insulation value. This type of floor substitutes two-inch dressed and matched planks, laid horizontally over beams spaced wider apart (4 ft. 6 in.) than is normally the case for joists. The finish floor, over building paper, is laid exactly the same as in ordinary joist construction. The National Lumber Manufacturers Association claims for this type of construction: 1. saving of 26.4 per cent in *labor time*; 2. a saving of 14.7 per cent in *lumber*; 3. an increased insulation efficiency of 24.8 per cent.

The need for cross bridging between joists is eliminated, saving labor and materials. The system reduces the over-all thickness of the floor construction, while at the same time increasing the thickness (and thus the insulation value) of the floor itself. The plank floor is laid with practically no waste. Finally, a cheaper grade lumber may be used, with no loss in strength, but with a considerable reduction in cost.

In one-story buildings some saving may be achieved by laying the floor directly on a bed over cinders on tamped earth, finishing with ceramic, quarry or asphalt tile, or brick or stone with grout joints. Prefabricated wood flooring panels, produced much in the manner of plywood, make possible a saving in nails and time. The panels are set in mastic over cement or wood.

ROOFS

LAMINATED WOOD TECHNIQUES make possible a wider range of roof and truss forms than heretofore. By using plywood in conjunction with framing members rigid panels may be obtained having greater strength than the same elements would have separately, because of the T-beam effect produced when they are integrally joined. With the exception of metal—sheet iron, copper, tin—most usual roof finish materials are available. Built-up roofing



Of 85 per cent plywood construction is the White Salmon, Wash., gymnasium, built by the Speedwall Co. Plywood was used for laminated arches, partitions, walls and roof

and other homogeneous types that use a minimum of nails will be preferred.

TREATED LUMBER

THE SIMPLE PROCESS of impregnating wood with certain inorganic salts through a controlled pressure treatment renders lumber fire-retardant, resistant to decay and to termites and other organisms. The wood so treated also offers greater resistance to the effects of weather and abrasion. At the same time, none of the advantageous qualities inherent in wood as a building material are sacrificed.

Preservative oils, such as creosote, have long been in use for heavy industrial timbers—railroad ties—but dry chemicals answer the long-felt need

for a clear, odorless, non-poisonous and yet economical treatment which would be equally effective. Several types of chemical treatment are available now.

Preservative Treatments against fire, decay, and termites, available at present, are:

1. Zinc Chloride. Any tendency to leach out may be prevented with cement paint.
2. Chromated Zinc Chloride. The chrome acts as a mordant, preventing leaching out.
3. Pyresote (zinc chloride, bichromate and ammonium salts). Reduces inflammability, combustibility.
4. Fluorphenol (Wolman salts)—sodium fluoride and dinitrophenol

with an anti-corrosive chemical, usually bichromate and sometimes with the addition of sodium arsenate.

Use of Treated Lumber. Treated lumber is recommended wherever resistance to decay and termites is needed, as sills, studs, sleepers, sub-flooring, sheathing, and, particularly, exposed parts such as porch posts, porch floors and steps. USHA further recommends that all grounds, furring strips, frames, etc., attached to exterior walls, with certain exceptions, be treated.

The chief need for treated lumber is where wood is substituting for metal. Great quantities of treated wood are being used at present in the construction of vital defense plants, warehouses, new docks and ships.

NEW METHODS AND MATERIALS

THE REALIZATION of objective two, mentioned earlier, will require research, long-range planning, and will depend so largely on unpredictable developments that any specific discussion here would be fruitless. However, trends in certain directions seem clear:

High Stress Steel. The obvious way to make precious steel go farther is to produce stronger steel and permit design up to that strength.

"The most effective way of reducing the amount of steel reinforcements used in flexural reinforced concrete members is to make available bars of high yield point, and stress them at a higher rate than is now the custom.

"Tests conducted by Lyse, Mylrea, Johnston, Krefeld, and others, have demonstrated that in concrete beams reinforced with high yield point steel the full resistance of the bars can be developed fully.

"The more recent New York City code revision, permitting a unit stress on high yield point bars not to exceed 40 per cent of the yield point or 24,000 psi, followed the satisfactory results of beam tests which served to reaffirm the generally accepted fact that within limits the ultimate strength of a reinforced concrete beam is proportional to the yield of the steel used to reinforce it.

"European countries, in order to conserve steel, have for some years past resorted to the use of high yield point bars stressed at much higher rates than is permitted in this country.

"In view of the fact that the present national emergency has brought

about a shortage of steel, it is highly desirable that the production of high yield point steel bars be encouraged and that the use of correspondingly higher unit stresses be sanctioned by authoritative organizations."*

Building Codes. Most war community buildings of the type under discussion here will be subject in one way or another to Federal specifications, so that local building codes may not always apply. However, most builders believe that the latter should be temporarily revised or liberalized to meet present emergency conditions. Such action would effect considerable savings in steel without sacrificing real safety. This could be accomplished by revision of allowable working stresses and live-load requirements. The desirability of revising and of standardizing live-load requirements, even in normal times, is indicated by the wide divergences of load regulations in the codes throughout the country. This is only one detail of these laws needing revision.

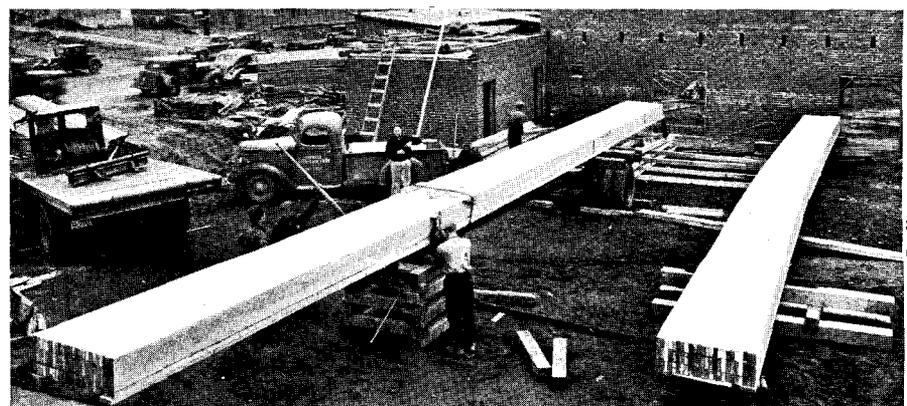
The American Municipal Associa-

* Saving Steel in Reinforced Concrete, by R. L. Bertin, Journal of American Concrete Institute, Feb. 1942.

tion has advised cities in defense areas to adopt flexible building codes for the duration and to waive regulations that conflict with defense housing insofar as the critical list of materials is concerned. Under present conditions it is practically impossible to make installations of mechanical equipment which conform to the existing regulations. It is desirable to extend revised regulations to the general construction of these buildings, temporarily at least.

FOREIGN TECHNIQUES

MANY UNUSUAL and novel floor constructions have recently been devised abroad. Prompted by the necessity of conserving steel, and to a lesser degree wood, tests have been made on many different systems. While all have imperfections and fall short of measuring up to our accepted standard in some respects, nevertheless they exhibit a new approach which is stimulating and which might well serve in emergency constructions. They are exciting in concept and, it is hoped, thought-provoking. A few European ideas are illustrated on the following pages.



Photos by Roger Dudley

"Due to high-strength cold-setting glues, giant beams, arches and long spans are possible. Small, easily-handled, inexpensive materials can be used; little metal is needed; the assembly is not subject to serious checking under moisture content changes . . ." Here are two 67-ft. beams for the Yesler Hill recreational center, Seattle

SOME MATERIAL-SAVING IDEAS FROM ABROAD

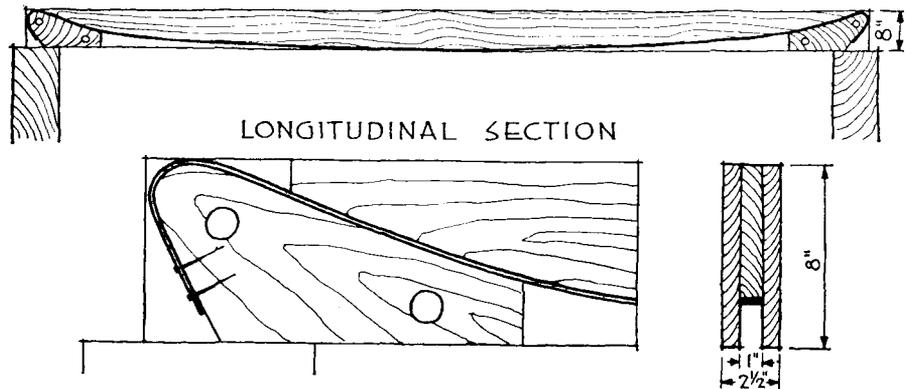
Selected, from various European publications, by Professor William H. Hayes

WOOD BEAM WITH STEEL REINFORCEMENT

EUROPEAN EXPERIMENTERS have developed a reinforced wood beam that saves 60 per cent in wood cubage. Three thin boards are reinforced with a steel band. The inner board or filler piece is so shaped that when the band is drawn around it the reinforcing is distributed to take the tensile stresses. The band is fastened to two oak anchor boards. By means of cold-setting glue, wood dowels and nails, the whole is made into a strong assembly. Tested to failure, the beams took 93 per cent higher loads than normal

wood beams of the same dimensions. And they all took approximately the same loads, whereas ordinary beams

showed considerable variation. Deflections under load were about the same for both types of beams.

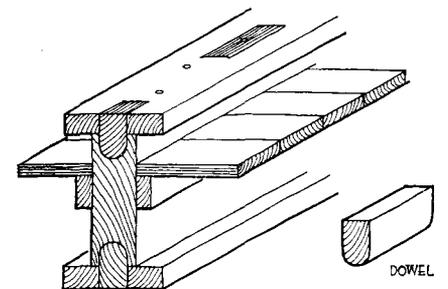


BUILT-UP WOODEN "I" BEAMS

EFFORTS of European designers to save on the quantity of material and the resulting dead load have led to new systems of wood construction. The wooden "I" beam is not new, but new methods of construction have been developed. Past European experience tended to show that gluing was not advisable. However, recent American development in glues indicates that this trouble can be overcome, as present-day glues result in joints stronger than the wood fibers themselves. The European method was to place long

dowels (6 in.) with the fibers parallel to the beam. This arrangement minimizes the shrinkage of the dowels, and eventually, after years, the shifting of the parts of the "I" beam. Minimum distance between the dowels is 8 in. Otherwise they are distributed in a manner similar to the bent-up bars in a concrete beam. The pairs of dowels (one on the upper and one on the lower flange) resist equally the forces of horizontal shear. The advantage of using wooden "I" beams is obviously the decrease in material

used, an increase in rigidity and decrease in deflection, as compared with rectangular beams, permitting of greater spacing.



FLOOR CONSTRUCTION WITH WOODEN OPEN-WEB JOISTS

ANOTHER EUROPEAN IDEA, to save steel and wood and to reduce dead load, is an open-web wooden joist. The upper and lower cords of the beam are connected by a laminated, wave-like plywood web. Connections between the web and the top and bottom cords are made with cold-setting glue and nails. The practical height was found to be 9 in., the spacing 10 in. Variations of spans and loads are taken care of by changing the dimensions of the top and bottom cords. Spaces between the joists may be filled with light terra cotta filler blocks. The

filler blocks, of course, give a considerable increase in fire-resistance and insulating value. A 2-in. fill of sand or cinders is placed on top of the filler blocks and the finished floors fastened directly to the joists. Ceiling plastering is as usual. Such a floor construction is said to save from 50 to 60 per cent of the wood. The beams are shop fabricated. Their deflection

is within the permissible limits, and can be decreased by cambering during assembly. The decreased weight decreases transportation costs.

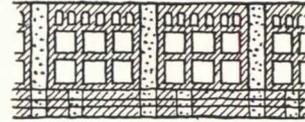
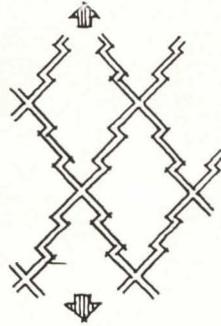


A FLOOR SYSTEM WITHOUT ANY STEEL

HERE IS a floor system that uses no steel at all, an idea developed in Italy. It is said that installations have been made with spans up to 20 ft. Light terra cotta blocks provide the compressive area. The tensile stresses are resisted by several layers of fine terra cotta plates. These plates are rhomboidal in shape, with toothed edges. In each layer the plates interlock, thus transferring the tension forces from plate to plate. The whole assembly, with the filler blocks above the plates, is held together by concrete. This system requires exceptionally strong and light materials. Those used in Italy

have an ultimate strength of 1,100 lb. per sq. in. The greatest difficulty is to obtain adequate connections between the tension and compression portions;

the tension plates must be held to filler blocks and to the concrete portions by the bond between plates, concrete and blocks.

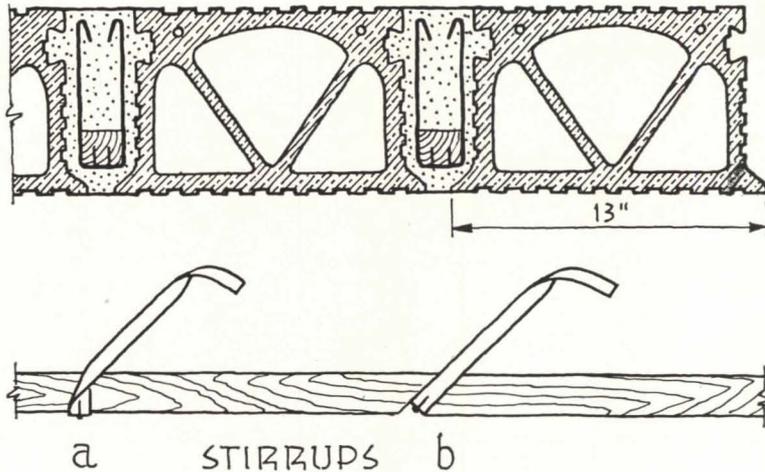


FILLER BLOCK FLOORS WITH WOOD REINFORCEMENT

IN AN EFFORT to conserve both steel and wood, experiments have been made in Europe with filler block floors in which steel members in the concrete were replaced by wood. Because the bond between concrete and wood is extremely questionable, no reliance at all is placed on it. The wood tension members are tied to the concrete (the compression section of the beam) by flat iron stirrups. Where the shear is great (near the supports) the stirrups are set into notches in the wood to prevent slipping (as at *b*). Near the center where the shear is small the stirrups are merely nailed (as at *a*). The use of round rods was found inadvisable because of the difficulty encountered in fastening them to the wood, also the possibility of their cutting into the wood fibers. Tests showed that floors of this construction failed only after stresses in the wood exceeded four times the allowable stress in the

wood. Floors of similar block systems with the usual steel reinforcement failed after the stress exceeded only 2.35 times the allowable stress of steel. These results seem to be achieved

mainly through the use of shift-preventing connections between the tension-resisting wood and the compression-resisting concrete sections of the beam structure.

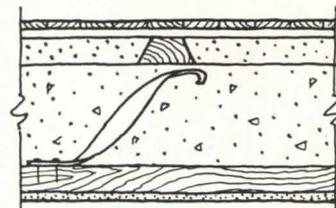
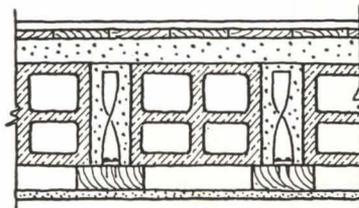


ANOTHER FLOOR SYSTEM WITH WOOD REINFORCEMENT

THE LACK OF EXPERIENCE concerning the behavior of wood imbedded in concrete led to the development of a system in which the wood members would be in contact with the concrete only on one surface. A further advantage in placing the wood at the extreme bottom of the beam is the greater distance of the tension members from the upper surface of the floor. Because of the possibility of shrinkage across the fibers and resulting changes in the whole floor structure, the stirrups in this system are not bent around

the wood, but screwed to it. This system uses approximately .16 to .12 lb. of metal per sq. ft. of floor surface, and about a fourth of the cubage of

wood that would be needed for normal floor construction of rectangular wood joists. The floor is fireproof on its top surface, but not on the bottom.



CONSTRUCTION OF SMALLER BUILDINGS: MASS CONCRETE FOOTING DESIGN DATA

Information in this series of Time-Saver Standards sheets concerns a few of the details of construction in smaller buildings most affected by material shortages—footings, piers and bearing walls, lintels and floor systems. Both basic determinants and design data are included. The information was com-

plied for the Record by Prof. William H. Hayes of Columbia University's School of Architecture.

In many cases, complete elimination of steel (for instance) is not possible; but much can be done to conserve (use less of) this vital material. The process may involve use of greater masses of

available materials—as in the case of mass concrete footings in place of reinforced concrete spread footings (see data on this page)—or employment of older structural forms—such as brick arches instead of steel lintels to span openings. Information on brick-arch construction appears on page 80.

(1) AREA OF FOOTING:

FROM KNOWN LOAD AND SOIL CAPACITY (TABLE AT LOWER RIGHT) AREA OF FOOTING IS DETERMINED BY FORMULA:

$$A = \frac{P}{S}$$

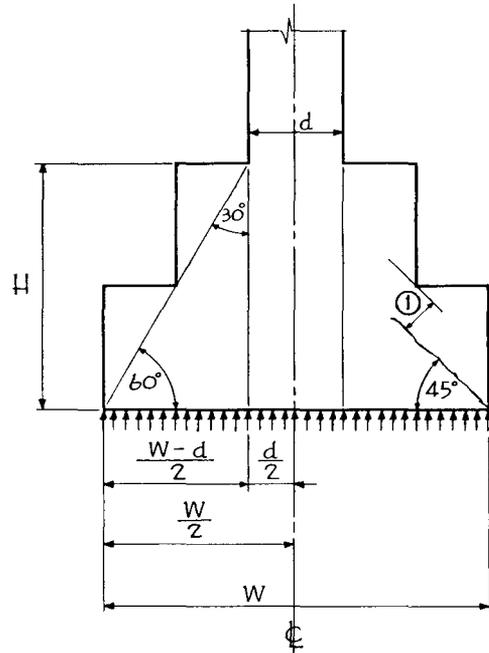
WHERE: A = AREA IN SQUARE FEET
P = LOAD IN POUNDS
S = SOIL CAPACITY IN POUNDS PER SQ. FT.

(2) HEIGHT OF FOOTING:

FROM WIDTH OF FOOTING, ITS HEIGHT IS CALCULATED BY FORMULA:

$$H = \frac{W-d}{2 \tan 30^\circ} \quad \text{OR} \quad H = \frac{W-d}{1.14}$$

WHERE: H = HEIGHT OF FOOTING
W = WIDTH OF BASE
d = WIDTH OF PIER



① - TENDENCY TO SHEAR AT ANGLE OF 45° IS WELL WITHIN BODY OF CONCRETE

DESIGN OF MASS CONCRETE (STEPPED) FOOTINGS

MIX	LBs/SQ. IN.
1. PLAIN CONCRETE 1 PART CEMENT: 7 PARTS AGGREGATE: 8½ GALS. WATER, MAX. →	400
2. "AVERAGE" CONCRETE ★ "A" { 1 PART CEMENT: 5½ PARTS AGGREGATE: 7½ GALS. WATER →	500
"B" { 1 PART CEMENT: 4½ PARTS AGGREGATE: 6¾ GALS. WATER →	625
★ AS DEFINED BY N.Y.C. BUILDING CODE	

GOVERNING HEIGHT-WIDTH RATIO FOR PIERS

$$H = 10d \quad \text{WHERE: } H = \text{HEIGHT OF PIER}$$

$$d = \text{LEAST DIMENSION}$$

PIER DESIGN

CLASS	MATERIAL	MAX. BEARING TONS PER SQ. FT.
1	HARD SOUND ROCK MEDIUM HARD ROCK	40 25
2	HARDPAN OVERLYING ROCK SOFT ROCK GRAVEL OR COARSE SAND, CEMENTED	10 8 6
3	COARSE SAND FINE, DRY SAND	4 3
4	HARD, DRY CLAY SAND AND CLAY, MIXED FIRM CLAY FINE AND WET SAND, CONFINED	3 2 2 2
5	SOFT CLAY, SANDY LOAM & SILT ADOBE	1 ½

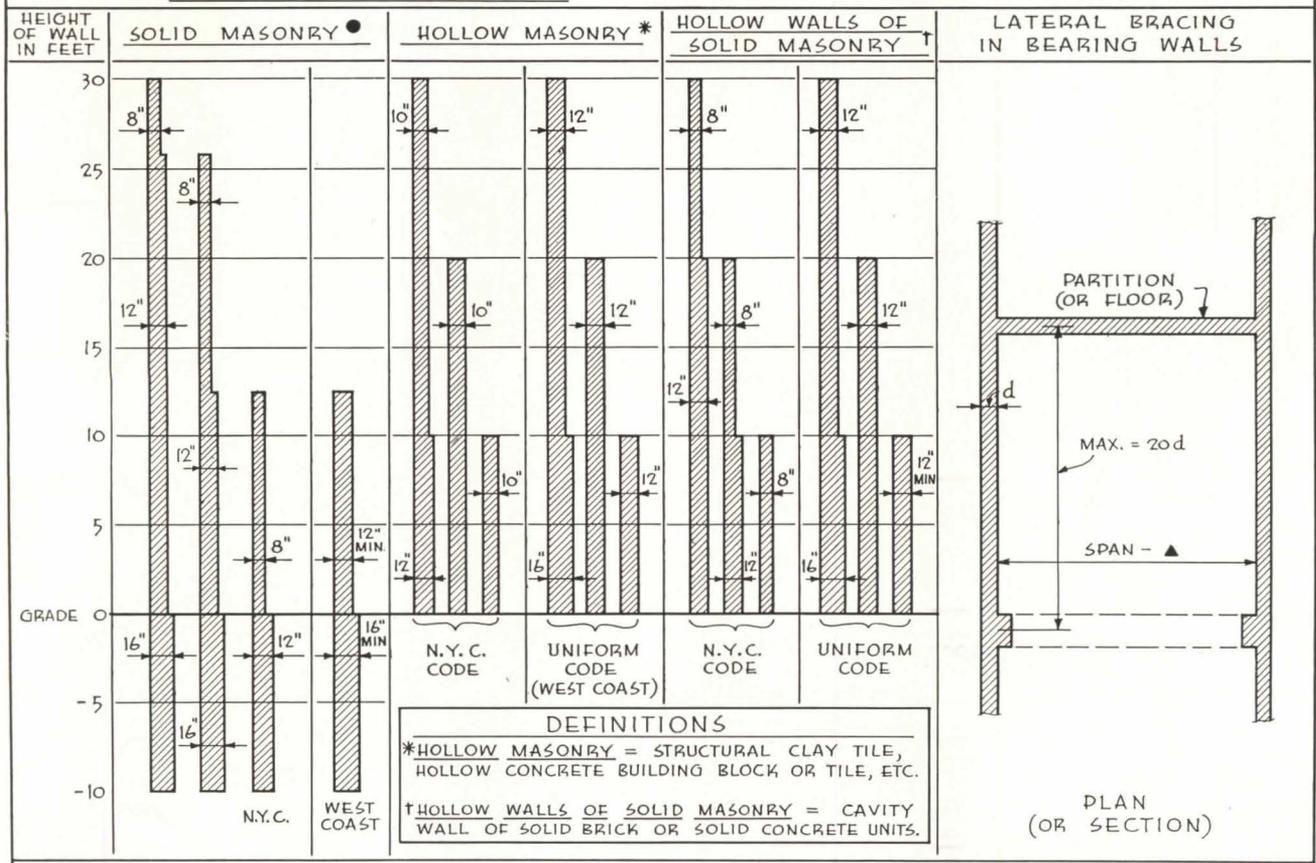
CONSTRUCTION OF SMALLER BUILDINGS: 2—PIERS AND BEARING WALLS

TABLE B
 PIERS OF MASONRY UNITS

MORTARS ↓ MATERIALS →		ASHLAR				RUBBLE	BRICK	CLAY	CONCRETE	
		GRANITE	LIME- STONE	MARBLE	SAND- STONE	STONE		TILE	HOLLOW	SOLID
CEMENT MORTAR	EAST COAST (N.Y.C.): 1 PART CEMENT: 3 PARTS SAND: 15% LIME (MAX.) OR 1 PART MASON'S CEMENT: 3 PARTS SAND.	800	500	500	400	140	325	125	70	150
	WEST COAST (UNIFORM CODE) 1 PART CEMENT: 3 PARTS SAND: 20% LIME (MAX.) (20% CEMENT VOLUME)	800	500	500	300	140	325			
CEMENT-LIME MORTAR	1 PART CEMENT: 1 PART LIME: 6 PARTS SAND (MAX.) © 250 IN WEST	640	400	400	320 ^o	100	250	100	58	125

PIER DESIGN

TABLE OF MINIMUM WALL THICKNESSES AS REGULATED BY CODES - N.Y.C. & WEST COAST ★



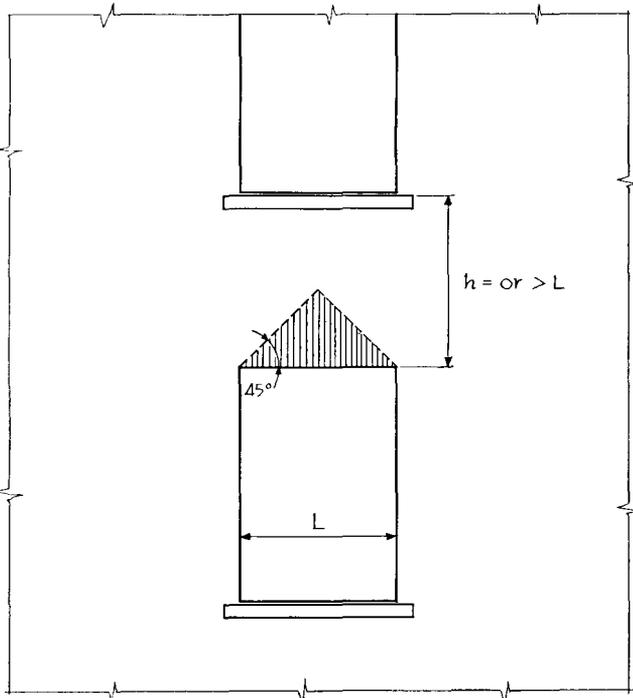
★ OPENING AREA IN BEARING WALLS MUST BE LESS THAN 50% UNLESS THICKNESS OF WALL IS INCREASED 4" FOR EACH 15% IN EXCESS. MAXIMUM: TOTAL MUST BE LESS THAN 75% OF HORIZONTAL SECTIONAL AREA OF WALL.

● RUBBLE MASONRY 4" THICKER THAN SHOWN IN TABLE
 PLAIN CONCRETE BEARING WALL (NO REINFORCING) MAY BE 2" LESS THAN SOLID MASONRY THICKNESSES SHOWN, BUT NO LESS THAN 8" THICK

▲ WHERE CLEAR SPAN IS GREATER THAN 26'-0", WALL THICKNESS MUST BE INCREASED 4" FOR EVERY 12'-6" IN EXCESS OF 26'-0" UNLESS WALL IS ADEQUATELY BRACED

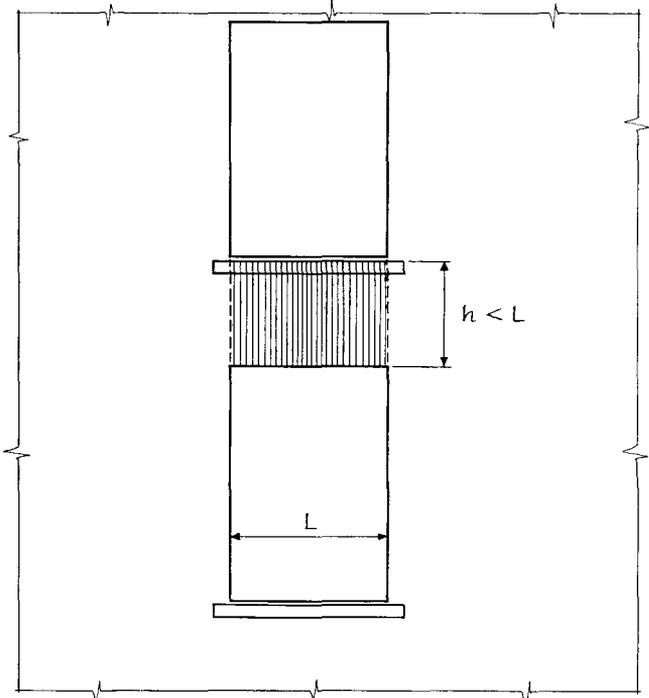
BEARING WALLS

CONSTRUCTION OF SMALLER BUILDINGS: 3—DATA ON LINTEL LOADING



①

WHERE TOTAL HEIGHT OF MASONRY ABOVE IS AT LEAST EQUAL TO WINDOW OPENING



②

WHERE MASONRY ABOVE OPENING IS LESS THAN "L"

OPENINGS

PURPOSE

While small quantities of steel may be made available for lintels, it is unwise to count on this. Other means of spanning openings must be employed, revising design concepts if necessary.

THEORY

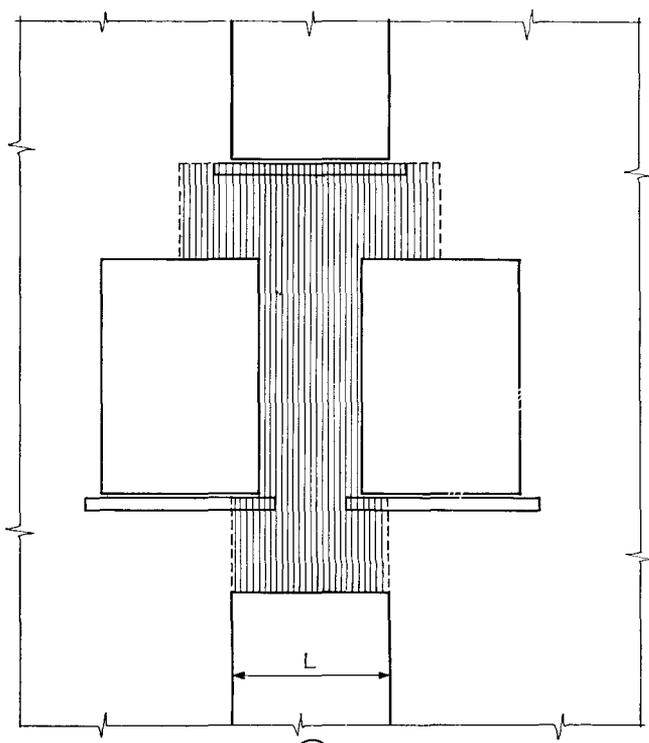
If wall over opening is of sufficient height, masonry will arch over opening and only a triangle over the opening need be carried on the lintel. Designers differ as to whether triangle of loading should be 60° or 45°. Emergency justifies using 45°.

Case 1. Equivalent total load W (Pounds) for triangular load (shaded area) = $\frac{w'L}{3}$ where w' = weight of wall in pounds per square foot and L = span in feet.

Case 2. Where height above opening is less than L , use total shaded area to figure load on lintel. $W = w' h L$.

Case 3. Where openings are staggered or where reactions from lintels above come onto lintel being designed, whole shaded area must be used to get W . $W =$ (shaded area) w' .

Note: Any girder or floor loads which come onto wall over openings must be added to wall loads. Care should be taken to avoid bringing floor or girder loads into walls over openings to minimize reinforcement required for lintels.

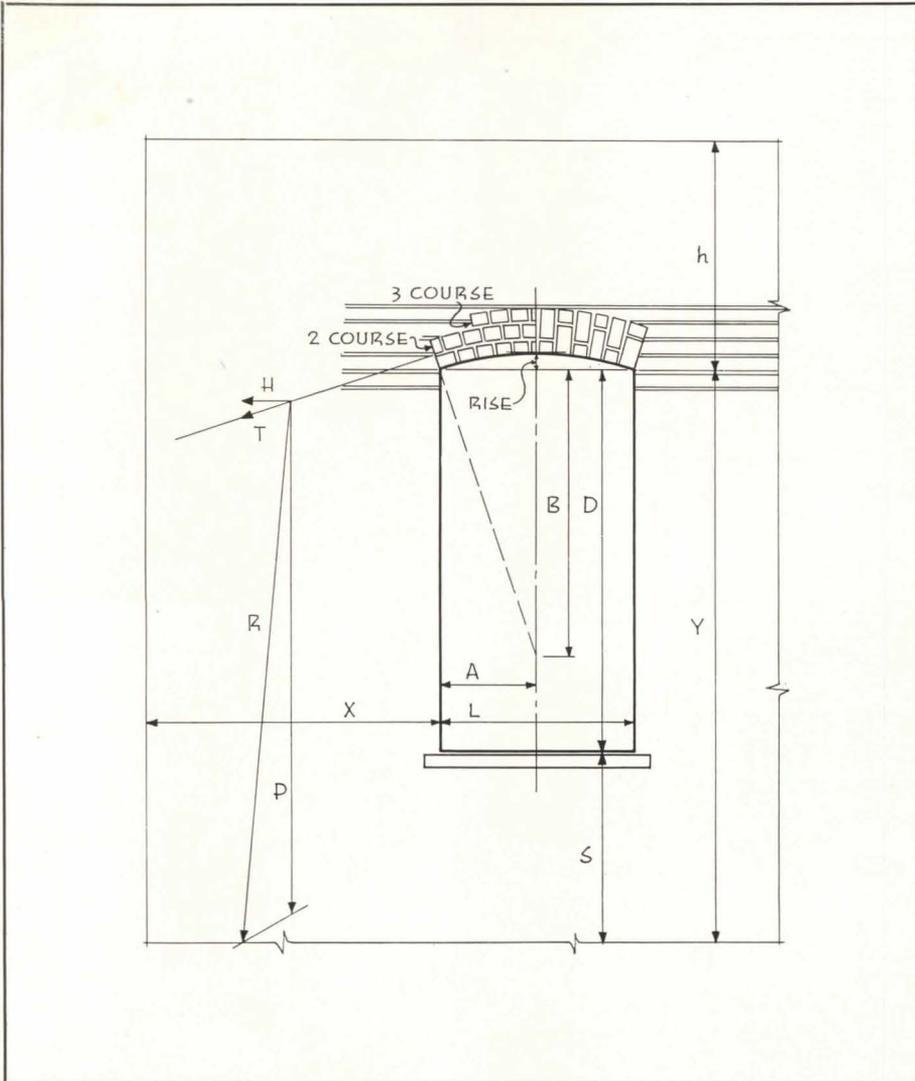


③

WHERE PIERS DO NOT CARRY THROUGH

CONSTRUCTION OF SMALLER BUILDINGS: 4—OPENINGS SPANNED BY BRICK ARCHES

MAY, 1942



PURPOSE

This sheet reviews some of the principles of brick arches as a means of spanning openings. Use of arches eliminates the need for steel lintels and should prove satisfactory for wartime-permitted one- and two-story defense buildings with brick-bearing walls.

Layout. The New York Building Code requires and the Structural Clay Tile Institute recommends a rise of 1 in. per

$$\text{ft. of span or Rise} = \frac{L}{12}$$

Common drafting room practice is to make $B = 3 A$. This gives a rise of

$$\text{practically } \frac{L}{12}$$

Thrust. The thrust produced by an arch may be written in terms of horizontal thrust

$$H = \frac{\text{weight on arch (Pounds x span (ft.))}}{8 \times \text{rise (ft.)}}$$

For the minimum rise specified above, this reduces to a horizontal thrust

$$H = \frac{3W}{2} \text{ where } W \text{ is the total load on the arch, uniformly distributed. A concentrated load at the center would produce double this thrust component.}$$

Loads. If h , the height of wall above the opening, can be made $\geq L$, the load on the arch W can be reduced from

$$w'hL \text{ to } \frac{w'L^2}{3}, \text{ where } w' \text{ is the weight of wall in pounds per sq. ft.}$$

Width of end piers. Thrusts and counterthrust from a series of windows of equal or nearly equal size will balance out, but a sufficient pier of unbroken masonry is required at the end of the building. The diagram illustrates a graphical calculation of load P , required to keep the resultant of the thrust and P within the middle third of the pier. If the pier had to depend solely on dead weight to produce P , the pier would have to be about $3L$ wide. Since the masonry is bonded together, we may take the allowable shear, bond and tension in the mortar and brick at 25 psi or 300 pounds per running inch of 12 in. wall. With the triangular loading on the arch, the horizontal

$$\text{thrust } H = \frac{3}{2} W = \frac{3(w'L^2)}{2} = \frac{w'L^2}{2}$$

$Aw' = 144 \text{ lbs. per sq. ft.}$, $H = 72 L^2$ and must equal the shear times X or $X = \frac{72 L^2}{300}$

$$\text{or approximately } \frac{L^2}{4} \text{ where } X =$$

width of pier in inches, $L =$ span of opening in feet. Therefore it can be assumed that the wall around the opening will act with the pier and the pier will not be required to balance the thrust by its dead load alone. Therefore a pier size of from 1 to $1\frac{1}{2}$ times L should be satisfactory.

CONSTRUCTION OF SMALLER BUILDINGS: 5—OPENINGS SPANNED BY REINFORCED LINTELS

MAY, 1942

The reinforced concrete beams are calculated for 2,000-pound concrete, $f_c = 650$ psi, $f_s = 18,000$ psi, $n = 15$. Weight of wall has been taken at 144 pounds per cu. ft. As this is above the

average for common brick walls, lintels are adequate for bonding flat brick arches to 8 in. lintel to form a 12 in. wall. Wire ties should be cast in when beam is poured. Top of beam should be

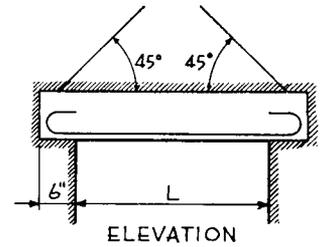
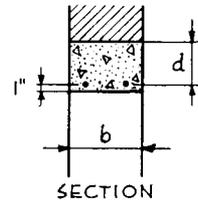
so marked and care taken to hoist beam with top up, if precast.

Reinforced brick beams are calculated on $f_b = 400$ psi, $f_s = 16,000$ psi, $n = 25$, $d = 11$ in.

REINFORCED CONCRETE LINTELS

CLEAR OPENING	TOTAL LOAD	SIZE	WALL THICK.	BARs	CU. FT. CONC. PER FT.	LBS. STEEL PER FT.
3'	400	6"x8"	6"	2 - 1/4" ϕ	.33	.33
	535	8"x8"	8"	2 - 1/4" ϕ	.45	.33
	800	12"x8"	12"	2 - 1/4" ϕ	.67	.33
4'	625	6"x8"	6"	2 - 1/4" ϕ	.33	.33
	835	8"x8"	8"	2 - 1/4" ϕ	.45	.33
	1250	12"x8"	12"	2 - 1/4" ϕ	.67	.33
6'	1250	6"x8"	6"	3 - 1/4" ϕ	.33	.50
	1670	8"x8"	8"	3 - 1/4" ϕ	.45	.50
	2500	12"x8"	12"	2 - 3/8" ϕ	.67	.75
8'	2000	6"x8"	6"	1 - 1/2" ϕ 1 - 3/8" ϕ	.33	1.05
	2670	8"x8"	8"	3 - 3/8" ϕ	.45	1.13
	4000	12"x8"	12"	2 - 1/2" ϕ 1 - 3/8" ϕ	.67	1.71

ALL LOADS CALCULATED ON TRIANGULAR LOADING AT 45°
NO STIRRUPS REQUIRED



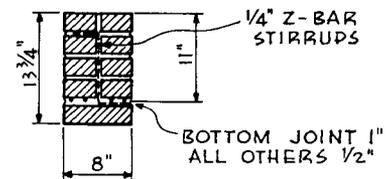
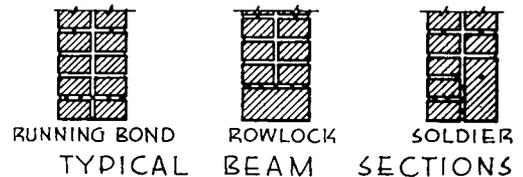
REINFORCED CONCRETE LINTEL DIAGRAMS

REINFORCED BRICK LINTELS

CLEAR OPENING	LOAD IN LBS	BEAM SIZE	NUMBER AND SIZE OF BARS
3'	640	8" x 13 3/4"	2 - 1/4" ϕ
4'	1000	8" x 13 3/4"	2 - 1/4" ϕ
6'	1960	8" x 13 3/4"	3 - 1/4" ϕ
8'	3240	8" x 13 3/4"	6 - 1/4" ϕ

THE LOADS AND BARS GIVEN FOR THE DIFFERENT SPANS ARE ADEQUATE TO CARE FOR A 12" WALL. FLAT ARCHES SHOULD BE BONDED TO BEAMS WITH WIRE TIES FOR 12" WALLS.

NO STIRRUPS REQUIRED



FORMULAS FOR CALCULATING REINFORCED CONCRETE AND REINFORCED BRICK LINTELS

$$M = \frac{1}{8} WL \text{ (FT. LBS.)} = \frac{w}{24} L^3 \text{ (FT. LBS.)}$$

$$bd^2 = \frac{M \text{ (IN. LBS.)}}{K} \quad K = 101 \quad \gamma = \frac{8V}{7bd}$$

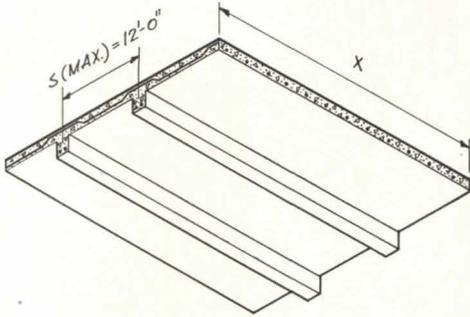
$$A_s = \frac{M \text{ (FT. KIPS)}}{1.29 d \text{ (IN.)}}$$

CALCULATIONS ARE BASED ON A WORKING STRESS OF 650 PSI FOR CONCRETE, AND 18,000 PSI FOR STEEL.

w = WEIGHT OF WALL PER SQUARE FOOT OF FACE

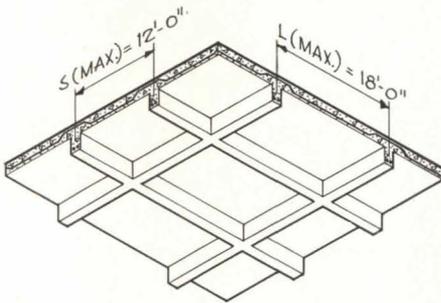
CONSTRUCTION OF SMALLER BUILDINGS: 6—COMPARATIVE DATA ON FLOOR SYSTEMS

MAY, 1942

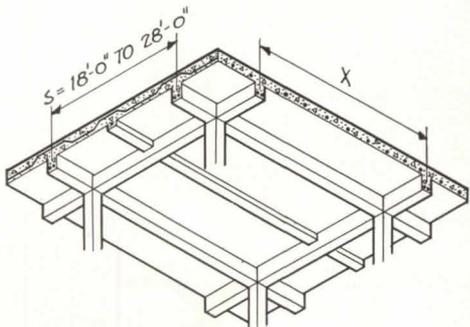


ONE WAY CONCRETE SLAB

S = SHORT SIDE
 L = LONG SIDE



TWO WAY REINFORCED
 CONCRETE SLAB
 RATIO OF S:L = 2:3
 OPTIMUM S:L = 1:1



ONE WAY REINFORCED SLAB
 WITH INTERMEDIATE BEAM

FLOOR SYSTEMS

It may be said that the capacities of individual reinforced concrete floor systems most commonly in use indicate that the placing of loads and spans each in two categories will facilitate a general evaluation of these systems in terms of economy. Thus, light live loads may be classed as loads less than 100 lbs. per sq. ft., heavy loads, more than 100 lbs. per sq. ft., short spans less than 18 ft., long spans over 18 ft.

Light Loads, Short Spans. Study has shown that for light live loads, one-way reinforced concrete floor slabs are economical on spans with no intermediate beams, up to approximately 12 ft.

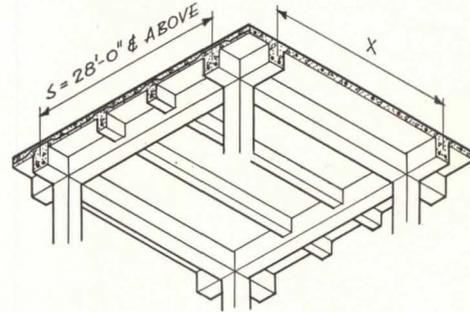
Two-way reinforced concrete floor slabs, with light live loads, are economical over spans of 12 to 18 ft. Because of the difference in magnitude of the moments in rectangular two-way slabs, it is desirable that these slabs be used in square bays if possible.

Light Loads, Long Spans. When long spans are to be negotiated it will be found economical to introduce intermediate beams in the bay of supporting members and forming a ribbed slab by means of metal pan fillers or tile filler blocks. A one-way reinforced concrete slab, placed in a bay, having a short side of 18 to 28 ft., and having one intermediate beam, will prove economical. Furthermore, a one-way reinforced concrete slab may be used in a bay having a short side of 28 ft. or more if two or more intermediate beams are used.

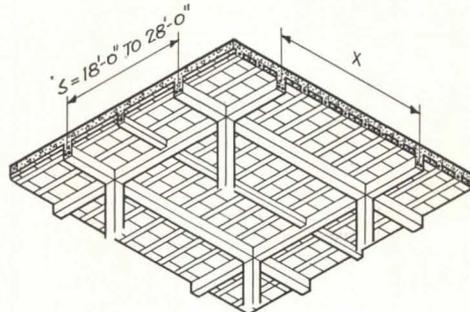
Other factors, such as ceiling treatment and occupancy or the disposition of the vertical supports in the plan, may indicate use of a ribbed slab. In such cases a one-way ribbed slab with metal pans can be employed advantageously in a bay of 18 to 28 ft. having one intermediate beam.

A one-way ribbed slab with tile filler blocks is also used under conditions given above. This system forms a smooth soffit throughout the panel.

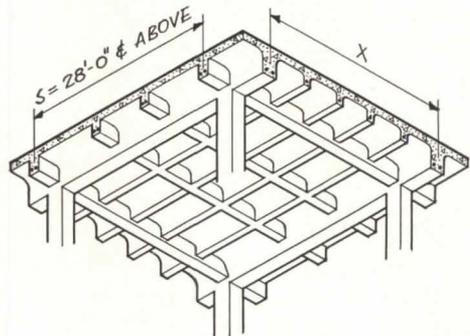
When a span of over 28 ft. is to be covered, either the one-way reinforced ribbed slab with metal pans or tile filler blocks is used with two or more intermediate beams.



ONE WAY CONCRETE SLAB
 WITH TWO (OR MORE)
 INTERMEDIATE BEAMS

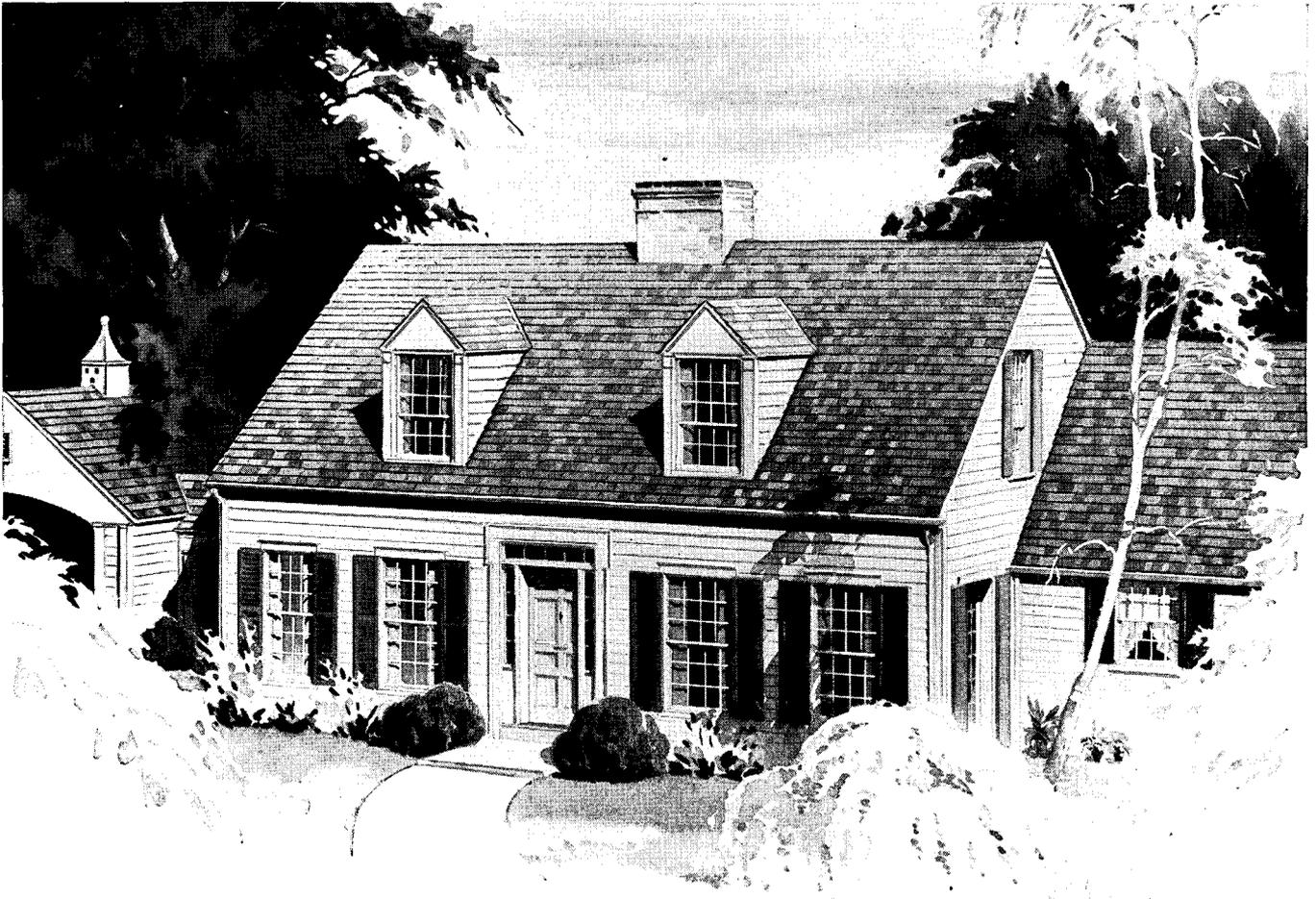


ONE WAY REINFORCED SLAB
 WITH TILE FILLER BLOCK
 (OR METAL PAN SYSTEM)



ONE WAY METAL PAN FLOOR SYSTEM
 OR TILE FILLER BLOCK

Looking ahead with Asbestos



**HOMES OF TOMORROW WILL BE
SHELTERED BY LIFE-TIME ROOFS**

• Anybody acquainted with the unique virtues of K&M "Century" asbestos-cement shingles knows that their future is assured.

While other types may catch fire... or rot... or curl... or split, K&M asbestos-cement shingles are immune to all these threats; actually get tougher with age. While other types may vary according to the wood... or the quarry... or the manufacturer's formula, all K&M shingles have the same qualities that go with the proper proportion of asbestos fibre and portland cement... regardless of their size, shape, color or cost!

Now is the time to think of tomorrow... to think of it in terms of the many benefits that will result from total victory. K&M roofs, for example, will be in greater demand than ever before because they offer full beauty and service for the lifetime of tomorrow's homes.

Our research laboratories continue to search for new uses for asbestos, in order that this strangest of minerals may be of still greater service, when peace has come again.

* * *

*Nature made asbestos;
Kearsbey & Mattison, America's asbestos pioneer,
has made it serve mankind... since 1873.*

KEASBEY & MATTISON
COMPANY, AMBLER, PENNSYLVANIA

Makers of

asbestos-cement shingles and wallboards; asbestos and magnesia insulations for pipes, boilers, furnaces; asbestos textiles; asbestos electrical materials; asbestos paper and millboard; asbestos marine insulations; asbestos acoustical material; asbestos packings; asbestos corrugated sheathing and flat lumbars; asbestos-cement pipe for water mains



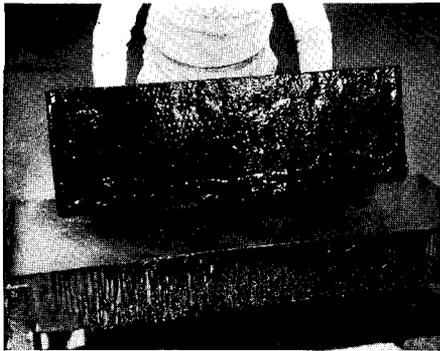
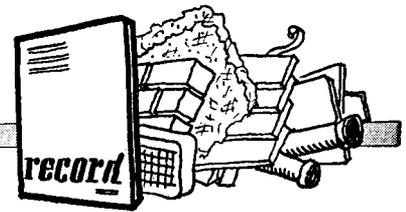


Fig. 1. Operator lifts insulating board out of hot asphalt coating. See story below

Refrigeration and Roof Insulation

As cork importations are curtailed comes word of an insulating board that is said to have the properties of cork, for cold storage refrigeration and roof insulation on industrial buildings. It is made of glass fibers compressed to a density of 6 lbs. to the cu. ft. and enclosed in a sheath of asphalt. Its heat conductivity is 0.265 Btu per sq. ft. per hr. per degree F per inch thickness, at a minimum temperature of 60 degrees F. The asphalt coating provides a substantially waterproof seal and increases the stiffness of the insulation so that the blocks can be used for the erection of self-supporting partitions or as load-bearing insulation to carry floors in refrigerated spaces; also as a promenade surface on flat roof decks. 12 by 36 in. size; thicknesses of 1, 1½, 2 in. Owens-Corning Fiberglass Corporation, Toledo, Ohio. (Fig. 1.)

Patented Fluorescent Lamp Process

ANNOUNCEMENT is made of a newly patented process for the manufacture of fluorescent lamps which is said to increase the life and initial brilliance of the lamps and eliminate subsequent development of dark streaks, splotches or shadowy end-bands. The basis of the new process is the explosion of a mercury "bomb" in the interior of the lamp tube during manufacture, regulating the amount of mercury in the lamp. Too little mercury, it is pointed out, will cause a lamp to slump in a comparatively short time; an excess eventually causes dark discoloration

and blackened end-bands. With the new process the "bombs" which release the mercury are carried under a magnetic device which removes from the line any which contain even one-thousandth of a gram less than the amount required. The process is in operation. Hygrade Sylvania Corporation, New York City.

Engineer's Handbook

A HANDBOOK just issued on an asphalt protected steel roofing and siding should prove useful to engineers. The book gives technical data, with drawings, instructions for estimating, and a number of helpful tables, on computation of sheet coverages, standard fasteners, etc. Levinson Steel Sales Co., 33 Pride Street, Pittsburgh, Pa.

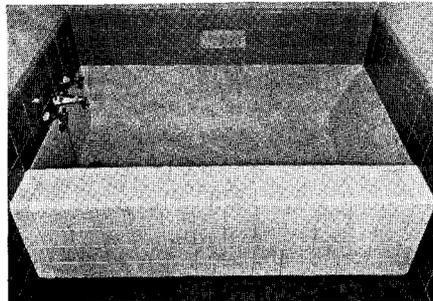


Fig. 2

All-Ceramic Tile Bathtub

OF ALL-CERAMIC tile, a new bathtub has been developed to be built at the job by a tile contractor. On war housing projects the sponsors believe the tub will cost less than \$50. The interior is composed of small pieces of unglazed ceramic mosaic tile. Tile Manufacturers' Association, Inc., 60 E. 42nd St., New York City. (Fig. 2.)

Acoustic Phone Booths

REINFORCED birch plywood makes an acoustic phone booth. It is lined with sound-absorbent material with perforated plywood facing. There is an opening at center and rear of roof panel for light fixture. A new half-size booth, for use where noise conditions are mild or space limited is announced also. Acoustic Division of

Burgess Battery Company, 2825 W. Roscoe St., Chicago, Ill.

New Luminous Paint

TO MAKE indoor objects visible in the dark there is a new luminous blackout paint. The manufacturer states that after the paint has been exposed to daylight or ordinary electric illumination for a few minutes it glows for about 20 hrs. Maas & Waldstein Company, 438 Riverside Ave., Newark, N. J.

Gas-Fired Air Conditioner

A NEW GAS-FIRED conditioner is announced for defense housing work. It incorporates a heat exchanger consisting of a battery of heavy gauge steel tubes, vertically placed with horizontal fins projecting into the air stream. Capacities 60,000, 75,000, 90,000 Btu input. Surface Combustion, Toledo, Ohio.

Plastic Tubing

TRANSPARENT seamless plastic tubing, in sizes ranging from 3/16 to 3/4 in. in diameter, is announced as available for immediate delivery. This tubing, the sponsor claims, is virtually unbreakable and may be bent, formed or curved to fit conditions. The ends, according to its manufacturer, are easily adjusted to standard flared fittings with the same tools used for copper tubing; and large-diameter tubing, with wall thickness of .0625 in., can be threaded with standard thread cutting tools. Extruded Plastics Inc., Norwalk, Conn. (Fig. 3.)

(continued on page 86)

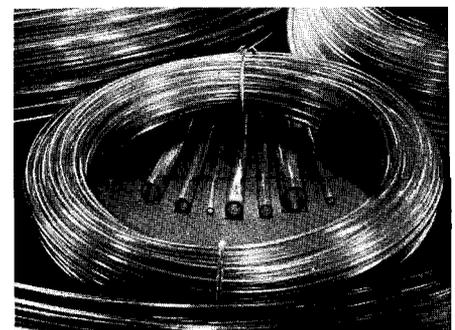
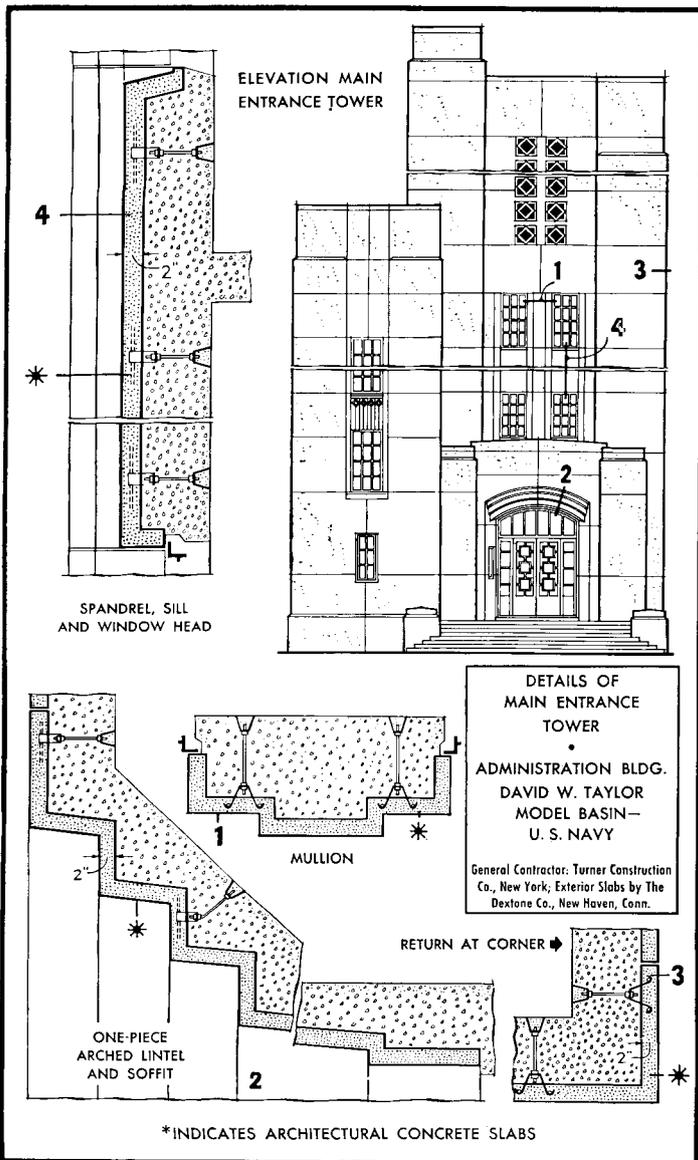


Fig. 3

NAVY USES PRECAST CONCRETE SLABS

for facing and for forms

● Shop, office and laboratory buildings of the U. S. Navy's David W. Taylor Model Basin form a continuous group 871 ft. in length and are faced with Architectural Concrete Slabs made with crushed, glistening quartz and Atlas White cement. Slabs are on interior walls also. Color and pattern in ship murals and other details result from exposing aggregates in Atlas White cement.



Pleasing texture, high strength, light weight and varied monolithic shapes are combined in the thin, precast Architectural Concrete Slabs used at the Navy's Ship-Testing Basin (and at new Naval Medical Center).

THIS intimate combination of white cement, welded steel fabric and selected aggregates, with the virtues of all three, provides a modern building material with unusual advantages. Units are only 2" thick, and thus are light in weight and easy to handle. They are shaped to almost any desired profile, with integral returns and lugs. Single units are "wrapped" around corners, window reveals, sills and heads. Spandrels extending from one window head to the sill above are made in a single piece. These features, combined with the larger sizes, up to 100 sq. ft. or more, reduce joints, flashings and leakage, and provide for freedom of design and ease of erection.

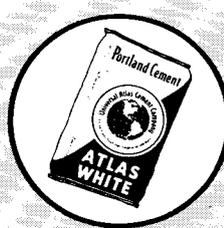
The face, cast monolithically with the backing, is made of selected aggregates which are brushed and washed to expose them in their true colors and textures in a matrix of Atlas White cement. At the Ship-Testing Basin the slabs also were used as exterior forms for the back-up of structural concrete.

For more complete description of this job, of the Navy's subsequent use of over 400,000 sq. ft. of similar slabs in the various buildings of the Naval Medical Center, and for other installations for interior as well as exterior facing on various buildings and bridges, write for a copy of the new book on thin, precast, "Architectural Concrete Slabs." Use the coupon below. Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York City.

OFFICES: New York, Chicago, Philadelphia, Boston, Albany, Pittsburgh, Cleveland, Minneapolis, Duluth, St. Louis, Kansas City, Des Moines, Birmingham, Waco.

ARCHITECTURAL CONCRETE SLABS

MADE WITH ATLAS WHITE CEMENT



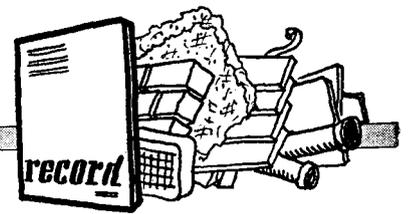
Universal Atlas Cement Company
 Chrysler Bldg., New York City

Please send me a free copy of your new 28-page booklet, "Architectural Concrete Slabs."

Name _____

Address _____

(continued from page 84)



Blackout Ventilators

POSITIVE ventilation is offered for blacked out plants in the form of exhaust units and summer and winter supply units that are said to be both light-proof and weather-proof. Trane Company, La Crosse, Wis.

Wall-Surfacing Material

FUNCTIONS of insulation, sheathing and siding combine in a new exterior wall surfacing material for emergency defense structures and other buildings. The product has a core of rigid cane fiber insulating board that is said to

provide bracing strength exceeding that of horizontal wood sheathing. The core is coated with an asphalt compound and processed against termites and dry rot. Exterior facing has a mineral granule surface. Application is directly over wood studs. Celotex Corporation, 919 N. Michigan Ave., Chicago, Ill.

Coating for Steel, Wood, Concrete

A CORROSION-RESISTANT coating for protection of steel, wood or concrete is said to be readily obtainable because it consists of non-essential material. The product can be sprayed, brushed on or dipped, dries in 6 to 8 hrs. or can be baked to an enamel-type finish. In a test application, used as a coating for pipe handling sulphurous drainage waters from a coal mine, it is said to have indicated more than 3 yrs. of service where ordinary steel pipe without protection corroded out in 2 to 3 weeks. Carbozite Corporation, Pittsburgh, Pa.

Oil-Burning Furnace—Low Cost

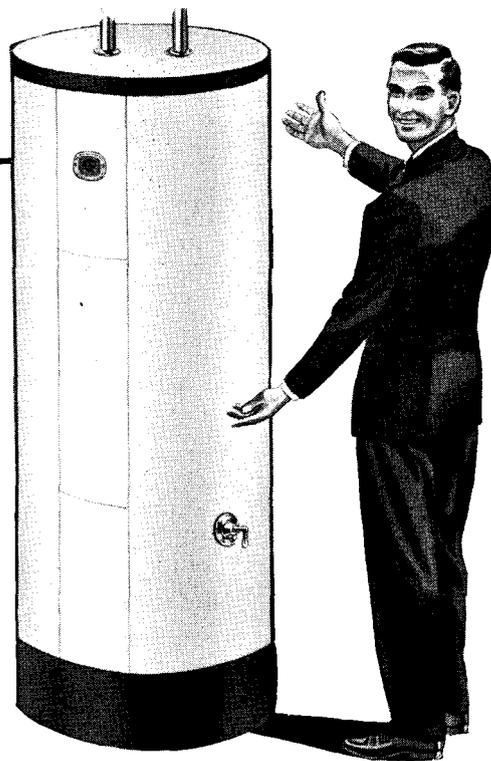
FACTORY-WIRED and shipped assembled, two new low-cost oil furnaces suitable for defense housing are announced. A feature is low weight due to conservation of metals. These models take about 3 sq. ft. of floor space. Mechanical draft fan is standard with both models. Oil rates are 0.10 gals. per hr. minimum and 0.61 gals. per hr. maximum. General Electric Co., 570 Lexington Ave., N.Y.C.

Industrial Humidifier

FOR textile mills, paper and printing plants and other industries where humidity control is important, there is a new industrial humidifier said to be compact, easy to install and low in power consumption. The unit is ceiling-suspended; can be used single or in multiple. Two capacities: 4800 and 6150 cu. ft. of humidified air per hr. The manufacturer states the unit will clean, circulate and heat the air. Carrier Corporation, Syracuse, N. Y.

(continued on page 90)

Porcelain enameled tanks approved for defense housing



CLEAR, sparkling hot water for the bathrooms and kitchens of Victory and rehabilitation homes is a necessity. It contributes to the health, comfort and morale of war workers.

Today hot-water tanks that are porcelain enameled *inside* are going into these housing projects. They are on the approved list of critical materials because each one saves the 5 pounds of vital zinc or 55 pounds of equally vital copper that other tanks would require. Also because the

glossy flint-hard mineral surface of porcelain enamel has a long record of satisfactory service.

Most manufacturers use ARMCO Ingot Iron for their porcelain enameled tanks. The first enameling iron developed, it is now recognized as the "world's standard."

If you are working on priority construction, you'll want complete data on porcelain enameled tanks. Just write to The American Rolling Mill Company, 1061 Curtis St., Middletown, Ohio.





SHELDEN LAND CO.
 37121 PLYMOUTH ROAD
 REEFORD 4710
 PLYMOUTH, MICHIGAN

February 20, 1942

DETROIT OFFICE
 1212 BURL BUILDING

Curtis Companies Incorporated
 Clinton, Iowa

Gentlemen:

We are sending you under separate cover a number of photos showing exterior and interior shots of our Rosedale Gardens project also a project recently completed in which we built a group of houses of the defense home type.

The building of defense homes in groups has become a highly skilled and reputable enterprise. We are endeavoring to build into these defense homes, the same workmanship and material that go into the more expensive homes. In other words, we are attempting to give the small home buyer a top-notch home at a price he can well afford to pay.

As you know, the homes mentioned above have been equipped with Curtis Silentite windows and Curtis Miterite casings and these quality products have proven to be a great help in our disposing of these houses so quickly. I know you will be glad to hear that we have found it possible to use Curtis Silentite windows and Curtis Miterite trim even in our smaller homes and consequently we are specifying your materials in a project of some 200 homes in the defense classification, selling complete with lot from \$4500.00 to \$4650.00

Our organization feels it can be very helpful during this period by doing our part in building a small house of architectural distinction, soundly constructed on a well located lot, economical to operate and a readily saleable investment.

We would like to take this opportunity to thank your Company and particularly its representatives in the field for the cooperation they have given us.

Yours very truly,
 SHELDEN LAND COMPANY

By *C. J. Nelson*

CGW/w



Another view of the Rosedale Gardens Project

OTHER CURTIS-EQUIPPED PROJECTS

Here are other large housing projects in which Curtis Silentite Windows and Curtis Stock Architectural Woodwork are guarding quality and speeding the job:

- | | |
|---------------------|----------------------|
| Baltimore, Md. | Salt Lake City, Utah |
| Wheeling, W. Va. | Cuyahoga Falls, Ohio |
| Tulsa, Okla. | Spokane, Wash. |
| Williamsport, Penn. | Columbia, S. C. |
| Amarillo, Texas | Indianapolis, Ind. |
| Boise, Idaho | Arlington, Va. |
| Yakima, Wash. | Wichita, Kans. |
| Atlanta, Ga. | Burlington, Iowa |
| Canfield, Ohio | |



WHY SO MANY DEFENSE HOUSING PROJECTS

Choose **CURTIS**

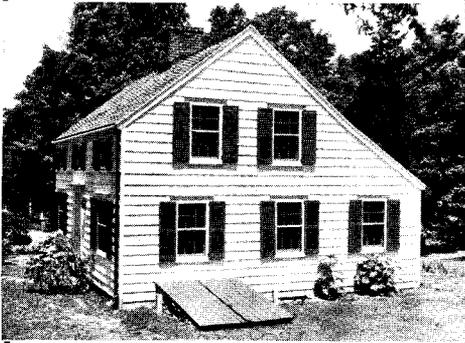
THIS letter speaks for itself. It shows why Curtis Woodwork and Curtis Silentite Windows are being chosen for defense housing projects throughout the country by builders who want to put *top-notch* value into low-cost homes. Let us give you full details about Curtis Woodwork and Curtis "on time" service. Mail the coupon.



CURTIS COMPANIES SERVICE BUREAU
 Dept. AR5-W, Curtis Bldg., Clinton, Iowa
 I want to know more about how Curtis Woodwork and Curtis Silentite Windows can serve me in defense housing.

Name.....
 Address.....
 City.....State.....

When the job
must go up
FAST.....



"Quilt" insulated house, Wilton, Conn. Architect: Evans, Moore & Woodbridge.

... You'll appreciate
the easy installation
of Cabot's "Quilt"

Easy installation is just one of the qualities which makes Cabot's "Quilt" the ideal insulation for war housing. It is low in cost. There is no shortage. Its convenient blanket form permits air circulation, thus preventing harmful moisture condensation in the walls.

"Quilt" is rot-proof, vermin-proof, stays permanently in place, and does not settle.

Cabot's Shingle Stains
Easy to apply—do not peel or blister even when applied before the house has dried out.

FREE BOOKLET. *Build Warm Houses.* Write today for your copy of this informative, file-size booklet, which gives much data on insulation. Address Samuel Cabot, Inc., 1284 Oliver Building, Boston, Mass.

**Cabot's
"Quilt"**

Heat Insulating
Sound Deadening

BUILDING FOR VICTORY AND THE FUTURE

(continued from page 46)

We must realize that private construction must always be accompanied by sizable expenditures for necessary community facilities. For that reason I believe the proposals that have been made for setting up a public works reserve are sound, and represent a very essential program that should be undertaken at the earliest moment. The proposal fell by the wayside in the House of Representatives during the recent Congressional revolt against boondoggling, but it will be revived. Soundly projected and soundly administered, a public works reserve program represents a necessary part of adequate post-war planning and a highly appropriate use during wartime of such planning and designing talent as may not be employed directly in the victory effort.

There will undoubtedly be some stiff arguments between advocates of gigantic Government programs and those who believe that private construction demand can be responsible for a major proportion of the total activity necessary to maintain investment and employment at sufficiently high levels. In one important sector, the forces are being marshalled today. There is in preparation a bill to be introduced in Congress, which if passed would authorize Federal subsidies for urban rehabilitation programs. On the other hand, many people believe this job can be done without financial aid from the Government.

To enumerate all the kinds of building and engineering structures that will be needed to regenerate and advance twentieth century American civilization is beyond my capacity. The needs will call for all the creative talents our architects and engineers may possess. Recall the transformations wrought in previous eras by the building of railroads and industrial centers. Think back over the specialized demands created by the automobile—highways, parkways, toll bridges, factories, filling stations, roadside restaurants, tourist camps, parking garages in cities, bus terminals, suburban communities, built-in garages in our modern houses; the contribution of the automobile to our way of life has only been partly expressed in fitting architectural forms and community patterns; the modifications it has effected

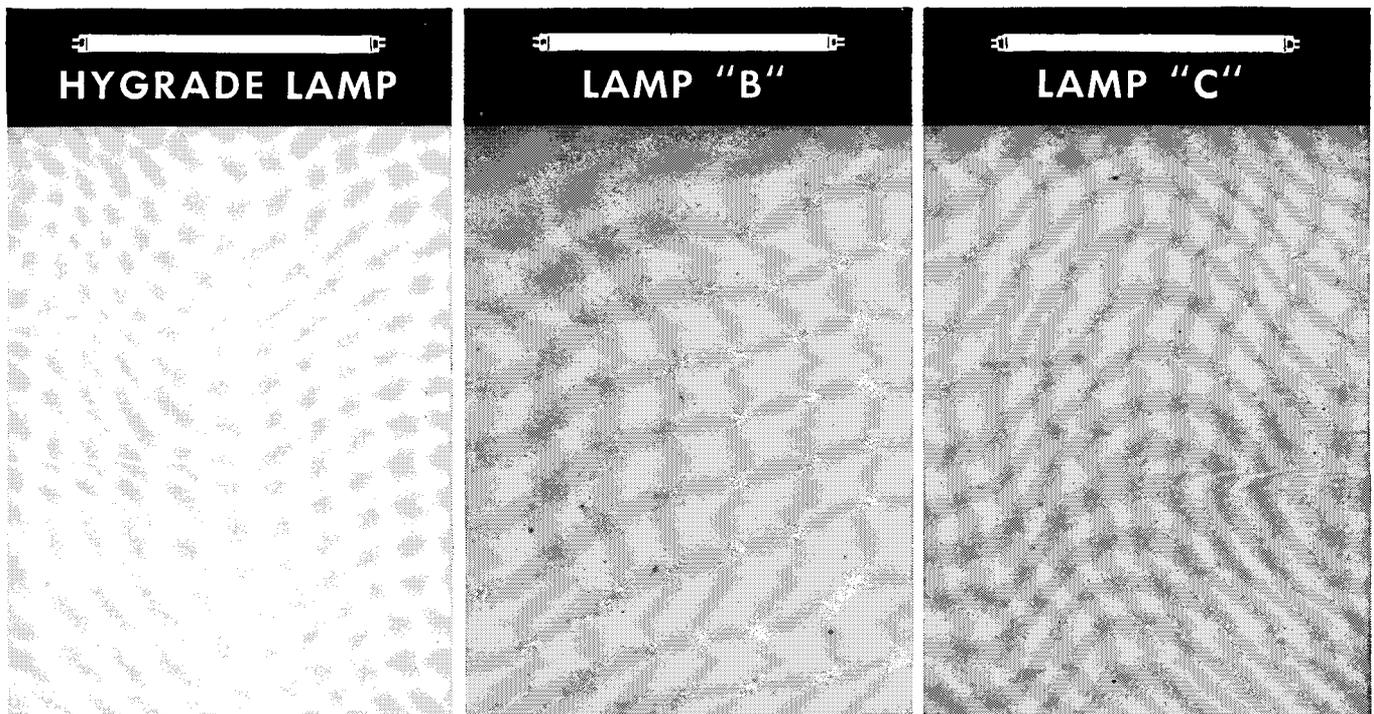
in our structures have not yet reached the end. This great industry will come to life again in the post-war period and demand new structural types.

The airplane industry has created an ever-increasing demand for hangars, airports, terminals. Can anyone today set limits to the future possibilities of this industry and the future demands it will make for new types of buildings? What will the availability of cheap steel, aluminum, magnesium and plastics mean to construction? What of the possibilities of prefabricated houses? What of the many needs for planned residential communities, for recreational facilities? The evolving demand for better buildings for family living, better facilities for a motorized and air-minded generation, for recreation, education, health, and civilized community life will challenge all the ingenuity and creative ability that we can find. If victory does not ultimately result in a truly great American architecture, we shall have proved unequal to our task.

Building for victory is building for the future, and for a future in which architecture and building will occupy the key position they have always occupied in an era of vital and expanding civilization,—an architecture keyed to the future and not to the past. The present time of trial and adjustment, and the post-war period of reconversion of building industry talents and facilities to peacetime purposes may serve as times of testing the design ideas, the professional and business practices and the designing and building organizations that are fitted to survive. Our fight for freedom is a fight for survival as a nation; but it is much more than that. It is a fight for opportunity, for the right to carry the torch of western civilization; a fight for the chance to create our own future and to make it just as good a future as our intelligence and our determination and our good will may merit. When we say our prayers for victory, let us also pray that we may prove worthy of the great opportunities that victory will bring.

◆
Condensed from a speech delivered by Mr. Holden before the annual convention of the Michigan Society of Architects, Lansing, Michigan.

New Light on Fluorescent!



Here are typical sections of three fluorescent lamps of the same size, bought from dealers' regular stocks, photographed in their own light and unretouched. One is a Hygrade Lamp; "B" and "C" are lamps of two other manufacturers. Note the smoother, more even coating of the Hygrade Lamp. This is one of the many Hygrade features that insure more light, as well as more attractive appearance.

YOU may be surprised to learn that the coating texture of a fluorescent lamp is an extremely important factor—not only in appearance, but in lumen output.

And, thanks to unique, pioneering methods of applying fluorescent powders—Hygrade Lamps have a smoother coating than any other kind.

Examine any Hygrade Lamp and you'll see what we mean. Note the myriads of tiny particles that cling to the surface in a smooth, evenly applied film. They provide a coating that's thinner, more attractive—just the right density for maximum illumination.

But better appearance and more light are only part of our story.

Note the excellent color uniformity of Hygrade Lamps—every lamp gives the same color of light.

They remain "bright to the last inch"; end-darkening doesn't dim them before their time.

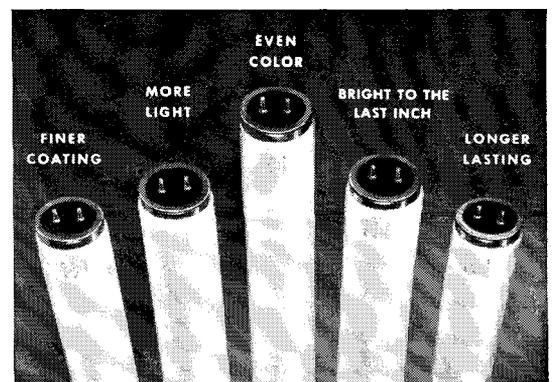
And they last longer—actual service records prove it.

Good vision begins with good lighting. And there's no lighting quite as good as "fluorescent at its finest"—Hygrade Lamps in a Hygrade Miralume fixture—a complete package with lamp, fixture and all accessories working together—with no laggards anywhere, no obstacles to tiptop performance.

It's just the sort of lighting industry wants and needs to-

day, when wartime production schedules call for the utmost speed and precision.

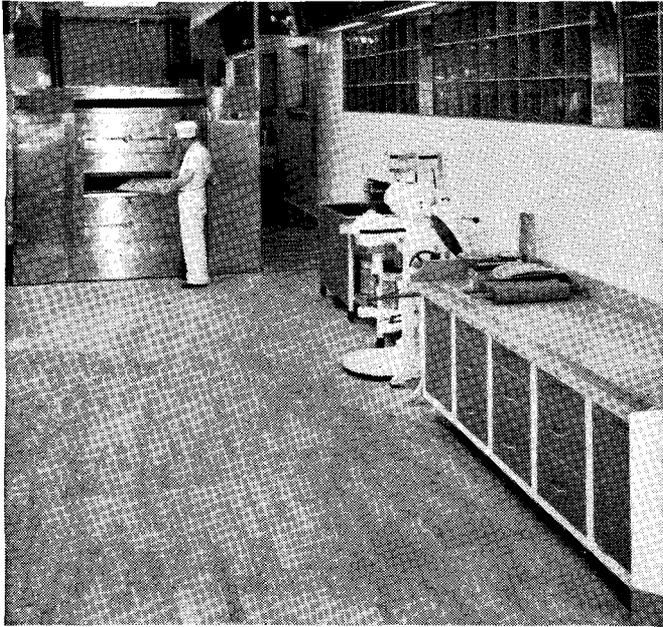
If you haven't yet received our free file-size kit—containing catalogs, prices and complete technical specifications on all Hygrade Fluorescent Lighting Equipment—write today to Dept. AR-5.



HYGRADE SYLVANIA CORPORATION

SALEM, MASS.

Makers of Hygrade Incandescent Lamps, Fluorescent Lamps, Fixtures, Starters, Sockets and Sylvania Radio Tubes



Today's Trend in Industry is to **MAPLE FLOORS**

Hard Maple is getting the call today in plants from Coast to Coast.

Why? Because it's a comfort floor, stands up under heavy service twenty-four hours day after day. Helps speed production, yet may actually cost less.

Warm and dry underfoot, it adds to comfort, protects health. Resilient, it slows up fatigue, while its lasting smoothness speeds up work and traffic, creates no dust injurious to machinery. All to the benefit of production.

Surprisingly, though, Hard Maple often costs no more — most often, less in the long run. So tough-grained and free from splintering and splintering, it takes abuse without showing it; usually gives more years of service.

Today, more than ever, industry needs Hard Maple — **MFMA** Northern Hard Maple, in strips or blocks. See Sweet's, Sec. 11/82.

Write for complete information.

MAPLE FLOORING MANUFACTURERS ASSOCIATION
1782 McCormick Building, Chicago, Illinois



NEWS OF MATERIALS AND EQUIPMENT

(continued from page 86)

Camouflage Paints

THIS COATING is based on U. S. Army specifications for camouflage or visual deception in industrial areas. The nine colors, plus black and white, show no mirror-like reflections or high lights at any angle, according to the manufacturer. Truscon Laboratories, Caniff & G. T. R. R., Detroit, Mich.

Blackout Partition

A BLACKOUT PARTITION on the accordion principle is offered to protect entrances of lighted buildings during blackouts. The partition folds on itself, has a roller assembly traveling on an overhead track. A vertical pipe connected to the lead trolley and extending about 6 in. from the floor, concealed in a loosely fitted front hem, gives rigidity to the front of the partition and serves as a standard. Flameproof blackout fabric is attached with grommets at the top and to one side of the hinged plate, hanging free. When not in use the partition can be folded to the wall. New Castle Products, New Castle, Ind.

New Blanket Insulation

FOR BOTH on-the-job use and prefabrication, a new insulating blanket is announced. The fiber insulation is completely sealed, covered by a waterproof paper and flanged at the edges. In rolls of varying lengths. Wood Conversion Company, St. Paul, Minn.

Plastic Shower Door

SHOWER DOORS and enclosures are being made of a new extruded plastic. The doors have all glass pressure-set in rubber; special anti-drip that deflects water into a trough; piano hinges. American Shower Door Company, Los Angeles, Calif.

Shatter-Resistant Film

ANOTHER synthetic film for making glass windows shatter-resistant is reported, and is said to be characterized by the following properties: High tensile strength, flexibility, good adhesion, transparent to short wave light, resistance to yellowing, washability, hard smooth surface, readily applicable, removable by solvents, may be overcoated with blackout paint. Hamlin Stucco Co., Inc., Garden City, N. Y.

Small Warm Air Unit

SAID to be stripped to essentials without sacrificing efficiency is a new warm air heating unit designed for small dwellings. Capacity 75,000 Btu per hr. at the bonnet. Air delivery 750 Cfm at 160 degrees. Gar Wood Industries, Inc., Air Conditioning Division, Detroit, Mich.

"An Engineer Emphasizes the

flexibility and efficiency of

OIL BURNING SYSTEMS."



Henry C. Meyer, 3rd, is a member of the firm of Meyer, Strong and Jones, prominent New York firm of Consulting Mechanical and Electrical Engineers. Among the buildings in which they have used Petro Systems are the New York Telephone Company Building in Brooklyn and the American Insurance Building and National Newark and Essex Building, both in Newark, N. J. Mr. Meyer has this to say about oil burning equipment:

"It is gratifying to us to know that many installations of oil burning equipment can now be shifted so readily from peace time operation to a full twenty-four hour, seven-days-a-week war time job.

"In our experience American industries owe a great debt to oil heating systems, for they have produced low operating costs plus high heating efficiency, combined with cleanliness, flexibility and quick steaming."

"But—Under existing directives:"

All of Petro's expanded factory capacity is now on ordnance and similar work, and further expansion is being pushed. Production continues on burners which are earmarked for war construction and expansion. Consequently we are currently able to supply Petro burners only when the order carries a priority.

Petro service, however, is maintained. Our Engineering Division is completely manned here and in the field, and available for consultation, analysis, suggestions—in short, for any help we can give on problems of firing or heating efficiency.

Parts necessary for repair or efficient maintenance are available. Our Nation's steam plants must be kept going and their operating efficiency must be kept high. That is a responsibility we share and to which our Engineering corps is dedicated. In this emergency, we do not limit that to Petro fired plants, either. Where we can help, we will.

It still remains a fact that well engineered oil burning systems are more flexible, require less labor, and produce more useful output from each boiler at less cost of maintenance and repair than any other method of making steam.



OIL IS AMMUNITION USE IT WISELY

Full data on Petro Industrial Burners are in our Catalog in Sweet's Catalog file—or we will gladly send copies on request.



PETRO

Cuts Steam Costs



PETROLEUM HEAT AND POWER COMPANY

STAMFORD

—Makers of good Oil Burning Equipment since 1903—

CONNECTICUT

Gettysburg • 1863



Manila Bay • 1898

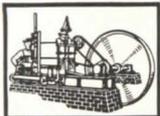


Meuse-Argonne • 1918



Pearl Harbor • 1941

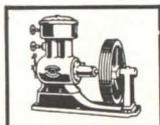
More than Four Wars Ago



Frick Steam Engine of the Fifties



Steam-driven Refrigerating Machine, 1883



Enclosed Ammonia Compressor, Introduced 1915



Now Serves over 200 Industries and Businesses

In 1850, to be exact, a millwright named George Frick built his first steam engine, and began the work which now means so much to the Victory Program.

By 1860 the Frick shops at Waynesboro were producing hundreds of engines. (General Lee's men, during the retreat from Gettysburg, took the belting from the plant, for use as shoe leather.)

By the time of the Spanish-American War, Frick refrigerating machines, introduced in 1882, were used in large numbers for packing meats, making ice, and storing essential foods.

By 1917 the importance of refrigeration was more fully appreciated. Thousands of Frick machines, in powder plants, hospitals, camps, ships, and supply bases, helped America win.

In the present conflict our refrigerating, ice-making and air conditioning systems play a still more vital part. Glenn Martin airplanes; Lycoming engines; Pratt and Whitney gauges; Hercules powder; important government buildings; scores of Army camps, Navy ships, arsenals, food factories, and civilian activities find Frick Equipment an invaluable aid.

DEPENDABLE REFRIGERATION SINCE 1882

Frick Co.

WAYNESBORO, PENNA. U.S.A.



We'll Land... and "Have the Situation in Hand"

Are you "up to your ears" in work, harassed by the need for speed on every war-connected building today? Let the builders' hardware man save you precious hours in selecting needed hardware. He can take this important but detailed job off your mind entirely.

Door Control Experts to Help You

When it comes to door control, the LCN man backs up the builders' hardware man. This team can get the situation in hand without delay. There's the streamlined LCN organization behind them... with expert knowledge of door closer requirements, and a door closer to meet every need. And you can rest assured that any LCN closer can be relied upon to operate without attention for years to come.

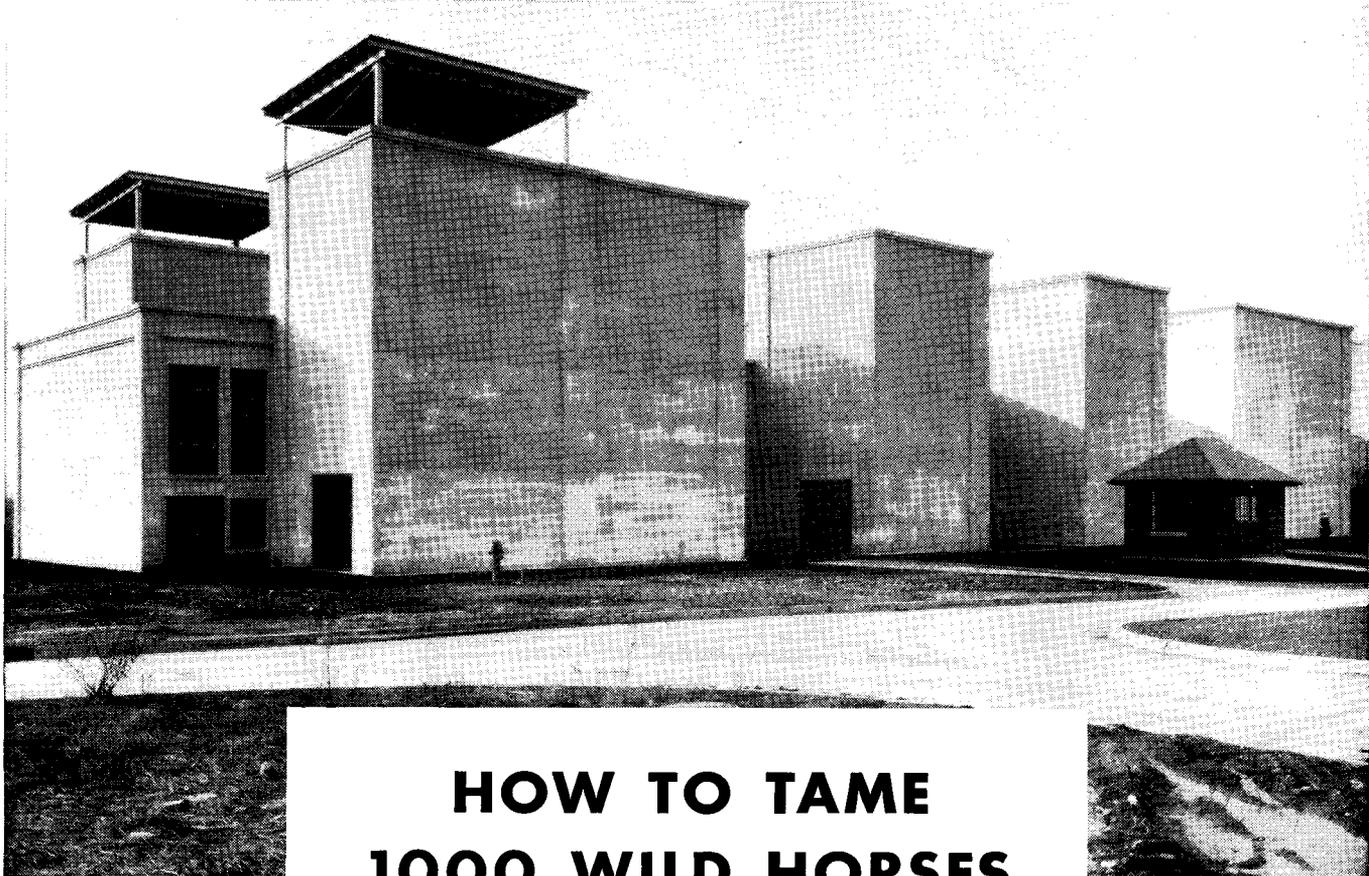


We Are In It, Too

Factories, hospitals, administrative buildings—they all need reliable door control. That's why LCN is working "around the clock" to produce these and other precision products. It's a full-time job—and we're giving it full-time attention. LCN, 466 West Superior Street, Chicago, Illinois.



To be Sure—Specify DOOR CLOSERS BY 



HOW TO TAME 1000 WILD HORSES

THIS queer-looking building is a group of airplane test cells—where motors of 1000 horsepower or over are given grilling tests at high speeds. The noise created is so intense it causes real physical pain to men in the building—even irritates and fatigues workers in adjacent plants and offices.

But Gold Bond's new Acoustimetal-B is solving this tough sound control problem at Patterson Field, Dayton, and other Army and Navy air bases. The terrific din is muffled to the level of ordinary factory noise where it ceases to be objec-

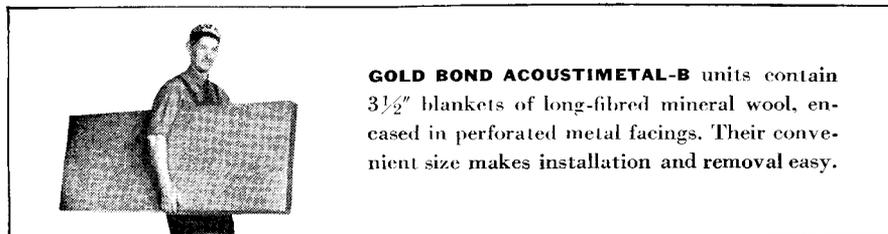
tionable or injurious. And this new material withstands 100 M.P.H. wind velocities, is compact, fire-proof, durable, removable and easy to clean and maintain.

Whatever your next sound control problem may be, the Gold Bond acoustical distributor in your community offers you all the resources of Gold Bond Sound Control Research and Service—to help you select the right materials, and to follow through with the expert installation workmanship that insures maximum performance.

There are over 150 other Gold Bond

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Consult Sweet's, or write for specifications on all Gold Bond sound control materials. National Gypsum Company, Buffalo, New York.



GOLD BOND ACOUSTIMETAL-B units contain 3½" blankets of long-fibred mineral wool, encased in perforated metal facings. Their convenient size makes installation and removal easy.

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Gold Bond

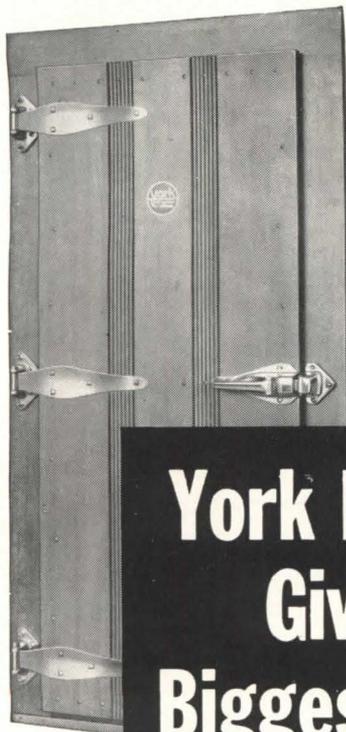
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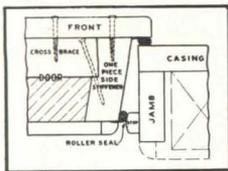
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When you buy refrigerator doors, you expect them to last a long time. York doors stand up, retain original insulating, sealing and operating efficiency longer because of correct design, generous use of top-grade materials, rugged hinges, skilled craftsmanship . . . and these exclusive York features:



PATENTED ROLLER-SEAL. The York double seal provides two tough, pliable gaskets with sponge rubber cores and moisture-proof, grease-proof, wear-resisting coverings. The outer gasket overlaps and compresses tightly against the face of the door-frame. The Roller-Seal or inner gasket is brought to bear against a wood sealing strip with a rolling and wedging action that insures a leak-proof seal through the years.

The outer gasket overlaps and compresses tightly against the face of the door-frame. The Roller-Seal or inner gasket is brought to bear against a wood sealing strip with a rolling and wedging action that insures a leak-proof seal through the years.

ROLLER-SEAL LATCH. A new latch combines finger-tip control with extreme ruggedness and modern styling . . . easy to operate and good looking . . . all exposed parts subject to wear made of stainless steel.

York Roller-Seal Doors are available for every type of refrigeration service, cooler, freezer and sharp freezer doors, vestibule doors, track doors.

York Ice Machinery Corporation,
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the Douglas Fir Plywood Industry is devoting its entire capacity to war production. We know this program has your approval.



Some day this unique method may help you solve a problem!

● At Oregon State College, Coach E. A. Stevens builds racing shells from 1/8-inch Exterior-type Douglas Fir Plywood. In order to shape the big, flat sheets into the required compound curves, he irons the plywood over the frame with an ordinary household steam iron. It takes but a few minutes to mold the plywood "skin" and have it ready for gluing and nailing to the frame. This method, Coach Stevens' own invention, enables him to build simpler, speedier, more durable shells at lower cost.

All over the nation, alert craftsmen and designers are constantly discovering new ways of using and handling Douglas Fir Plywood. We try to learn of all we can because they supplement in a very practical way the very extensive research program we are carrying on in our laboratory. You may never want to "iron" any plywood—yet the sum total of *all* the new information we learn about Douglas Fir Plywood *today* will *tomorrow* make this modern miracle in wood more useful to you than ever before!

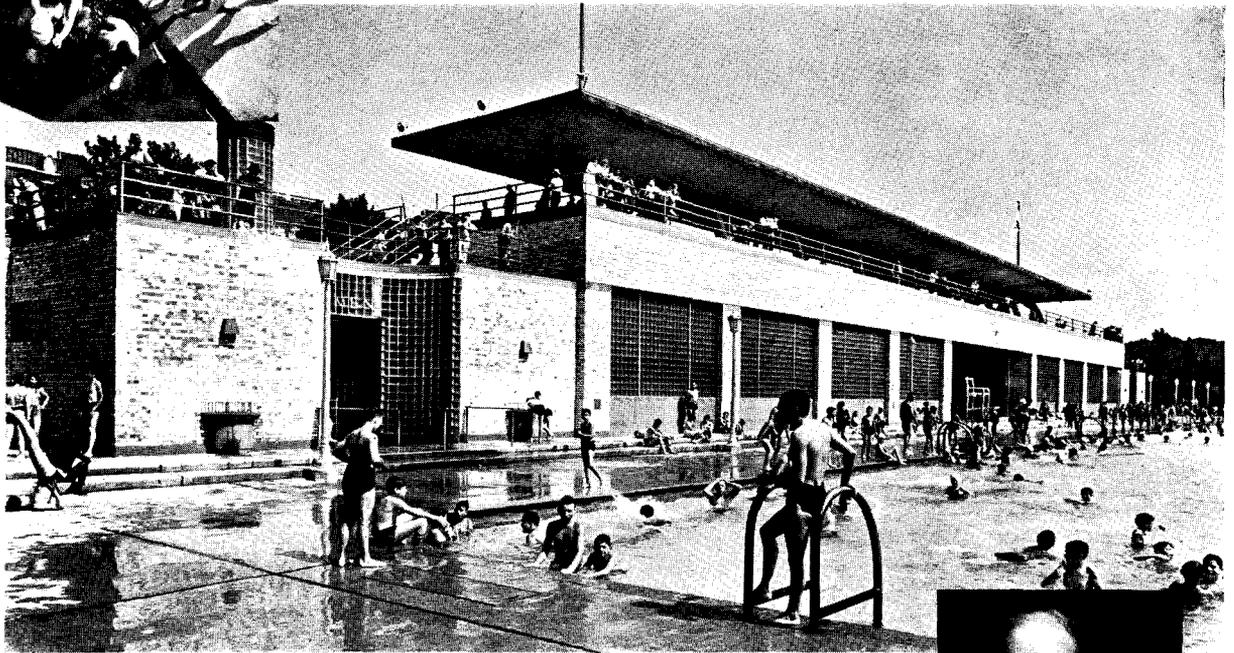
The Douglas Fir Plywood Association welcomes inquiries as to the uses and characteristics of Douglas Fir Plywood. However, non-defense inquiries as to the availability or delivery of Douglas Fir Plywood must be directed to your distributor. Douglas Fir Plywood Assn., Tacoma, Wash.

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Real Lumber
MADE LARGER, LIGHTER
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STRONGER



The Architect says about Chlorination



Two views of the Betsy Head Play Center in Brooklyn, one of the structures in the program of New York City's Park Department. John Matthews Hatton is the Architect, and E. A. Sears the Consulting Engineer. The pool can provide for 5,500 swimmers at one time. The smaller picture shows one of the foot baths.

John Matthews Hatton has this to say about chlorination:

"A problem which confronted us in the Betsy Head Play Center was to provide a continuous and positive sterilization of the swimming pool water for the thousands of boys and girls who use the pool. Wallace & Tiernan Chlorinators solved this problem by providing the protection which shields the children from water-borne infections. The Chlorinators were also used in the foot baths and they dispose of any danger of picking up 'athlete's foot.'

"It has been a pleasure for us to specify Wallace & Tiernan Chlorinators for this pool and many others which we have designed, because they do an efficient and reliable job. I can recommend them heartily from past experience.

"In these days of priorities it is gratifying to know that the Wallace & Tiernan organization are available for servicing present installations, thereby keeping them at peak efficiency during this emergency period. Health is more important now than ever before, and chlorination in swimming pools insures the health of the swimmers."

Hundreds of architects, like Mr. Hatton, rely on the Wallace & Tiernan nationwide service organization to keep W. & T. equipment in top working condition . . . Ask for the W. & T. Swimming Pool Technical Publications reviewing water treatment on several different types of pools.



John Matthews Hatton,
Architect

"SWIM IN DRINKING WATER"

WALLACE & TIERNAN CO. INC.

Manufacturers of Chlorine and Ammonia Control Apparatus

NEWARK, NEW JERSEY



SP74

Represented in Principal Cities

DATA FROM TORCH TESTS

Material	Strength of Abopon Solution	Time in Seconds		
		to flame	to end of flame	to end of afterglow
Masonite	None	4	3	6
	25%	35	0	3
5 Ply Fir Board (3/4")	None	5	2	3
	25%	10	1	3
Celotex	None	3	167	over 300
	25%	10	1	3
Nu-Wood	None	2	35	over 300
	25%	37	0	3
Upson Board	None	2	2	over 300
	25%	12	1	4
White Pine	None	7	20	24
	25%	10	1	5



TORCH TESTS PROVE BUILDING MATERIALS MADE FLAME-PROOF

Greatly needed today. You'll want to look into this flame-proofing treatment. Building materials treated with Abopon, a new type of flame-proofing agent, cut down fire hazards at a time when every saving is vital to the war program. It is especially adapted to war housing, wooden barracks, hangars and factories.

Abopon is odorless, colorless, non-corrosive and non-toxic. It does not interfere with the final appearance of the building material and the finished surface can be painted or lacquered as desired.

The above chart shows results of experiments upon structural materials impregnated with a 25% solution of Abopon in water. The materials were subjected to a flame from a blow torch with the blast continued for 30 seconds after the material caught fire.

• • •

Resistance of treated materials to fires caused by incendiary bombs, glowing sparks, were tested by means of hot blocks. Here again materials treated with a solution of Abopon ceased to flame or glow within 20 seconds after removal of the block; untreated panels continue to glow for over a minute and had to be quenched.



For complete information on costs and uses of Abopon write today to:

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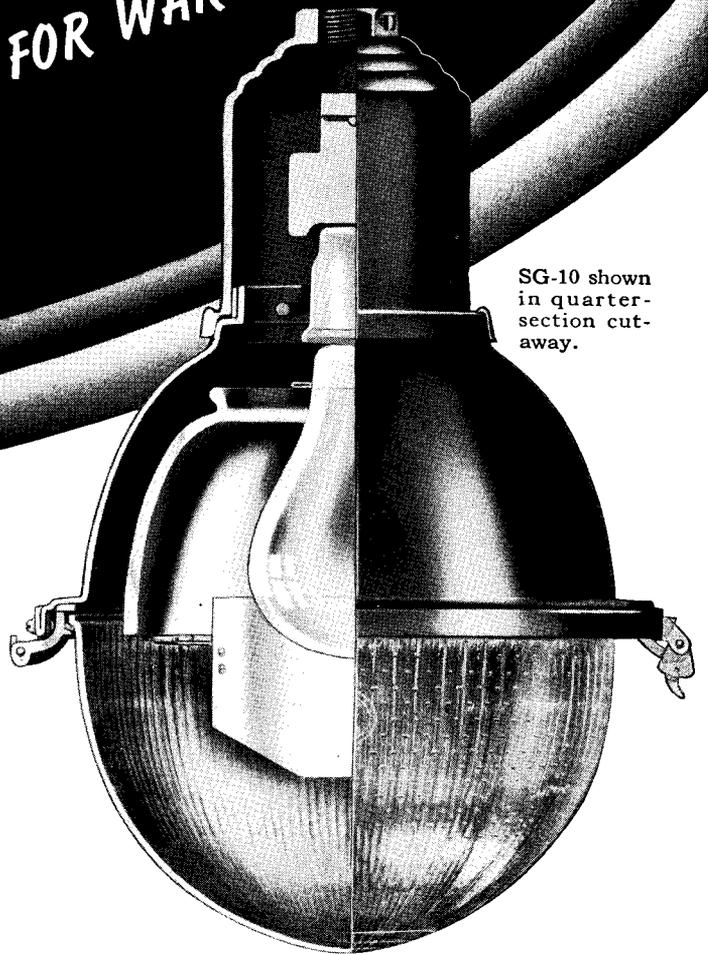
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New REFRACTOLUX LUMINAIRE

GIVES New SAFETY FOR WAR PRODUCTION



SG-10 shown in quarter-section cut-away.

How a "Wall of Light" Blocks Plant Sabotage

Here is another substantial contribution by our lighting engineers to sustain and safeguard America's 24-hour war production schedules. It's the Westinghouse Type SG-10 Refractolux Luminaire.

This new Refractolux combines a steel-protected silvered glass reflector with better methods of light control. When installed on the sides of industrial plants or on properly located poles, the units produce a protective "wall" of intense light. Trespassers are immediately revealed as they approach plant boundaries, fences, storage areas or production centers.

We've designed this high-candlepower luminaire to assure effective, night-after-night protective lighting. SG-10 is typical of Westinghouse *engineered seeing*—the combination of scientifically designed fixtures expertly applied to achieve the best visibility conditions. Full data is available in our new Protective Lighting Planning Book, B-3085. Write Westinghouse Electric & Mfg. Company, Edgewater Park, Cleveland, O.

The SG-10 consists of a canopy, high or low voltage type for internal or external wiring; a socket, mogul multiple or series type; a sheet steel housing that protects the glass reflector; a silvered glass reflector, cushion-mounted to absorb shock; and either a refractor or globe. Canopies, wiring and mounting arrangements and glassware are all interchangeable. A porcelain enameled shield, with refractor type units, redirects light from the pole side, and a hand-operated toggle latch releases the hinged globe or refractor for safe, easy maintenance.

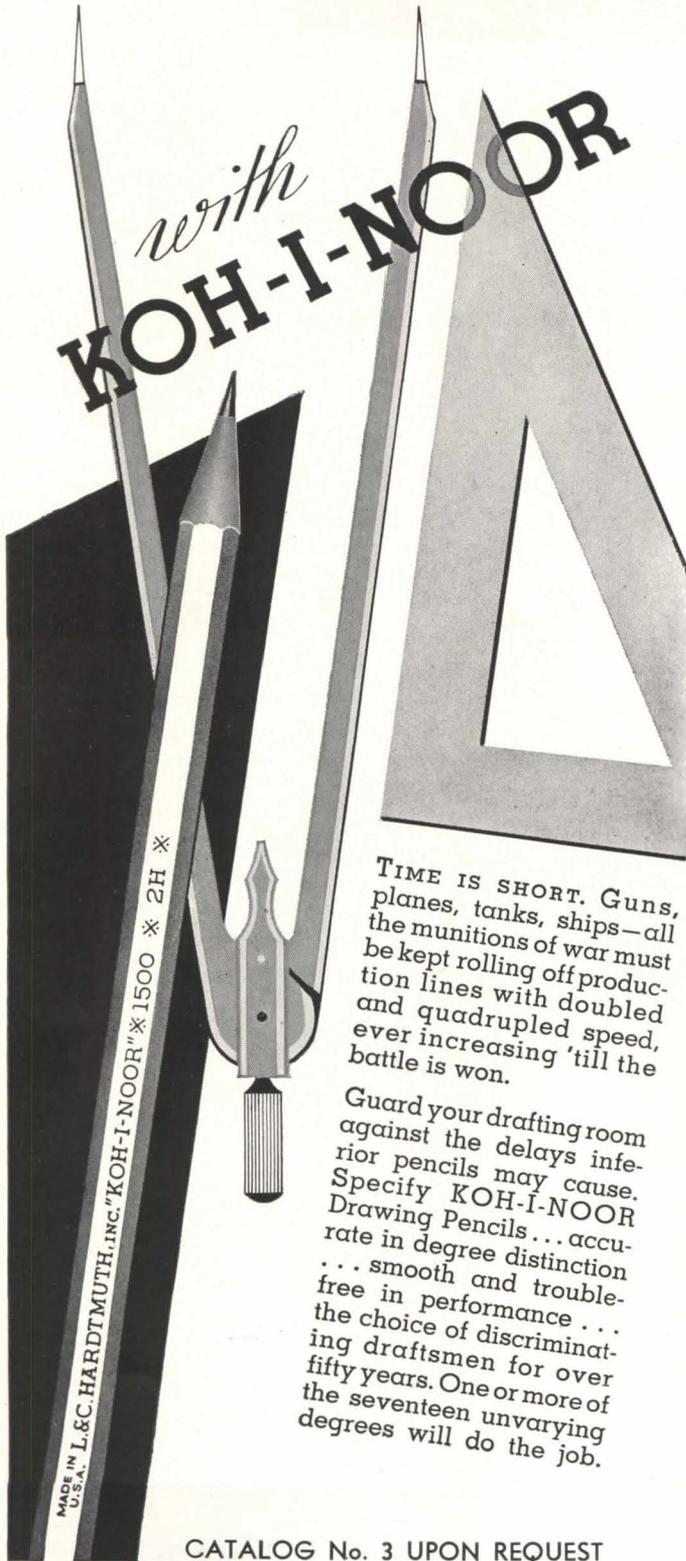
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.. another safety factor
for built-up roofs

OUTLET valves let air escape —
help prevent blistering!

INLET valves let asphalt seep in,
tightly sealing felts to each other
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Ruberoid goes a step further to safeguard the life of Built-up Roofs.

Ruberoid's newest innovation is not just Perforated Felt, but Perforated Felt with *inlet* as well as *outlet* valves. The felt is punctured alternately from the upper and lower side of each sheet. Result, *double valve action!*

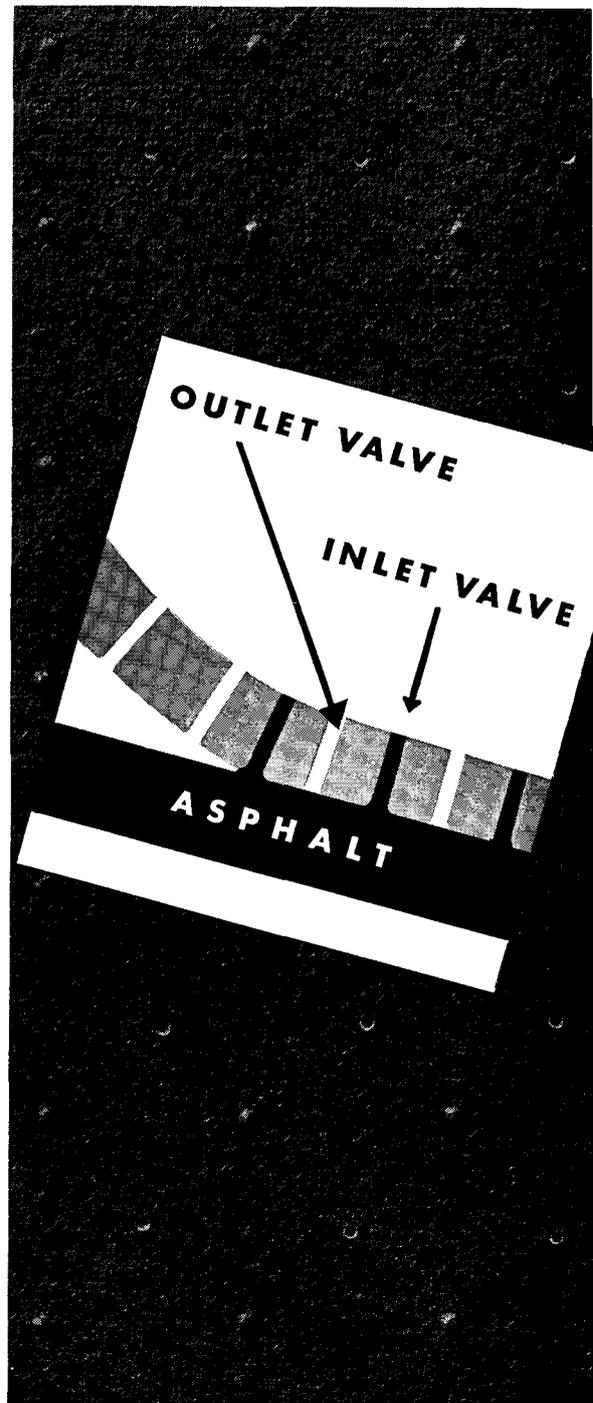
The *outlet* valves permit the instant escape of air containing moisture or water vapor from between the sheets before the sheets start to "set." This is a safeguard that practically eliminates blistering!

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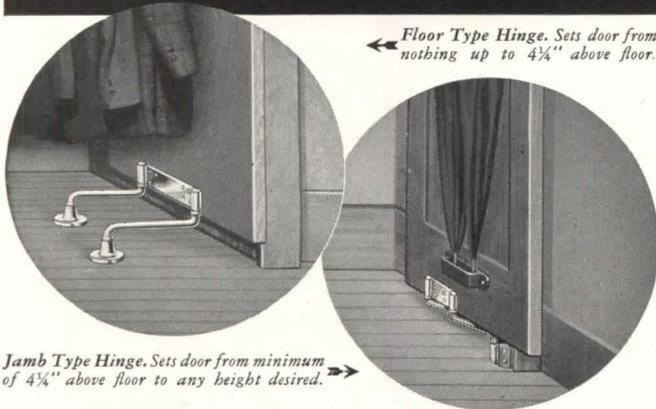
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← Floor Type Hinge. Sets door from nothing up to 4 1/4" above floor.

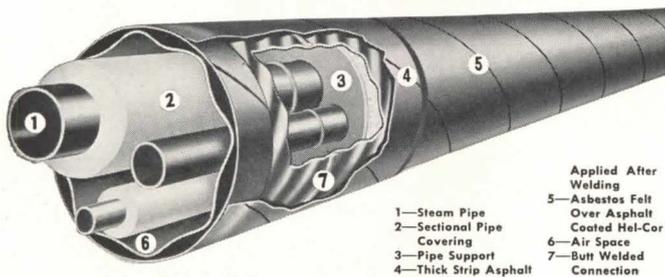
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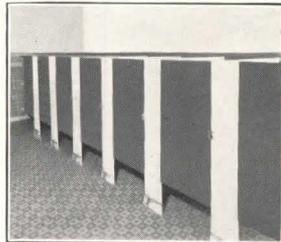
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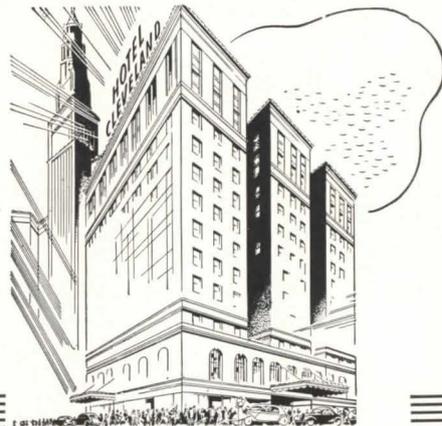
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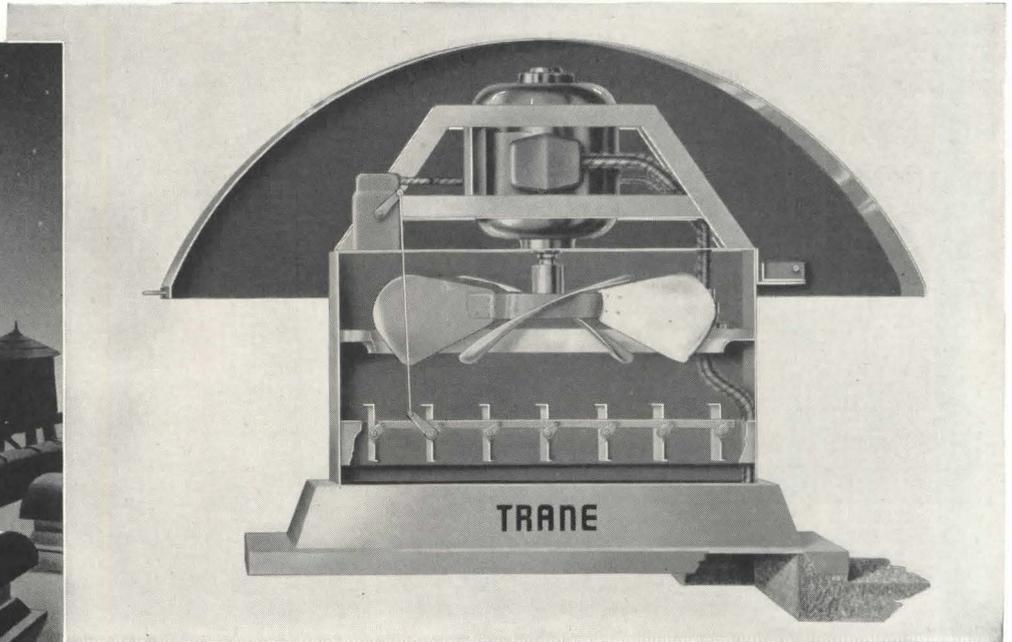
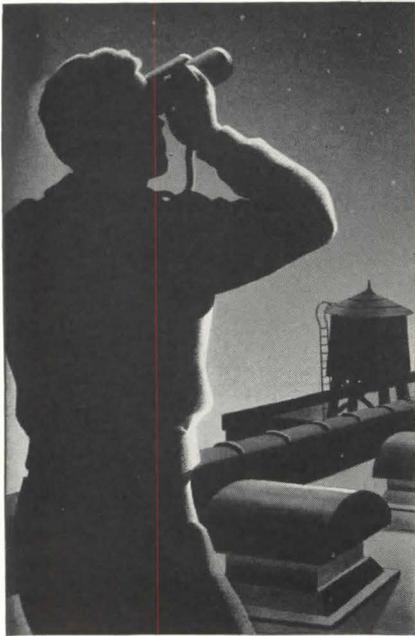
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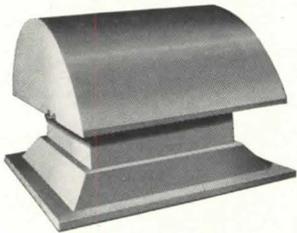
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10. Used by many of America's largest, most vital industrial organizations.
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Write now for your copy of Trane Bulletin DS-364, describing Trane Blackout Ventilators—or, better yet, check with the Trane representative in your area who has complete data on this as well as other Trane products for wartime application.

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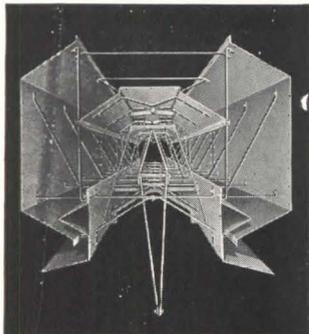
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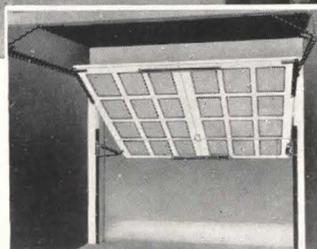
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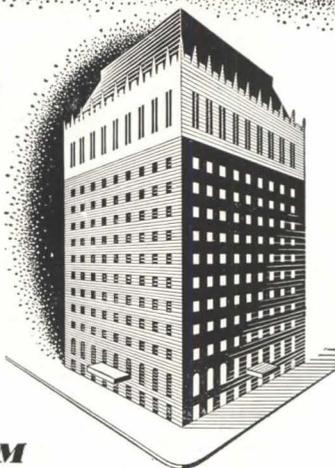
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Above: Celotex Sound Conditioning provides perfect acoustics in the directors' room atop San Francisco's new 12-story Bank of America Building. Below: The imposing exterior of the Bank of America's new home.

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SAN FRANCISCO is justly proud of this new Bank of America Building. Nothing has been left undone to make it right in every regard—an efficient home for the two-billion-dollar institution which makes its headquarters here.

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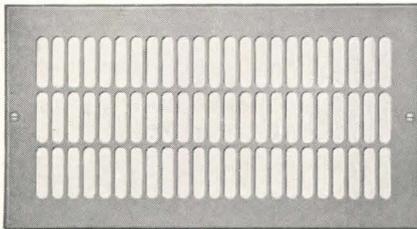


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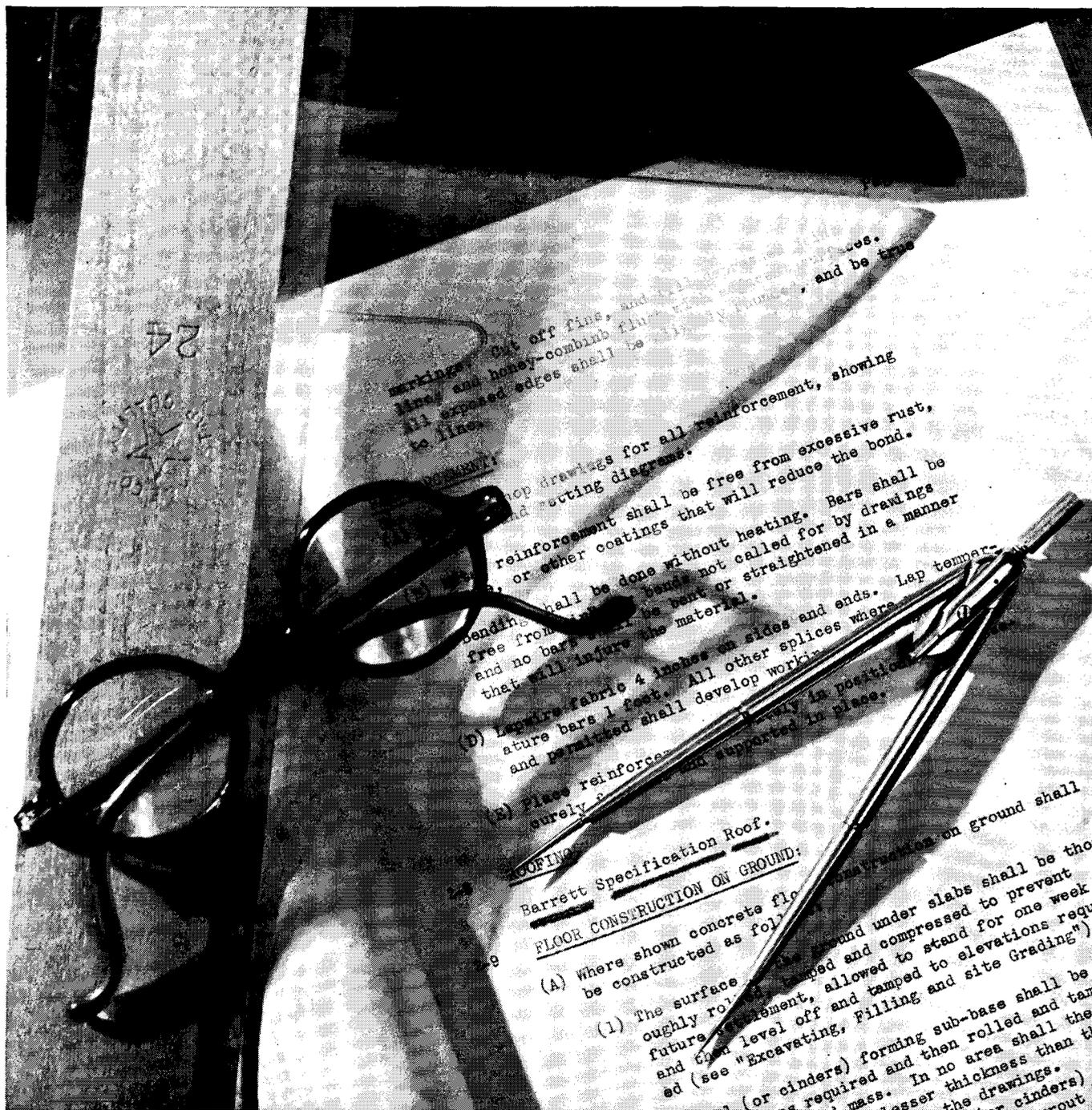
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March 29, 1942

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We are planning to build a Cape Cod style house, containing kitchen, dining room, living room, two bed rooms and bath on the first floor and sufficient space on the second floor for two additional bed rooms. The location is to be on Van Buren Street between Market and Washington Streets in Wilmington, and the cost is expected to be about \$9,000. If we cannot build this year due to inability to obtain materials, we plan to build when the war priorities permit. Architect and builder have not been selected.

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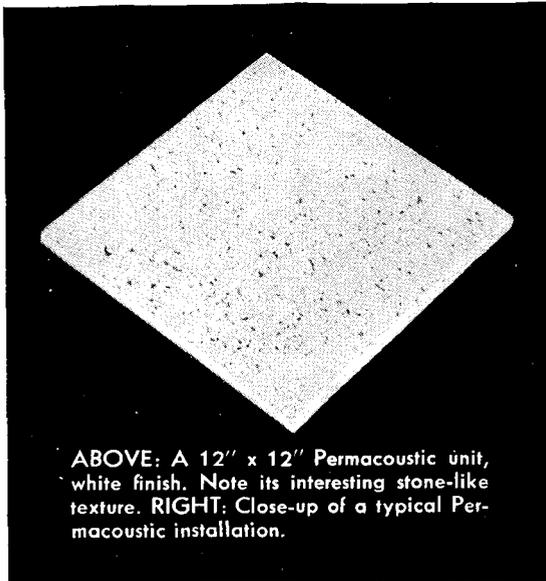
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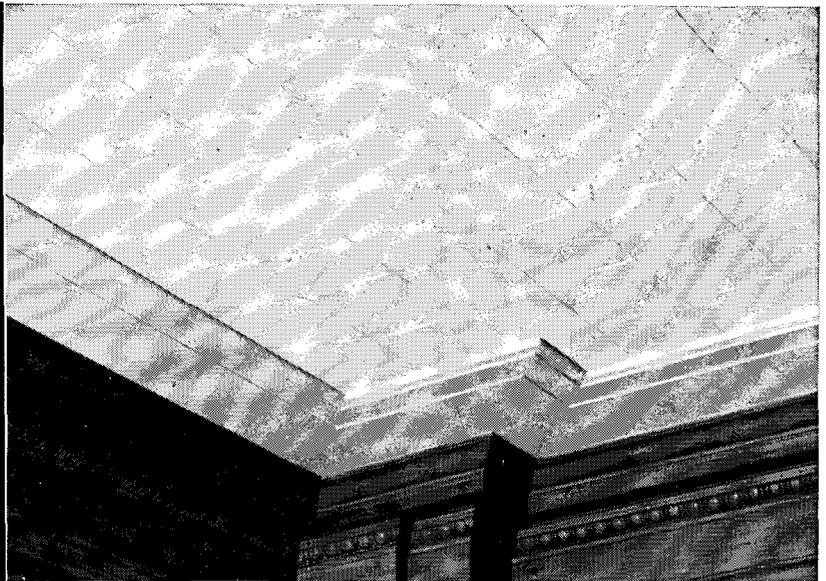
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ABOVE: A 12" x 12" Permacoustic unit, white finish. Note its interesting stone-like texture. RIGHT: Close-up of a typical Permacoustic installation.



Johns-Manville PERMACOUSTIC

... an economical, ceramic acoustical product that combines an attractive natural texture with high sound-absorbing efficiency

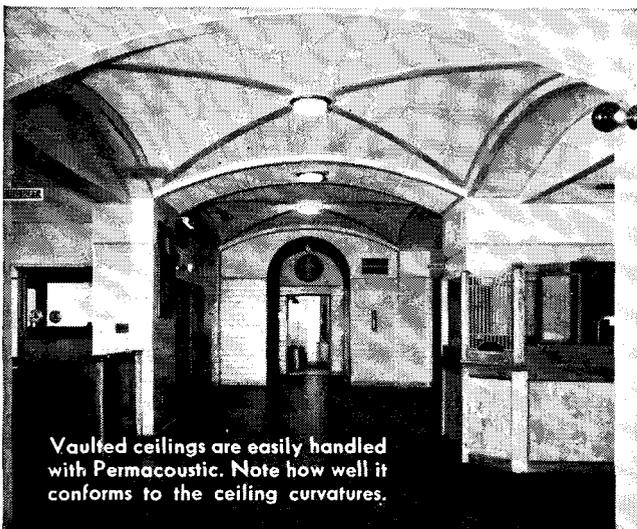
Description: Permacoustic is formed by baking rock wool and clay under extremely high temperatures. It has a distinctive stone-like texture that harmonizes with practically any decorative treatment. Used on walls or ceilings, it forms an interior finish of exceptional beauty and dignity.

Advantages: Attractive in appearance, Permacoustic also provides excellent sound-absorption characteristics. It is mineral in composition, therefore cannot rot and is unaffected by moisture. Permacoustic is fireproof. Little maintenance is required. Cleaning is readily accomplished by conventional methods. Painting will not reduce its noise-quieting efficiency.

Recommended Uses: Permacoustic is an all-purpose, low-cost acoustical material. It is particularly adapted for use in offices, restaurants, schools, auditoriums, etc. Its realistic stone-like texture also makes it ideal for such structures as churches and public buildings.

Application: Permacoustic is easily handled and applied. In most installations, the units are cemented in place directly over the existing ceiling with J-M Acoustical Cement. In suspended ceiling construction, however, each unit is kerfed to accommodate the metal suspension system.

Sizes and Colors: Permacoustic is furnished in units of 6" x 12", 12" x 12", and 12" x 24"; in thicknesses of 3/4" and 1". Standard colors are white and buff. Units may be obtained with either square or beveled edges.



Vaulted ceilings are easily handled with Permacoustic. Note how well it conforms to the ceiling curvatures.

SOUND-ABSORPTION COEFFICIENTS								
Tests by the official laboratory of the Acoustical Materials Assn.								
Material	Thick-ness	128 Cycles	256 Cycles	512 Cycles	1024 Cycles	2048 Cycles	4000 Cycles	Noise Red. Coefficient
Perma-coustic	3/4"	.19	.34	.74	.76	.75	.74	.65
	1"	.23	.44	.71	.68	.70	.73	.65

Light-Reflection Coefficients: Natural White, 73%; Painted, 85%

FOR COMPLETE DETAILS and specification data on J-M Permacoustic and other materials in the complete J-M line of acoustical materials, see Sweet's Catalog, or write for Catalog AC-26A. Johns-Manville, 22 East 40th Street, New York, N. Y.

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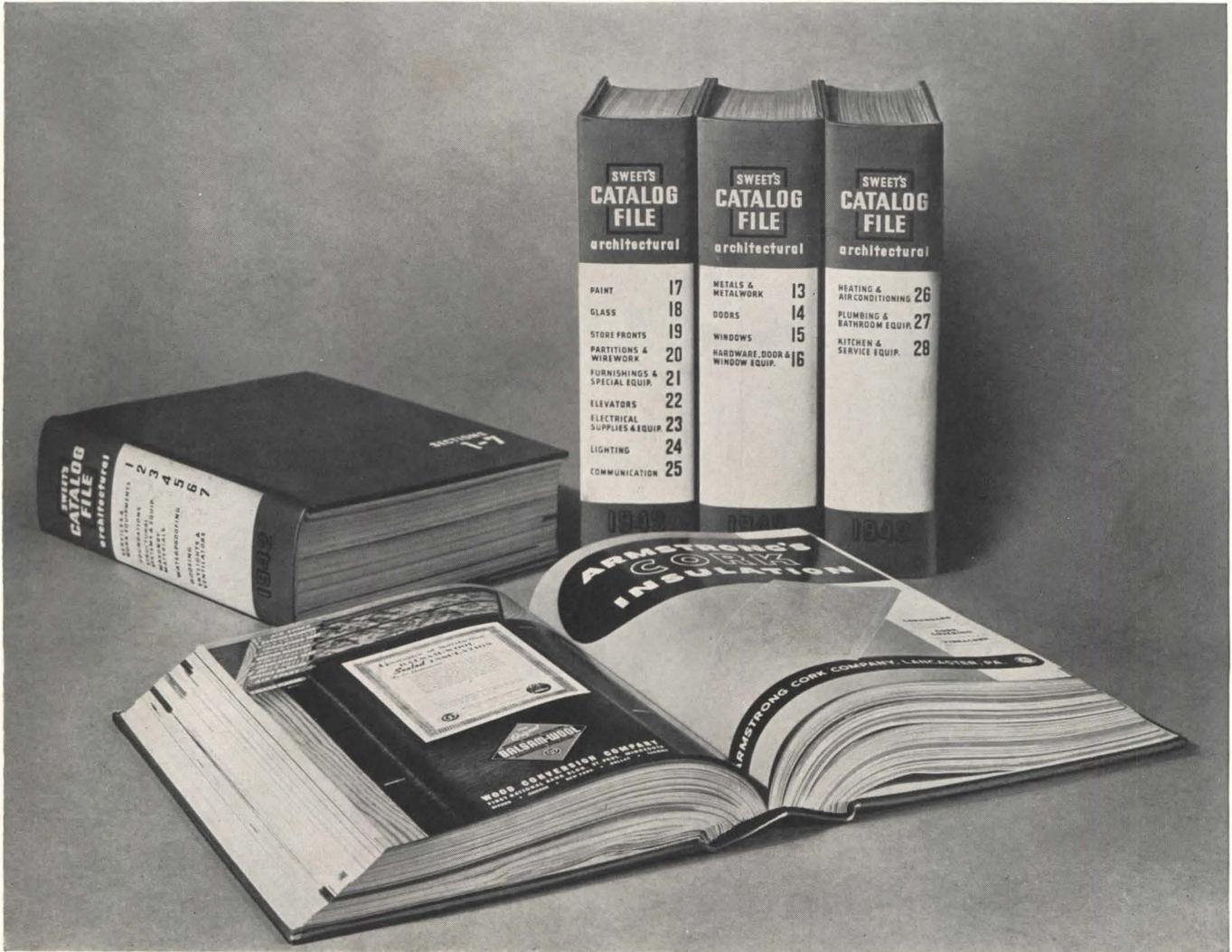
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