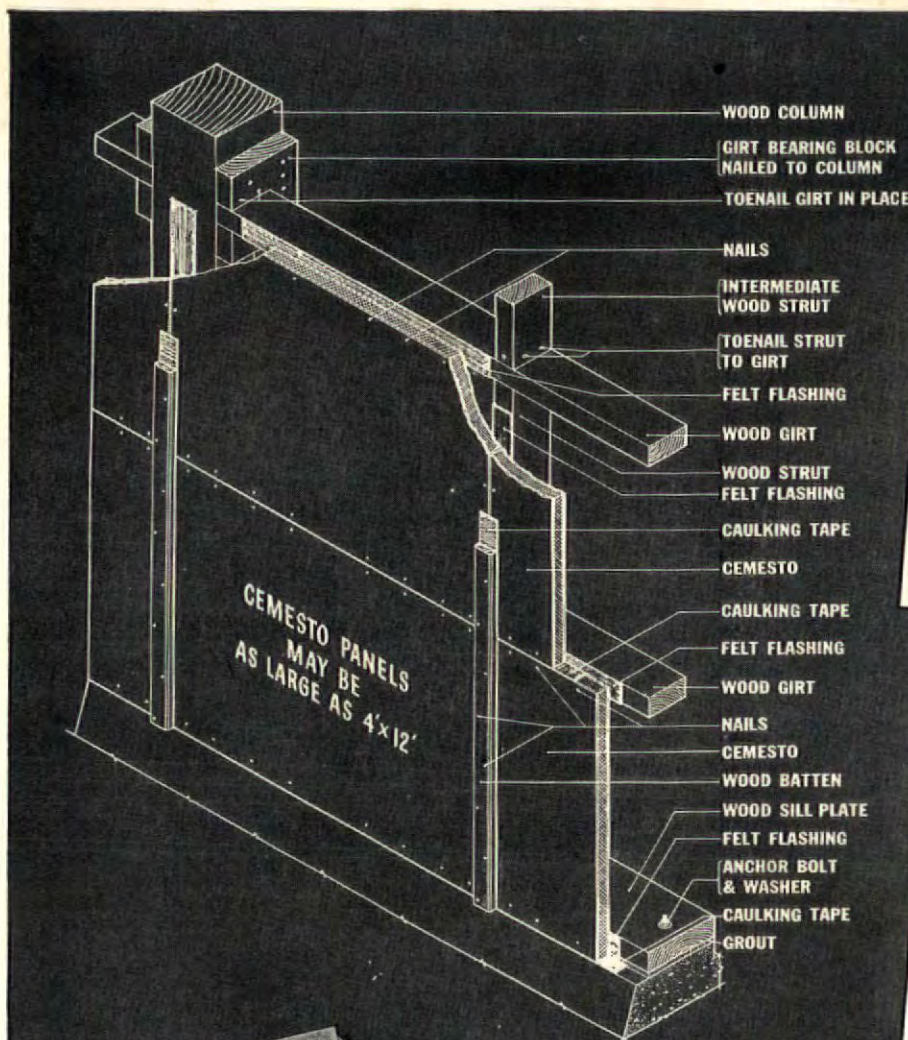


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THE ARCHITECTURAL FORUM

JANUARY 1943

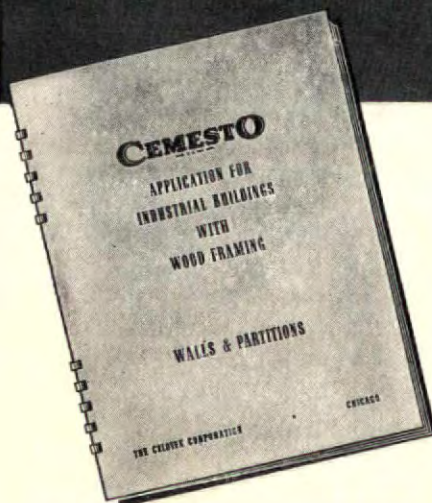
PROBLEM: To Erect Mill Building Walls with Minimum Use of Critical Materials . .



... Using Wall Units which combine all these advantages in one thickness:

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SAVING NAILS
SAVING LUMBER
SAVING TIME
SAVING DECORATING
EXPENSE
SAVING MAINTENANCE
EXPENSE



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NEW PORTFOLIO
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TO WOOD FRAMING

ONE thickness of Cemesto does the work of many materials. That is why Cemesto construction is setting new records for speed in factory construction with wood framing. This revolutionary new method deserves the attention of

every architect. Bring your files up to date by sending for this new Cemesto portfolio now. It contains a wealth of detail drawings and descriptive specifications. A request on your letterhead will bring it promptly.

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CEMESTO
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The word Celotex is a brand name identifying a group of products marketed by The Celotex Corporation.

THE CELOTEX CORPORATION • CHICAGO

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WPB, NHA sign friendship pact . . . War Housing Manual issued . . . Palmer mission to Britain returns with report to the President . . . Dodge construction estimate for '43 . . . Boston fire violations reported . . . Moses to investigate housing for Army, Navy . . . NAREB convention . . . Group health plan attached to housing projects . . . Weinfeld resigns.

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New wings for Library and Science Building solve the problem of reconciling the difference between old and new architectural treatments by frankly expressing it. Hornbostel & Bennett, Architects.

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Joseph C. Hazen, Jr.
George B. Hotchkiss, Jr.
S. Chapin Lawson
A. Banks Wanamaker

Publisher, Howard Myers; Managing Editor, Ruth Goodhue; Associates, John Beinert, Doris Grumbach, George Nelson, Henry Wright; Assistants, Richard E. Saunders, Madeline Thatcher. THE ARCHITECTURAL FORUM is published by Time Inc., Maurice T. Moore, Chairman; Roy E. Larsen, President; Charles L. Stillman, Treasurer; David W. Brumbaugh, Secretary. Publication and Subscription Office, Orange, Conn. Subscriptions may also be sent to 330 East 22nd Street, Chicago, Illinois. Executive, Editorial and Advertising Offices, 19 West 44th Street, New York. General Manager, Robert W. Chastaney, Jr. Advertising Manager, George P. Shutt. Address all editorial correspondence to 19 West 44th Street, New York. Yearly subscription, payable in advance, U. S. and Possessions, Canada, Cuba, Mexico, South America, \$4.00. Elsewhere \$6.00. Single issues, including Reference Numbers, \$1.00. All copies Mailed Flat. Copyright under International Copyright Convention. All rights reserved under Pan American Copyright Convention. Copyright, 1942, by Time Inc. Printed in U. S. A. VOLUME 78—NUMBER ONE

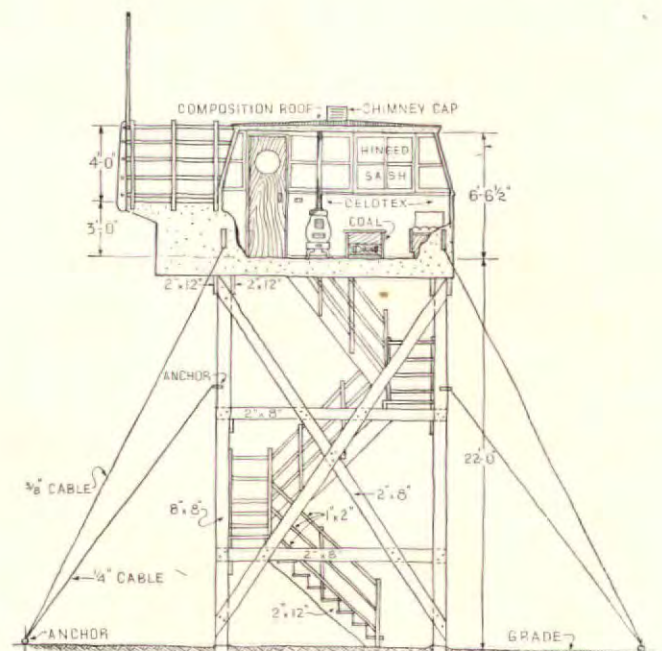
FORUM OF EVENTS

OBSERVATION POST

Posts of the Aircraft Warning Service are scattered along the entire U. S. coastline at intervals of a few miles. This tower, located at Kent, Conn., is approved by the Army as a structure properly designed for the job it has to do. As the illustrations show, it is a wood frame braced by cables. Funds were raised at a square dance; volunteer labor put the building together. Its cost (materials and special installations) was under \$600; paid labor would add another \$400. The plans, prepared by Chief Observer-Architect Allan McDowell, are now available to any community which does not have access to a competent architect. Inquiries are to be addressed to Captain Ralph Millet, Aircraft Warning Service, First Fighter Command, Mitchell Field, Long Island, N. Y.



Van Anda





The evil little guys who cause so much trouble to those who must maintain the working surfaces of counters, table tops, doors and walls, have two strikes on them, if the surface is covered with Formica.

Formica is harder than marble and very durable. It is not absorbent, and it is chemically inert so it is very hard to stain. It is not brittle and the sharpest kind of a rap will usually not injure it. It may be cigarette proof. The colors are stable and maintain their original appearance over the years.

No wonder so many restaurants, hotels, public buildings, ships and trains make use of Formica surfaces. Watch Formica after the war.



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THE ARCHITECTURAL
FORUM

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VOLUME 78
Number 1

FORUM OF EVENTS



Photos, Jan Kulpa

ZIOLKOWSKI AND WEBSTER

From the town of West Hartford, Connecticut, comes a tale as heartening as it is symbolic. It concerns one Korczak Ziolkowski, a sculptor and an American, and another American named Noah Webster, who was born 184 years ago in West Hartford and later gained fame from his dictionary. The tale is told by Dorothy Brewster Comstock, a local citizen:

"Two years ago, Ziolkowski offered to West Hartford his models for a statue and his services gratis, in order that honor might be paid to Noah Webster. By contributing about forty-three cents per voting citizen, he said, the townspeople would, if they were so disposed, cover the expenses and make the enterprise a gracious community project. At first eager to meet the sculptor's offer, representative citizens declared that there would be no trouble in raising the required funds, but the donations amounted to only about one-quarter of the needed amount. But the sculptor, bent on keeping his promise to the town, dispensed with the statue's ornamental features, gave up the work-shed and even many tools necessary for the work, and launched his gigantic undertaking.

"Despite much unaccountable opposition, Ziolkowski obtained from the Council a plot outside the Town Hall where he erected the marble block, bringing it himself by trailer across the city from the freight yards, with only the help of a group of young people.

"These young people, high school students and even young children, have worked at polishing the statue, at raising additional funds of their own, and at all sorts of enterprises connected with the statue, which they have made their particular possession. Every day for two years, summer and winter, they have worked consistently with the sculptor and out of their energy has arisen an intimacy with form and design, and predominantly, a knowledge of the sacrifices which go to make a true American."

(Continued on page 106)



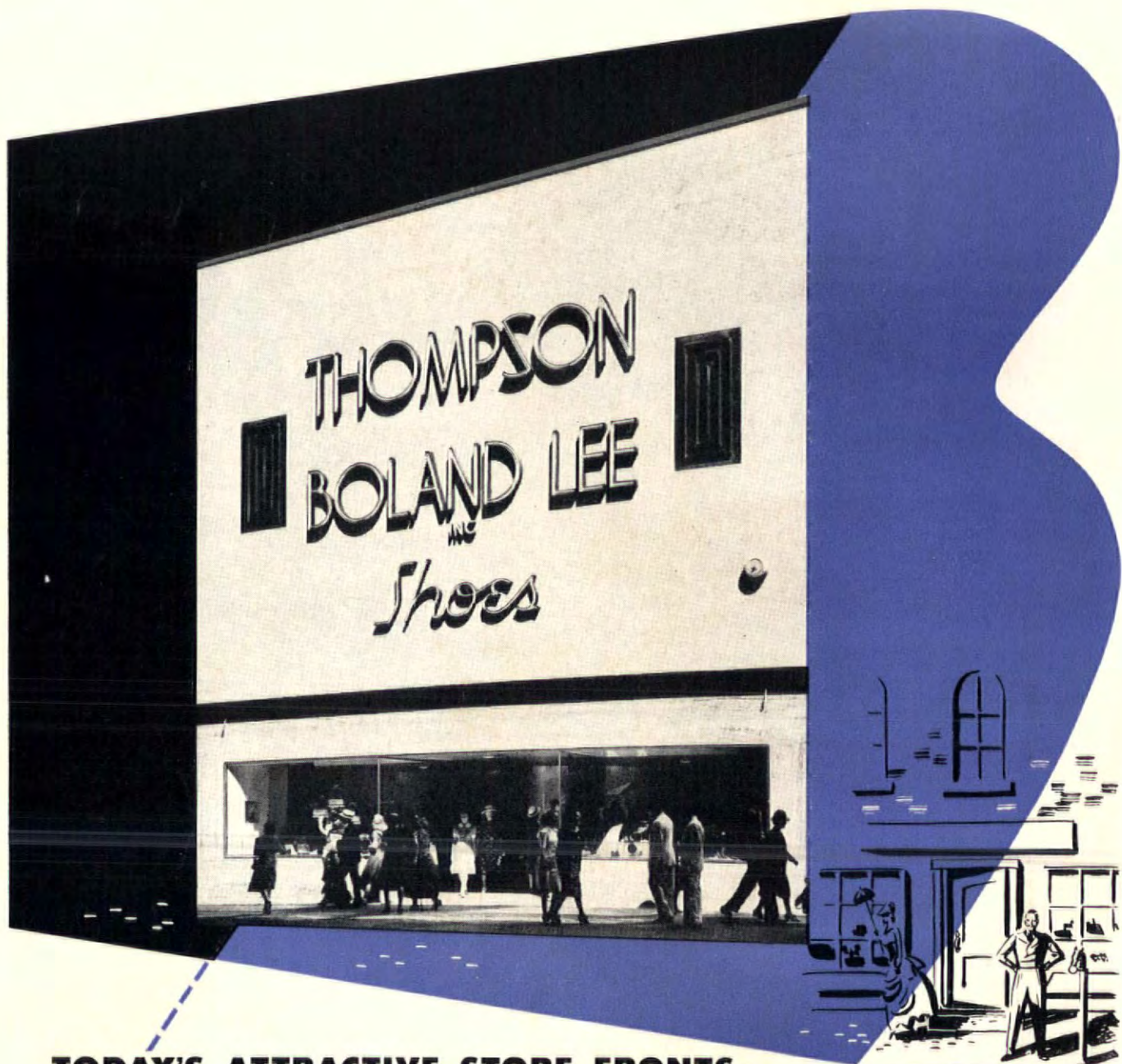
BEGINNING THE CARVING



ZIOLKOWSKY AND HELPERS



INAUGURATION



**TODAY'S ATTRACTIVE STORE FRONTS—
MADE POSSIBLE BY KAWNEER**

★ Back in 1905, the average store was without show-window display facilities—there was no store-front architecture as such, because no practical method of holding large plates of glass had been worked out. • But what a difference today! Much of the effectiveness of modern retailing is based on the display function of the up-to-date store front. Architects have met this problem, and the country

abounds with splendid examples of their work. • All because the Kawneer Company was founded by a practicing architect who devised the first resilient, rustless metal store front. Although the Kawneer Company is now engaged in war work exclusively, a time will come—and before long—when new and better Kawneer Store Fronts will again be available. The Kawneer Company, Niles, Michigan.

Kawneer

ORIGINATORS OF THE
RUSTLESS METAL STORE FRONT
AND ALL-ALUMINUM RESIDENTIAL WINDOW



1853

90 YEARS OF SERVICE

1943

Now there can be only one event to celebrate—the Victory each of us so earnestly desires. Birthdays will occur, however, and so instead of making this, our 90th, the occasion for a celebration, we simply mark it by expressing our sincere appreciation of the confidence that you who design and build for America have placed in us all these years. Without your belief in the worth of fine-quality plumbing and heating products, Case could not have served you and your customers so well in the past, and could not plan to serve so well in the future. W. A. Case & Son Manufacturing Company, Buffalo, N. Y.

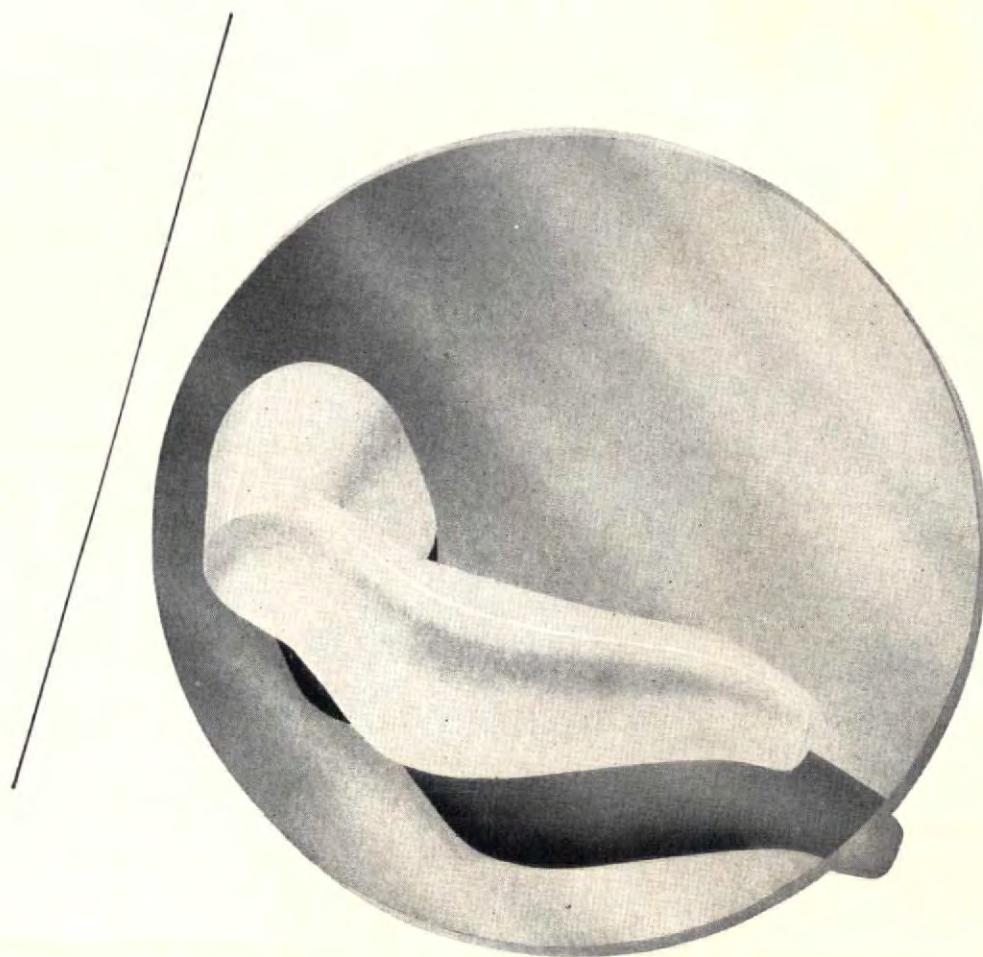
90 YEARS
1853
CASE
1943
OF SERVICE

CASE

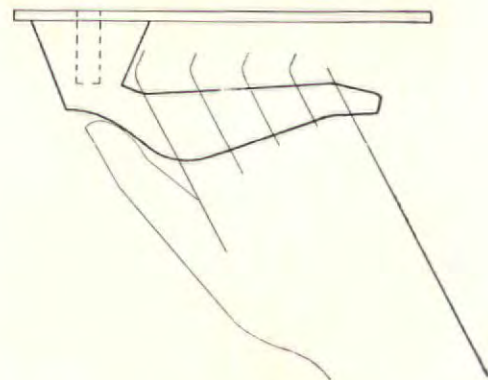
**VITREOUS CHINA PLUMBING FIXTURES
WELDED METAL PRODUCTS**

"... an ugly doorknob made by hand is a regrettable incident, but a million vulgar doorknobs in use are a calamity."

DOUGLAS COCKERELL, London, 1942, at a meeting of the Royal Society of Arts



Architect Richard M. Bennett, New York, suggests a door lever handle, designed to be appealing to the eye and pleasing to the hand. Fashioned to fit the contour of the hand, this lever, when in use, provides a most "natural-feeling" grip. The lever itself is of colored or translucent plastic while the circular back plate is of polished metal.



READING presents the tenth of a series of hypothetical designs submitted by members of the profession as a stimulus to better design in hardware for building post-war America. READING HARDWARE CORPORATION, READING, PENNSYLVANIA

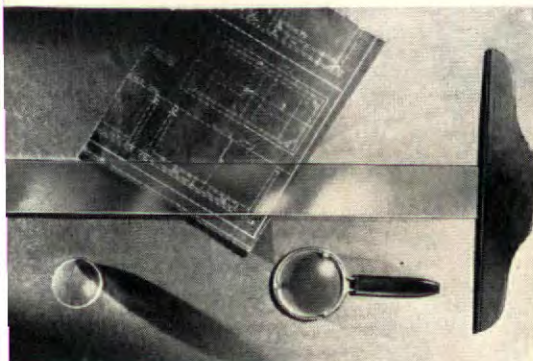
GOOD HARDWARE

READING

SINCE - 1851

J A N U A R Y 1 9 4 3

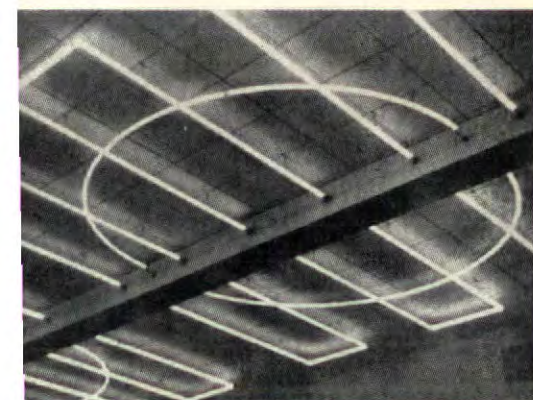
Building Reporter



1. Plastic T-Square and Reducing Lens



2. Custom-Built Fluorescent Lighting



3. Concrete Manhole Lids for Wartime Use

T-SQUARE, REDUCING LENS composed of plastic.

Name: Lucite T-Square; Lucite Reducing Glass (left 1).

Purpose: Lucite T-Square enables draftsman to see drawing at all times; Lucite Reducing Glass provides a crystal-clear, unbreakable, lightweight reducing lens (most reducing lenses were formerly imported).

Features: T-Square has a completely transparent blade. Sizes range from 15 to 30 in. Prices: from \$1.75 to \$3.25. *Reducing Glass:* A 3 1/8-in. lens is set in a gold-plated rim. Handle is finished in shiny, black ebony. Price: \$3. Also available without rim and handle, 2 1/4-in. dia. Price: \$1.25. For sale at art supply stores.

Manufacturer: Arthur Brown & Bro., 67 West 44th St., New York, N. Y

LIGHTING. Continuous tube custom-designed to best serve the individual application.

Name: Zeon Fluorescent Lighting (left 2).

Purpose: For office, drafting room, factory.

Features: "Zeon" fluorescent tubing (normally used for electric signs) may be employed for lighting purposes either in the form of circles or other designs worked out as separate luminaires or distributed over the entire ceiling area in any desired pattern. Upper illustration shows one such luminaire, in which the necessary transformer is contained in a round, central box suspended from an ordinary stand and canopy from the ceiling. Lower illustration shows use of Zeon distributed over the entire ceiling area, producing an even light which does not cast shadows. Zeon conserves vital materials in that electrodes, tubing, and transformers now in stock and not convertible to other war purposes are used. Return circuits in tubing minimize branch circuits using vital copper wire, conduit and other accessories. Starts quickly without flicker. Although initial cost of installation is higher than other systems, upkeep cost is low. Tubing is guaranteed against burn-out for 15,000 hours (or three years) without limitation as to number of times light is turned on and off. Long life saves repair costs and interruption of workers during war production. Units illustrated are available only on Pacific Coast.

Manufacturer: Electrical Products Corp., 1128 Venice Blvd., Los Angeles, Calif.

MANHOLE LIDS OF CONCRETE OR WOOD help war booming communities solve problem caused by ban on cast iron installations.

Name: Concrete Manhole Covers and Curb Inlets (left 3).

Features: Designed by a paving contractor to complete an urgent street paving project in Pittsburgh which had been held up because metal was unobtainable. Cover and inlet were cast of concrete on the job, using a minimum of 1/2-in. round reinforcing steel.

Information Service: Portland Cement Assn., 33 West Grand Ave., Chicago, Ill.

Name: Wood Manhole Covers.

Features: Officials of the county surveyor's office in Los Angeles (where these wood manhole covers were first tried) declare that they are suitable for city and country use throughout the nation. Made of solid timbers specially treated with a salt preservative to resist termites and decay. May be constructed in either circular or hexagonal design by laminating short lengths of plank in local wood-working shops without extensive fabricating equipment.



Information Service: National Lumber Manufacturers Assn., 1319 Eighteenth St., N. W., Washington, D. C.

PLASTIC SCREEN CLOTH is translucent, durable, stainless, non-rusting.

Name: PlastiScreen.

Purpose: Non-critical replacement for metal insect screen.

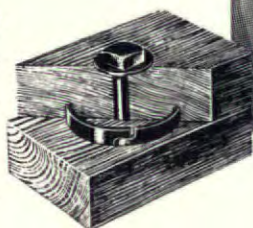
Features: Translucent, admits light. The mesh opening approximates usual area opening in regular 16-mesh metal cloth. PlastiScreen has a lustrous sheen, and its neutral shade harmonizes with all colors. Manufacturer states that tests under severe conditions show that it gives long service, is resilient so therefore resists

(Continued on page 102)

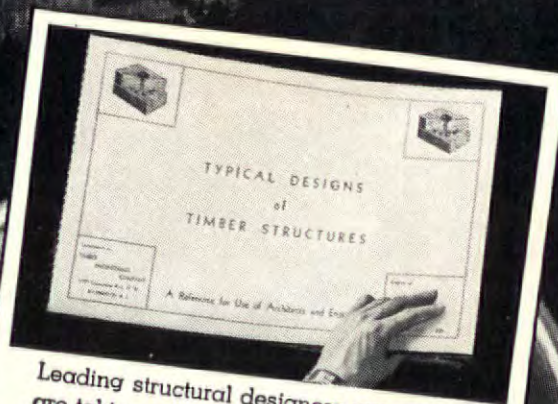


WE'RE DOING A JOB "DOWNSTAIRS" TOO

The TECO Ring Connector spreads the load on a timber joint over practically the entire cross-section of the wood . . . brings the full structural strength of lumber into play.



Timber ENGINEERING COMPANY
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Write Us Today.



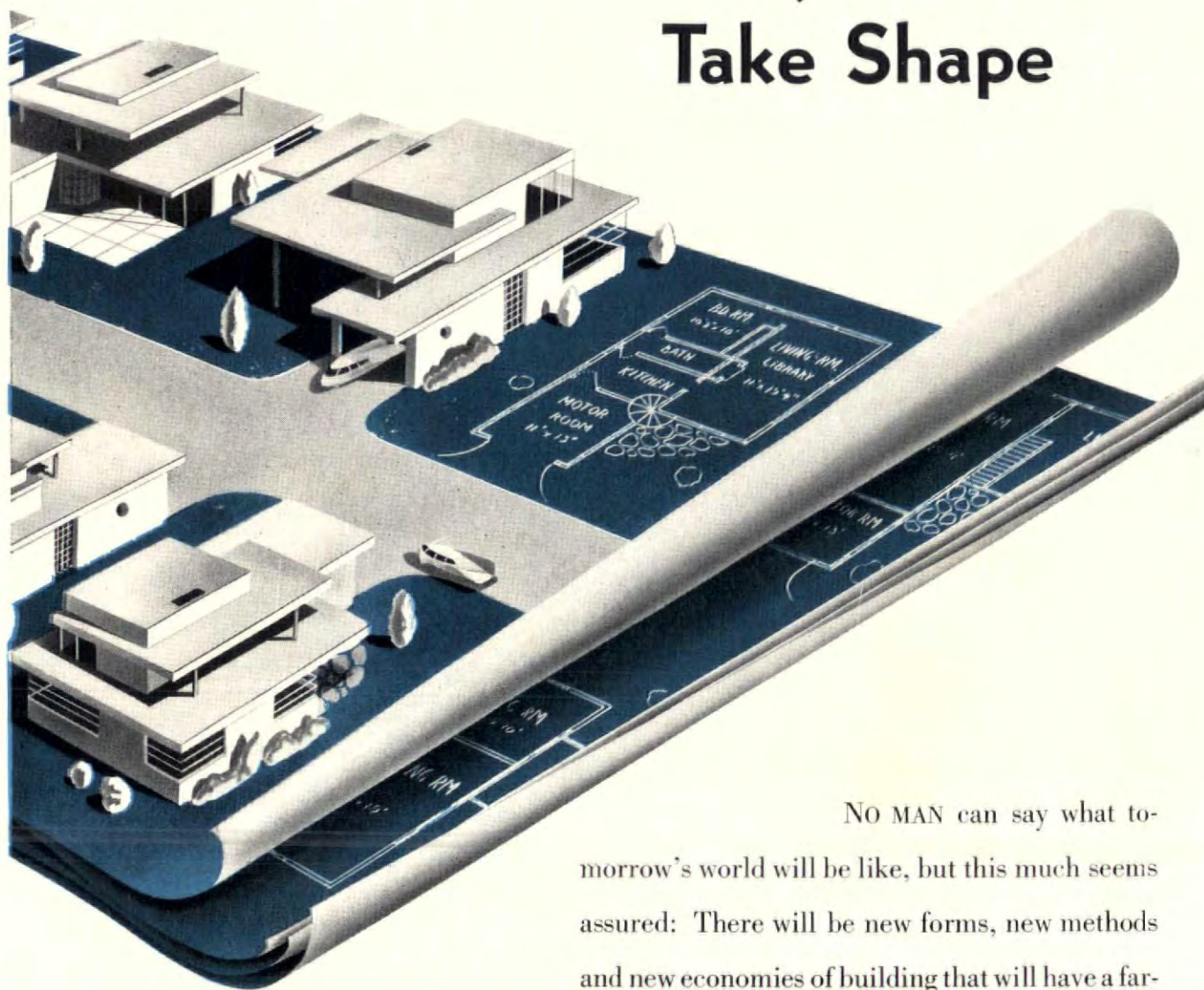
Illustration shows magnified cut-away section of No. 50 Vacuum Breaker installed in DELANY FLUSH VALVE. Note how the flush tube is AIR-VENTED. Flexible rubber check valve with lips at base is contracted by vacuum. When valve is flushed, the check valve expands tight against the tube closing the air-vents — water passes thru the expanded lips.

The first line of defense is maintenance of health. To this end, the United States Government, Bureau of Standards, requires installation of an approved Backflow Preventer on every toilet fixture that has a jet, to protect the men in our armed forces. The Delany #50 Vacuum Breaker under all existing test requirements known to plumbing industry successfully meets them all. If any device is not capable of performing this

function (protection under any and all conditions) it is most certainly inadequate. If a unit's efficiency can be sabotaged through its own weakness (mechanical breakdown or failure), it should be condemned of itself. We have reports of every irrefutable test that the Delany Vacuum Breaker can deliver all around protection day in and day out. It is 20 years ahead of any vacuum breaker on the market.

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 BROOKLYN N.Y.

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THIRTY-ONE YEARS AGO—'way back in 1912! —Mengel was already making hot-plate *waterproof* plywood that was fully the equal of most waterproof plywood today!

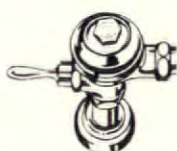
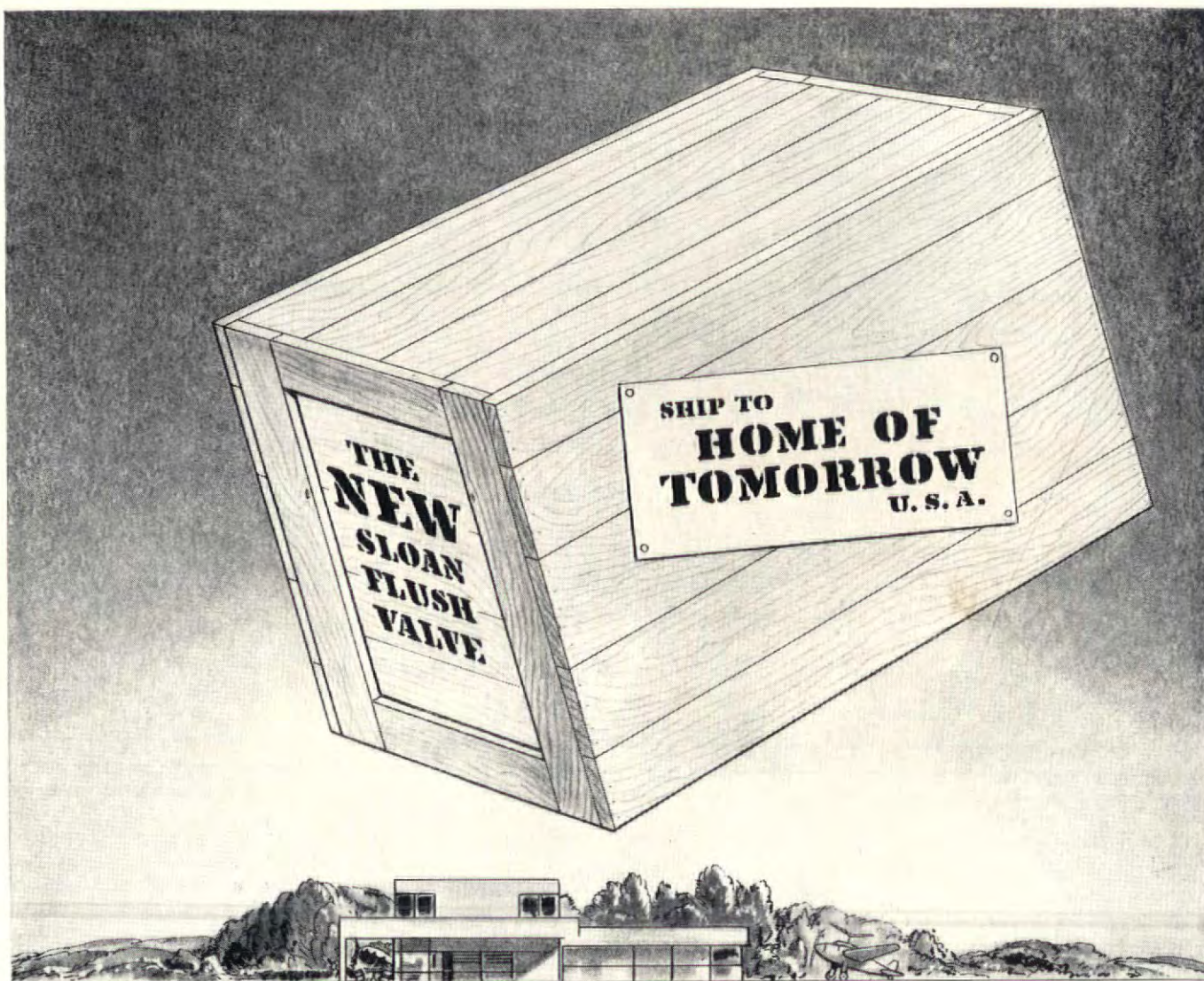
To cite one humble but eye-opening example—the photograph above shows a meat board made of Mengel Waterproof Plywood that has been in constant service—scoured *daily* in soap and hot water—for *over three decades!* And today the board is almost as good as on the day it came from our pioneer *hot-plate-press*, back in 1912!

Today we're glad we've had this long experience

in waterproof plywood, because it's enabling us to do a lot of *big jobs* for Uncle Sam—to make tremendous quantities of waterproof plywood for assault boats, landing boats, cargo ships, prefabricated barracks, airplanes, gliders, and other war tools too numerous to mention.

And when Peace comes back, this long experience will enable us to continue producing better waterproof plywood for your needs, too—better building materials of all sorts, as made by America's Largest Producer of Hardwood Products.

THE MENGEL COMPANY, *Incorporated*
Louisville, Kentucky



Yes—There will be a *new* Sloan Flush Valve for the home of tomorrow. Right now, our job is to win the war and the Sloan Valve Company is devoting its every effort to that end. But in addition to our present job of providing Uncle Sam with equipment for military combat, defense housing and essential war industries, Sloan laboratory research has already developed a new and revolutionary type of flush valve that may be installed in even the most modest of homes.

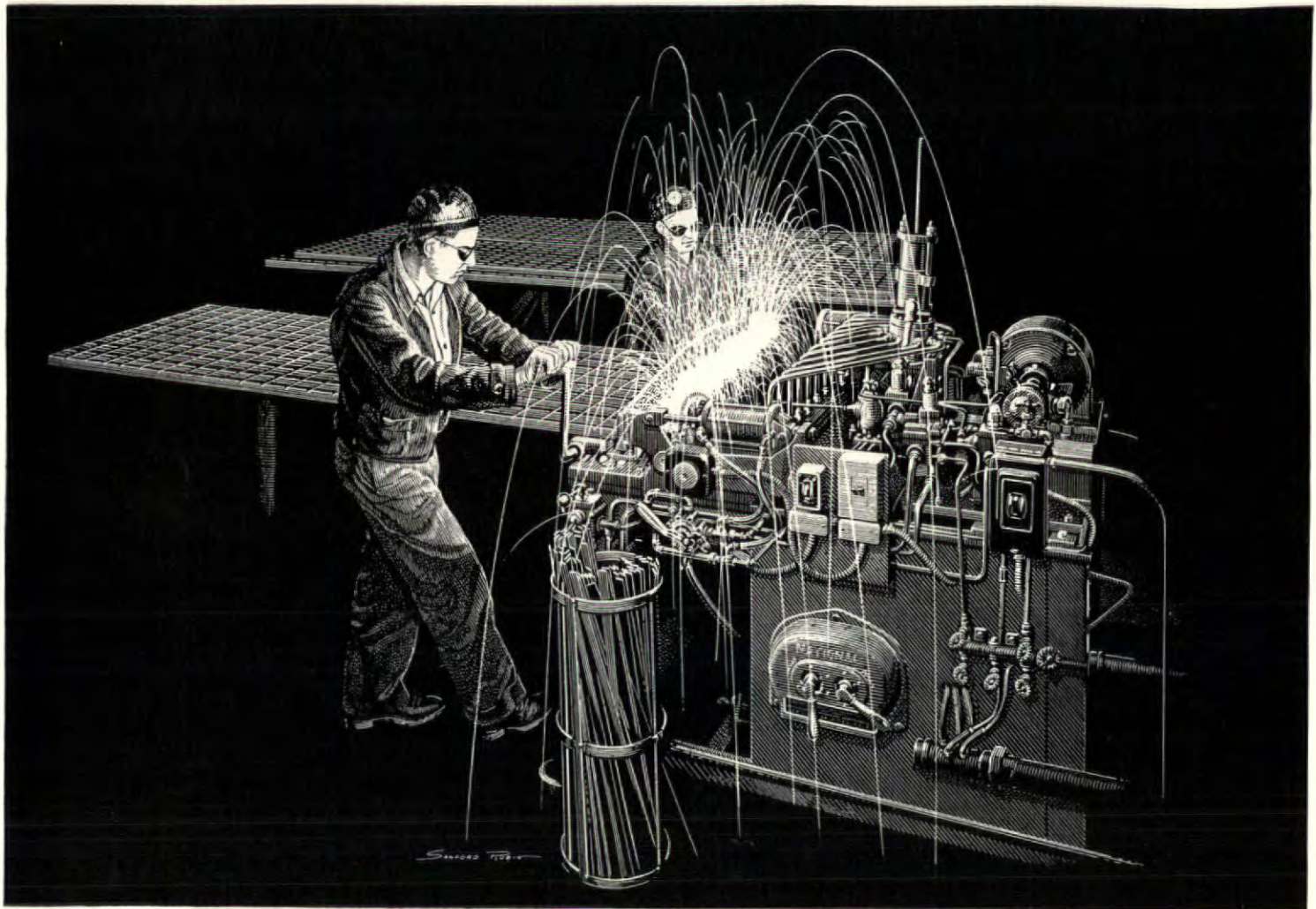
This *new* Sloan Flush Valve will be as quiet as a whisper—it will save water—it will prevent back-syphonage—it will be far more economical to maintain—and the fixture will be more beautiful.

So start now to plan for Sloan-equipped homes. Sloan Flush Valve toilets will be a sales feature for all: architect, builder, owner. Remember! there are more Sloan Flush Valves sold than all other makes combined.

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Orlando—J. L. Bulmer
Tampa—A. B. Zierleyn
GEORGIA—Atlanta—Lewis & Co.
ILLINOIS
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Chicago—Branch-Nicoloff Co.
Decatur—Ornamental Metalworks Co.

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Evansville—International Steel Co.
Fort Wayne—Don White
Indianapolis—W. J. Holliday & Co.
South Bend—The Builders Agency
IOWA
Davenport—Builders Service Co.
Des Moines—Perkins Concrete & Lum. Ser.
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KANSAS—Salina—The Lee Hardware Co.
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Lexington—Faulkner Bldrs. & Sup. Co.
Louisville—Philip Carey Co.

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Boston—Stel-Wad Eng. Co.
MICHIGAN
Detroit—C. B. Moe Co.
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Lansing—James E. Payne
MINNESOTA
Duluth—Duluth Bldrs. Sup. Co.
Minneapolis—George T. Warner

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Jackson—Mississippi Steel & Iron Co.
Meridian—Lenray Glass & Mtl. Co.
MISSOURI
Joplin—General Steel Prods. Co.
Kansas City—Southwest Mtl. & Equip. Co.
St. Louis—Mesker Bros. Iron Co.
MONTANA
Great Falls—Building Service, Inc.
NEBRASKA
Hastings—R. W. Kerr Co.
Omaha—Earl S. Lewis & Co.
NEW JERSEY—Newark—Boorman & Co.
NEW MEXICO
Albuquerque—Superior Lbr. Co.

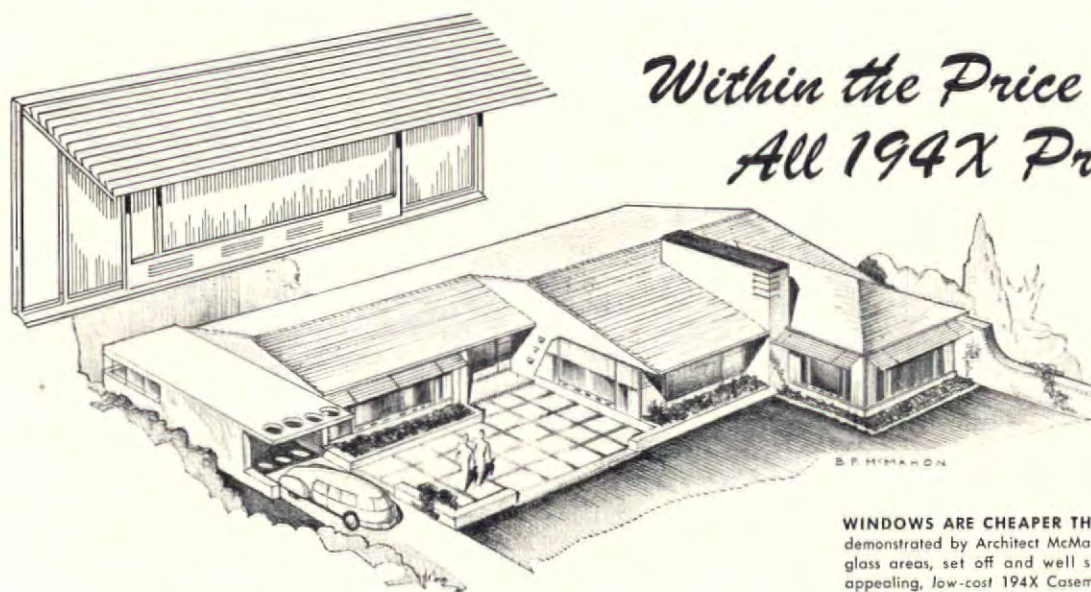
YESTERDAY AND TOMORROW

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If not, write for this comprehensive volume, personalized with your name. Covers metal windows from A to Z... ideal to have at your elbow when working up specifications, details, etc., on post-war projects. No obligation.

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Salt Lake City—Structural Steel & Forge

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PUERTO RICO

San Juan—Prisco Jimenez, Jr.

TERRITORY OF HAWAII

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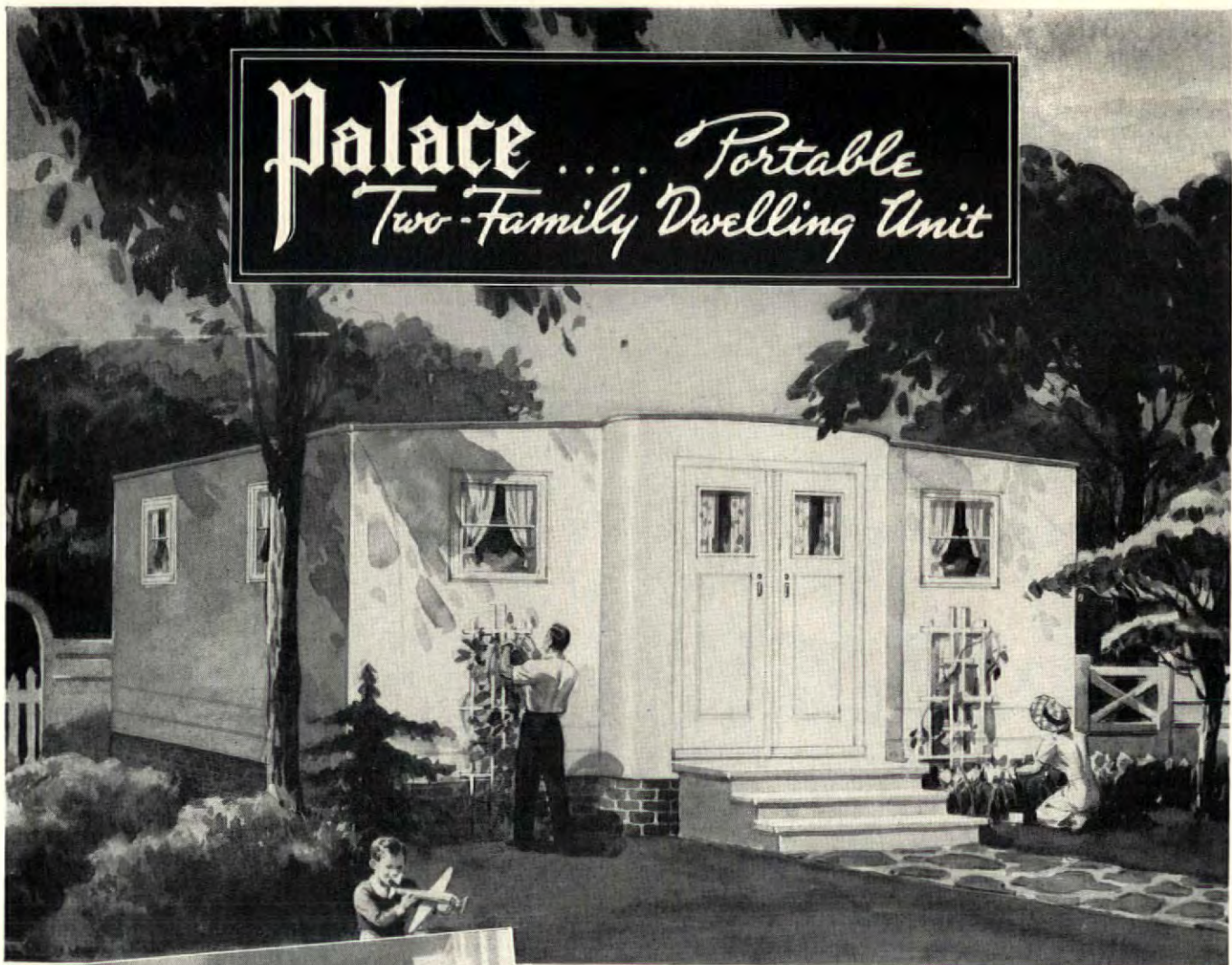
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Write for Literature

Quickest Way to Meet Industrial Housing Needs!

When sudden plant expansion gives rise to an influx of new workers, the quickest way to meet the need for additional housing is by the use of Palace Portable 2-Family Dwelling Units.

Completely factory-built and factory-assembled, with plumbing, heating and electric wiring all factory-installed, this new-type home is ready for occupancy practically as soon as it arrives at the building site.

Unlike the ordinary portable home, it is so designed that the walls, roof and floor of the two side-wings fold up against the central section. Thus, it can be easily transported on a flat-bed truck direct from the factory to any desired location.

Palace Travel Coach Corporation
Flint, Michigan

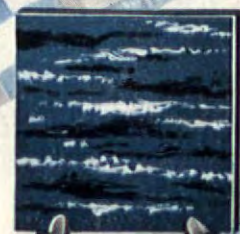
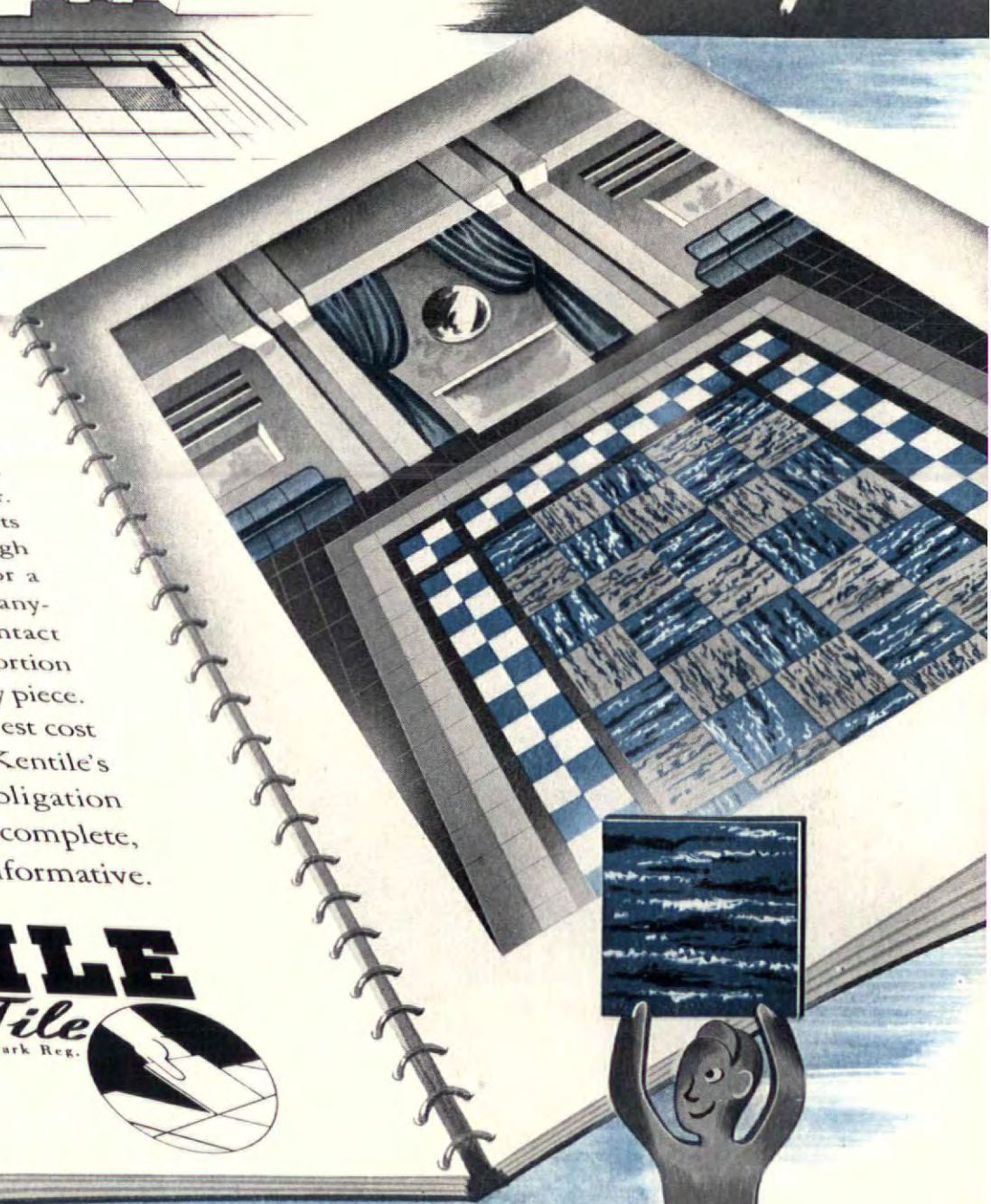
SPECIFICATION

Vstyle

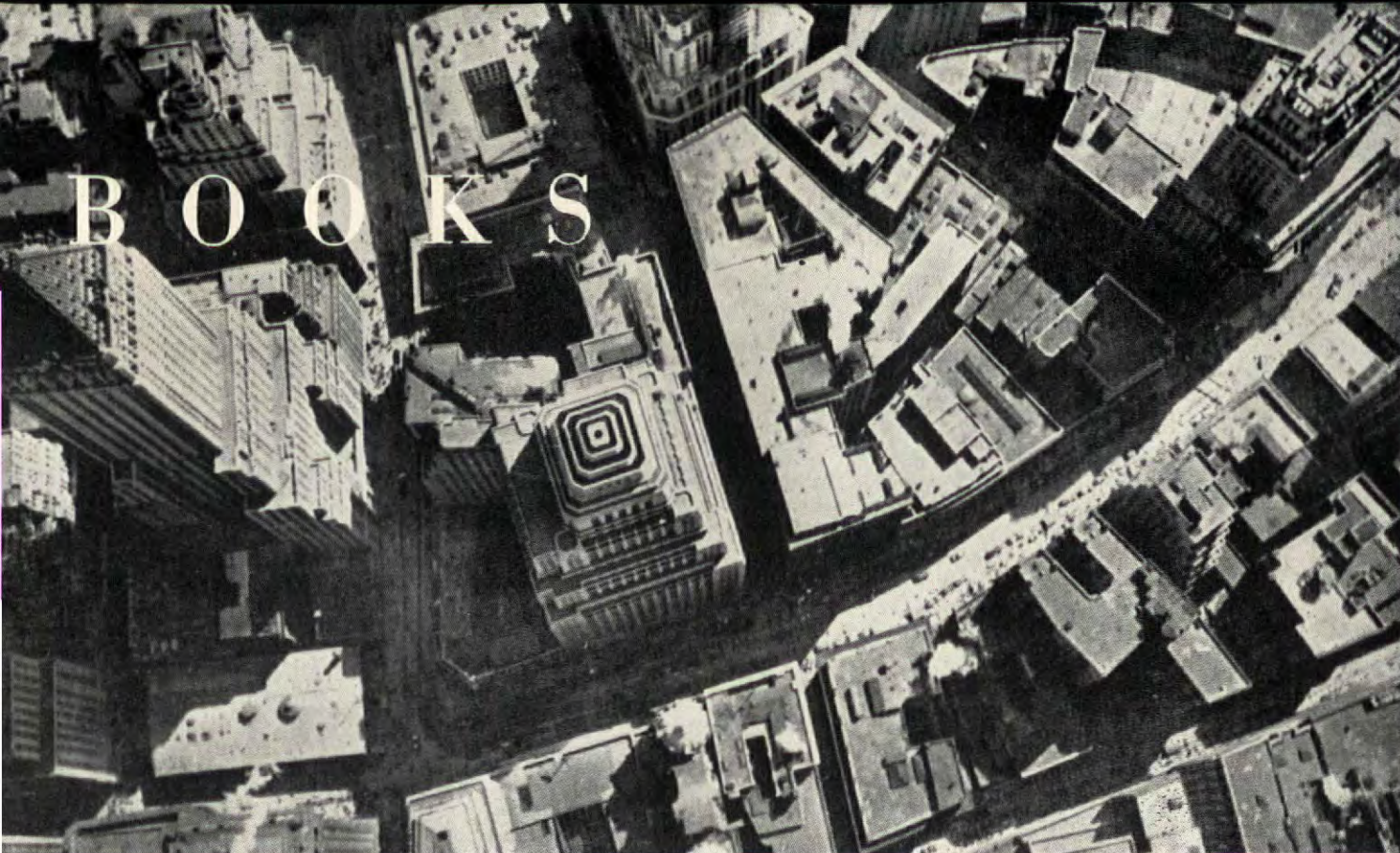


Today—instant delivery, bullet-speed installation, rugged wearability, trouble-free maintenance. Tomorrow—after "V" day—limitless pattern and color, restful and quieting resilience, stain-proof cleanliness, year after year wear. Today and tomorrow, Kentile meets every specification. It is strong enough for factory use, lovely enough for a beauty parlor. It can be installed anywhere, even on concrete in contact with earth. Use it today and any portion can be altered tomorrow, piece by piece. And, always, it is one of the lowest cost floorings made. Know ALL of Kentile's advantages. Without any obligation write for your copy of our complete, detailed color book. It's informative.

KENTILE
Asphalt Tile
Trade Mark Reg.



DAVID E. KENNEDY, INC., 54 SECOND AVE., BROOKLYN, N. Y.



MANHATTAN'S "GOLDEN HORN"



ARTILLERY REPLANNED THE MEDIEVAL CITY



TRAFFIC IS REPLANNING THE 18th, 19th CENTURY CITY

CAN OUR CITIES SURVIVE? by José Luis Sert. The Harvard University Press, Cambridge. 259 pp., illustrated. 12x9. \$5.

The title of this book should not mislead the reader who may have just finished going through the latest war bulletins. Mr. Sert is not concerned with the problems of air raids and potential damage to buildings, not, at least, in any important way. His attention is concentrated on a process of urban disintegration which has been going on a great deal longer than the present war. This process is not an unfamiliar one.

Our cities are relics of the 19th century, with a spotty overlay of 20th century improvements. Their street systems were created primarily to facilitate small-scale land subdivision and secondarily to meet the modest needs of horse-and-buggy traffic. The prevailing system of virtually uncontrolled land use concentrated the working population in those areas where the streets were least able to carry the increased loads, while the rapid transportation networks, designed to feed still more people into the metropolitan centers, have been draining them out instead. Main Street merchants have watched their customers drift away to new shopping centers where a car can be parked, and tax delinquencies have mounted in consequence. While the war program has arrested these downward trends for the moment, it is generally expected that an accelerated postwar process of decentralization will further aggravate urban problems.

The book is offered as an "ABC of urban problems, their analysis, their solutions." It is an ABC, and an extremely good one. But it must not be confused with the kind of pseudo-primer in which a hypothetical audience with an assumed mental age of three is addressed by an author in the same class. Here the writer has assumed that his material will be interesting to laymen because laymen also live in cities. The urban center, to Mr. Sert, is a very live organism with a past, present and future, an infinitely perfectible organism whose main function is to meet the living and working requirements of large numbers of people. This basic idea, and the story of its development, should be quite comprehensible to any intelligent citizen, whether planner or plumber.

One of the most impressive features of the book is the really magnificent use of pictures. These numerous illustrations have

(Continued on page 110)

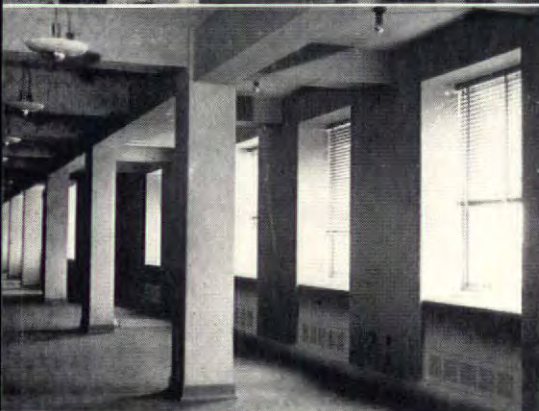
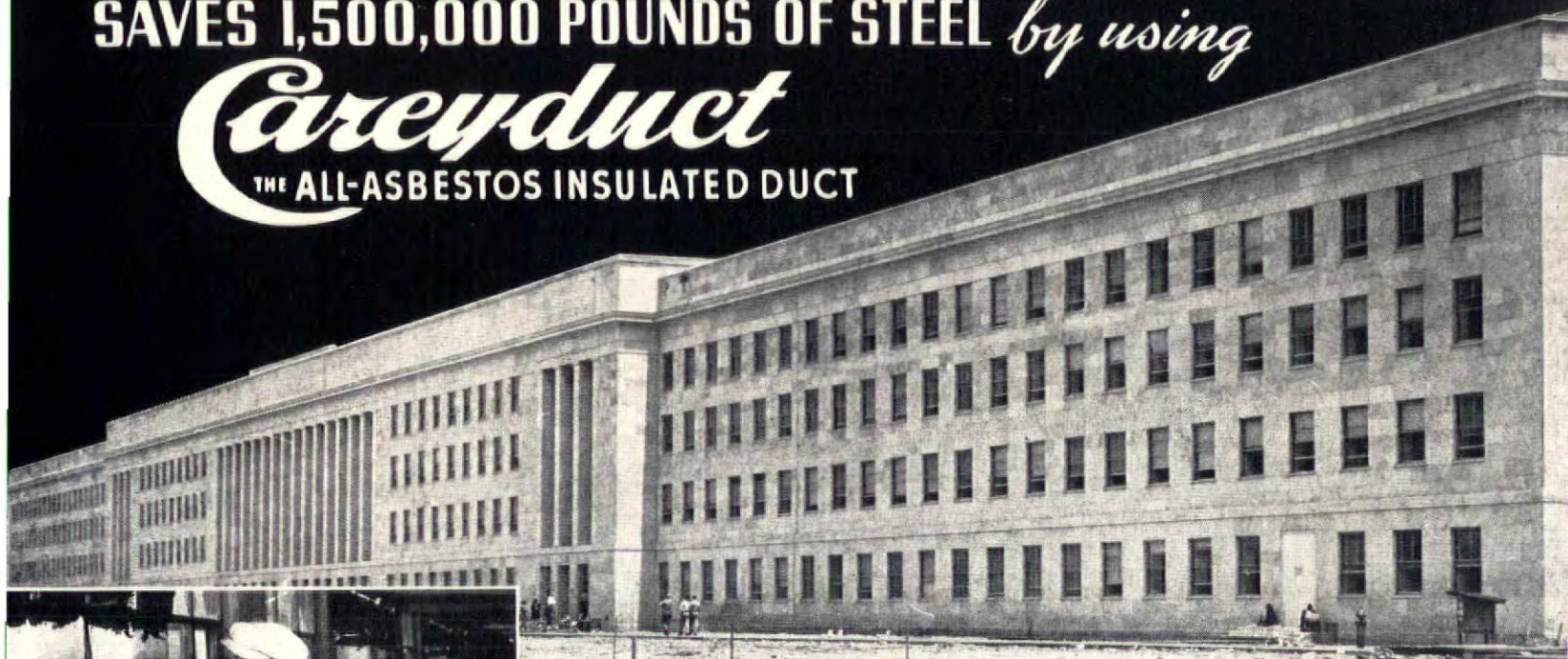


NEW WAR DEPARTMENT BUILDING

"An Air-Conditioned City in Itself"

SAVES 1,500,000 POUNDS OF STEEL *by using*

Careyduct
THE ALL-ASBESTOS INSULATED DUCT



MEETS RIGID STANDARDS OF GOVERNMENT ENGINEERS

Advantages Over Metal Demonstrated in Important Jobs

All Over Nation . . .

Millions of pounds of steel have been saved by using Careyduct in air-conditioning the new War Department Building at Arlington, Va., and hundreds of other important public and private structures throughout the nation.

Yet saving vital steel is but one of the many advantages of using Careyduct. Made entirely of asbestos, it is a natural sound absorber; hushes equipment noises and metallic "cracking" due to pressure changes or expansion strain. By reducing noise, higher velocities with smaller sizes may be used, solving difficult problems where space is limited.

Factory fabrication eliminates shop work; saves time, manpower. Silent erection permits installation in occupied buildings such as hospitals, radio stations, banks, etc. With all its advantages, Careyduct costs no more, frequently less, than insulated metal duct.

To conserve steel — insure better air-conditioning — specify CAREYDUCT. Write for full information, address Dept. 20.

*Photographs in this advertisement
released by Materiel Div., U. S.
Army Procurement Div.*

Architect: George Edwin Bergstrom
General Contractors: John McShain, Inc.
Heating and Air Conditioning: Baker Smith & Co., Inc.; Mehring & Hanson Co.
Consulting Engineers: Chas. S. Leopold

The
**PHILIP CAREY
MFG. COMPANY**

*Dependable Products Since 1873
In Canada:*

**The Philip Carey Company, Ltd.
Office and Factory: Lennoxville, P. C.**

Post-war home buyers want it -
the new **HEATING UNIT** by
FITZGIBBONS

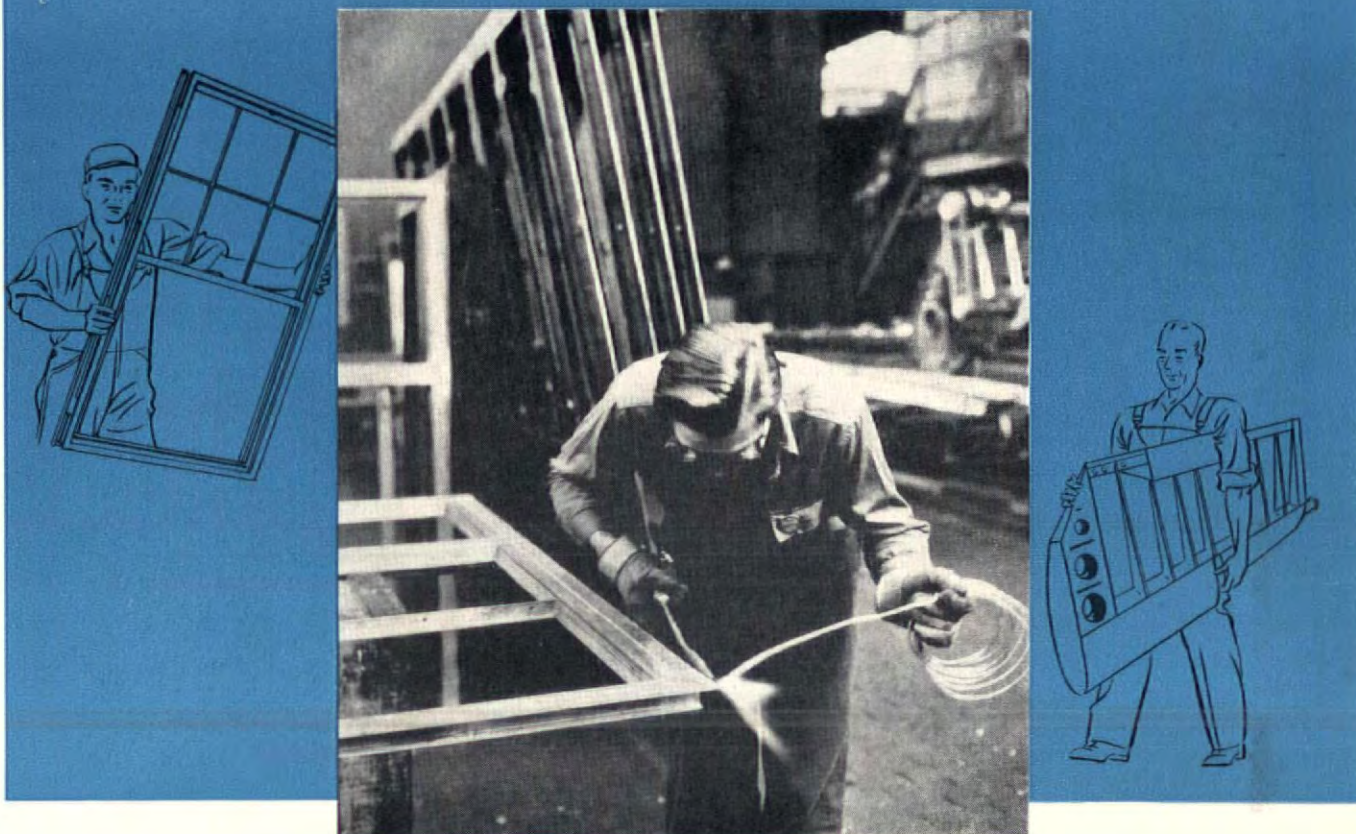
File until V-year
*and the inevitable
homebuilding rush!*

Like almost everything else since Pearl Harbor, we
measured and paid in full, home heating today is an essential.
New standards of economy, of comfort, of convenience, are required
— and are here! in the new Fitzgibbons Heating Unit, designed,
tested and perfected in preparation for the demand of today.
Again, Fitzgibbons leads the field with a new heating unit which
sets more homes, assures greater owner satisfaction, and upholds
the Fitzgibbons reputation established in 1934 and never allowed
to diminish.

Fitzgibbons Boiler Company, Inc.
101 PARK AVENUE, NEW YORK, N. Y.
NEW YORK, OSWEGO, N. Y.
Representatives in Principal Cities

*All-out for Victory to-day,
the Fitzgibbons Boiler Company, Incorporated
will be ready for peace when it comes.*

**IT GOT THEM READY FOR WAR;
IT'S PREPARING THEM FOR PEACE**



Manufacturers of Aluminum architectural products were readying themselves for this war, unknowingly of course, for years past. The fabricating methods they had developed, the skilled workers they had trained, enabled them to swing over quickly to war production.

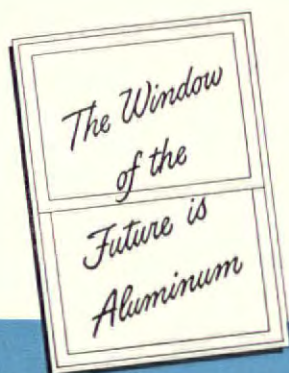
Substitute some part of a combat plane for the Aluminum window frame that's under the welder's torch in the above before-the-war photograph. Now you have a scene today in any one of the plants that were formerly manufacturing Aluminum windows.

The war effort has caused development work to go on at a greatly accelerated pace. New problems are

being encountered and solved. Methods of forming and assembling Aluminum parts are being simplified, speeded up, improved. Additional thousands of workers are being trained in these arts.

Vital to the war effort, this fact also has an important bearing on the products you will be offered in the future. The advantages of Aluminum Alloys gained in making materials of war will be the same for the new products at your command; light weight, high strength, fine appearance, resistance to corrosion.

Aluminum windows and sills, storefronts, skylights, coping will be better than ever, lower in cost, readily available from many sources. ALUMINUM COMPANY OF AMERICA, 2166 Gulf Building, Pittsburgh, Pennsylvania.



ALCOA ALUMINUM



Reg. U. S. Pat. Off.

GLASS HELPS BRING THE STRATOSPHERE

Down to Earth!



Six . . . seven . . . eight miles up. Up in the stratosphere. Soon our flyers and planes will be streaking through heights fit only for angels, before.

Because these heights do strange things to men and machines, industry is untiringly testing the performance of special motors, instruments and parts under actual stratospheric conditions. It is also seeking facts that will help medical science protect the men who rise to these rarefied heights where concentrated oxygen must be breathed and —100° cold combated.

Large testing chambers, like the one in the Douglas Aircraft Company plant, pictured above, bring the extreme temperature and atmospheric conditions of the stratosphere down to earth. These chambers are built with large glass windows so that work inside can be observed.

Because of the bitter cold inside, this would have been one of the most difficult windows in the world to glaze if it had not been for a remarkable Libbey-Owens-Ford glass development . . . Thermopane.

Thermopane might be likened to an air-conditioned

glass sandwich. It is made of multiple panes of glass bonded together in one unit. The air space between each pane of glass is dehydrated and sealed. This unusual insulating window eliminates condensation between panes, even under conditions of extreme cold. No dirt nor dust can get inside the glass to impair vision. In short, Thermopane, for the first time, provides a glass window that insulates and affords the clearest vision at the same time.

Today, Thermopane is making an important contribution to the war effort. Tomorrow, this new glass unit, perfected by Libbey-Owens-Ford, promises to open the way to revolutionary benefits in the fields of clear-vision insulation and window conditioning for postwar construction.

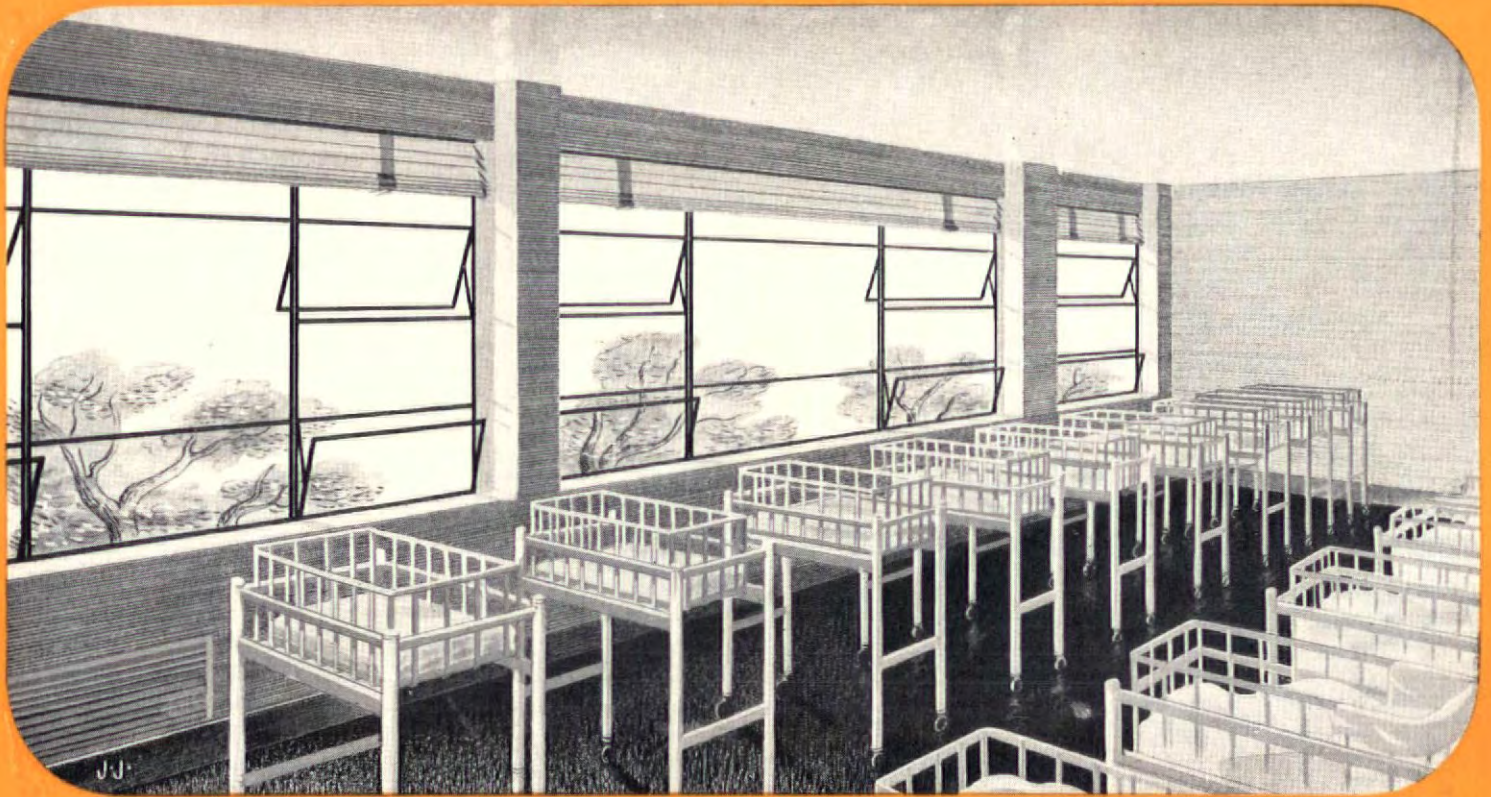
Libbey-Owens-Ford glass research is multiplying the usefulness of flat glass, both for military and civilian needs. L·O·F flat, bent or tempered glass products undoubtedly will help solve design and construction problems for architects who will plan the buildings of the future. Libbey-Owens-Ford Glass Company, 1338-A Nicholas Building, Toledo, Ohio.



LIBBEY·OWENS·FORD

QUALITY *Flat Glass* PRODUCTS

Your postwar hospital planning should include SUNSHINY AND CHEERFUL ROOMS



HARBORVIEW HOSPITAL, SEATTLE, WASHINGTON
Architects: Thomas, Grainger & Thomas
Dr. Wm. H. Walsh, Hospital Consultant

This means that your fenestration of postwar hospitals should call for larger window areas. Then your hospitals will meet the new trend which indicates windows built of metal with slender frames and large glass areas to flood every room with daylight and good cheer.

There are many other advantages to be gained by using Fenestra Hospital Window Specifications, such as, *better ventilation*—open-in ventilators at sills protect against direct drafts, while open-out ventilators above them form canopies over openings; *easier opening*—steel ventilators never warp nor stick; *superior weather-tightness*—precision-fitted by craftsmen, Fenestra windows stay tight, never warp nor shrink; *safer washing*—both sides of glass washed from inside; *increased fire safety*—steel will not burn; *lower cost*—by America's oldest and largest peacetime manufacturer of solid-section steel windows.

DETROIT STEEL PRODUCTS COMPANY

Now Exclusively Engaged in War Goods Manufacture

Dept. AF-1 • 2252 East Grand Boulevard • Detroit, Michigan

Fenestra HOSPITAL Windows

LETTERS

PROBLEM

Forum:

... The department store field offers a stimulating problem for the future. The introduction of self-service due to the labor shortage caused by the war is developing new requirements for counter designs and interior display, and will lead, eventually, to a new architecture.

This trend towards a new architecture is not just a temporary demand due to the war, but will be found so superior and convenient that it will probably influence future selling tactics and interior displays and architecture permanently.

F. MAURICE YOST

Hartford, Conn.

Good stores, recently published, include: Macy's Parkchester, Feb. '42, Sears, Roebuck & Co. and L. S. Ayres, Apr. '42, Artek in N. Y., Aug. '42—Ed.

MONOPOLY VS. MODERN

Forum:

I am sorely tempted, but I'm like the asylum inmate in my father's oldest story: He was pushing a wheelbarrow around most industriously, but upside down. When asked if he didn't know it was wrong he exclaimed, "Of course I do; I tried it the right way but they filled it full of bricks." I tried your leadership once. It took years to get over the effects of the bricks I received.

You know the tremendous gain in public acceptance of modern design from '35 to '38. By this time, largely through FORUM leadership, I had evolved a very satisfactory method and design. We were fortunate in having forward-looking FHA architects in Buffalo. I got a commitment on an 857 sq. ft. single; I sold a 1,000 sq. ft. single; had a long list of prospects. I finished and closed the second deal to the satisfaction of the local FHA office. I went back to finish the 857 sq. ft. job for myself.

At this time the Mortgage Monopoly of the U. S. awoke to the fact that this trend would rapidly depreciate their existing equities. They awoke with a start in my case. The management of the Buffalo office came near to losing their jobs because of my two commitments. Washington criticized them unmercifully. I was made to redecorate twice. I was made to replace my heating plant. It was nearly two years before FHA was made—I mean "made"—to honor their commitment. Then it was for 23 per cent less than the original loan. I had two years' idleness of the property; seven hundred dollars legal fees; a thousand dollars loss on the commitment. Bear in mind that FHA had gladly and freely passed the

first one finished. The construction and detail were identical in both properties.

I take exception to your "so entirely plausible you will wonder why it required a war to awaken the industry's consciousness to this whole new world of improved design, construction methods and materials."

Your own publication for the last decade has given the lie to that quotation. Ask any of the so-called Modern or Functional Designers of small homes what their problem was. Was it to sell them? Or, was it to get mortgage money?

Right here, a new 3-bedroom home cost the first mortgage (50 per cent of \$9,000, the 1927 cost of a 3-bedroom on my street) of a 15-year old firetrap. See what happened to the value of that \$4,500 mortgage on the old 3-bedroom home?

Oh, no! The banks could not allow that.

So I ask, can we get mortgage money for these super-duper jobs when all these defense projects are held by the banks?

HARRY W. MILLER

Kenmore, N. Y.

Reader Miller is more right than wrong. But the banker's decision is not an easy one, and his training and instincts conservative. Patience and fortitude. Rome wasn't built in a day, not even Rome (or Kenmore) N. Y.—Ed.

POSTBLITZ LONDON

Forum:

The recent publication in numerous newspapers and magazines in this country of the Royal Academy's plans for rebuilding London, demands a reply on behalf of the hundreds of young, enlightened English architects, who are at present in the armed forces. One of the most promising events since the war started has been the enormous social change in England, culminating in the speeches and writings of such men as the Archbishop of Canterbury, Sir Stafford Cripps, and the Beveridge plan. Through all these events the Royal Academy, and particularly its architects, have soundly slept. There has not yet been a complete publication of the London plans in this country. But the perspective drawings and the explanatory notes show the trend sufficiently well. There are vistas and avenues. There is even provision for pomp and parades. But there is no "living space." There is no attempt to decentralize the monstrous conglomeration of industry, slums, suburbia (future slums) and distribution arteries, which make up greater London with its twelve or thirteen million people. Instead, one feels that this is the gleeful last fling of a number of elderly gentlemen

in their dangerous years, suddenly presented with the opportunity to do a really magnificent Beaux Arts problem—while the jury was engaged elsewhere.

It is difficult to know whether Sir Edward Lutyens and Sir Charles Bressey realize the implications of their schemes, as they are being published in this country. Very few Americans know of the immensely strong progressive movement in England, which in architecture showed itself in the work of the Mars Group and such Government projects as the Pithead Baths Commission. There is still too large a section of opinion in this country which thinks of England in terms of George III, and the publication of the London plans may well strengthen this dangerously incorrect impression as to the kind of society England expects after the war. It is unfortunate that the young men are too seriously engaged at this time to correct that impression.

It is very regrettable that Lutyens and Bressey should be the ones to put their names to the London scheme. Lutyens' contribution in his time was second only to that of Wright in many respects, and Bressey, I suppose, occupies a rather similar place to Robert Moses.

PETER BLACH

Philadelphia, Pa.

Said THE FORUM in publishing the London schemes: "... a pompous example of the academicians' chronic inability to shake off the dead hand of the past."—Ed.

REBUTTAL

Forum:

I would like to take issue with Mr. Brisbane's letter to THE FORUM (Nov. '42) and his strictures affecting the architectural profession.

It all hangs on his obvious misconception about "leaving the administrator, who is largely hired the last thing before the building is opened, to struggle along the best he can with the whole mess." The italics are the writer's. Mr. Brisbane does not seem to know that it is the approved hospital practice to bring in the administrator or someone equally expert in hospital operation at the very outset so that the development of the plans and the decisions are entirely with his collaboration and subject to his approval or veto. . . .

If hospital committees will always select an architect through no other qualifications than an established reputation for excellence of service, and select a competent administrator at the outset to work with them, the results Mr. Brisbane complains about will be entirely avoided.

CHARLES C. PLATT

New York, N. Y.

• The magnitude of the War Department Pentagon Project at Arlington, Va., is best visualized by such facts as: provides working quarters for 40,000 employees; has nearly nine miles of corridors; has six large cafeterias.

Chief Architects: George E. Bergstrom and David J. Witmer.
Consulting Engineer: Charles S. Leopold.
Plumbing Contractor: Fred Brutschy Co., Inc.



WATROUS FLUSH VALVES installed in the new War Department Pentagon Building—WORLD'S LARGEST OFFICE BUILDING

3,004 Watrous Flush Valves will bring to the new War Department Pentagon Building the "all-out" water and maintenance saving performance for which Watrous Valves are famous. Here in the world's largest office building these valves will demonstrate the tremendous extra savings that are possible when each valve can be *adjusted* to the

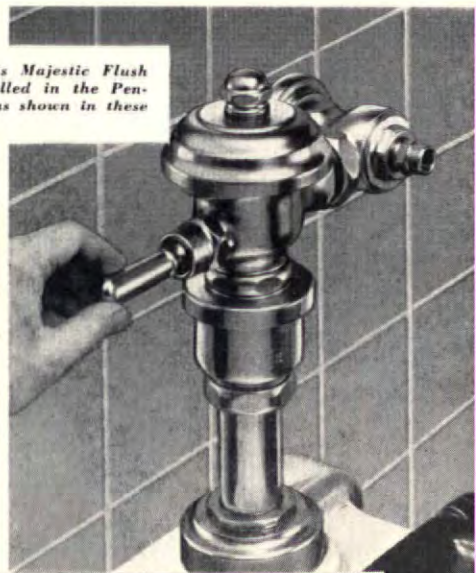
actual water requirements of the fixture on which it is installed.

For detailed information on Watrous Flush Valves, including the new "V" model which is now available for essential applications, write for Bulletin No. 858-W or see the new 1943 Sweet's Catalog File, Catalog No. 39, Section 27.

THE IMPERIAL BRASS MFG. CO., 1238 W. Harrison St., Chicago, Ill.

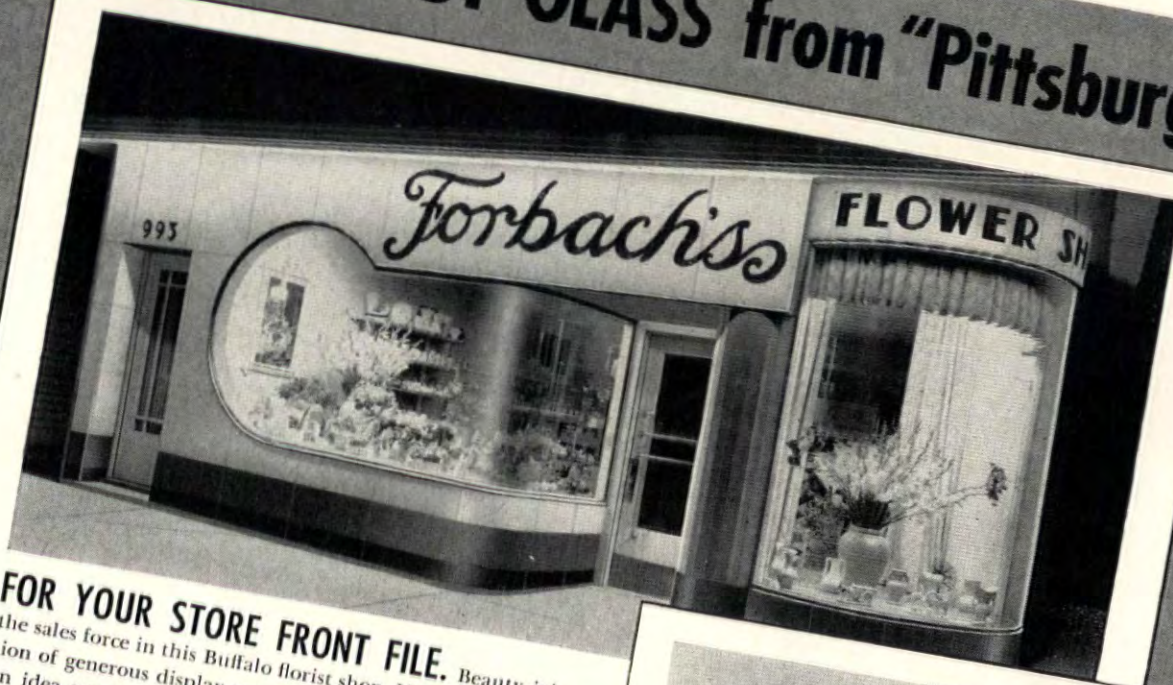


• 3,004 Watrous Majestic Flush Valves are installed in the Pentagon Building as shown in these two views.

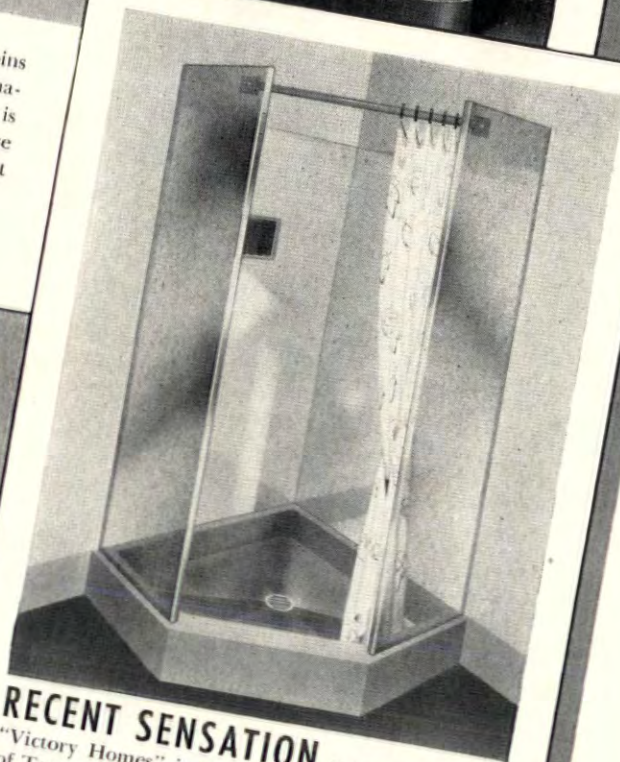


Watrous Flush Valves

NEWS ABOUT GLASS from "Pittsburgh"



FOR YOUR STORE FRONT FILE. Beauty joins the sales force in this Buffalo florist shop. Note the combination of generous display space and attractive design. This is an idea worth saving in your own store front file, for use when building restrictions on this type of store improvement are lifted.



RECENT SENSATION among builders of "Victory Homes" is the prefabricated shower stall of Tempered Carrara Glass. No metal is involved in its installation. Shipped to the job ready for immediate assembly—it saves time. Several styles—eight colors. Gives small homes a smart appearance, yet its cost is well within proper limits for this type of home.



DAYLIGHT HELPS WAR WORKERS

do their jobs quickly—accurately. There's plenty of daylight in plants such as this, where Pennvernion Window Glass floods huge working areas with natural daylight. And the clarity, good vision and surface brilliance of this quality glass make it ideal for glazing defense houses at reasonable cost.

PITTSBURGH PLATE GLASS COMPANY
Pittsburgh, Pa.

"PITTSBURGH"
stands for Quality Glass and Paint

FOR ACHIEVEMENT IN WAR PRODUCTION



FOR OUTSTANDING PERFORMANCE in wartime construction! The battle flag of production! On December 5th this prized Army-Navy "E" was awarded to Barrett & Hilp for exceptional proficiency in the erection of more than 150 important building projects under contract NOY 4705 at Mare Island Navy Yard. Today, Barrett & Hilp, their sub-contractors and employees from coast to coast salute these fellow workmen. Again we pledge to build for greater victory in war—to build for better living in peace.

BARRETT & HILP
GENERAL CONTRACTORS • SAN FRANCISCO

OTHER VITAL BARRETT & HILP PROJECTS *Salute Mare Island*



IN ARIZONA and Southern California the Bartlett Dam, highest multiple arch construction in the world, and sections of the huge Metropolitan Aqueduct. Both delivered by Barrett & Hilp and the Macco Corp. within two years. Despite heavy flood conditions.

AT NORFOLK five thousand homes for shipbuilders. Five thousand pre-fabricated and demountable houses completed in less than six months. Each constructed by Barrett & Hilp according to the Precision Built System of the Homasote Company. Each ready to live in.

FOR WESTINGHOUSE more working space. A new addition to the huge Oakland plant. A new addition to the productive capacity of another of America's leaders in the all-out drive for victory. Again B & H men... B & H methods... at work against deadline.

ON SAN FRANCISCO BAY twenty-six concrete ships for the United States Maritime Commission. Twenty-six great ships of stone to carry cargo, to strengthen United Nations' supply lines. A new lightweight aggregate... a new design... both for efficiency and long life.



From the Pacific to the Atlantic

BARRETT & HILP
GENERAL CONTRACTORS • SAN FRANCISCO

An important

contribution to pre-fabrication



Strong-Bilt panels save time and reduce cost of applying interior wall linings in this busy pre-fabricating plant.

... and to new low cost systems for speeding conventional building methods at the site

Reasons of far-reaching significance to the building industry are behind the rapidly widening use of Strong-Bilt Panels on scores of great housing projects and in many thousands of homes, both public and privately financed.

The record to date:

Substantial savings in time and cost are being made by users.

Quality of the finished job and its value to the owner are being stepped up.

Nature and size of the panels are permitting new advances in mass production methods and a further speeding up of quick assembly systems, both at the site and in pre-fabricating plants.

Qualified engineers with up-to-the-minute "know-how" gained on important projects will gladly explain adaptations to your plans and systems. Write, wire or phone. The Upson Co., Lockport, N. Y.

► **FULL WALL CONSTRUCTION:** Special giant panels 8' wide, long enough to cover entire wall of average room without seams or joints. Also available in regular 4' widths.

► **DRY-BUILT METHOD:** No water. No moisture. No "drying-out" period. Apply any month of year, in any climate. Remains forever crackproof.

► **APPLICATION TIME:** 40 to 50 man-hours at the site for average family unit. Panels driven against pronged Floating Fasteners nailed to studs. No taping—no cutting—no filling of joints. No nails to countersink. No filled holes to mar surface.

► **INSULATION VALUE:** Up to 3½ times that of plaster. High resistance to sound.

► **STRONG AND RIGID:** Stands impact test up to six times that of boards with a mineral core.

► **FINISHING:** Beautifully pebbled surface, pre-finished and pre-sized at factory. Painting begins immediately after application of trim. Single coat usually is sufficient.

► **FHA ACCEPTED:** Liberal terms streamlined for the duration.

► **PRE-FABRICATION:** For projects of 100 units or more, sizes are pre-cut and numbered at the factory—ready for lifting into place at the site or pre-fabricating plant.

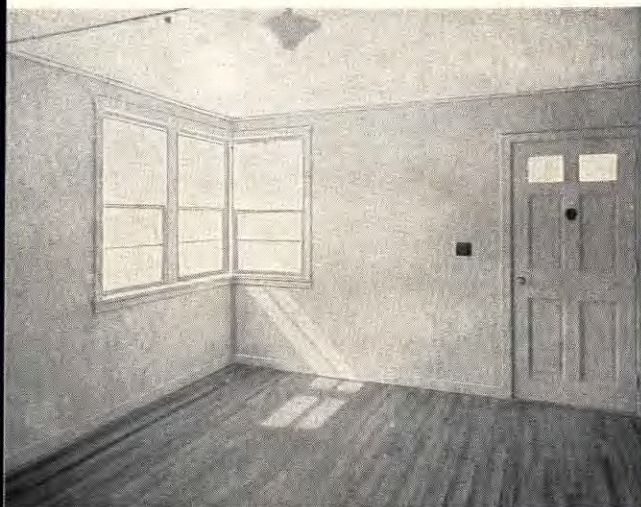
Upson Quality Products Are Easily Identified By The Famous Blue-Center

THE *Beauty Surface* FOR WALLS AND CEILINGS



**UPSON
STRONG-BILT
PANELS**

JUST 6 PANELS TO LINE AND EFFICIENTLY
INSULATE ONE ROOM IN A SMALL HOME



ABOVE: Crackproof full wall construction in a living room corner as completed with Strong-Bilt Panels by Stofflet & Tillotson.



BELOW: Nearing completion. Section of a big Stofflet & Tillotson project. Use of Strong-Bilt Panels adds dollar value to the finished job.



HANCOCK 8800

STOFFLET & TILLOTSON
BUILDING CONSTRUCTION
2033 EASTERN AVENUE
PHILADELPHIA, PA.

September 10, 1942.

Re: [REDACTED] Defense Housing Project
No. Pa 36281 - [REDACTED] Penna.

The Upsen Company,
Lockport, N. Y.

Attention - Mr. G. G. Ellinwood - Supervising
Engineer, War Housing Projects

Gentlemen:

The writer is happy to advise that he was not only pleased with the "Dry Wall" product itself which your company manufactured and furnished for the [REDACTED] Defense Housing Project at [REDACTED], Penna., but with the services your company rendered on this job of 200 family units.

We further desire to commend you on the fact that you furnished ample materials with no delays, which, you will recall, was the thing we were most concerned about when placing our order with you. Your representatives furnished all of the working drawings, handled the distribution details in an able manner, relieving us of all of these responsibilities and added materially in our being able to complete the job in record-breaking time.

To the best of our knowledge, this product has proved entirely satisfactory. We have had many comments upon its appearance and it certainly went up fast. You cooperated with us and the forces of the Government to the highest degree and we sincerely trust that we may have the pleasure of working another proposition of this character with you in the near future.

Yours very truly,
STOFFLET & TILLOTSON

By: *Stofflet*

hms/ms

Note: Location censored in accordance with Government requirements.

A GLIMPSE INTO



...thru **ANDERSEN**
HORIZONTAL GLIDING ^{WOOD} WINDOWS

When dim-outs are a memory and homes are built again, you will find Andersen Complete Wood Window Units becoming more and more important in residential construction.

For it is the generous use of fenestration that makes wall areas alive . . . that brings the beauty of the outdoors to the comfort of the indoors. Andersen Complete Wood Window Units bring to the architect the benefits of sound modern design, precision production and wide adaptability to all types

of architecture. Andersen has produced and promoted Lifetime Window Units as a permanent functional part of a home for many years. In 194X Andersen will still be solving problems in modern fenestration — with Andersen Lifetime Wood Window Units. Sold through regular millwork channels. See Sweet's Catalog, or write for details.

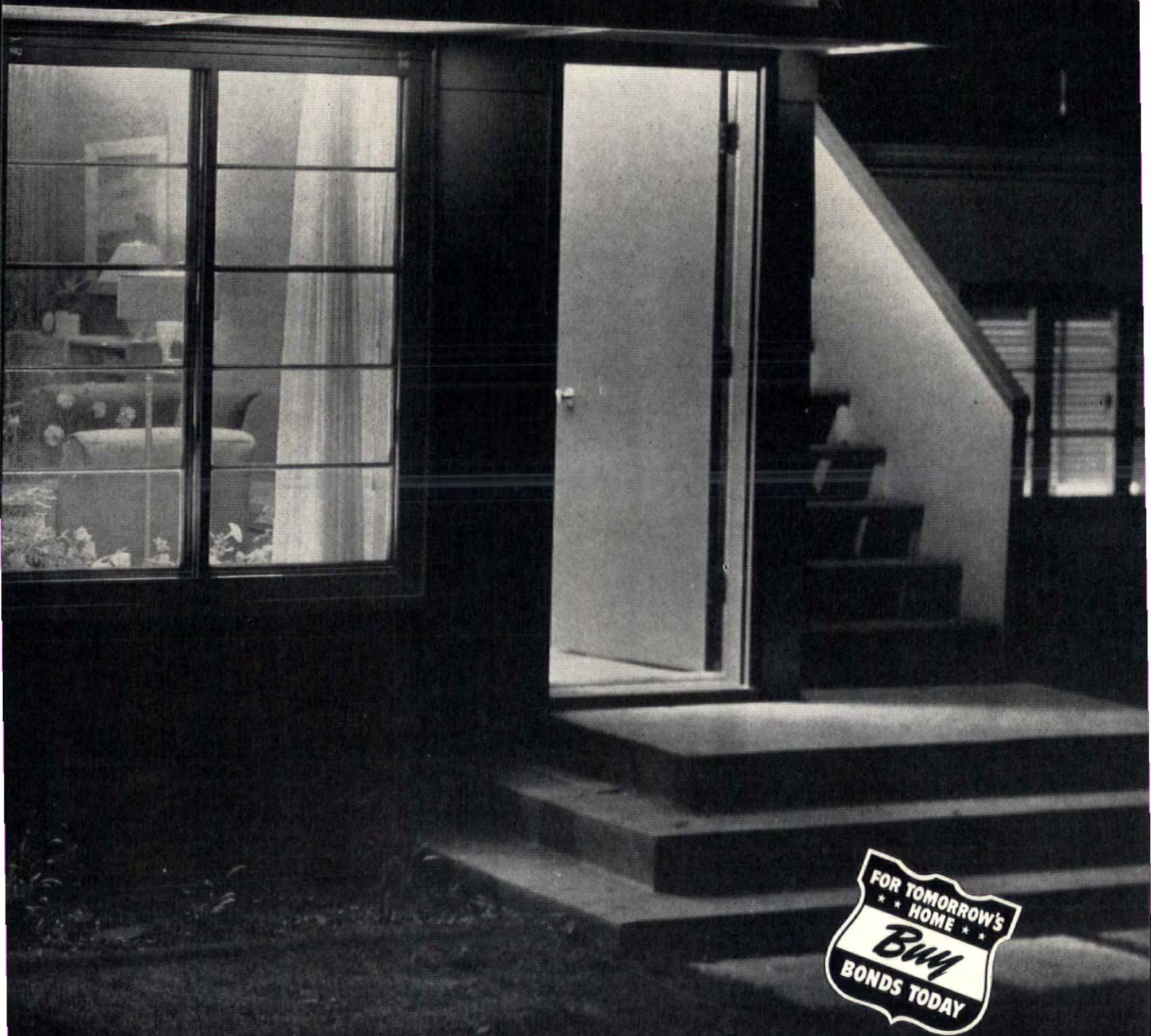
In installation pictured, Andersen Horizontal Gliding Windows provide a wide expanse of glass area for a moderate cost.

Andersen Corporation

BAYPORT, MINNESOTA

ONLY THE RICH CAN . . .

THE 194X HOME



AFFORD POOR WINDOWS

How GOLD BOND can help you HOUSE WAR WORKERS IN A HURRY!

FROM all reports we're over the hump in emergency military and industrial building. The next big job is adequate housing for war workers. Already plans are being made to lick it. Remodeling existing structures is the first step. Unused space in homes will be put to work. Warehouses, idle factories and stores will be made into living quarters. Then, as present material shortages let up, new construction will again take the lead.

In designing wartime housing remember that you get better construction at lower cost with Gold Bond materials. Advanced Gold Bond research has provided "everything for walls and ceilings"—materials which go on faster because they're easier and more efficient to use. Here are some Gold Bond products to help you design better housing for war workers—all are ready for shipment.

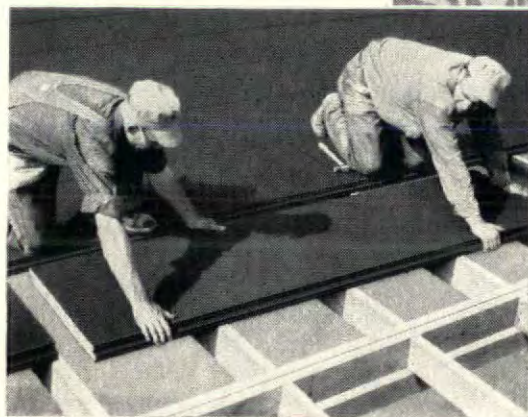
Gold Bond Sunflex Deluxe Wall Paint—dries in one hour with no painty odor. Immediate occupancy the moment the job's finished. Covers any surface, even wallpaper with one coat.



Gold Bond Exterior Board—is an extra thick gypsum board with a durable overcoat of asphalt roofing. A combination sheathing and siding which comes in large sizes covering up to 20 square feet in one operation—really saving workers' time—sturdy, rigid, permanent finish.



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THE MONTH IN BUILDING . . NEWS

Year's end brings entente cordiale between NHA and WPB, a new War Housing Manual, more talk about conversion, no more action (this page) . . . Palmer report on British housing problems (this page) . . . Boston fire spotlights building code violations (page 35) . . . Dodge construction estimate for 1943 (page 35) . . . Robert Moses to work on Army and Navy housing problems (page 90)

OFF-WHITE CHRISTMAS

Perhaps influenced by the season of good will to all men, December was a calm building month after the storms of November.

►WPB and NHA, lion and lamb of housing, effected an entente cordiale. In a joint declaration of policy, brothers Nelson and Blandford announced that henceforth NHA will be solely responsible for the programming of all housing, WPB will quarterly allot to it materials to meet NHA's approved programs. Other specifications: NHA will push its conversion program (to make maximum use of existing property to house eligible war workers). Critical materials will be used only in accordance with the War Housing Construction Standards (FORUM, Nov., p. 36) and the latest War Housing Critical List. NHA and WPB will share responsibility for enforcement of construction rules.

►Born of the same sweetness and light was the new *War Housing Manual*, issued by WPB's Construction Bureau, outlining basic rules for war housing construction, limiting sale price of units to \$6,000, shelter rent to \$50 per month, emphasizing rental rather than for-sale developments, temporary dormitory accommodations and demountable housing. ("These types constitute a majority of the accommodations provided by the program. The more permanent types of structure are provided almost entirely by private builders under private financing.")

Other contents: Digest of procedures and requirements covering application for priority, privately financed ratings, descriptions of limitations, restrictions on critical materials.

►NHA's newly adopted child, the conversion program, which involves leasing of existing buildings to the Government, was more talked about than doing, partly because the small and unsatisfactory number of applications (only 40 had been approved by late December). First house to be leased to the program was in Alexandria, Va. (see cut). Homes Use Service will convert it to war apartments, try to spread the gospel further.

Reasons for doubting success of the conversion program are these: Most suitable houses in suitable neighborhoods have long since held war workers. Where would present tenants move to while remodeling is being done? Unoccupied houses frequently need such extensive

alteration as to make the time and money required out of proportion to the result.



ALEXANDRIA, VA. First house to enter the Service.

Local zoning laws are in some cases a barrier.

PALMER TO THE PRESIDENT

No one is likely to assume that England's war housing problem is the same as ours. Neither need anyone assume that a country which was under continuous air blitz, with the necessity of dispersing its plants and large segments of its population, faced problems easier than our own. What these problems were and how they were met is for the first time disclosed in a confidential report to the President and NHA, by a three-man mission headed by Charles F. Palmer (see page 72). To England with the former Defense Housing Coordinator for an exhaustive first-hand study went William V. Reed (Chief of Housing Standards Section, NHA), Eric H. Biddle (Consultant to the Budget Bureau).

It is not necessary to read between the lines of the mission's succinct report to detect a more direct, realistic approach to war housing than has marked our effort. Partially explained no doubt by the grim necessity of acting decisively and quickly, with materials and manpower shortages apparent from the start, nevertheless Britain seems to have concerned itself far less with peacetime standards and ideologies and gotten ahead with the job. Emphasizing local action rather than national, her success is in marked contrast to the U.S. authorities' national bureaucracy.

The Palmer mission's most significant conclusions:

(Continued on page 34)

Wartime Housing. "Wartime housing is first and foremost a function of manpower mobilisation. This fact impresses us as the most significant lesson that can be drawn from the British experience."

"The problem is not primarily one of design or construction techniques or bricks and mortar considerations. The ultimate consideration is one of ensuring the kind of living and working conditions that will result in the highest obtainable productivity of the worker."

Co-ordination of Planning. "The British wartime housing experience emphasizes the imperative need for co-ordination of planning and action; as between the Housing Agency and the Manpower and Production Agency. By the trial and error method and after many disastrous experiences the British have developed a much higher degree of co-ordination of the housing and related programs than existed at the beginning of the war."

"It is plain that the housing agency should be fully aware of the programs of the Production, Manpower and War, Health and Welfare Agencies, and should participate at every step of the planning process in matters affecting plant site location, manpower mobilisation, and in other related matters."



ERIC H. BIDDLE: Budgetary Missionary.

"Finally—this important observation—When England broadened her concept of the mobilisation of manpower to include the mobilisation of woman-power she was automatically taking steps which tended to require less transfer of men workers, less dislocation of labor supply, and less strain on housing supply. Such a program can of course only be worked out with the complete co-operation of organized labor. In this connection a British consultation machinery which has been set up between organized labor and industry and the effective system of advisory committees that have been developed—particularly since June of 1940—is worthy of careful study by the Federal Government, partic-

ularly as consultation with organized labor and industry on the subject proceed."

Britain's housing action began early in its war effort, took many forms successfully:

Billeting was tried first, made possible by quick, efficient legislation.

"Section 22 of the Defence Regulations, 1939, confers upon the Minister of Health, the authority to require the occupier of a house to furnish lodging or food or both for such persons as may be specified. The regulations permit the Minister to delegate this power to local 'Billeting Officers'."

"The Minister can direct anyone to move out of a prescribed area but to date has not found it necessary to do so."

"In case the accommodation is provided on a compulsory basis, the payment is fixed at 5 shillings per week. This amount is collected by the householder from the Post Office. The Government is reimbursed from funds paid to it by the factory where the worker is employed. Such funds are deducted from his salary. . .

"In the case of compulsory billeting the power does not extend to the provision of meals. However, in ninety per cent of the households which are billeting workers, meals as well as lodging are provided. . .

"The standard on which the availability of accommodation in a house is measured is one person per habitable room. A calculation on this basis includes the kitchen if it is a living room. Thus for example, two persons might be billeted in a five-room house where three persons are already living."

"Generally an attempt is made to billet each individual with the type of family with which he will be compatible. . .

"The existence of compulsory billeting powers has had a marked effect upon the extent to which billeting has proceeded on a voluntary basis. . ."

Billeting activity was ceaseless and successful. In Birmingham, for example, during 1941, 9,956 industrial workers were billeted. In the first 4 months of 1942, 5,550 additional workers were billeted.

Closed Towns was a parallel device tried at the beginning of the program. Utilized only in extremely critical situations, the "Closure Order" was established early in 1941:

"The owner or occupier of a dwelling house shall not without consent give lodging for reward or otherwise to any person, (other than a person lawfully billeted.)"

When both measures proved insufficient, the National Housing (War Requirements) Committee approved a hostel construction program for 275 thousand workers, a limited number of "married quarters."

Hostels: "The extensive mobilisation of manpower in Great Britain, particularly the drafting of men for the Armed Forces, has tended to separate many families. This fact, together with the extensive employment of women in industry, the influx of male labor into industrial centers to

which it was often not desirable or possible to bring their families, and the establishment of many factories in isolated areas, has contributed to a large demand for a special type of housing accommodation for single persons. Moreover, temporary accommodations have had to be provided for workers coming into industrial areas to be billeted, and it has been necessary to provide accommodations for the additional agricultural workers required under the Government's war plan."

"The Reception Hostel has been developed as a place where workers coming into an area can spend a night or two until they find permanent lodgings."

Hostels, wherever possible, utilized existing buildings. When new factories were located in isolated areas, new building was necessary (see pages 65-70).

"Large hostels accommodating 300 to 2,000 individuals have been built. Originally it was contemplated that new hostels would have to be provided for 275,000 persons. This number was subsequently reduced to 200,000, and now it is anticipated that the entire hostel program will amount to less than 100,000 units."

"Previously hostels were located at a



WILLIAM V. REED: NHA's Missionary.

minimum distance of five miles from the Royal Ordnance Factories. . . Hostels are now located within walking distance wherever possible, thus eliminating bus transportation. The standard with regard to walking distance is loosely defined, being "1/2 mile from factory boundary" to "2 miles from built-up area of factory. . .

"The large industrial hostels are designed to furnish all the amenities of home life on a communal basis. The terms on which sleeping, feeding and home nursing facilities, together with entertainments, sports grounds, libraries and limited shopping facilities are provided, are controlled by the Ministry of Labour and National Service. . .

"Competent management is a prime requisite for the success of hostel operations. Even in the larger hostels the attitude of the staff in charge seemed to be

reflected in the atmosphere of the place. No matter how well planned the physical plant, it will not take the place of intelligent management."

Family housing, suspended at war's beginning, never really came to life again, due to the Government's emphasis on single-person dwellings. Some of what has been built, however, was done with an eye to postwar conversion into 2-story units.

Early in the war, powers were granted to the Minister of Health for requisition of family houses when needed.

"The power has been exercised in a number of instances, and a considerable number of families have been accommodated by this means. However, it should be remembered that the supply of unoccupied houses is extremely limited, especially in reception areas."

Rent Control is an old story in England, having first been invoked in 1915, loosened considerably ("de-controlled") during the interim war years, re-invoked in 1939 for "all houses with a rateable value (computed on income), of not more than £100 (London) and £75 (Provinces); both the houses previously de-controlled and houses built after April 2, 1919."

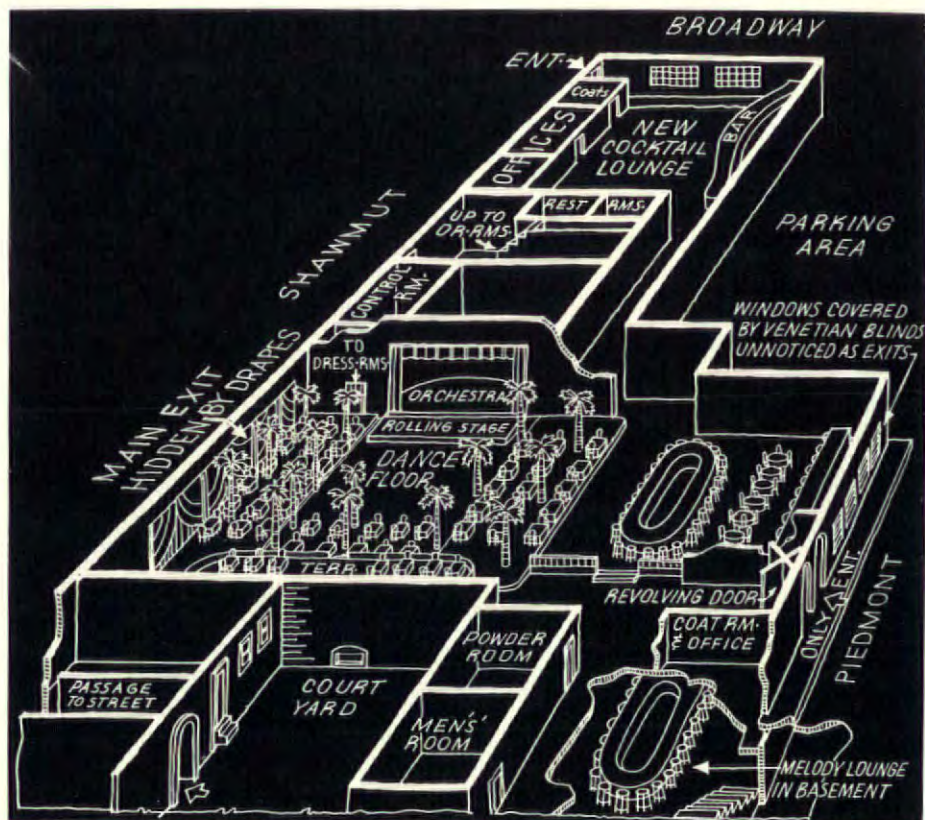
In effect like the U. S.'s act, it is national in scope, strictly policed and court-enforced.

TRAGEDY IN BOSTON

Highlighted by the blazing holocausts of Boston's worst fire (dead: 487) were the physical conditions of the nation's entertainment places, laxness of existing building codes, gross violation of fire-safety principles, lack of responsible surveillance.

The Coconut Grove was housed in a 1st class building, the main part reinforced concrete. A subsequent addition (which did not catch fire) was in a converted tenement. According to Robert S. Moulton, technical secretary of the National Fire Protection Association, the building did not in the least present the appearance of a fire-trap, much like "hundreds of other night clubs located throughout the United States."

Night clubs have suffered no recent, glaring fire-tragedies (exception: Detroit Study Club fire, 1929, 22 deaths); their rules of fire safety have been consequently far more lenient than theatres (Iroquois Theatre fire, Chicago, 1902, 602 deaths), factories (Triangle Shirtwaist Factory fire, New York, 1911, 145 deaths), schools (Collingwood School fire, Ohio, 1908, 175 deaths). Existing Building Exits Code (the NFPA's formulation, nationally-recognized, rarely enforced, specifies proper exits, a swinging door immediately adjoining or within 20 ft. of every revolving door, other emergency entrances, all kept unlocked, unobstructed, undraped when building is occupied. There were nine doors widely separated at the Coconut Grove, one revolving, the others (see diagram) obscured by drapes, all but two of



COCOANUT GROVE: ENFORCEMENT, NOT NEW LAWS, IS NEEDED.

them locked. None was clearly marked, windows which might have served as exits were hidden by drapes, others in back of the building were boarded up.

The Code provides: "Paper and cloth decorative material should be kept to a minimum in places of public assembly since such flimsy materials increase the hazard of the kindling and spread of fire." Decorations, claimed to have been once fireproofed at the Coconut Grove, had never been reproofed. Further, no automatic sprinkler system had been installed.

Doubtless, there will now follow a wave of state and local legislation regulating night clubs. Less important than new legislation, points out the NFPA, is competent enforcement. "Codes and laws, of course, are much in need of improvement but . . . this is all too likely to result in the great American remedy of 'passing a law' rather than getting at the root of the matter."

PREVIEW—1943

Viewed in the light of WPB's current curtailment order and Government estimates for 1943 construction activities (FORUM, Nov. p. 36), F. W. Dodge annual estimate, issued at midmonth, describes its figures as "minimum."

The figure quoted for the 37 states east of the Rocky Mountains is \$4,035,000,000 [non-residential: \$1,785,000,000; residential: \$1 billion; public works (pub. & priv.) and utilities (pub. & priv.) \$1,250,000,000]. This is \$3,780,000,000 less than Dodge's 1942's estimated construction (\$7,915,000,000), or about 1/2 of last year's construction.

The Dodge Statistical Research Service,

regarded as a classic for builders in the "crystal ball" field of estimated construction, has traditionally managed to hit close but short of the bull's-eye. If the 11 Western States* not included in the Dodge estimate follow this pattern, the Government's (WPB) 1943 estimated total construction (\$7,125,000,000) will be far from the mark. Dodge's estimate, a more realistic view of 1943's building blues,

JOB FOR GOD

It is no military secret that war production is below par in certain areas. Lack of housing, lack of transport, lack of such simple community services as sewers and roads are defects from which stem lack of fully effective manpower. Month ago two tough top warriors, Lt. General Brehon Somervell and Admiral Ben Moreell, ran out of patience and into the one man this side of Heaven who might help them, Bob Moses. Since the start of the war Moses has sat on the sidelines, irked by the belief that the head coach was not likely to call on him. When the call came, it took Moses no time to make up his mind, not much more to act. By plane, Moses-picked experts moved into Shangri-la and Shangri-loo. Working their way through the maze of

*All indications point to a decline in west-coast figures comparable to the rest of the country. Despite wild stories of enormous building activity in and about Portland, Sacramento, Oakland, etc., figures tell another tale. Example: Portland's 10-month 1941 total was \$12,588,320; the same period in 1942: \$12,518,430. Total key for west-coast cities for same period shows a \$42,979,670 decrease in '42.

(Continued on page 90)

ALBERT KAHN

1869 - 1942



Hedrich Blessing

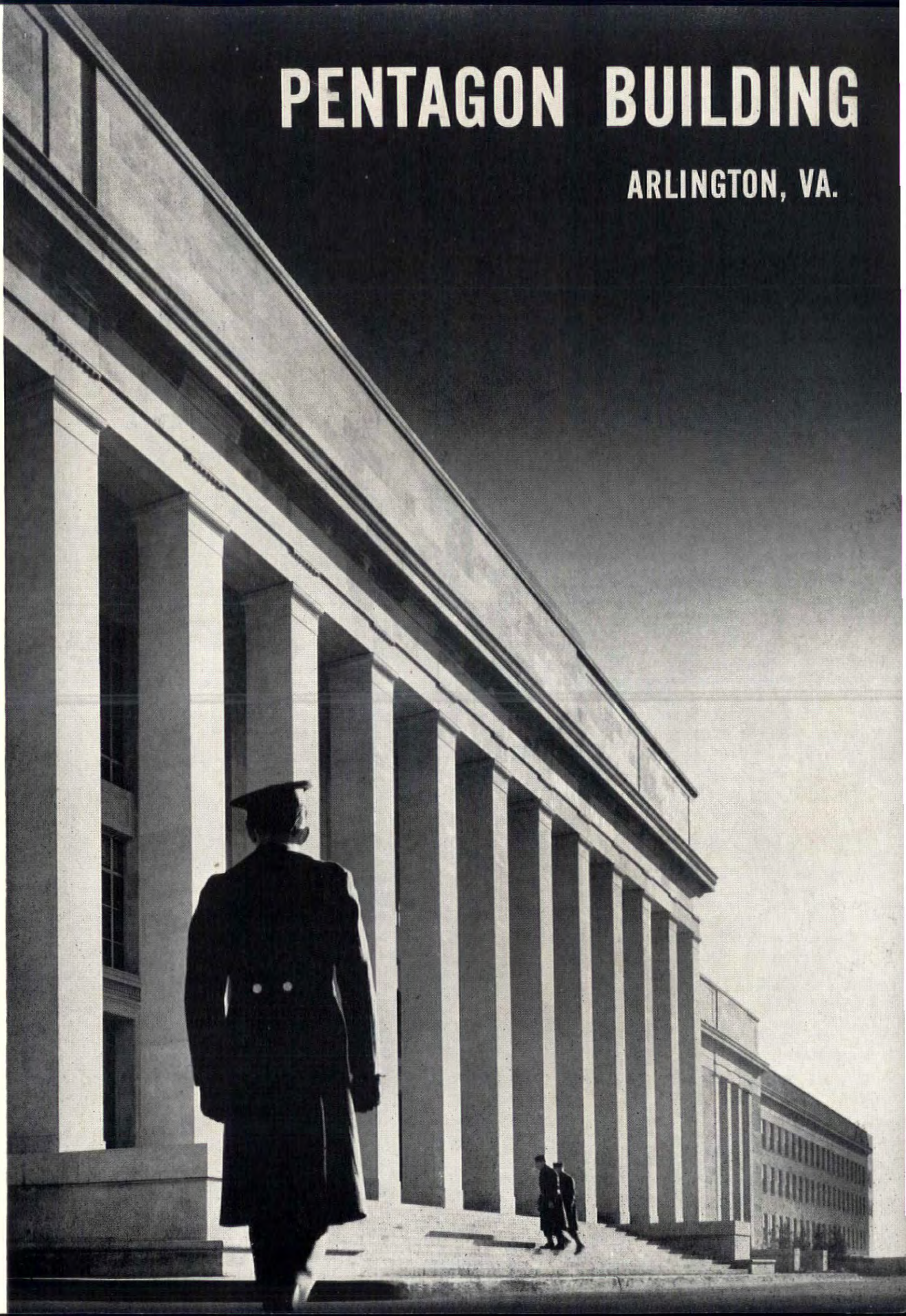
On the eighth of last month, in the midst of the greatest industrial building program ever entrusted to a private architect, Albert Kahn died at his home in Detroit. In the last year of his life—the year after Pearl Harbor—he had the great personal satisfaction of creating some of the most powerful industrial plants ever built in America. And he died with the even deeper satisfaction of knowing that he had played a tremendous part in defending that freedom which drew his family here from Europe many decades ago. His buildings are serving on many fronts, in Australia, in Canada, in South America and most notably in the Soviet Union, where hundreds of Kahn factories have furnished many of the arms that finally stopped the Nazis.

Albert Kahn was the kind of man that all Americans, without regard to race, creed or political complexion, like to think about. He made his way the hard way—a poverty-stricken youth, the care of younger brothers and sisters, the end of formal schooling at eleven. He worked and grew big with big industry, and he kept on working until the day of his last illness. His favorite picture shows him in shirt sleeves. While so many of his fellow architects wrestled with problems of exterior decoration for banks, state capitols and universities, he was quietly creating shelter for mass production on a scale that few men of his generation even dreamed of. Oddly enough, it was not until the late years of his life that Kahn or his co-professionals saw the real significance of his merging of architecture and engineering to create an entirely new type of building, but today the record is clear for all to see.

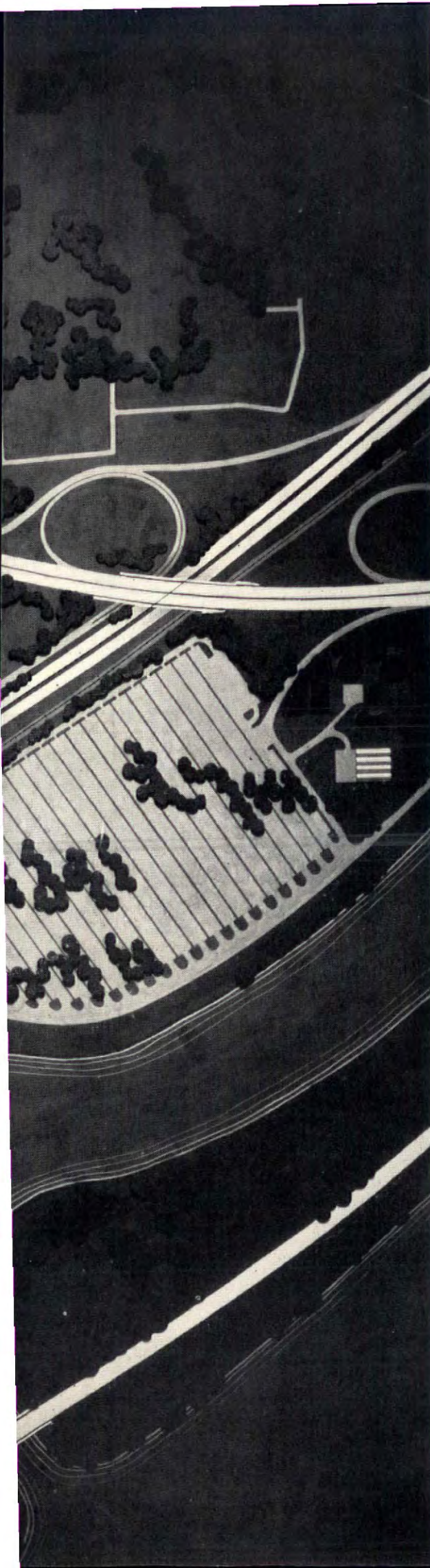
Albert Kahn is dead, and he leaves great works and high honors behind him. There are the factories on five continents and the arms pouring out of them to the fighting fronts, and there are the degrees from universities and the decorations from governments. And there is the organization he created, which, like his factories, will continue to produce, for Albert Kahn had no use for a one-man show. In paying tribute to him, the building profession does honor to a man who saw, sooner and more clearly than most, that architecture is bigger than any individual in it, and that the true measure of any professional is his usefulness as a citizen.

PENTAGON BUILDING

ARLINGTON, VA.







PENTAGON BUILDING

WAR DEPARTMENT, ARLINGTON, VA.

CHIEF ARCHITECTS:

G. E. BERGSTROM

DAVID J. WITMER

GENERAL CONTRACTORS:

JOHN McSHAIN, INC.

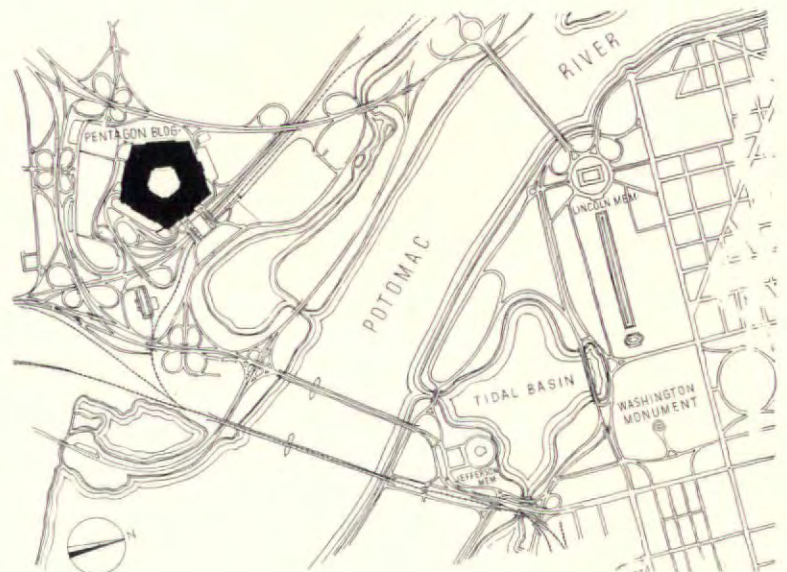
DOYLE & RUSSEL

WISE CONTRACTING CO., INC.

Even Washington, surfeited with bigness in all its forms, is impressed by the Pentagon Building, and with good reason. The Pentagon is not big — it is super. It is the largest office building in the world. Its population is staggering (40,000 capacity). The equivalent of a small city sits down to lunch in its cafeterias every day. A truck road winds unseen through its bowels. And even Washingtonians, long habituated to miles of labyrinthine corridors, finds it large enough to be confusing.

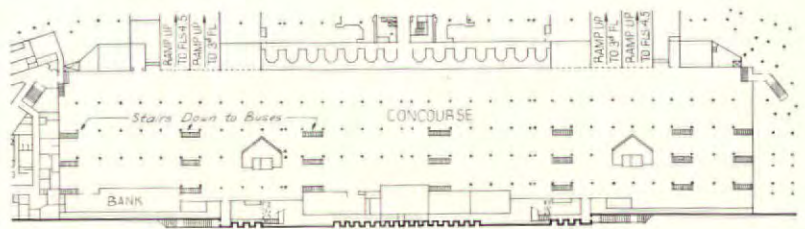
For so important a building, the Pentagon was designed in a rather curious way, and equally odd is the manner in which it got its name and shape. About the building's exterior, the less said the better: in essence it is the official Washington front, stretched thin to cover 4,600 running feet of facade. It is presented here because a building so enormous takes on an entirely new quality of interest and excitement, a quality which depends not on the "architecture" but on its size and the problems that go with it.

One thing that happens when a building for 40,000 people is put up, appears in the model photograph: a fantastic network of roads, cloverleaves, underpasses and overpasses. This influence is not confined to the site, generous as the 400-acre site happens to be. For miles around the results of building the Pentagon are visible: the reclaimed slums, the broad roads, and the new, integrated approaches to the capital. Perhaps the greatest lesson of the Pentagon is here: as building approaches the scale technically feasible, the distinction between architecture and city planning vanishes. Despite its shortcomings, the Pentagon gives a real foretaste of the future.





Here is the real entrance to the Pentagon, not the porticoes which protude so feebly from its sides, but a tunnel nearly 1,000 feet in length, tucked in almost as an afterthought under one of the five segments of the building. Here, where the working population surges in and out at the rate of 30,000 per hour, is the essence of what the building as a whole might have been. Here is the picture of a future architecture in which buildings will be linked to their users by smooth-flowing traffic networks. To the visitor who has just been exposed to the vast and boring expanse of windows, cornices and columns, nothing comes as a greater surprise than this sleek tunnel, for its entrances have been almost hidden in the corners of the building. The busses glide in between low walls of smooth gray brick, their engines muffled by a ceiling of acoustic tile. There are lanes for busses



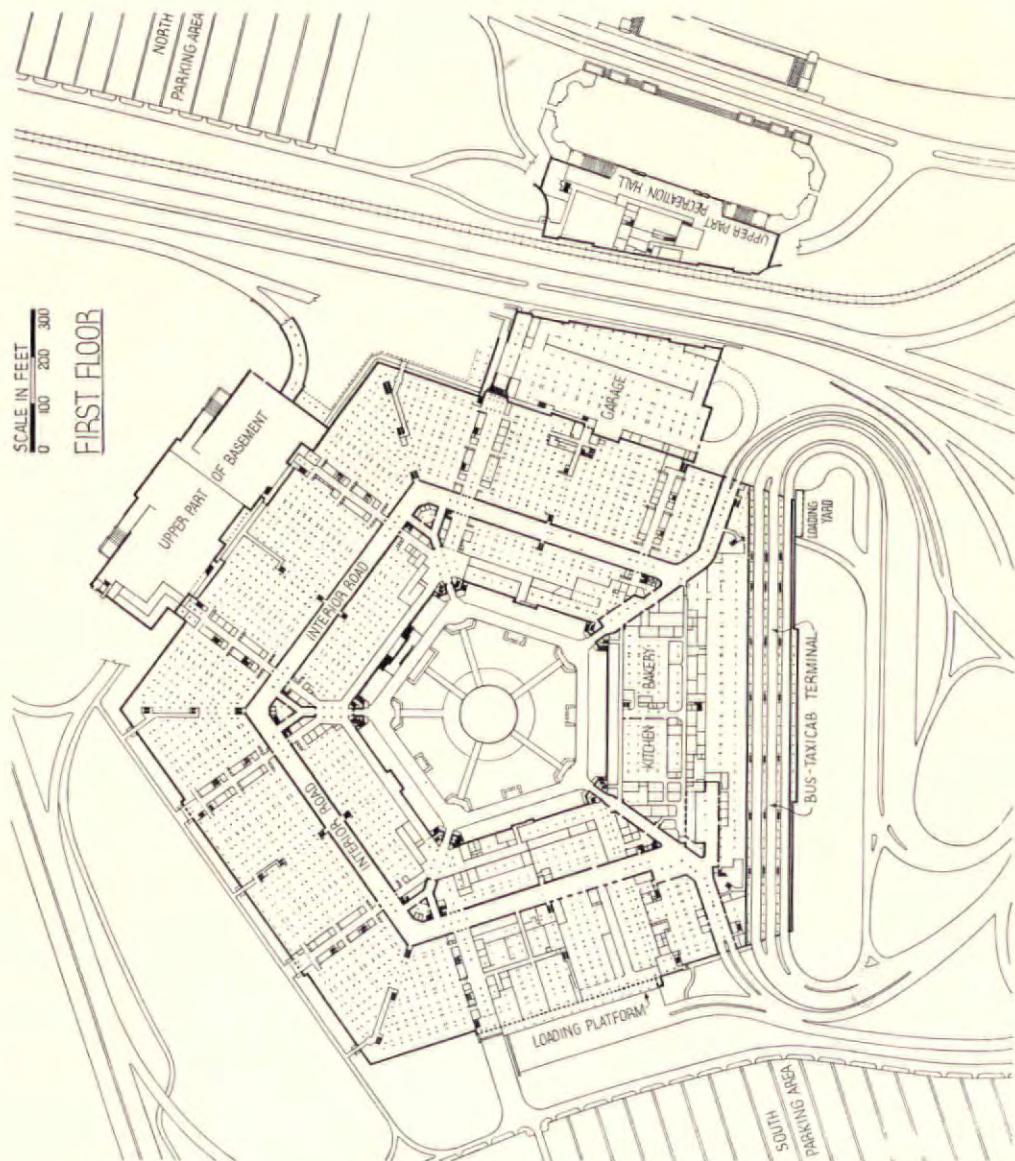
and lanes for taxis, and each is sufficiently broad for loaded vehicles to pass those still at the platforms. Passengers arriving at these platforms move up stairways into the great concourse on the floor above. The scale established by the need to handle large crowds without friction is very pronounced, and the design solution is entirely satisfying. Row after row of round columns, painted a glistening red, extends almost to the vanishing point. Walls of glossy tile in gray or yellow, flush units for lighting and ventilating, dozens of doors to the various ramps, marked by excellent signs—all of these elements combine to form a consistent, stimulating design for swift movement.



Each floor in the Pentagon is color keyed, the five colors for the five floors ranging from warm to cool. In the concourse, where the ramps to the different floors begin, the doors to the ramps are similarly keyed. This device is not only practical as a means of quick identification, but it serves to add a bright note of color. The ramps, which are surfaced with terrazzo, have a ten per cent slope; the narrowest of these is 20 feet wide.

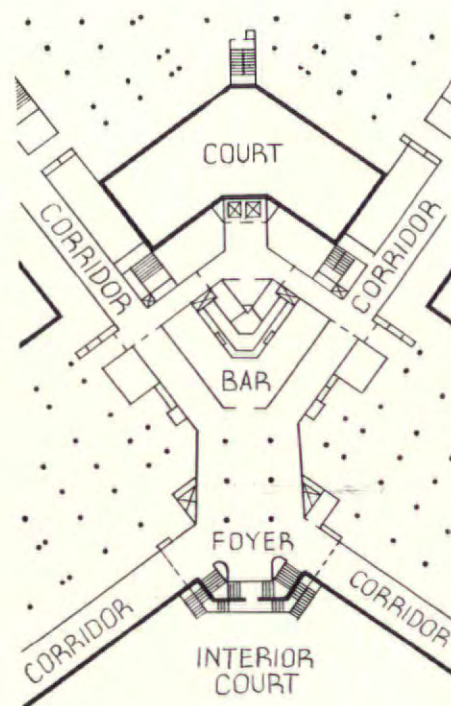
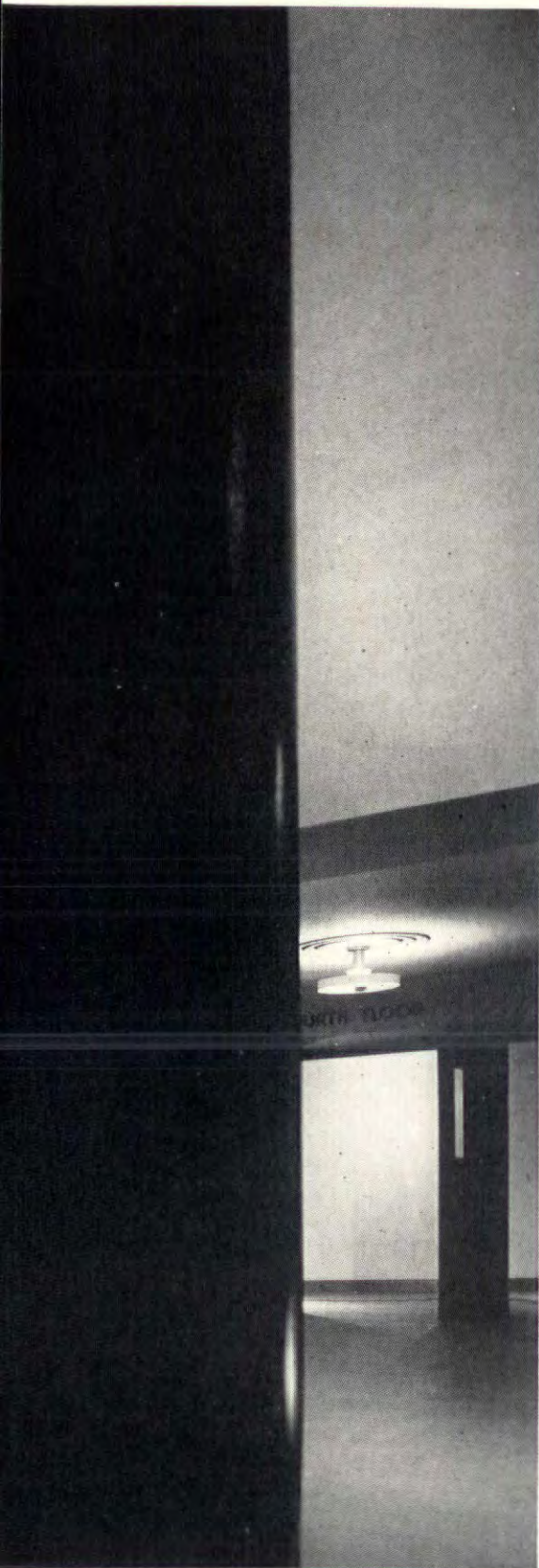
Another means of grasping the size of this building is given at the right. It is interesting to compare, on this plan, the relationship between the bus and taxicab terminal and the building as a whole. Another factor helpful in establishing the true scale of the project is the truck road at this level, 40 feet in width, which winds through four of the five segments of the building. The thousands of columns which dot the plan are laid out in 10 and 20 foot bays; the former occur where it might be desirable to establish corridors. The section containing the terminal also includes the kitchen and bakery, which serve the cafeterias on the floors above by means of elevators and food lifts. These service elements are large enough to take care of the entire food preparation requirements of a small city. At this level there is also a garage for cars of the commanding personnel.

Both first and second floors are alike in that they have very large uninterrupted office areas — the light courts, which divide each segment of the pentagon into five parallel rings, occur only in the top three floors. The best picture of how these light courts fit into the pattern appears in the large photograph of the model on page 38. The general plan arrangement, however, varies very little from one floor to another: essentially it consists of general office space, with the appropriate services, in four sections of the building, while the fifth contains most of the large special features, such as the cafeterias. This concentration of the main services in one segment was a result of the most urgent practical considerations. The building was built — and designed — in a clockwise manner, and the high-speed schedule made it necessary to put those elements requiring most time to design and build in the section completed last. Any planner will recognize that this method leaves a great deal to be desired, but under the circumstances neither the War Department, the architects nor the builders had any other choice.

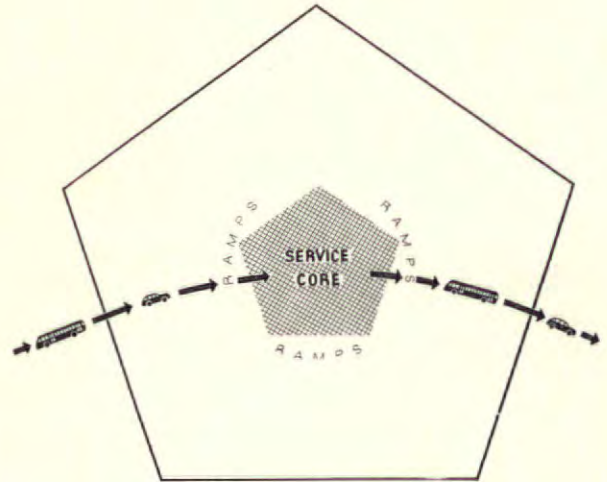
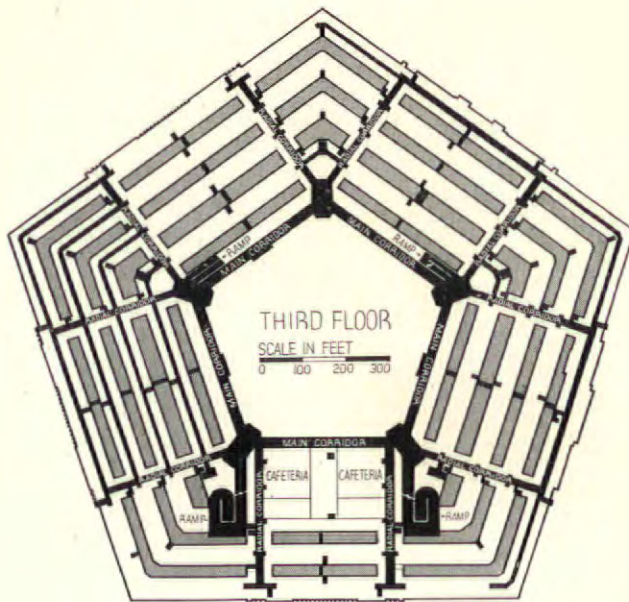








Circulation was one of the major problems in the design of the Pentagon Building, not only because of the crowds to be handled, but because getting from one office or another may mean a walk of a quarter of a mile or more. Basic in the scheme is the main corridor, which wraps around all five sides of the big center court. From this go the radial corridors, towards the outside walls, while ring corridors span between the radials. This relationship between the main traffic arteries is clarified by the plan on the following page. The photograph and plan here show what is called a radial intersection, one of the five spots on each floor where the main elements of circulation come together. At some of these intersections beverage bars are located. Equipped to provide sandwich lunches, candy, cigarettes, etc., these bars help to reduce the load on the cafeterias. The radial corridors fan out on each side of the beverage bar, while the main corridors around the interior court go off in the opposite directions. At these points most of the vertical circulation is also located, in this instance stairs, at other points on the plan, the wide ramps which were designed to carry by far the larger part of the traffic load. In addition to the ramps and stairs there are five sets of escalators in the building; these, however, provide a limited service, intended primarily for employees with physical disabilities.

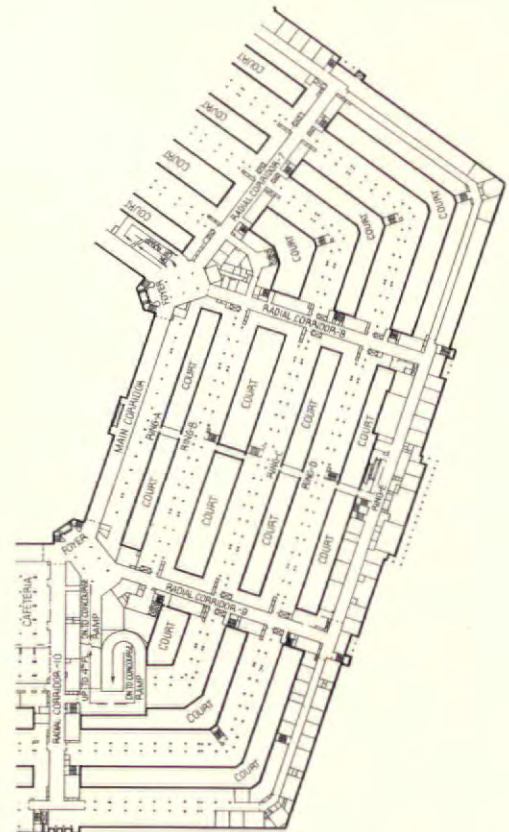


Most interesting of the questions that have arisen in connection with the building is the very first: "Why is it a pentagon?" The answer is equally interesting. In July of 1941, architects in the War Department's Construction Division were ordered to prepare a scheme for a building to house the entire War Department personnel, then scattered in seventeen buildings in Washington. To prepare the sketches for this mammoth undertaking the architects were given a long weekend.

The site was bounded by roads and other features which created a shape that was roughly pentagonal. Reasonably enough, the building conformed to the site's shape. As things developed, the first site was given up, as were several others in rapid succession. But after three months of study, the building still ended up a pentagon.

For keeping the shape after the original reason for it had disappeared there were apparently several reasons. For one thing, the schedule did not allow development of an essentially different scheme. For another, the pentagon, a shape vaguely reminiscent of the fortress-towns of the 17th century, seemed to appeal to the Army as some kind of symbol. But the best reason was that any shape approaching a circle gave the greatest area with the shortest walking distances. Due to the pressure on both architects and builders, this concept was never fully developed.

As it has been built, the Pentagon is completely air-conditioned both summer and winter. Practically all of the offices keep their lights on all the time. Substantial savings could have been made by eliminating the ineffective light courts and unattractive central court, and working out a scheme consistent with the real potentialities of artificial light and ventilation. A service core at the center could have contained the bus terminal, cafeterias, etc., which is where proper planning would have put them in the first place. The diagram at the upper right suggests such a solution: while smaller than the present building, it contains an equal amount of floor space. Such a scheme, in fact, was considered, but it would have slowed up both design and construction. Had the architects ever had an opportunity to present the core scheme, it probably would not have gone very far. There is a profound conviction in all official Washington that no building is a real Government building unless it has a court in the middle of it.



Above, a section of a typical office floor, showing the main and radial corridors, the light courts and office rings.

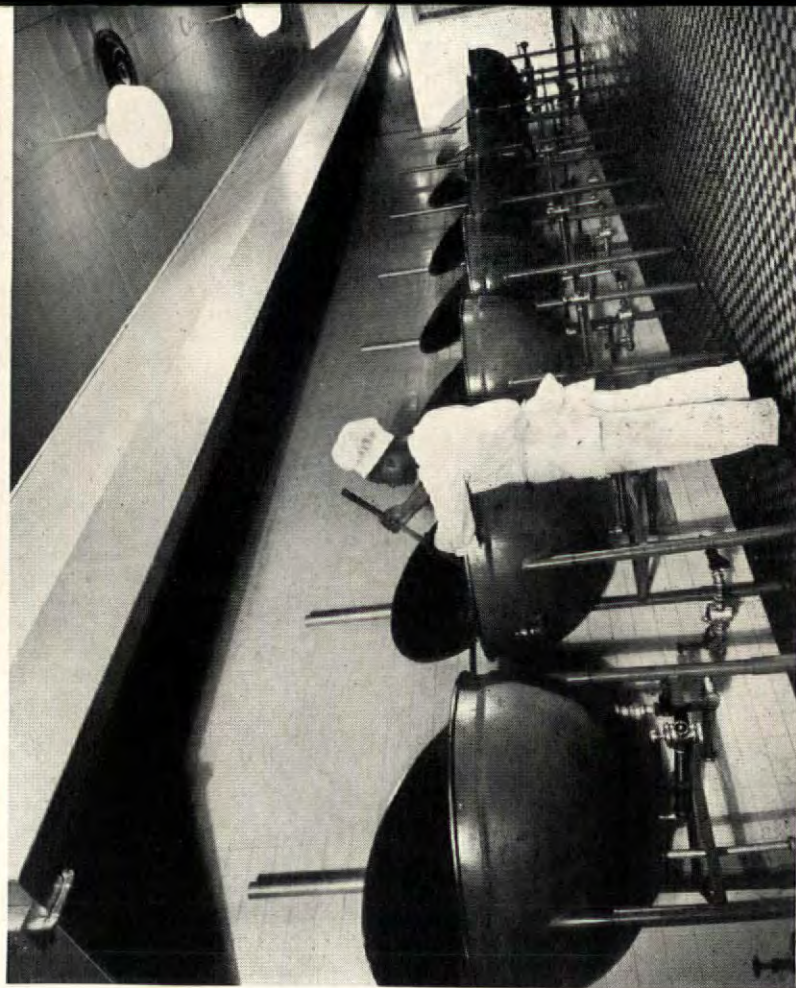
The photograph at the right shows a typical main corridor, with windows on the big court. If taken out of doors it would make a two-lane highway with room to spare. Note the sign giving the corridor's location.

THIRD FLOOR

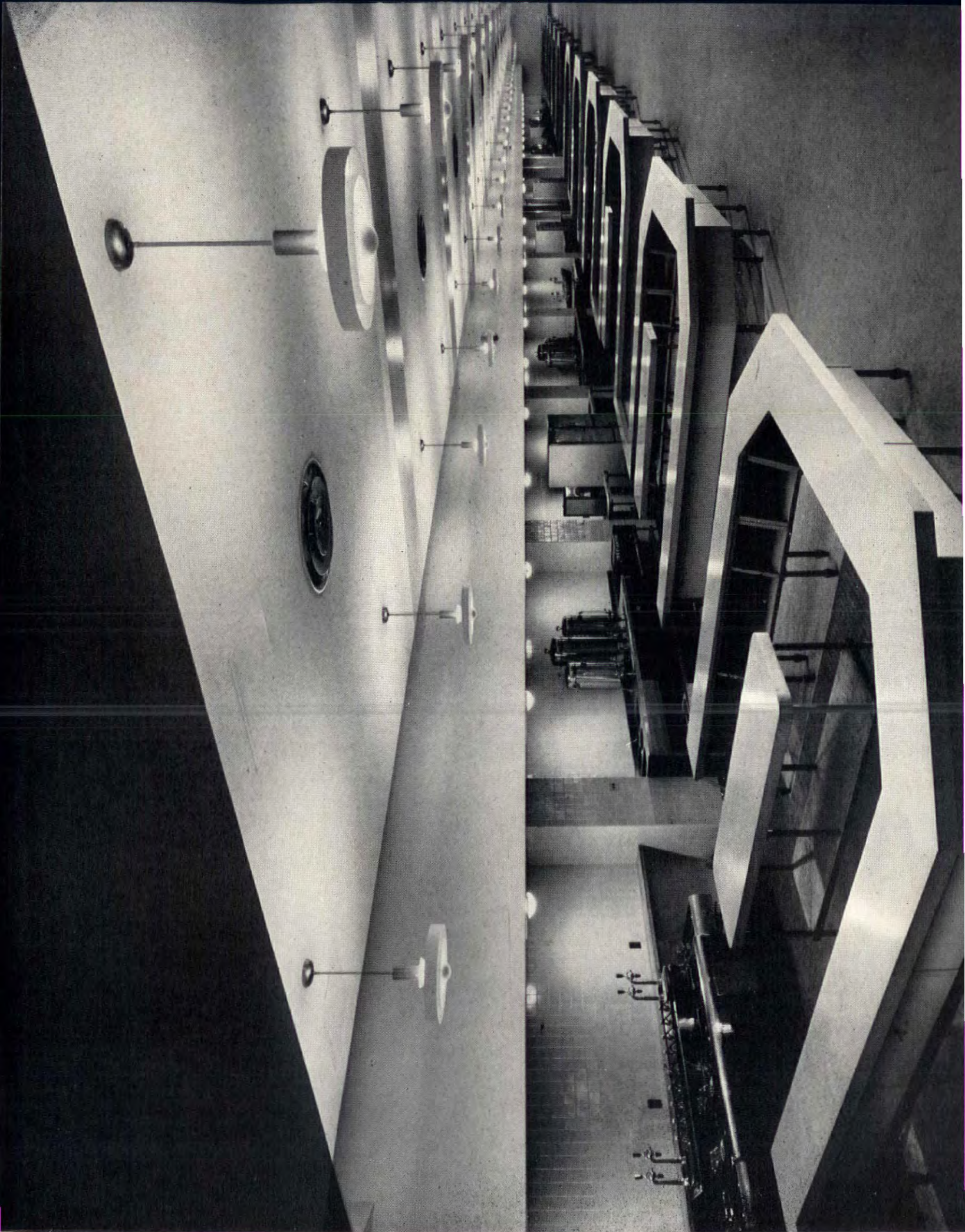


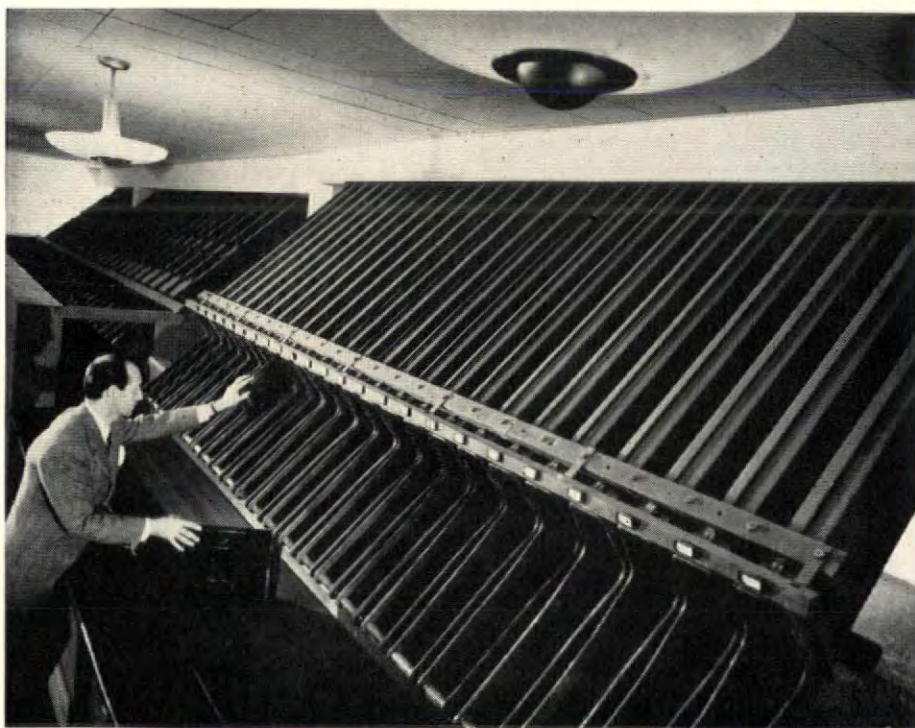
TO BAYS •
3A662-3A688





Most fascinating of all the features of a building on the scale of the Pentagon are its services. Here everything is expressed in superlatives. Typical is the so-called Soda Bar, illustrated below, which opens off the great concourse above the bus terminal. Three hundred feet in length, it was designed to serve (after the seats are installed) a great many breakfasts in a hurry. Both kitchen and bakery are laid out in the most impressive manner, with large areas filled with long batteries of mixing machines, soup kettles, ovens, pressure cookers, etc. Gleaming walls and floors of easily cleaned materials, acoustic ceilings and brilliant illumination combine to create an effect of quiet efficiency and tremendous production. This effect, incidentally, mirrors a very real fact, for out of these kitchens can come 7,000 meals at one time, up to 30,000 lunches or more on an average working day.





The scale of the Pentagon's food preparation and serving centers is more than matched by its many other services. The main telephone switchboard, for example, is the largest ever installed in an office building, and could take care of the requirements of a city of 125,000 population. Carefully installed in one of the safest parts of the building, it is one of the most rigidly controlled and protected of the service units. Equally remarkable for its size is the pneumatic tube system which extends through the entire structure. These tubes eliminate much of the usual messenger service for inter-office mail. Memoranda, reports, etc., are delivered to tube stations on each floor; from these the containers go to the central station (see photograph) where they are re-routed to the proper section of the building. In striking contrast to these huge-scale mechanized services are the executive offices, quiet, conservative, and completely in the manner of Government's executive offices from time immemorial. The photograph below shows the office of the Secretary of War.



Access to the Building.

Roads constructed include three express arteries together with traffic interchanges and terminal facilities. Pavement (including paved parking for 8,000 cars) is the equivalent of 49 miles of 24-foot roadway. There are 24 bridges. The entire system is free from red lights, grade intersections, stop signs and private access roads.

Bus Terminal Signal Control.

Two lanes, each with a parallel platform, are used for loading and unloading passengers. Each platform is divided into seven spaces, arranged to take three small or two large busses per space.

When a bus is full and ready the operator waits for the green light, which is operated automatically on a cycle previously set. Each space on the platform has a control panel and a starter, who can call busses as they are needed from their parking space outside the building. Entrance to the bus terminal is controlled by traffic lights under the direct control of the dispatcher.

Atmospheric Control System.

There are two principal types of space; perimeter space having windows on approximately ten-foot centers, and interior space where the distance from the window exceeds 25 feet. The problem of conditioning adjacent to the windows is solved by the use of window induction units in which an amount of air equivalent to that required for cooling in peak summer weather is introduced through a jet. This jet in turn induces a flow of air from the room through a steel-finned heater within the unit. These units differ from the ordinary application as follows:

a. A sloping sill aids air distribution and prevents obstruction of air flow by the piling up of books and papers.

b. The units operate with a constant quantity of air from the jet so that ventilation is automatically maintained. The primary control of air temperature supplied to the jet is effected by outside temperature and the intensity of solar radiation.

The interior spaces are supplied by horizontal ducts furred into the ceiling and construction. Circular diffusion ceiling outlets are used in some areas and side wall outlets in others.

Both the interior and exterior systems are supplied by the same air washer systems. The air supplied to the local recirculating fans for interior spaces is the straight dehumidified air. The air for window units is temperature controlled by a reheater and by admixture of recirculated air.

For the typical office space of the building there are approximately sixty washer systems. In general, steam is used directly for temperature control at the conditioning apparatus and forced circulation hot water for window units and small booster heaters.

The chilled water used for drying and cooling the air is obtained from a central refrigeration and boiler plant located about a quarter of a mile from the building and connected by an underground tunnel. There are 12 1120-ton centrifugal refrigerating units; about 24,000 gallons of water are recirculated per minute through two 36-inch lines. Water is taken from the lagoon, filtered, and picked up by five vertical well-type pumps of 10,000 gallons capacity each.

The boiler equipment consists of five 80,000-lb.-per-hour 3-drum units with multiple retort underfeed stokers. The plant is equipped with mechanical dust precipitators. The water treatment consists of the use of a de-aerating feed water heater with Zeolite-treated make-up water.

Electrical System.

The power for operation is obtained from the local utility and is transmitted at 66,000 volts to two 33,000 KVA transformers. Here the voltage is reduced to 13,800 for distribution to the main building. Within the building there are 16 transformer vaults of 2,000 KVA capacity each, every vault consisting of four transformers distributing on a radial feed system with provisions for paralleling busses in event of transformer failure.

Illumination is provided largely by indirect luminaires, using bottom-silvered lamps. In many cases these fixtures are combined with the conditioned air outlets.

There is a complete combined watchman's tour and fire alarm system, with other protective systems. A limited system of under-floor duct is provided for buzzers, intercommunicating phones, etc.

Acoustical Treatment.

In general, all public spaces have ceilings of sound-absorbing material. Sound control also required the erection of soundproof partitions in noisy locations, and special devices to reduce the disturbance of machines and mechanical equipment.

Sewage Treatment.

The sewage treatment plan was designed to take waste from the building, and from the Navy Building and Fort Myer nearby. It was designed to so process the waste that the effluent might be discharged into the Potomac River Boundary Channel without health hazards or general nuisance. The plant has two comminators for grinding coarse solids, a Parshall Flume, aeration tanks, settling tanks, etc. It is laid out in duplicate for flexibility in handling both peak and low periods. Waste gas is used for heating the digesters and the plant's two boilers.

Credits.

It is almost impossible to allocate credits fairly on a job of the magnitude of the Pentagon Building. The following list is of necessity incomplete:

District Engineer: Lieut. Col. Clarence Renshaw.

Project Manager: J. Paul Hauck.

Consulting Engineer (air conditioning): Charles S. Leopold.

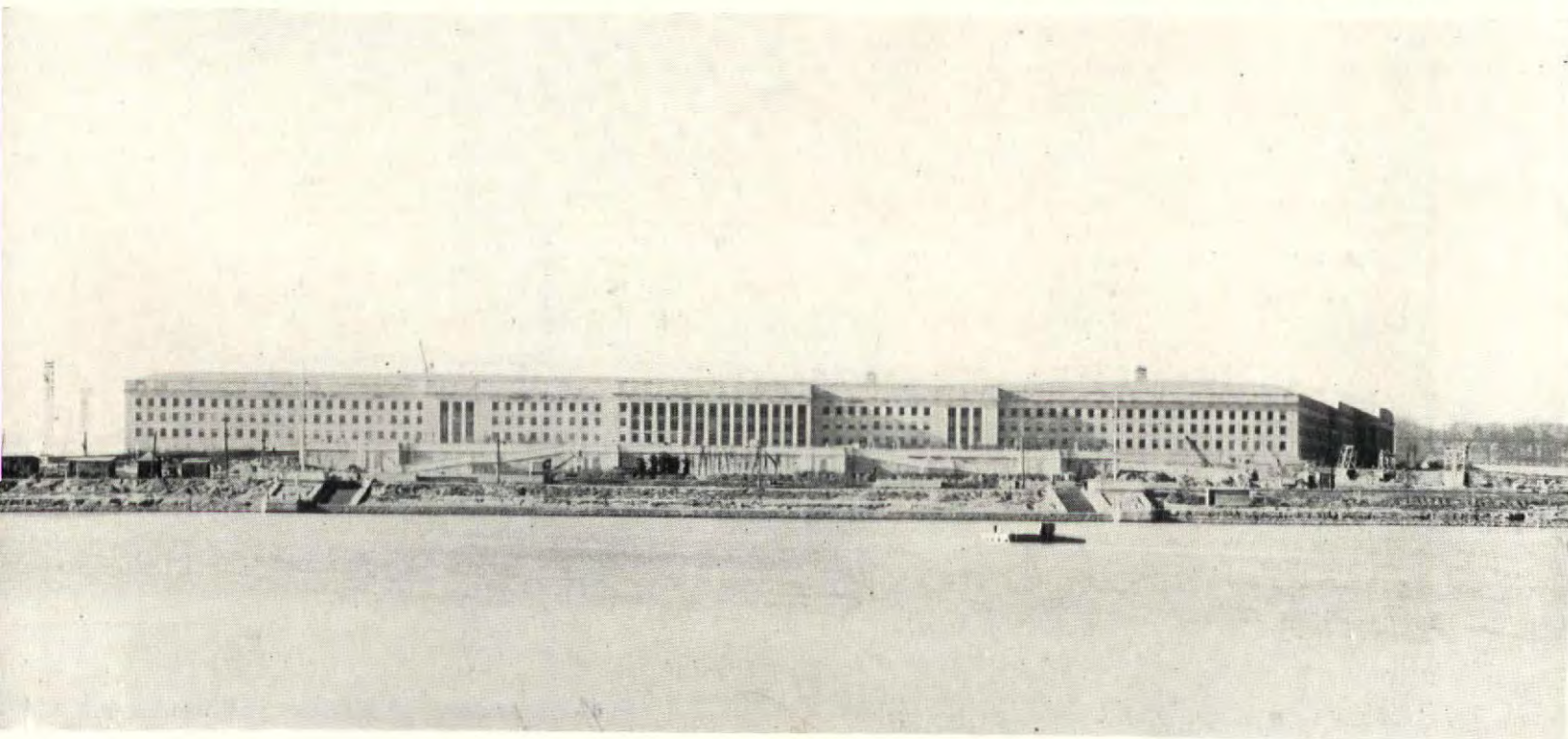
Landscape Architect: A. D. Taylor.

Acoustical Consultant: F. R. Watson.

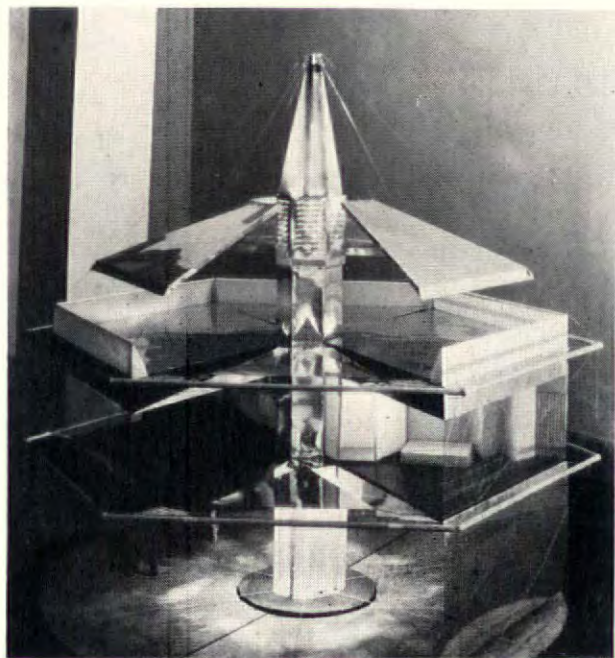
Sanitary Engineer: Charles Velzy.

Plumbing Engineer: Fred Brady.

Transportation Consultant: W. S. Chapin.



PREFABRICATION



1.

THE PREFABRICATED HOUSE

1. A MOVEMENT EMERGES

published December 1942

2. IDEAS

the stimulus to change

3. CONCRETE

forerunner to the movement

4. STEEL

prominent in early experiments

5. WOOD

material of realization

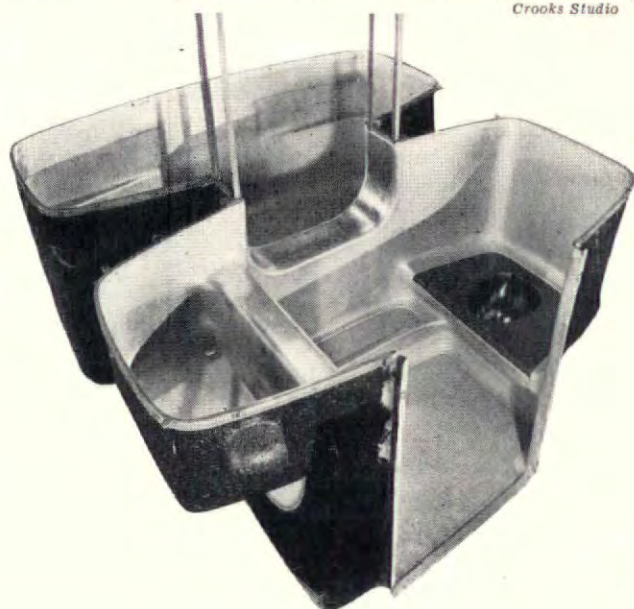
6. "REENGINEERING"

the measure of progress



2.

Crooks Studio



3.

1. Cutaway model of Buckminster Fuller's famous "Dymaxion House" designed in 1928. 2. Full-size, experimental model of Corwin Willson's trailer house, built in 1937. 3. Lower portion of Buckminster Fuller's four-piece, all-metal bathroom, built experimentally for the Phelps-Dodge Research Laboratory in 1937.

2. IDEAS

THE STIMULUS TO CHANGE

OUT OF THE functionalist movement in architecture, there has sprung in the period since 1925, a series of radical, startling and even bizarre ideas for the production of houses on a mass scale. Few of them were ever executed except in model or experimental form. Their function in the development of prefabrication is more one of stimulation than of practical development.

The extent of the influence of these ideas has varied according to the nature of the ideas themselves. They have ranged from highly imaginative visualizations of the house of the future to practical approaches to some phase of prefabrication, but one thing they have all had in common. They have represented an extreme approach that has served to center attention on the subject as a whole; and they have contributed, in one way or another, ideas that have been put into actual practice in a modified form.

Such ideas have struck sometimes deft, sometimes blunt blows as accepted convention and tradition. From one point of view they may have contributed to a misunderstanding of the true character of prefabrication, creating unnecessary resistance to the entire subject. This has occurred because their extreme or unusual external form has been mistaken for the subject of prefabrication itself.

From a more important point of view, however, their very extremity has served to establish principles or modify concepts formed from habit, when a more timid approach would have made little progress against the fundamental inertia of established convention.

The ideas themselves have been many and varied. Some were never intended for execution but had as their purpose only the stimulation of interest. Others were evolved for use in experimental houses and even for houses intended for the market. Among those that were projected, certain definite groups of ideas stand out because of the widespread attention they have attracted, or because they have already provided a basis for practical developments.

One such group of ideas was the projections for mast-hung houses which first appeared about 1927. They served to stir at least professional consideration for prefabrication at a time when traditional construction was still in the midst of a record boom, and only a startling or unusual suggestion could have gained attention for either prefabrication or for low-cost housing.

Another group employed what has sometimes been termed "shape engineering" to suggest entirely new forms for the house as a whole. Developed as the prefabrication movement has progressed, these projections illustrate many of the principles which, in a modified application, have played a large part in the growth of the movement.

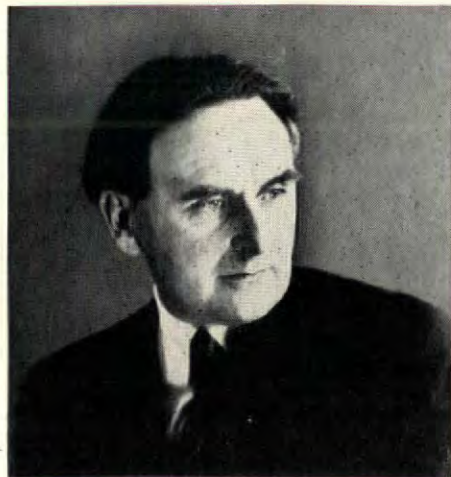
Finally, in a completely different class, there has been the experimentation with mechanical equipment, both for the sake of improvements in the equipment itself, and in order to better adapt such equipment to the requirements of prefabricated construction. Out of these experiments, there have evolved modified versions of these radical ideas that have done much to make prefabrication practicable.



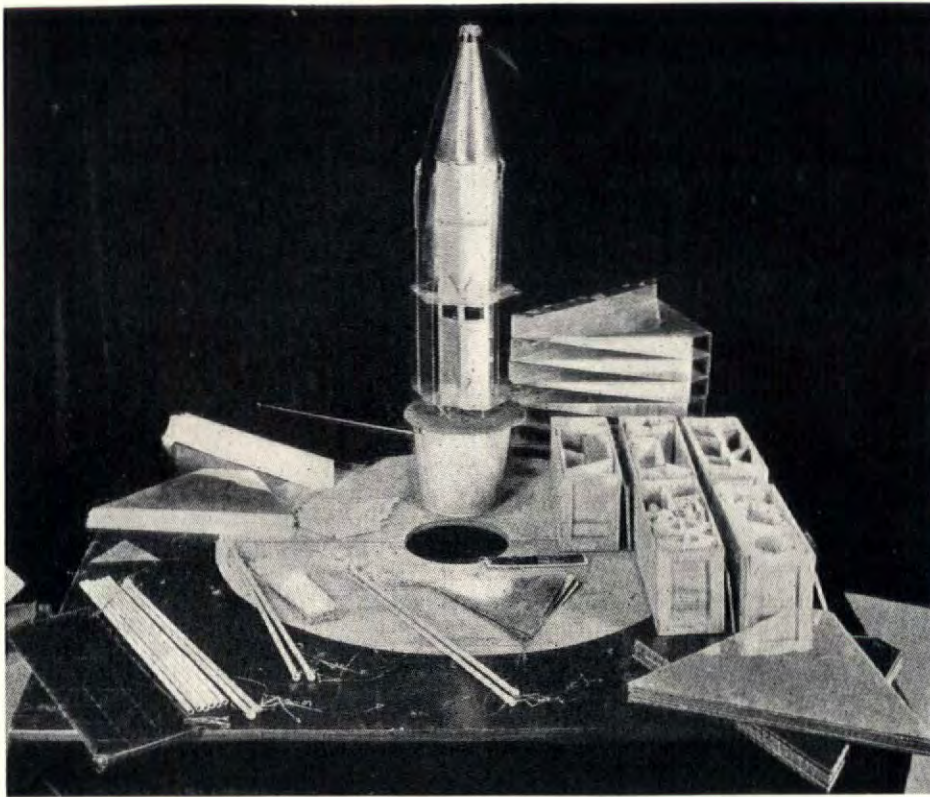
News pictures
Buckminster Fuller is a name you are apt to trip over in examining almost any phase of prefabrication theory, since he has been active in all of them. Author of "Nine Chains To The Moon," he is an outstanding exponent of industrialization of every type.



Bernard Hoffman
Corwin Willson, architect and industrial designer, became enamoured of living in trailers during the short-lived fad of 1938. His enthusiasm produced one of the best attempts at shape engineering, a two-story "mon-ocoque" trailer of exceptional livability.



Mary Culley
Richard J. Neutra, Los Angeles architect who came to the U. S. from Austria in 1923, is an early proponent of mast houses and prefabrication who has applied many of his ideas to a radical redesign of the structure of his conventionally-built houses.

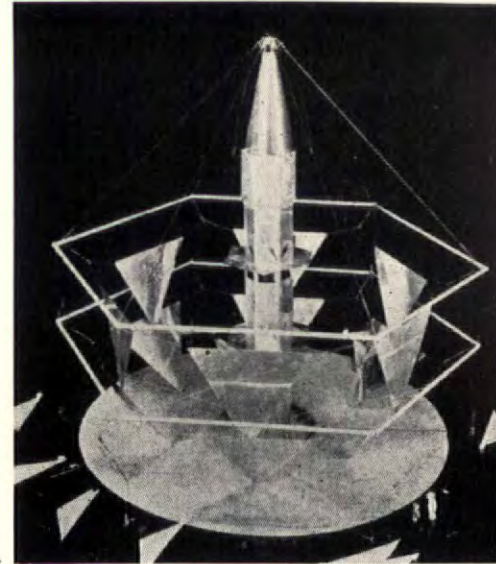


MAST HOUSES

For a type of structure that has as yet had no place in practical prefabrication the mast structure has had almost unbelievable influence upon its development and upon the form that development was to take. First proposed by Frank Lloyd Wright in a design for a Chicago skyscraper in 1920 (and later in his St. Marks Tower project, 1929), it is an idea which has again and again held the attention of designers. More than that, it has focused attention upon the fact that the ultimate solution to prefabrication might lie in a fundamental change in the structure of the house as it is now known.

In 1927, just as the nation was completing one of the greatest years for traditional building in its history, Buckminster Fuller attracted wide attention through one such projection of the house of the future. Fuller advanced the argument that conventional methods of house construction were entirely inadequate. To make his point, he projected a low-cost house, called the Dymaxion House, to be prefabricated on a mass scale. An hexagonal-shaped structure suspended in mid-air on a central core or mast, it resembled an over-sized "crow's nest" on the mast of a ship. Its unorthodox character was the very essence of Sunday supplement copy, and stories about it provided exciting reading on low-cost housing for the jaded followers of the class magazines whose regular fare at the time dealt extensively with the two- and even three-car garage. The extent of its influence and the interest it created are shown by the fact that even college papers devoted columns of type to explaining and discussing it.

More important than its somewhat bizarre form was the fact that it was associated by Fuller with his own ideas of mass-scale housing. It formed in effect a link between the functionalist ideas in architecture and prefabrication. Fuller urged that houses should be created in a universal design so that they could be used anywhere in any climate, instead of being built to meet local climatic or other conditions. Further, he wanted his houses reduced in weight to make them easily transportable, either com-

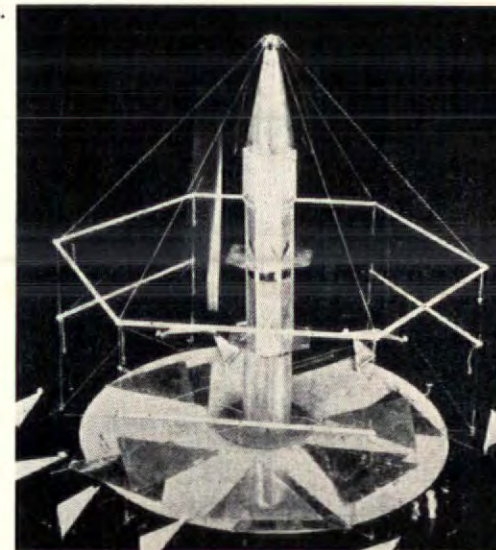


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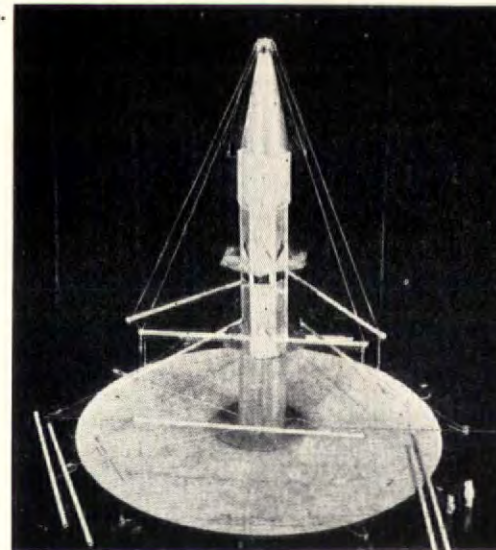
Progressive views showing assembly of Fuller's projected "Dymaxion House." 1) Shows complete mast, including mast-base containing septic and fuel tanks. 2) Shows mast in place, with three of the floor beams for each deck suspended from the top of the mast. In 3), the outer frame of the upper deck has been completed and anchored to the ground. 4) Shows first stage in erecting triangular metal floor panels used to support the pneumatic floor.

1.

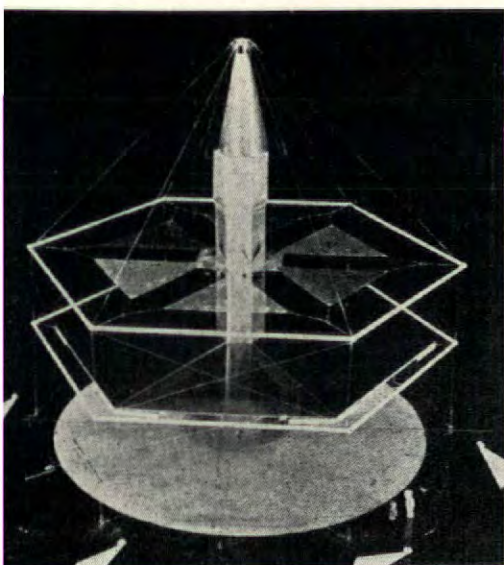
3.



4.



THE PREFABRICATED HOUSE



5. complete or in sections. Finally, he was not content with using the traditional materials of construction and demanded that new materials be found suitable to a house that could be factory-fabricated for service anywhere and capable of easy transportation.

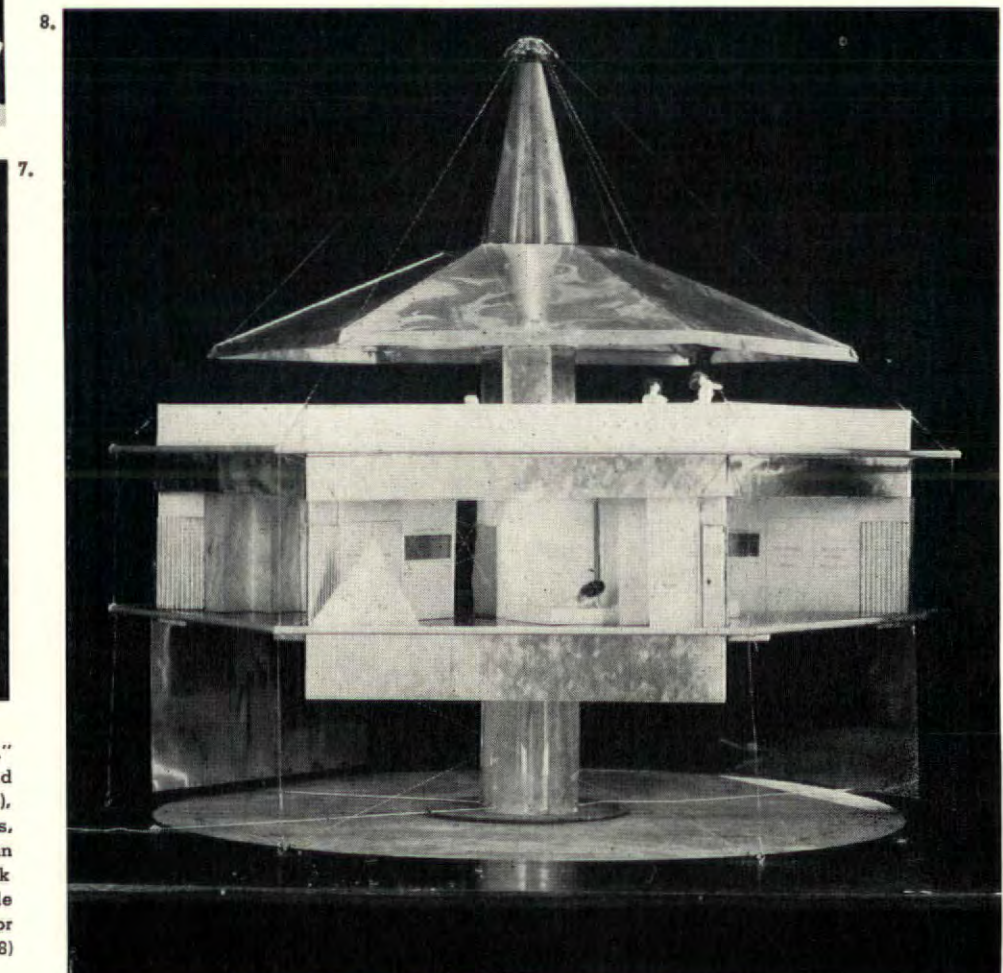
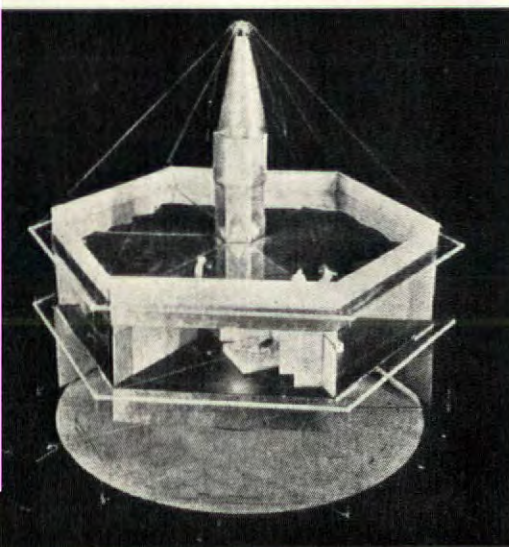
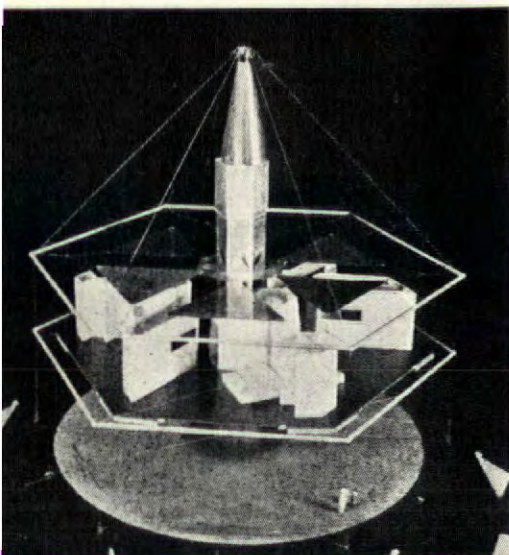
To establish the requirements of a house of the type he envisioned, he worked out an elaborate analytical table of the conditions it would have to meet, dividing the table into such headings as "external destructive forces" and "internal destructive forces," with a list of individual requirements that ranged from resistance to earthquake and pestilence to "repression-proofing" and "nerve-shock proofing."

His mast house was intended to illustrate a type of structure to meet all the requirements as he saw them. He specified the use of materials not yet on the market, as well as others on which the cost was then, and has remained, prohibitive.

Dymaxion I.

6. The central mast or core on which the structure was suspended was to be of Duralumin, and was to contain the utility services for the house, including elevator for entrance, laundry and all provisions for plumbing, air conditioning, etc. The roof and the floor were both "decks," suspended by wires that ran from the top of the mast to an hexagonal ring of tubular Duralumin beams around the outer edge of each deck. Between this ring and the mast was a network of thin, inflated, triangular Duralumin panels strung on wires to provide a cushioned walking surface. For walls between decks, he specified a translucent plastic to permit entrance of light and insulate against cold.

The top or roof deck was intended as an outdoor recreation area, and covered by a hood extending out from the mast. Equipment was to include



Final stages in assembly of the "Dymaxion."

5) Shows supporting panels for roof deck, and pneumatic floor laid on lower deck. In 6), service units, including bathrooms, closets, laundry, cooking units, etc., have been set in place on the lower deck. 7) Shows roof deck and parapets in place, transparent outside walls set up, and house complete except for the protective hood for the upper deck. 8) Shows completed house.

pneumatic doors that would not slam on children's fingers, incinerator pockets to destroy refuse at different points around the house, revolving bookshelves complete with maps, globes and atlases, a drawing board, typewriter, mimeograph, calculating machine, television unit, radio loud-speaker and microphone system, and even, in the mast itself, a laundry unit to return dirty clothes completely laundered in three minutes. All this, he estimated, would cost only \$3,000, if full-scale mass production were adopted on a universal basis, thus underscoring the points of prefabrication and low-cost housing.

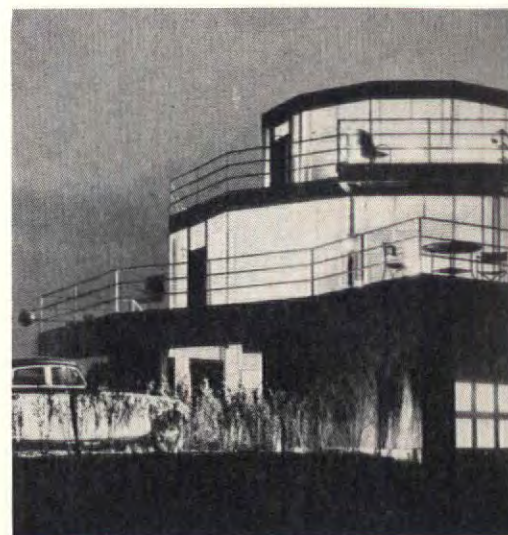
While the gadgets he included may have received as much attention as did his fundamental idea, there is no question but that the very startling nature of the projection—from the mast itself down to the three-minute laundry—gained attention for the subject of prefabrication in professional and semiprofessional circles that a less startling projection would never have received.

Other Designs

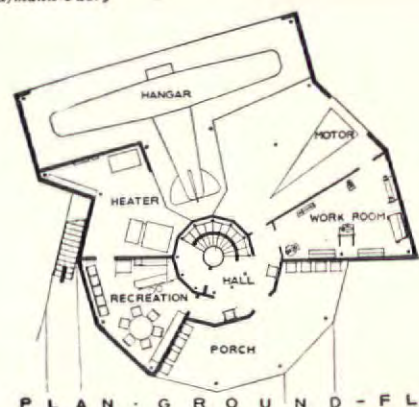
Concurrently with and immediately following this projection there was a virtual epidemic of suggestions for mast houses varying from the moderately conservative to the extreme. The production for occupancy of such a house is, however, still a matter for the future.

George Fred Keck did build a House of Tomorrow (ARCH. FORUM, July, '33) at the Chicago Century of Progress, in which he used a central steel core in a twelve-sided structure. The main part of the house consisted of two stories built over a garage, utility room and airplane hangar, on the ground floor. A flat roof and floor were supported on radial beams extending out wheel-spoke fashion from the central mast.

In the same year that Fuller made his Dymaxion projection, Richard J. Neutra, California architect who has introduced many structural innovations in individually-built houses, also projected a mast house. Neutra's house, designed with the collaboration of Peter Pfisterer, was more conservative in appearance. Known as the Diatom One-Plus-Two house, it was rectangular and not radial. Although the structural support was based upon suspension of walls, floors and ceiling, the house itself was at ground level. A series of masts was used, placed on the main axis or center line of the building as those of an old five-master are placed on the center line of the ship. From these masts, anchored in concrete and extending through floor and roof, jutted out transverse

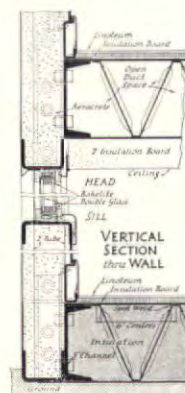


Kaufmann-Fabry

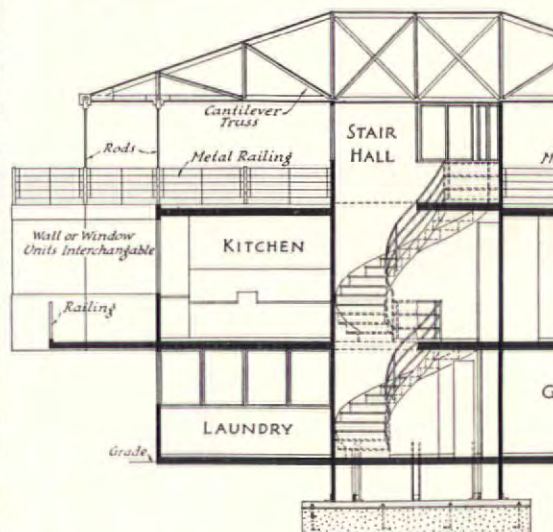
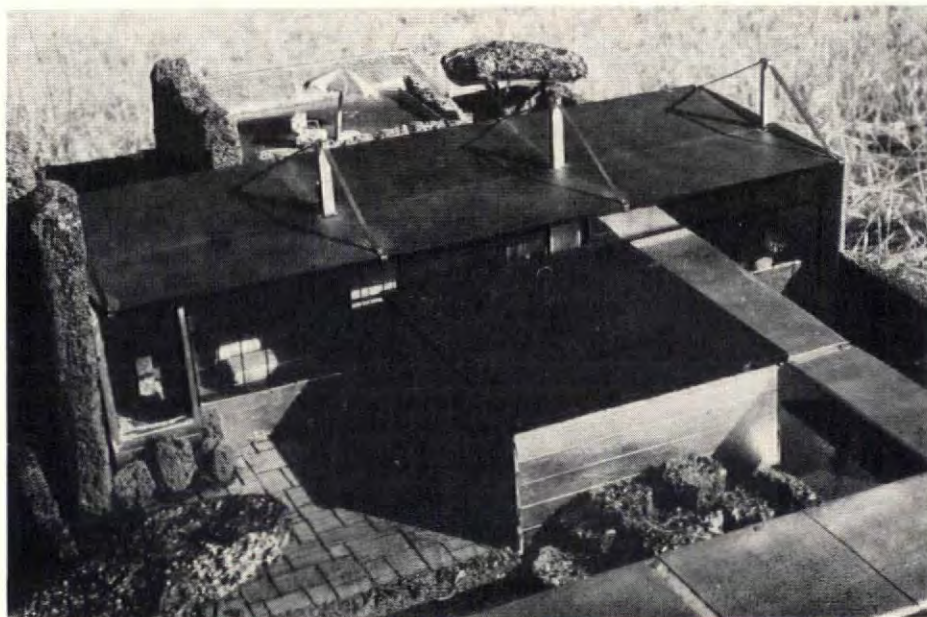


PLAN - GROUND - FL.

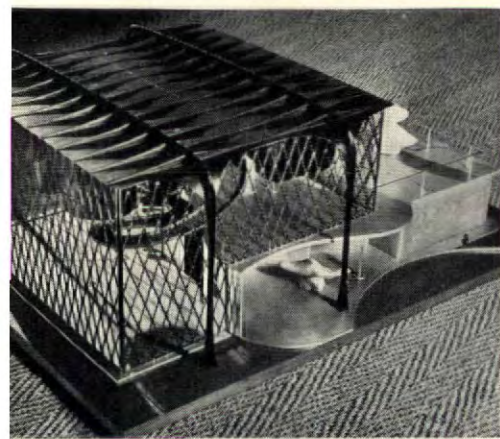
Various mast houses by other designers, developed at about the same time as the "Dymaxion."



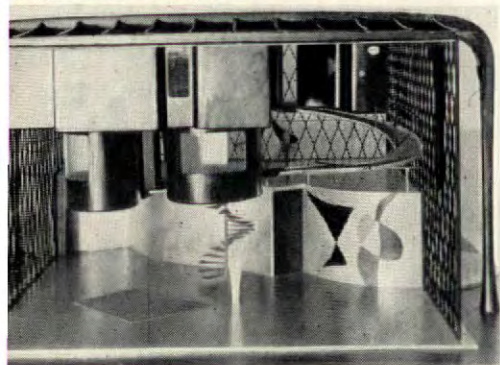
Above is a photograph and plan of Architect George Fred Keck's "House of Tomorrow," built at the Chicago Fair in 1933. Left and below are details of a scheme proposed by Bowman Brothers, Chicago architects, in 1932. Photo below shows a model of Architect Richard J. Neutra's "Diatom One-Plus-Two" house, a rectangular type with three masts.



THE PREFABRICATED HOUSE



terdeg, Museum of Modern Art



unami, Museum of Modern Art

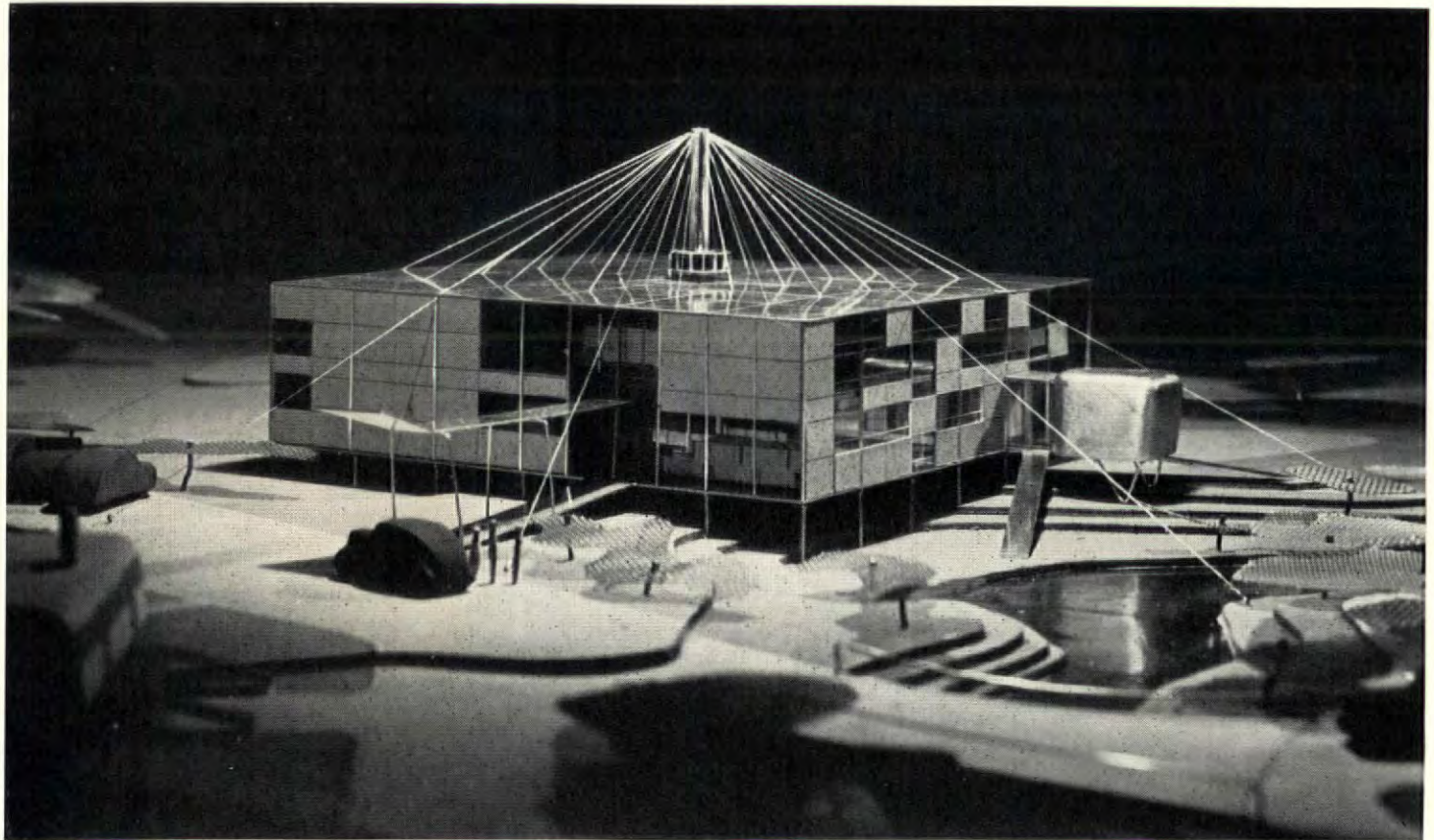
Above are exterior and cutaway views of a model of a house designed by Paul Nelson. The cage-like external structure, in metal, was intended to shelter and support individual prefabricated rooms, connected by stairs and a spiral ramp. Below is the most recent of the mast structures, a social center designed by Eero Saarinen for the U. S. Gypsum Co. in 1942, which employed steel cables hung from a tubular mast to support 12 x 12 ft. prefabricated roof panels.

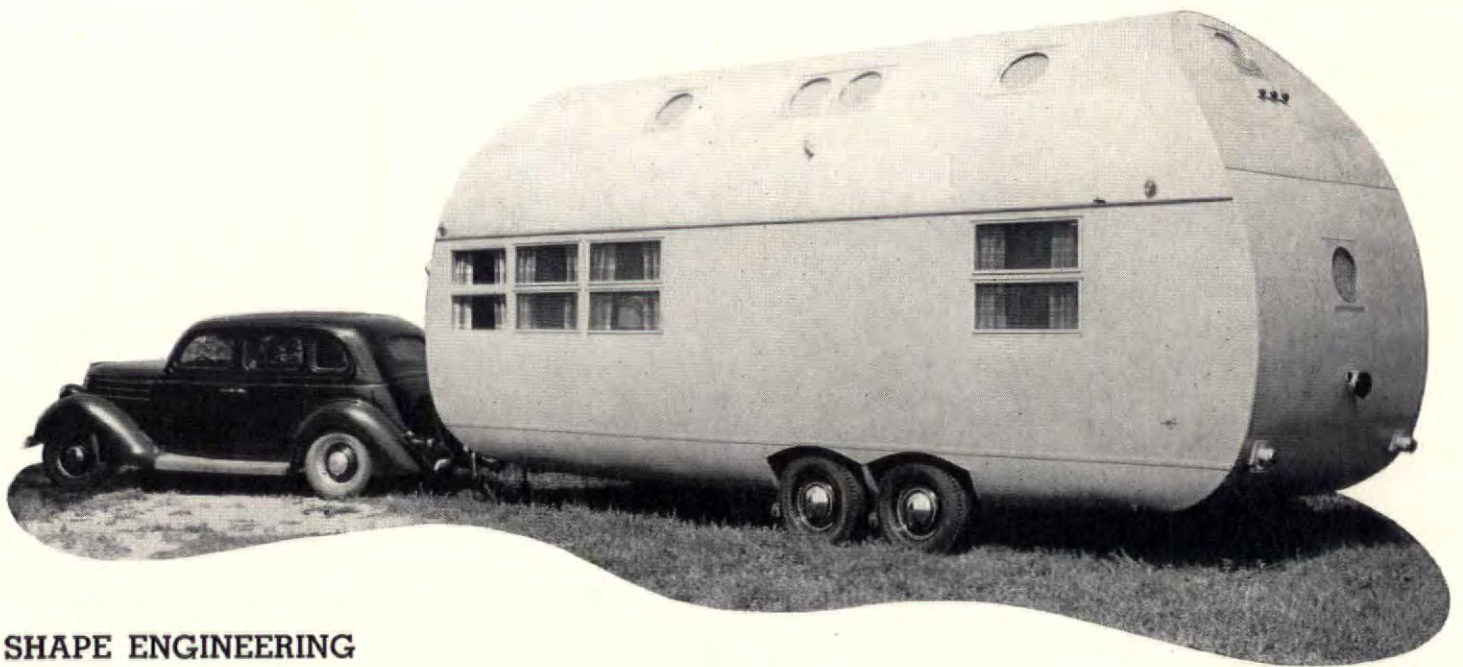
crossbeams of steel, as sail spars run out from the mast of a ship. On the spars rested a flat roof. Near the base were similar spar-like beams which carried the floor, prefabricated from a pair of angles and web plate. At the outer edge these floor beams received the walls which in turn were suspended on cables that ran from their upper edge to a cap on top of the masts. The house was intended to be an expansible one to which successive units could be added, each with its own mast. As a structural material for the walls, floors and roof, Neutra proposed to use slabs of a special diatomaceous earth composition which he had developed.

Another scheme for a rectangular mast house was projected by Bowman Bros. (ARCH. FORUM, July, '32), Chicago architects. Their project had a single central mast-core as in Fuller's hexagonal house. The core was in the form of a circular tower containing stair, plumbing stack and provisions for other utilities, with the floor, walls and roof of the structure hung from it by steel structural members.

A similar house was proposed by Clement S. Horseley, architect, except that he planned to build his mast or central utility core of masonry weight-bearing walls. From this masonry core-mast, lightweight floors and curtain walls were to be hung by cables.

Despite the fact that there has never been any practical use of any of these structures, the mast house has, for some reason, continued to intrigue the imagination of architects. As late as 1942, when the prefabrication movement had developed a long series of houses actually on the market, Eero Saarinen projected another mast house in the commercial advertising of a building materials company (ARCH. FORUM, Mar., '42). For his structure, he used a central mast to suspend a roof with a radial arrangement of cables resembling that used for a circus tent. Thus, though it has yet to reach the market in any commercial form, the mast house has remained as a stimulus, used again and again to suggest that changes in the traditional structure might proceed further and further in the development of prefabricated construction.





SHAPE ENGINEERING

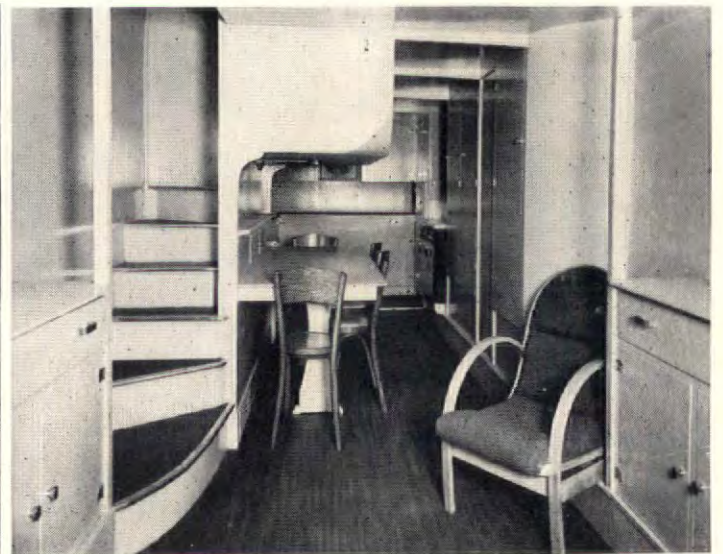
The term "shape engineering" is somewhat specious. In one form or another, virtually all houses take advantage of shape in structure. In the wooden frame house, to take an obvious example, no individual wall would stand erect by itself. The four walls of the house combine with a roof and floor to form a box, thus providing a rigid structure. Prefabrication, as it has developed, has meant the reengineering of structures on the basis of fundamental principles to take advantage of all factors, including shape, in creating the most efficient structure practical.

The mast houses suggested that reengineering might provide the key to practical prefabrication. In the course of the movement that followed, there have been applied engineering principles that are most graphically illustrated by their use in extreme form in what is often called the shape-engineered house. Unlike the mast houses, these structures are not merely forerunners to future development. Rather, they serve to illustrate in extreme form a development which has actually proceeded. Specifically, they applied a principle that has come to be described in aircraft terminology as monocoque construction. Used for the curved surfaces of an airplane fuselage, it provides a light weight structure in which the surface covering, or skin, provides much of the needed strength.

It is an old parlor trick to ask a guest to crush a glass in his hand. Because of the nature of glass as a material, it can be cracked or chipped easily, but if pressure is applied equally around the



Experimental two-story trailer-house built by Corwin Willson in 1937. Pictures below show two views of the lower level, looking towards each end of the unit from the center. Stairway leads to a bath-hall on the upper level (above), dividing the two-bunk "bedrooms."



THE PREFABRICATED HOUSE

surface, it will merely spread the stress throughout that surface or skin and compress the substance together as it is squeezed, making it stronger and stronger, as it is compressed. In the monocoque construction of an airplane fuselage, the same principle is utilized with a curved surface that also has strength in tension.

Despite its apparently fragile nature, the result of its low tensile strength, the shell of an egg has much the same overall strength as a glass. It can be cracked easily or smashed by a cracking blow at any point, but it cannot be readily crushed by uniform pressure since this merely compresses its shell or skin, making it stronger.

Corwin Willson's Trailer

In the houses projected using this principle of shape engineering, one of them could actually be described as an eggshell structure. It was worked out by Corwin Willson, designer and builder, of Flint, Mich., the center of the automobile industry. Willson was fascinated by the growth of the trailer idea. He wanted to provide trailers for year-round living.

Through his eggshell house, he expected to create a structure strong enough and light enough for the purpose. The house he evolved was not unlike a super-streamlined two-story bus in appearance. As a material that would have the tensile strength which the eggshell or glass lacks, he selected plywood, planning to manufacture the plywood in the shape of the house. Since this proposal was made, a number of processes to form plywood in varied shapes have been used for airplane construction.

Willson planned to form the outer shell of his trailer in three parts with a center section and two end pieces. To do this, he expected to use a large mandrel, wrapping veneer-like strips of wood around this mandrel and bonding or gluing them together with plastic phenolic-resin glue under heat and pressure. After the three parts had been formed, they were to be assembled and bonded together with the same plastic, providing the shell of a house with walls less than an inch thick. He proceeded with his plans to the point of forming a company in 1937, and actually completed an experimental model. However, the process of winding plywood strips on a mandrel was never actually tried.

Dymaxion II.

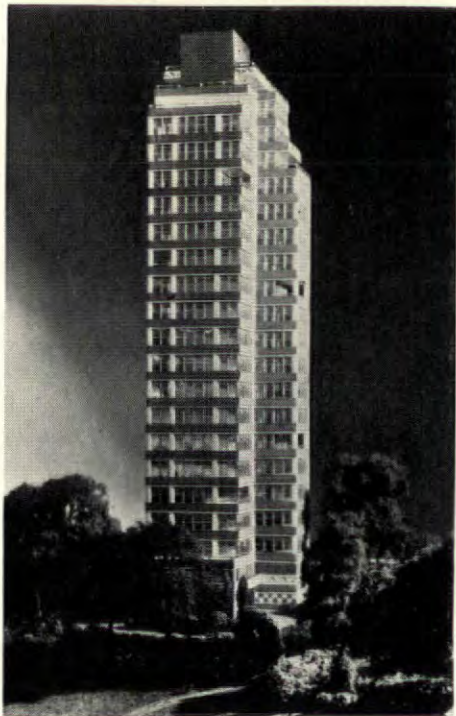
Later other developers projected the monocoque principle in forming igloo houses in the shape of half an eggshell. Buckminster Fuller was one who actually utilized it, basing his second Dymaxion House (ARCH. FORUM, June, '41) on this construction. He had long been interested in the principle, writing a special article for *Shelter Magazine* in 1932, in which he discussed the Mongolian Yurt, an instinctive use of monocoque construction in a domed hut woven together with staves covered with felt. Because of its shape, he pointed out, this hut merely grew stronger as it was flattened by wind pressure. In 1941 he used the idea to produce the second Dymaxion House, although he said that his inspiration for these houses came from seeing a grain bin out the window of a train in the Midwest.

In the igloo for the second Dymaxion House, Fuller produced a cylindrical structure with a separate domed top. Wall sections and pie-shaped roof sections were fastened together with a lightweight frame that served no purpose except to make a joint between the sections. Under the galvanized iron used for wall and roof he placed an interior finish of sheets of insulation. For a complete house he proposed to place the igloos in series to form different rooms.

He carried this idea into practice, making arrangements for production with the Butler Mfg. Co., manufacturers of the grain bin that had

Erection and finished views of Buckminster Fuller's second Dymaxion house, built in 1941. The round metal shell and pointed dome roof were built in reverse of the usual order, with the dome first assembled on the ground and then gradually raised on a temporary central mast to make room for the wall plates, applied from the top down. Bottom picture shows completed interior.

THE PREFABRICATED HOUSE



This scheme for a suburban apartment house, exhibited by Raymond Hood in 1932, was one of the first to suggest incorporation of plumbing fixtures in a mechanical core. This idea, which has been suggested many times since, was used in American Houses' Moto-Unit, below, developed by the Pierce Foundation. Photos show both sides of the unit, which divided the kitchen and bath-room and contained the plumbing, sink and heating plant.

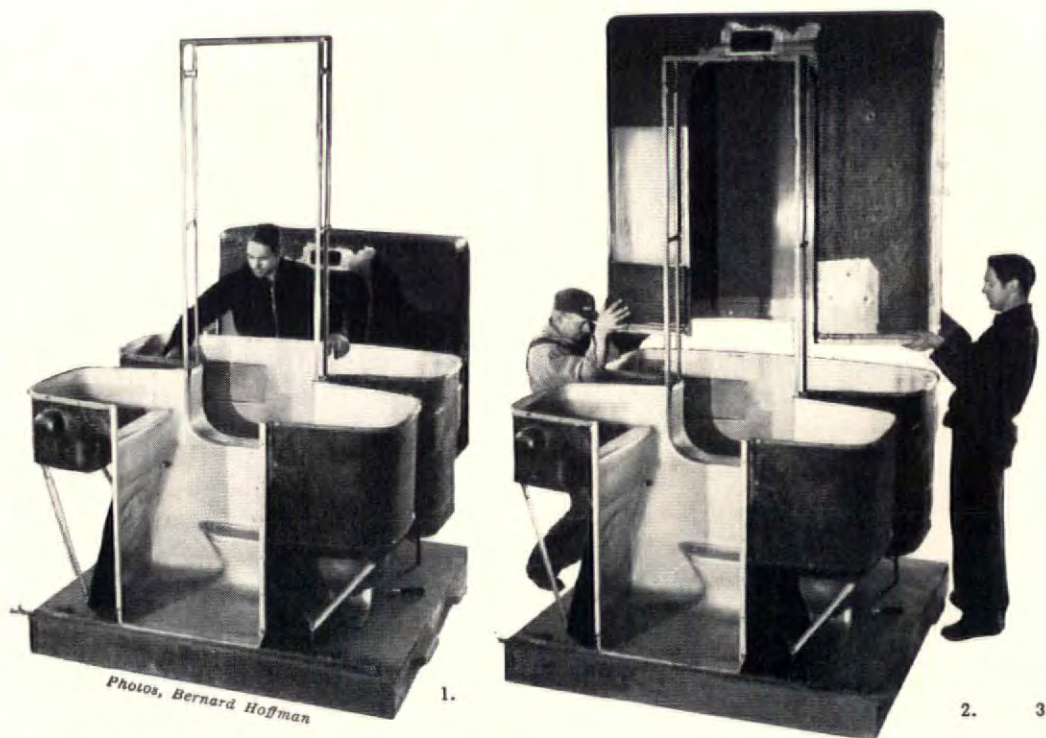
THE MECHANICAL CORE

The mast houses stimulated the broad idea of reengineering structures, and the shape-engineered houses offered a startling version of the type of principles that were to be applied in that reengineering, but there was a third group of advanced ideas which exercised a completely different influence. These ideas in their extreme form dealt not with revision of structure but with a modification of practice that did much to make that revision practical. They dealt with the mechanical equipment of the home.

Since our traditional structure was evolved, we have added to the house a whole series of utilities and equipment in the form of plumbing for bathrooms and kitchens, central heating and electric wiring for lighting and mechanical time-savers. So important have these services become, that when Buckminster Fuller evolved his mast house in 1927, he made a special point of the fact that a home has two functions to fulfill. One function, he said, was to house people, the other to house utilities; and the name Dymaxion was derived from this double function. In the structural form of the first Dymaxion House, he gave recognition to these two functions by housing his utilities, complete to the three-minute laundry, in the core of the mast, separating them from the living space. Thus he sought to create a structure, especially designed to provide for the utilities which modern living had added to a house that antedated their use. The traditional house offers no special provision for them. We have added plumbing, heating and other equipment to a structure designed before such utilities were in use. Bathrooms have been introduced into the house wherever there was an odd space. Central heating has



Photos, Gottscho-Schleisner



Photos, Bernard Hoffman



Buckminster Fuller's all-metal, four-piece bathroom, built experimentally by the Phelps-Dodge Research Laboratory in 1937. The lower part of the room (1) consisted of two shells, each about the size of a bathtub and 3 ft. high, one forming the tub and the other containing the lavatory and water closet, at opposite ends. Atop the base units were set similar shells that formed the upper part of the room (2). Entrance was by way of a divided, sliding door set in a facing panel of plastic-surfaced plywood (3).

been placed at a remote point and distributed throughout the structure, while wiring has been run generally to any points where it might be used.

The popularity of the wooden frame house in America probably arose, at least in part, from the fact that its structure—with its covered frame over 2 x 4 in. studs—created by accident a space in those walls where piping, ducts or electrical wiring could be installed. In order to make use of this space, however, it has been the practice to erect the frame for the house, add the exterior wall surface and then, before applying the interior finish to interrupt the construction to cut in or lay out the piping, etc., for the equipment.

If the walls of a house are completely prefabricated, this process is obviously impossible. With bathrooms located as best they might be or with remote-control heating to be piped throughout the house, each wall section of the house would have to have the piping, etc., pre-installed. Aside from the technical problems involved, the expense of the pre-piped, prefabricated sections would have added its own problems in any approach to low-cost housing. Studies showed that the bathroom-kitchen section of a dwelling—including foundations, floor and roof—cost 90 cents per cu. ft. with utilities included, as opposed to 25 cents per cu. ft. for a similar section without these provisions.

Early Proposals

The more radical projections in the field of mechanical equipment pointed the way to a solution of the problem. In 1932, Raymond Hood, the New York skyscraper architect, proposed this separation seriously in a model for a country or suburban apartment house displayed at the Museum of Modern Art. The model had nothing to do with prefabrication or low-cost housing, but it did demonstrate a principle that came to be described, in language borrowed from the automobile industry, as a separation of motor and chassis. Elevators, bathroom and kitchen units were all provided in a separate stack in the structure, much as Fuller had provided them in more startling form in the core of the supporting mast for his first Dymaxion House.

Fuller, however, had planned to have his utilities in this core completely pre-installed and delivered to the site. Other developers were to experiment with this same idea of pre-installation, presenting a radical version of the separation of motor and chassis.



The balance of the shell was left unfinished on the outside (4), and was to be enclosed by ordinary partitions or closet units. Each of the four parts were small enough to be moved through an ordinary door, and light enough to be easily transported and set up almost anywhere.

THE PREFABRICATED HOUSE

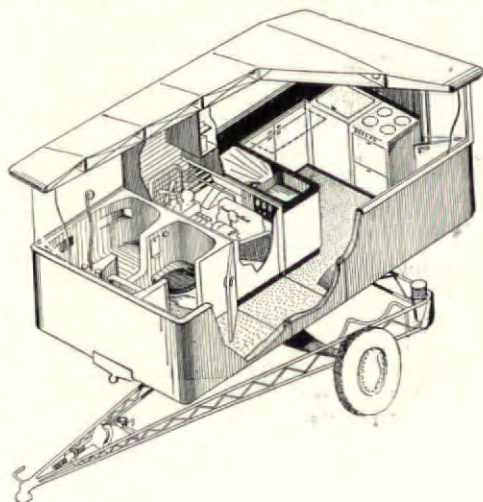


Bernard Hoffman



Samuel Kravitt

Details of Fuller's bathroom (above) show how fixtures were merged with the walls with rounded coves for easy cleaning. Sketch below shows his proposal for a portable mechanical core, incorporating the prefabricated bath in a trailer-like unit including a kitchen and heat-light-power unit. Including all of the mechanical and service portions of the house, it was intended to be used in conjunction with any type of construction capable of providing the balance of the required space.



About the same time that Hood displayed his apartment house model, the John B. Pierce Foundation, in its experimental house erected on the roof of the Starrett-Lehigh Building in New York, developed a prefabricated mechanical utility core for a small house. To carry this out, a unit was designed containing all piping for plumbing, bathroom cabinets and a built-in flush tank for the water closet. The front of the unit formed one wall of the bathroom, and the back one wall of the kitchen, on which the sink was hung. A centrally-located, warm-air heating unit that also served as a fireplace was placed on the floor plan in a hub-like position so that short ducts radiating out from it would carry warm air to every room in the house.

Moto-Unit, Fuller Bathroom

Later an adaptation of this experiment by the Foundation was made by Houses Inc., in their famed "Moto-Home" (ARCH. FORUM, June, '35). In this basementless house, the utilities were provided in a centrally located utility room. Plumbing services for the kitchen were backed to one wall of the room and those for the bath to the other. For heating, the central position of the room made it possible to carry heat in short runs to all other parts of the house.

Probably the most extreme version of the mechanical core idea was provided by the same Buckminster Fuller who had toyed with it in his first Dymaxion House. In an article for the Design Decade issue of THE ARCHITECTURAL FORUM, in 1940, he proposed that all the equipment for a house—including even a Diesel engine to generate electrical power—be installed in a trailer and wheeled up to a structure after it was completed. Previously he had designed for The Phelps-Dodge Research Laboratories a complete copper bathroom 4 ft. 6 in. x 5 ft. containing all fixtures and piping for plumbing in a prefabricated unit that could be placed anywhere in a house. The complete unit weighed only 800 lbs. Although not adopting the extreme form of these proposals, prefabricated houses did take advantage of the idea of a separation of the motor and chassis in modified form.

Without actually pre-installing equipment, they utilized the idea of the mechanical core in floor plans with fixtures for kitchen and bath installed back to back during erection, sometimes using double partition walls between these two rooms. Low-cost central heating equipment was also placed at the hub of the house, where warm air could circulate quickly to all rooms. This eliminated the need for pre-installing equipment in the wall sections, thus cutting costs and making possible the development of lighter walls. At the same time, through this modification of the core idea, the need for transporting heavy pre-installed equipment has been eliminated and it has been possible to instal equipment in accord with local codes and requirements.

Despite such concessions to immediate practicability, the idea of a completely-prefabricated mechanical core is still widely accepted. It is one of the most frequently-cited proposals for postwar development, and undoubtedly will reappear in various forms as the prefabrication movement develops, along with other radical proposals such as "shape engineering" as a basis for house design. Evaluation of these proposals in relation to future building must be postponed to a later chapter, to permit a detailed review of those which have already reached the stage of actual construction. These will be discussed in the next three chapters, in the order of the basic materials employed: Concrete, Steel and Wood.

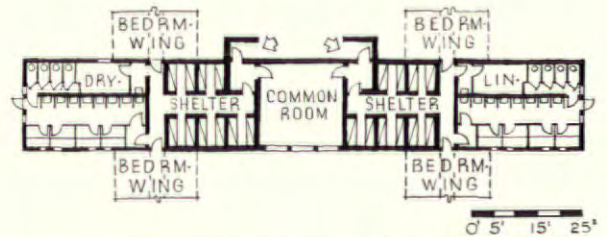
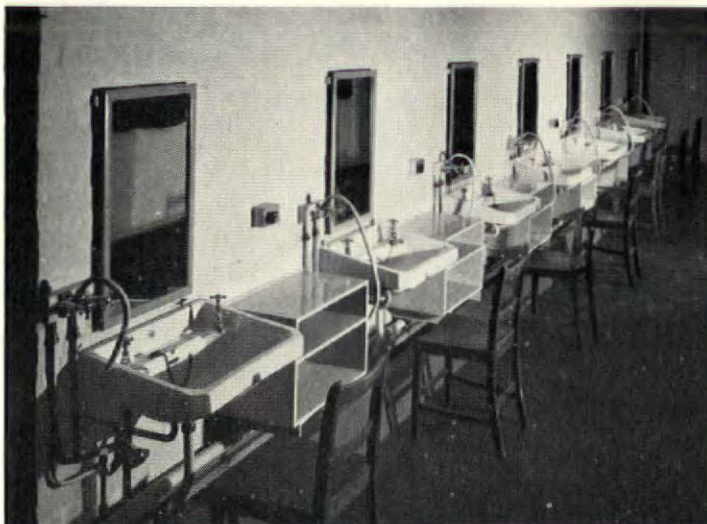
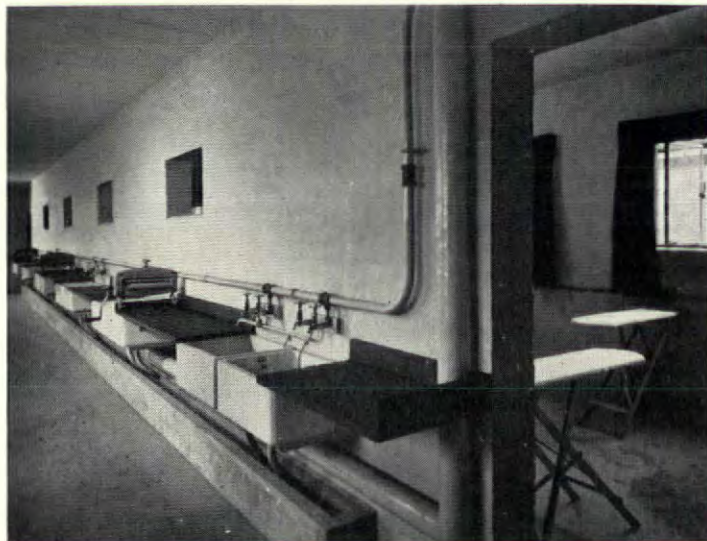
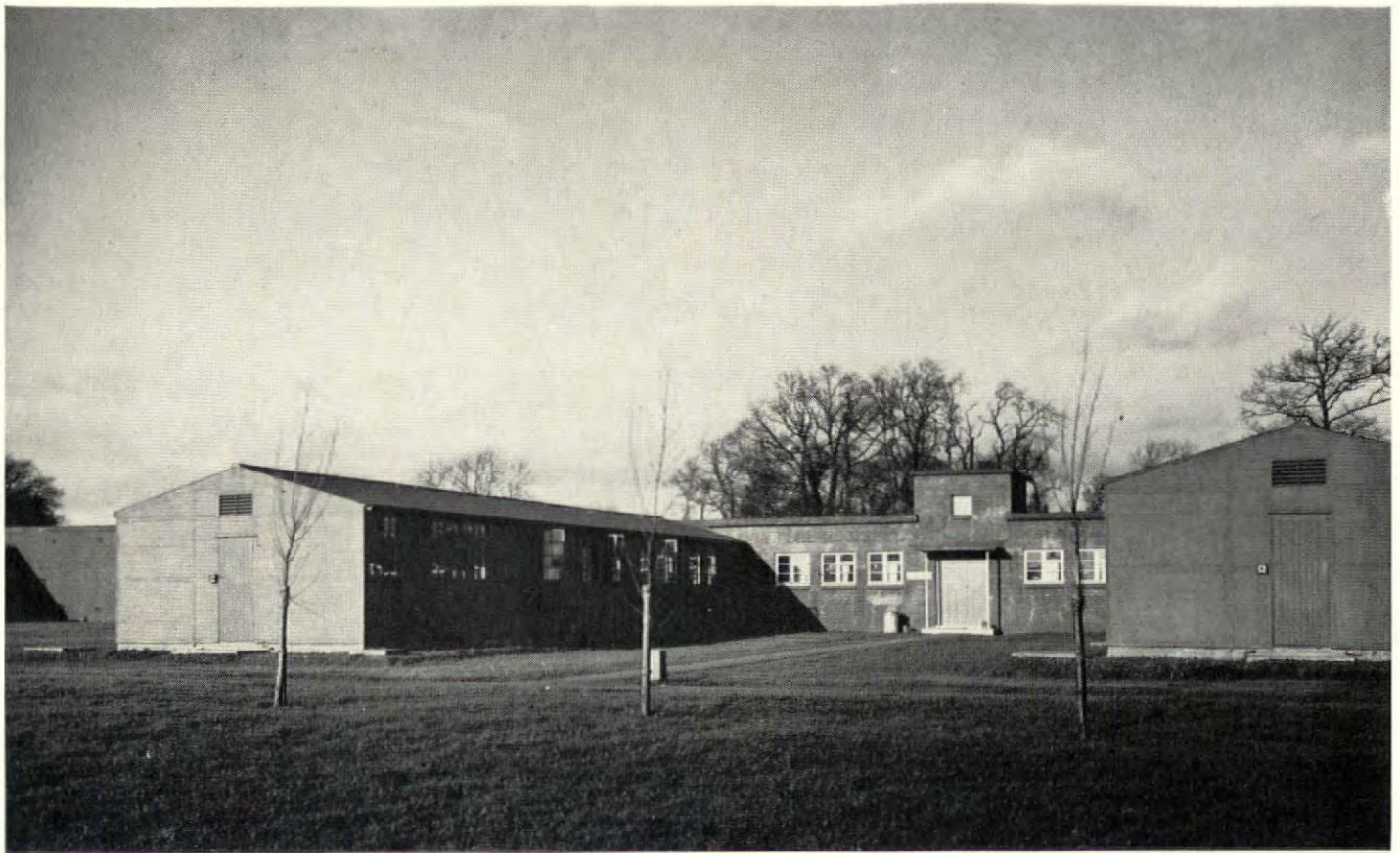
(The third chapter of "The Prefabricated House: Concrete—A Forerunner to the Movement," will appear in the February issue. To any reader who is interested in studying particular aspects of the subject further THE FORUM will supply without charge a complete bibliography of 85 FORUM articles on prefabrication that have been published since 1932).

BRITISH HOSTELS

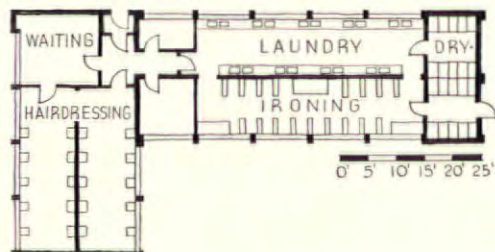


Hostels for unmarried war workers in England are the result of a program formulated in 1941 and subsequently modified in the light of experience. Occupied mainly by women, these hostels—or residential clubs, as they are now called—are planned as small factory communities with populations of 1,000 to 1,500 on the average, and they contain minimum sleeping accommodations, dining facilities, medical units and space for social activity. Despite the scarcity of building materials, the community functions are now considered so important that they make up a large part of the total materials used. The present building program is not large (see pages 34-35), for the groups are constructed only where billeting and other possibilities have been exhausted. Postwar uses for these communities are now being discussed, for the funds expended are large, and the rural locations are frequently pleasant; such uses, however, were not originally considered. The group of buildings shown here is typical of the best and most recent work.

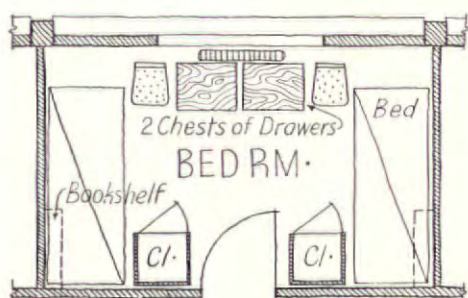




Dormitory units have bedrooms and wash rooms, a common room and frequently an air raid shelter. The above photograph shows an early H-type dormitory: some of the more recent plan types are illustrated directly above and below. Stringent limitations on all kinds of material and equipment have frequently resulted in dormitories that have been much criticized for their uninviting appearance.



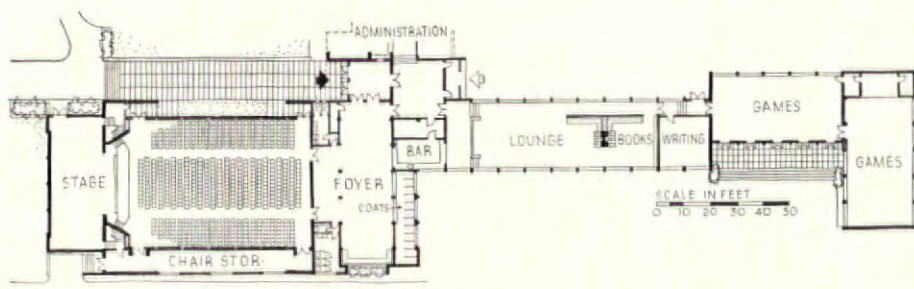
Left, a typical washroom. Walls are pale yellow, fixtures and ceiling are white. The shelf units are painted a glossy gray with yellow front edges. Flooring is brown linoleum. Note the hose attachments for rinsing hair. Above, the laundry, with an ironing room on the other side of the partition. Troughs are used instead of piping to carry away the waste.



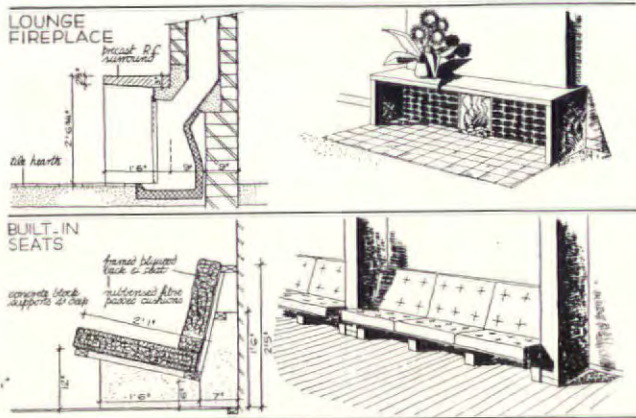
Almost all the dormitory buildings are about 76 by 18 ft. Several types of construction are used: wood frame and plasterboard, precast concrete, and brick and hollow tile. The frame buildings are all prefabricated, and are currently put up in two standard types. The detail at the left shows a standard bedroom for two, 12 ft. by 7 ft. 6 in. Each room comes equipped with two beds, two cupboards, two chairs and two chests. The plain wood bookshelves on brackets over each bed can be seen in the photograph below. The typical corridor is tight but adequate, and an attempt is frequently made to enliven the space by use of color. Here the walls are pale yellow, the truss is blue and flooring is of brown linoleum. Furniture in the bedrooms is stained green, red or gray.



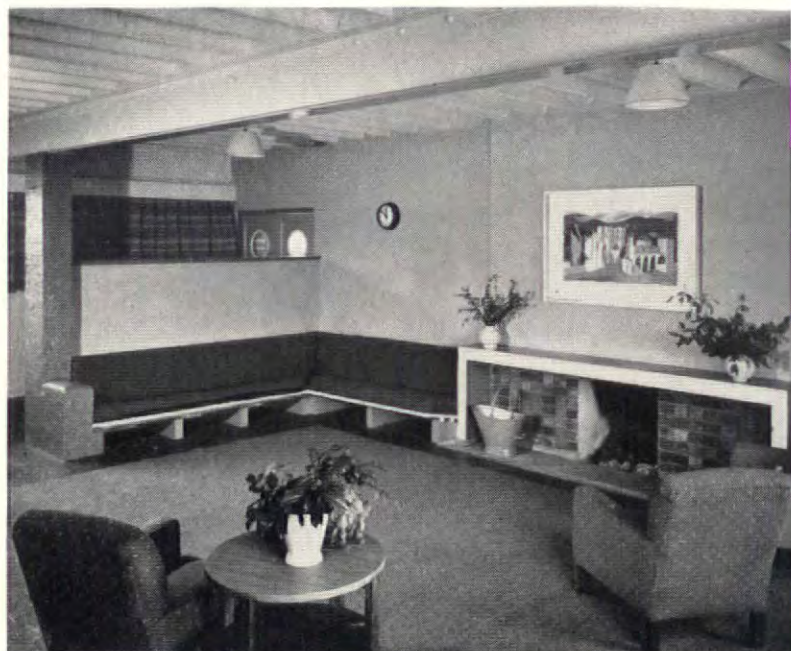
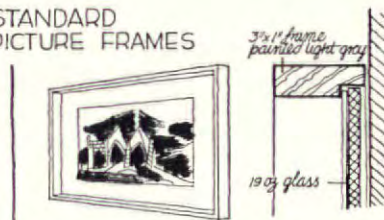
BRITISH HOSTELS



In the social rooms a really surprising amount has been done with very little. The foyer above, which leads to one of the assembly halls, is painted in gray-blue, turquoise and brown and uses fabrics produced by handicrafters. The mural was executed by members of the architect's office, using water paint on smooth plaster. The hall below is one of the larger types, with a seating capacity of 350. It has a color scheme similar to that of the foyer above, and is equipped with storage space for the movable chairs. Lighting fixtures are made of wire and parchment. The plan shows the relationship of the various units which comprise the social center.



STANDARD PICTURE FRAMES

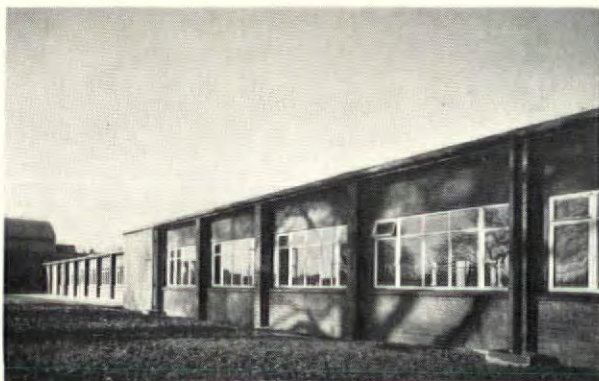


The two views of the lounge show excellent design achieved by intelligent emphasis of structural features, such as the ceiling arches, combined with simple, sturdy furniture. The attractive fireplace has a surround of vibrated concrete. Both colors and materials for these rooms had to be chosen with considerable care as the public rooms are generally in use about twenty hours a day. The snack bar illustrated is a common feature. Standard colors are yellow, red and blue-violet, which are combined most frequently to produce soft browns and powder blues.

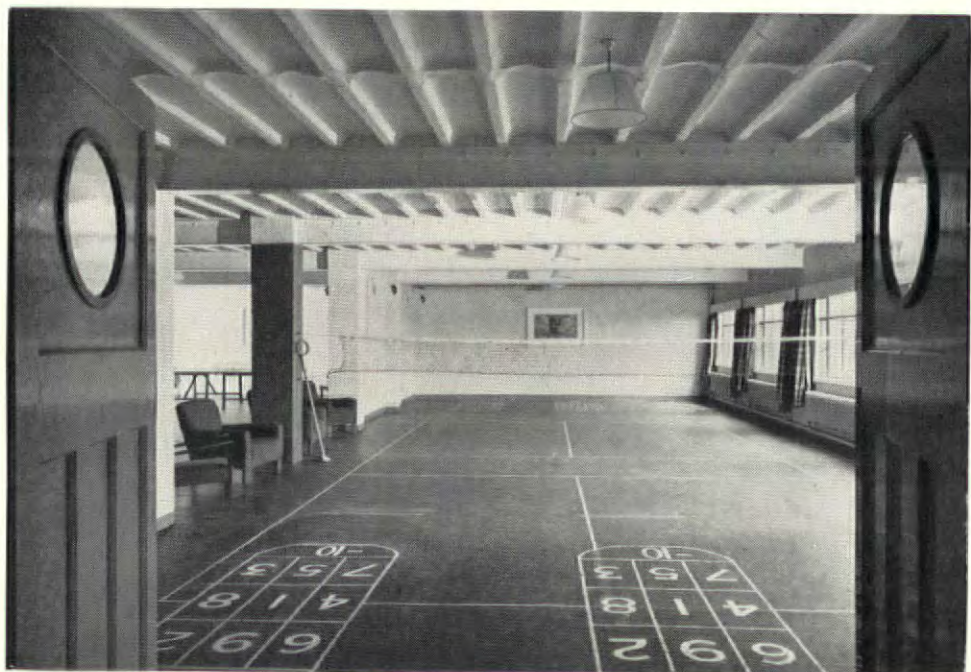




Canteens are generally built as two identical rooms, each seating 250, with a single kitchen serving both. The scheme is not unlike that used by the U. S. Navy for mess halls at its various training centers. The serving end of the canteen is illustrated below. Walls are of brick, painted blue; bright yellow paint was used on the railings and windows.



The game room (right) is one of the larger units in the typical social welfare building, and is usually installed in a semidetached wing to cut down noise transmission. A view of the exterior is shown directly above. While these buildings are generally of brick, construction and planning have been standardized to a considerable degree. The most common system uses brick piers, 10 feet on centers, with a precast roof as shown in the interior. Panels over the windows are of cement and gutters and downspouts are made of asbestos. The standard wood windows have both fixed and movable sash.



THE FORUM thanks The ARCHITECTS' JOURNAL for pictorial and other material.

BUILDING'S FIRST YEAR AT WAR

BUILDING GOES TO WAR

As December 6, 1942 brought to a close year one of America's World War II. Building could pin a medal on itself. That no one else pinned a medal on it can be forgiven, and fact is that few Building men have taken time out for reminiscence. The war is still to be won, and even though Building's part in it may have passed its peak, many a worker is still driving nails and many a technician still working around the clock. When the story can be told in detail, it will be a proud record of performance under difficulties that no one could anticipate, difficulties as great as any which confronted other more glamorous and publicized industries.

Measured in dollars (13 odd billion of them), Building has completed the largest volume of construction ever tackled in a single year. But that is the poorest of all ways to measure Building's part in the war effort. It takes no account of the speed, the ingenuity, the determination and the skill which have produced these buildings, many of them unprecedented in size and unknown to peace-time construction. Neither do the dollars measure the fact that many of these buildings arose in localities where neither labor nor materials were to be found, remote places in the U. S. and vastly more remote ones beyond this hemisphere.

But most remarkable of Building's achievements was its resilience, the recuperative power which carried it from a decade of deep depression and defeatism into undreamed of production overnight.

Photograph courtesy Aymar Embury II



Bricks without straw in Egypt

Credit for Building's war performance is great enough to be shared by the army of technicians and workers who are doing the job, in the office and in the field. To be sure, there are newsworthy individuals, most of them unknown, a few of them pictured on the following page. And there are stories of fantastic performance to match anything the airplane, ship and tank builders have poured into the microphones. For example, there is:

... the engineer who hooked up railroad locomotives to supply steam to heat an otherwise completed building until boilers arrived days later.

... the advance crew of architects who spent months at a northern base, at tem-

peratures of 50 degrees below zero, to provide comfortable quarters for the troops to follow.

... the constructors who toiled under Egyptian suns without water and with native labor to build a vast base for tank and plane repair.

... the overnight redesign of the structural drawings for one of the largest plants ever built, necessitated by a shift from steel to wood.

... the pouring of a complete concrete frame and roof of a huge, single-story plant at the rate of an acre a day.

... the completion of 5,000 prefabricated houses, ahead of schedule, at an average rate of 40 a day—despite a four-day rainfall of 15 in. during the assembly.

... the emergency construction, in six weeks, of an earth dam impounding 2.5 billion gal. of water to serve a Naval Depot where no other source of water could be found.

... the construction of a 2,000-unit dormitory for shipyard workers, on filled land, in 39 days.

... the completion of a cantonment for 36,000 troops in five months, three months ahead of schedule.

... the partial occupancy of a \$26 million installation for the Army—which included a million sq. ft. of warehouse space, 26 miles of railroad, 30 miles of roads, a dock, barracks, infirmaries, shops, reception buildings, laundries, bakeries, hospital, etc.—90 days after starting the site survey.

But exciting as these individual exploits are, they are simply high spots in an industry-deep job that will continue until the war book is closed and for years to come, as Building takes on its next major assignment—remaking the physical postwar world.

FROM WAR TO POSTWAR

Of the many significant and controversial questions which face Building none is more challenging than to weigh the impact of war developments on the future. The building industry which is functioning so well in the war is not the same industry which rang up the skyscraper boom of the twenties. It is new, toughened and better integrated than ever before.

THE GOVERNMENT

Obviously the most overwhelming change in Building was Government's almost complete monopoly of the client's role. And not only was Government a demanding client but one who kept changing the ground rules so often that Building had (and still has to) excavate its way through layers of multigraphed regulations while carrying on its normal functions of design and construction. That much of the regulation is necessary is clear; that as much

more is not, seems equally clear. Now that Government has vastly expanded its Building bureaucracy, strong purpose will be needed to shrink it, if it shrinks at all with huge public works programs in postwar prospect seemingly to justify its continuation. By common consent the best Government agency to work with is the Navy's Bureau of Yards and Docks, and by equally common consent the worst ones are the still-numerous Housing agencies. The reasons for that are made clear hereafter.

INTEGRATION

A word no longer confined to editorial use, Integration, shows at its best in the combinations of architects, engineers and contractors joined as unified firms to handle some of the largest war projects. This type of one-package service shows every sign of pleasing the client, whether it be the Government or a private owner, and if postwar projects of really great size and cost develop, such firms and other new combinations will find a demand.

LARGE-SCALE BUILDING

As a prelude to postwar planning, the war is teaching Building how to think and build on unprecedented scale. Plants and other installations which accommodate from 25 to 50 or more thousand people are almost commonplace. Sites are no longer measured in square yards but in square miles and large-scale site planning has become a practiced art. The blueprints for a single project are hung in lines as long as those in tobacco warehouses. All of which leads to the implication that future planning for super blocks and complete new communities will present no terrifying prospects to Building veterans of World War II.

NEW TECHNIQUES, NEW MATERIALS

Necessity, born in this case of intervention, has produced its share of new ways to build. The mounting shortages of metals turned the spotlight on wood, and wood, now become critical, may yield to masonry.

Plywood, made under heat and secured by plastic adhesives, has proved itself a miracle material. It is being used structurally in bents and girders, and the principle of its construction is being applied in laminated arches and in other forms. Large, lightweight materials of all types are being used on a scale and under circumstances never thought possible. Glass, in blocks, heat-resistant panes and as fiber insulation, has made notable headway. Fluorescent lighting has practically supplanted other types in the industrial field. Plastics have had only a limited workout in Building because of the military demand. However, they have been found practical for glazing and, in at least one instance, have been formed into window

SOME BUILDING FACES OF 1942



NAVY'S Moreell



ARMY'S Somervell



GUARDIANS: Nelson



Eberstadt



Kahler

DiJoseph, Myron H. Davis, Acme, Thos. D. McAvoy.



HOUSERS: Boss Blandford



Public Houser Emmerich



FWA's Fleming



Private Houser Potter



Legislator Lanham
Otto Hagel, Harris & Ewing, Reni.



EX'S: Ex-Houser Straus



Ex-FWA's Snyder



Ex-FWA Chief Carmody



Ex-Prefaber Newman



Ex-Experimenter Foreman

Harris & Ewing, Wide World, Thos. D. McAvoy.



POSTWARRIORS: NRPB's Eliot



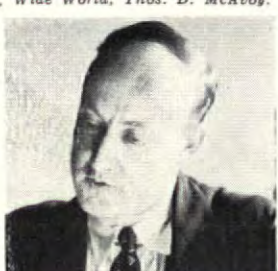
NCHE's Rosenman



20th Century's Chase



Federal Reserve's Hansen



and Greer
Acme, Bachrach, Wide World.



MISCELLANY: Prober Truman



194X man Howe



Absentee Harrison



Visitor Sir Ernest Simon



Traveler Palmer
Martin Harris, Hansel Mieth.



BASE ARCHITECTS: (l. to r.) Alfred Shaw, Holabird & Root, Voorhees, Walker, Foley & Smith, Shreve, Lamb & Harmon, Aymar Embury II.

frames for temporary structures designed for use overseas.

HOUSING

At only one point has Building fallen down in its war job. Oddly enough, it was at the point for which it seemed better prepared than any other. Even at this close perspective, the reasons for the substantial failure of the war housing program are fairly clear. Cutting through all of the conflicting claims, agencies, reorganizations, charges and counter charges, it was a failure of transition, an unwillingness to convert personnel, thinking, policy and action from peace-time levels to wartime demands.

War housing, as Charles F. Palmer concluded after inspecting the British effort (see pp. 33-5 this issue) is wholly and solely a problem in manpower. It is the means to the manpower end and not a field day for social experiments, intramural contests, administrative setting-up exercises and mass production of red tape.

Public housing is a "movement." Its position as a widely accepted Government function has come only after valiant and patient work by a small group of reformers. Inevitably, those who have been attracted to this field are men and women who from choice ride the crusader's white horse. Unfortunately in a mechanized war, horses, especially white ones, get in the way of task forces. War housing is just as much a two-fisted production job as programming and building the other implements of modern war. That housing remains a problem as we enter our second war year tells the story. And it tells the fact.

PREFABRICATION

Some may argue that Prefabrication is not Building's most important war development. But if the U. S. is to get a million new houses a year for a decade, that view must be challenged. War gave prefabrication the thing it most needed, an assured volume market. In return, prefabrication demonstrated that it could build houses more quickly than conventional methods, that it could build houses which can be demounted and re-erected, that prefabrication techniques can be applied successfully to many types of structures, that prefabrication can be done in plants on a moving production line or handled under cover at the building site, and that some degree of prefabrication is available even to traditional builders. Also, prefabrication proved that it offers adequate flexibility in design and plan.

Having more or less proved all of these things, it has yet to prove that it saves money as well as time. But most unprejudiced and competent observers believe that it can and will. And its most ardent advocates claim with new assurance that "prefabrication offers the greatest commercial opportunity of the postwar world." Not content to rely solely on its own judgment on a subject so charged with contro-

(Continued on page 98)

JANUARY

Lanham Act signed . . . Brig. Gen. Fleming replaced Carmody as FW Administrator, because of illness delegated his work to Baird Snyder III . . . Nathan Straus resigned as Housing Administrator.

FEBRUARY

Executive order issued by Roosevelt consolidated all Federal housing agencies into single National Housing Agency . . . John Blandford appointed Administrator . . . Congress passed bill setting up War Damage Corporation: capital, \$1 billion.

MARCH

Housing situation in Detroit, other war centers, became acute . . . President appointed Herbert Emmerich to head new Federal Public Housing Authority (consolidating USHA, DHA, FSA's nonfarm housing) . . . First rent control edicts from Price Administrator Leon Henderson applied to 20 communities.

APRIL

Freeze order issued (L-41), halting all nonessential construction—no new building over \$500 could proceed without Government permission . . . WPB named William V. Kahler to administer freeze order . . . To aid Kahler went Sullivan Jones' priorities section . . . WPB predicted year's total Building: \$14¾ billions . . . FHA's Title VI mortgage insurance ceiling boosted to \$800 million, existing \$300 million underwriting limit having been reached . . . RFC's Jesse Jones reported to President that Defense Plants Corp. had earmarked nearly \$4.8 billions to build or expand 700 more plants . . . First wave of WPB shut-down edicts reflected growing materials shortages.

MAY

WPB issued order freezing sale and delivery of softwood lumber for 60 days . . . Week later order thawed to permit housing projects to buy lumber direct from mills . . . Willow Run (Detroit) Housing plans announced: a Bomber City with 7,000 dorms, 1,500 single dwellings, 8,000 apartments . . . First rumors of approaching fuel oil shortage as WPB warned householders to convert to coal furnaces . . . Governor Lehman of New York hastened postwar planning programs by signing Ives Bill creating 10-man commission, earmarking \$450,000 for advanced designs.

JUNE

Detroit, Norfolk, other vital production hot spots continued to plague NHA . . . while Congressional (Lanham) committee questioned Blandford's statement of need (minimum: 1,320,000 dwellings), reduced requested increase of funds . . . S. Morris Livingston, Dept. of Commerce economist, predicted postwar construction of 4-5 million dwellings . . . HBI, AHB merged into Nat. Assn. of Home Builders, ending 2-year split . . . A.I.A. awards

special war medal to Albert Kahn . . . Rent control spread considered for 366 communities . . . RFC's \$1 billion War Damage Corp. went into action through private insurance agents.

JULY

Housing tangles grew worse, rumors that 175 FPFA projects were stopped in priority cul-de-sac . . . War Guest Program launched . . . Lanham bill amendment (\$600 million more) still stalled . . . Ford ousted FPFA surveyors from proposed Bomber City site.

AUGUST

First reports of rent control snags as landlords, tenants cooked up evasions . . . FPFA got priorities for curtailed program at Detroit's Bomber City . . . Army took over hotels galore in Miami Beach, Atlantic City, Chicago . . . Lanham bill still stalled . . . WPB issued new lumber order subordinating housing . . . Howard Strong to head new Homes Utilization Service.

SEPTEMBER

Feeble start of NHA's Homes Use program (née "Home Utilization") . . . Frank Bane to head program . . . Fuel oil rationed by WPB in 30 eastern states . . . Lanham bill amendment authorizing \$600 million more for war housing passed by Congress at long last, signed by President . . . Vincent Astor created real estate dither by sale of metropolitan New York properties . . . Lumber shortages mounted due to west-coast labor troubles . . . WPB amended L-41, limiting work on non-war housing to \$200.

OCTOBER

Department of Commerce estimated Building total figures for '42 close to \$13 billion . . . WPB's estimated '43 (7½ billion) . . . Ferdinand Eberstadt takes construction under his wing . . . His first moves: new war housing standards, stopped priorities to privately financed war housing.

NOVEMBER

Private builders and Congressional pressure forced rescission of stop-order on privately financed war housing . . . Maximum Price Regulation 251 issued by OPA setting building materials price levels at March 1942 . . . Controlled Materials Plan announced by WPB . . . Truman Committee hearings on first war housing scandal, Winfield Park, N. J., started.

DECEMBER

1942's construction activity \$13.8 billion . . . Private builders responsible for 160,000 units . . . War Housing Manual issued by WPB regulating all building . . . Albert Kahn died . . . NHA acted on conversion program, leasing first house . . . First Lady endorsed functionalism, referring to Navy's new Medical Center: "It seems to me extremely well-fitted for the purpose for which it is intended."

HOUSING PROJECT, BELLMAWR, N.J.

MAYER & WHITTLESEY AND
JOSEPH N. HETTEL
ASSOCIATED ARCHITECTS

COMMENTS BY THE ARCHITECTS

In a sense, Bellmawr was designed long before we got the project to do. Although most of our work had been urban except for the usual quota of country houses—and Resettlement's never-built Greenbrook—we had argued for, and thought about, and hoped for, a community to plan. We wanted to do a job where inches of land didn't count, where even feet didn't count violently if one didn't go hog-wild, where land was thought of in acres, not in price per sq. ft., where there was ROOM, within and around.

And our pre-design had gone a good deal further than that. We had become convinced of certain *principles* of community design, based upon the way people live. Civilized, spirited living demands not only good floor plans and good plumbing, the right number and location of playgrounds, and safety from traffic, it requires a lot more which has only very rarely been achieved in the large Government projects.

It requires the creation of community unity, form and flavor, but not monotony. Economy does not dictate endless repetition—that is mere architectural laziness. Such projects are large enough so that the economies of standardization can be at-

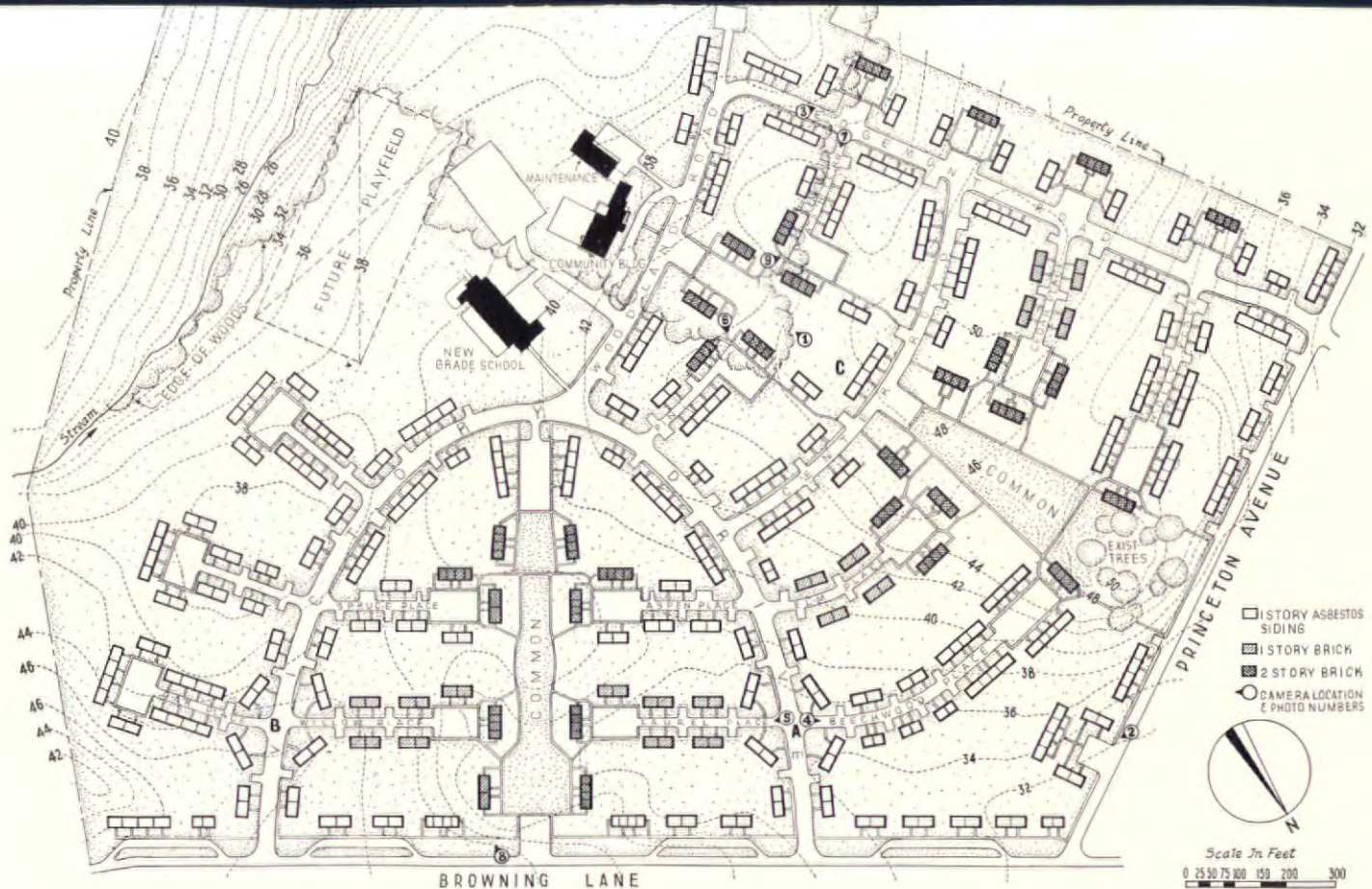
tained without endless reproduction. Nor does interest demand jumbled site planning or vulgar "style" differences. That is merely the speculator's interpretation of middle-class snobbishness which seems to him to require an imitation of the rich man's pre-1929 foolishness. Large-scale communities cry out for large-scale design which depends for its effect not on ornament we can't afford, not on jumpy differences in color, not even primarily on the individual house, but on the relation of the houses to one another, on the relation and type of streets, on the use of grades, trees and views to create liveability, interest, climax. Principle ONE is therefore a community recognizable as such but not violently at odds with what's around it, and with relations within itself that offer no fundamental surprises but do have enough happening so that when you have seen the first dozen dwelling units, you haven't seen the whole thing. A community unfolds. New vistas appear, new associations of buildings—new, but growing out of what you have already seen.

This flows right into Principle TWO. Not everybody wants to live in exactly the same way. Even if we have fifty million surveys to establish the facts, we will find

that some people like to live along a street, and that others like to live in a small court or in a backwater. This is fortunate because in terms of planning it means that we can get the impressive flow and suspense of the long curved street, the sharp, stabbing, straight street, the smaller scale of the short cul-de-sac, and the domestic intimacy of a small-scale court. All endless street is relentless, all small court is confining. The interplay of both is human. And if court and street are related to topography so that courts are used on reasonably level terrain, and streets and curves are combined with grade, then you have 3-dimensional site-planning (photo 4). If you're lucky as we were at Bellmawr, in having fine trees to build your 3-sided courts around, you're not merely saving trees, but building nature into your design (photos 2 and 3).

Another variation in families' likes is in the size of gardens and lawns. Some want reasonably much, some want as little as possible to take care of. If this is so, it leads to site plan forms and variations reflecting this pattern—greater and less densities, greater and less street depths. At Bellmawr, we have provided gardens to meet the desires of almost any family.





Principle THREE. Variety within an underlying idiom. This is the architectural counterpart of the site-planning principle TWO. While the speculator has made ghastly mistakes in his attempt to gratify it, there is unquestionably a deeply rooted human desire for distinction, recognizability, emphasis. The problem is to achieve this not by destroying our idiom of design, but by variation within the idiom, which on the contrary actually enhances it.

The strict economy imposed by low-cost housing fortunately prevents our use of even imitation middle-class ornament and style; equally fortunately, first cost and upkeep economy demand groups of houses rather than single houses. Thus we have the imposed boon of good mass and variable mass. We need not deal with atomic houses, and we have a first-rate means of creating emphasis. We also have the powerful but dangerous weapon of change of height. If not misused, the use of one- and two-story buildings can accomplish two things: difference in character, and emphasis. For example, a zone of two-story buildings, say a two-story street, achieves a different character between different parts of a community. The sparing use of two-story streets for emphasis, can produce a really dramatic effect. (For two-story areas, see photos 1 and 6. For two-story buildings as emphasis, see photos 5 and 7).

The use of the two-story element is not merely an architectural whim but is solidly grounded. Due to savings in land, utilities, roofs and foundations, it is no more costly than the one-story building. And it has the advantage that the second floor windows get long views.

The third means we have for achieving variety within a design idiom is materials. On some projects we have used natural woods such as redwood and cypress in contrast with painted wood or asbestos-cement board. At Bellmawr we were able to get brick veneer within our budget limitations. Note the feeling of solidity, of permanence, of belonging to the ground that this brick gives — even more, by virtue of contrast, than if the whole community were brick—there is a sharper appreciation of the “brickiness.”

This matter of differing heights and of materials, is full of danger. If used spotily, it can produce much the same restlessness as the style-spottiness of the speculator. But if used sparingly and particularly where topography plays along for emphasis, and if used for whole streets or zones, it produces relief, and what I may call large-scale excitement. Color should be used in the same way: in zones rather than in restless and distracting patterns.

Principle FOUR. Plan for the 990 accidental views, not just for perhaps 10 planned views. It is a fallacy to think that people will feel and see the project from a few set points such as the head of a street or looking down an axis. Characteristically they will be walking around, or driving through, or looking out of windows, and their feeling of order or confusion, of beauty or ugliness, of interest or boredom will accumulate from these 990 views (photo 6).

Just as there is a multitude of accidental views there are almost as many places from which an observer on the ground may not sense or feel the plan as

(Continued on page 80)



2



3



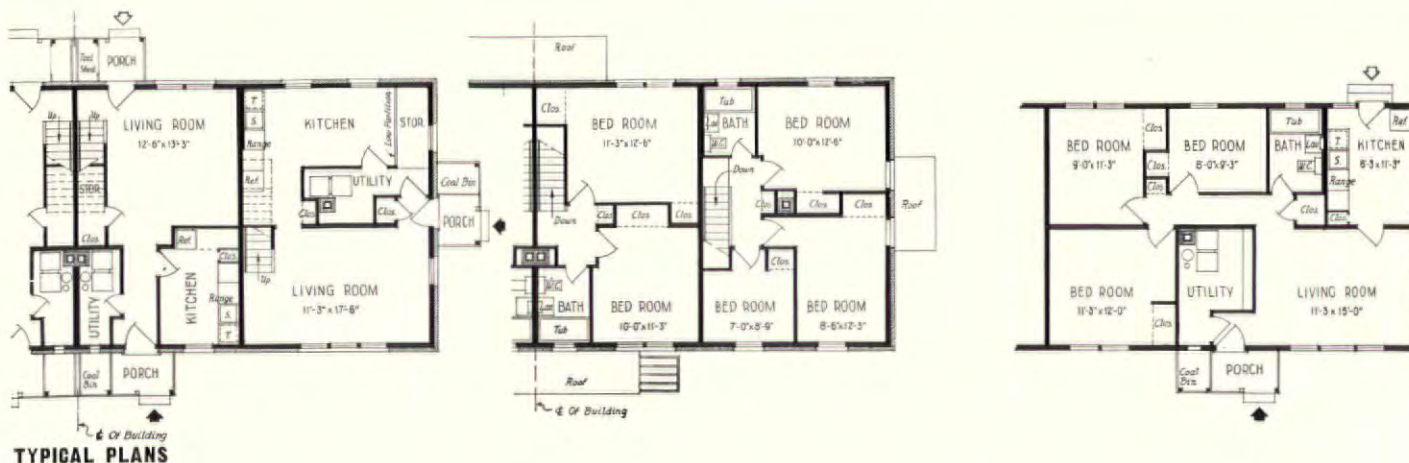
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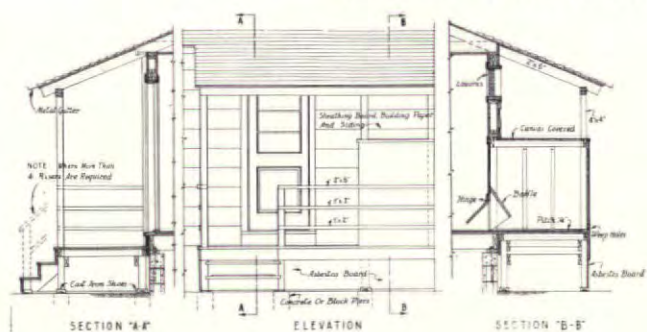
Photo above shows typical curving street (Beechwood Street) leading into the entrance of a cul-de-sac on rising ground.

Smaller picture (right) illustrates the use of a two-story brick unit for emphasis at the end of a street of one-story houses, also houses set diagonally across the corners at the entrance to the group to form diamond-shaped groups at the points marked "A" and "B" on the plot plan, preceding page.

Details and photo at top of opposite page show treatment of coal boxes as an integral part of the porch design. The top of the coal box—as well as the 6 in.-wide top bar of the porch railing—provides a convenient shelf for potted plants.

5





PORCH

KITCHEN



Unit plans embody some amenities over and above those required (or permitted) by the FWA and by the minimum standards set by the Lanham Act. Attention is called to the following:

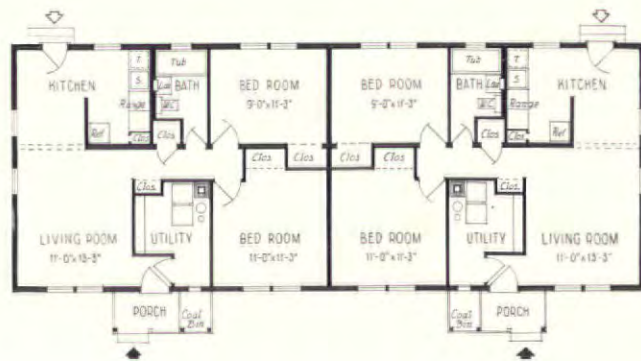
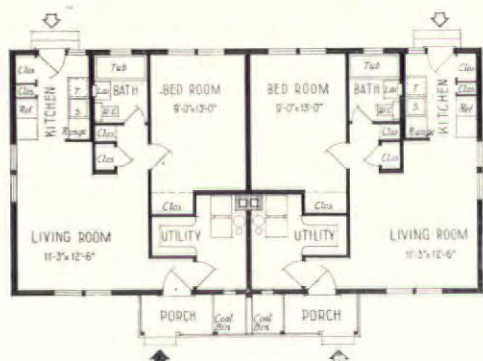
Living room entrance doors generally do not swing directly into the living room, some degree of shelter being provided by opening the doors into a vestibule space.

Where row-house kitchens are located on the street side of the house a through hallway is provided.

Room sizes, door and window locations are carefully studied for furniture arrangement.

Entrance porches are large enough to accommodate at least one chair.

Kitchen-dining space in the three-bedroom type is made amply large for the larger family.

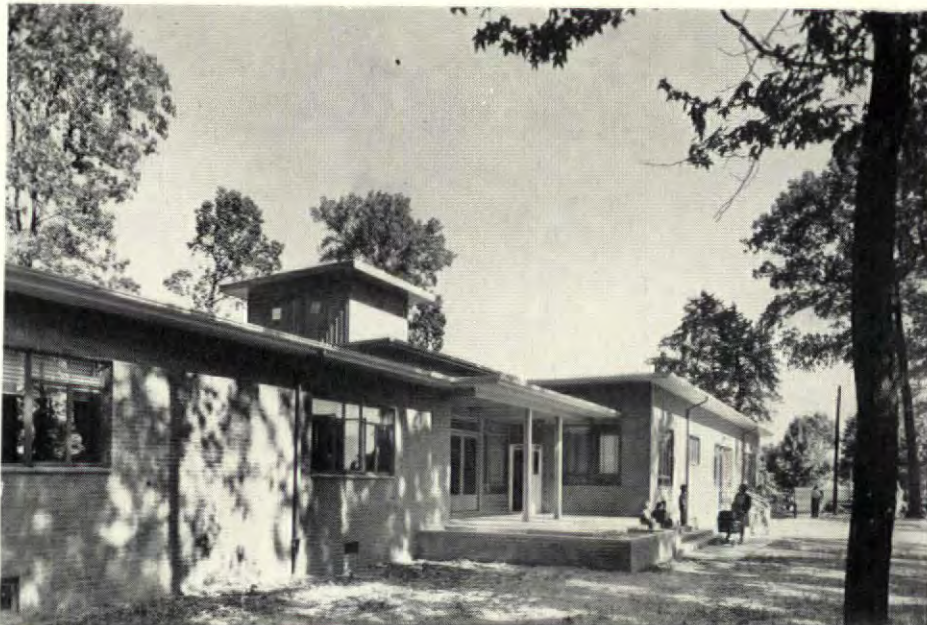


HOUSING PROJECT, BELLMAWR, N. J.

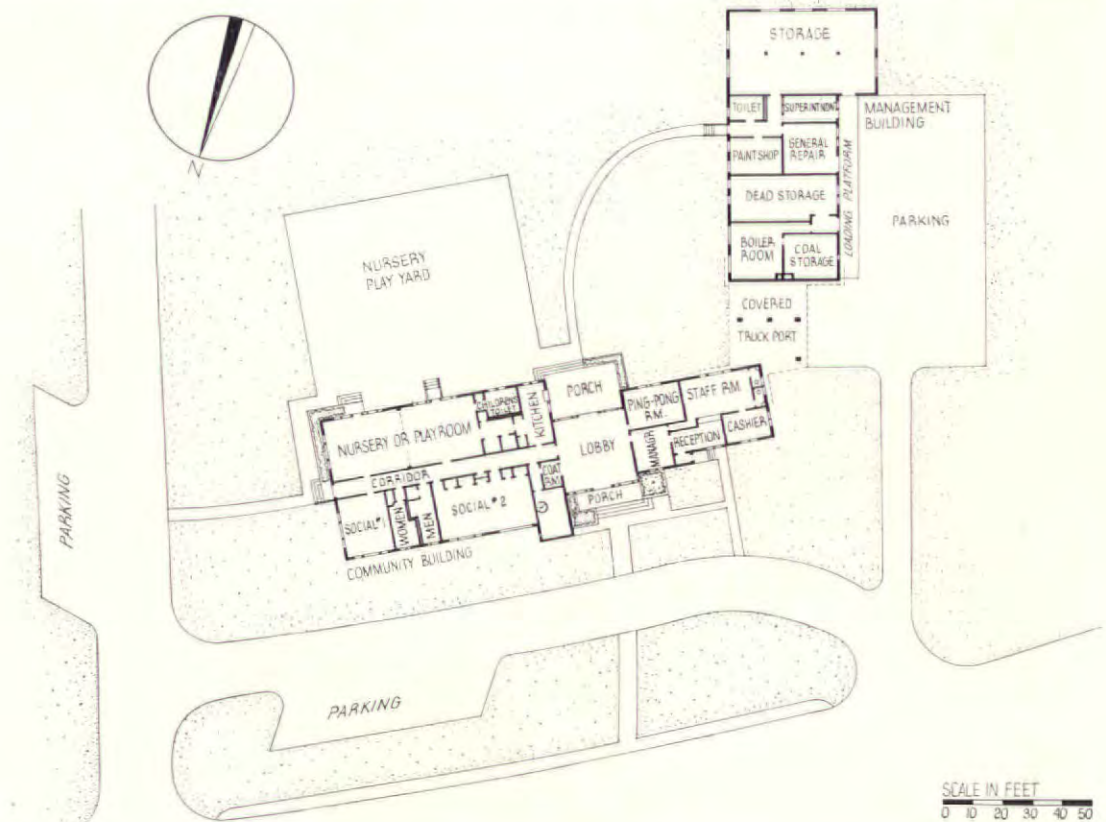


In designing the community buildings, we tried to create the effect that they were the architectural culmination of the houses—not just great monsters of buildings lording it over them. The idiom of the two-story, flat-roofed brick houses with white overhangs was carried out in the community building and school. The overhangs are wider, the windows larger, the buildings longer, the shapes freer—but nobody could doubt that the community buildings and houses belong to each other, and belong to the same community.

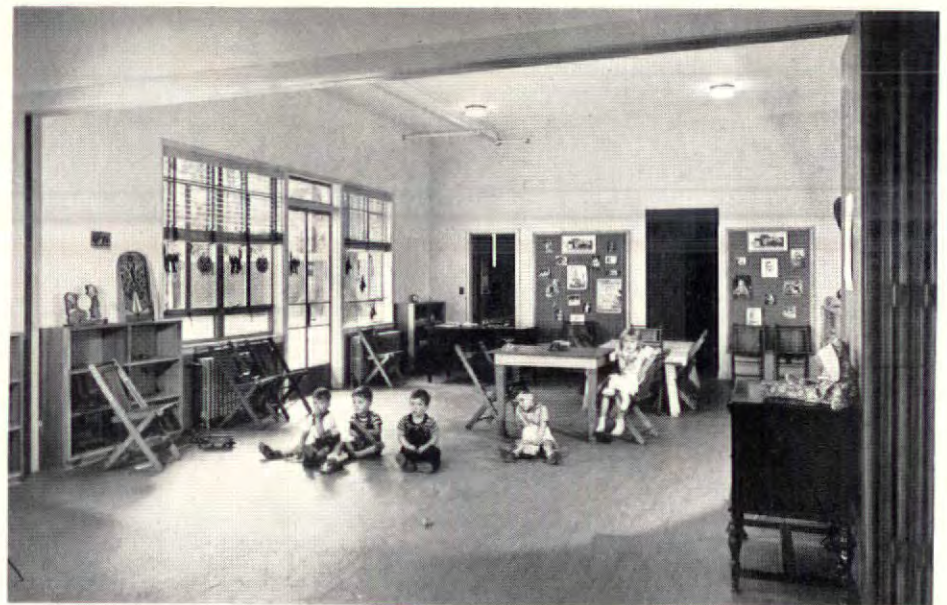
The tower of the community building is cypress selected as to grain and treated to preserve its natural color. This tower is used for chair storage on the ground floor, and for community photographic darkrooms on the upper level—the latter an example of the effort to give in the community house facilities that there was no room for in the houses.



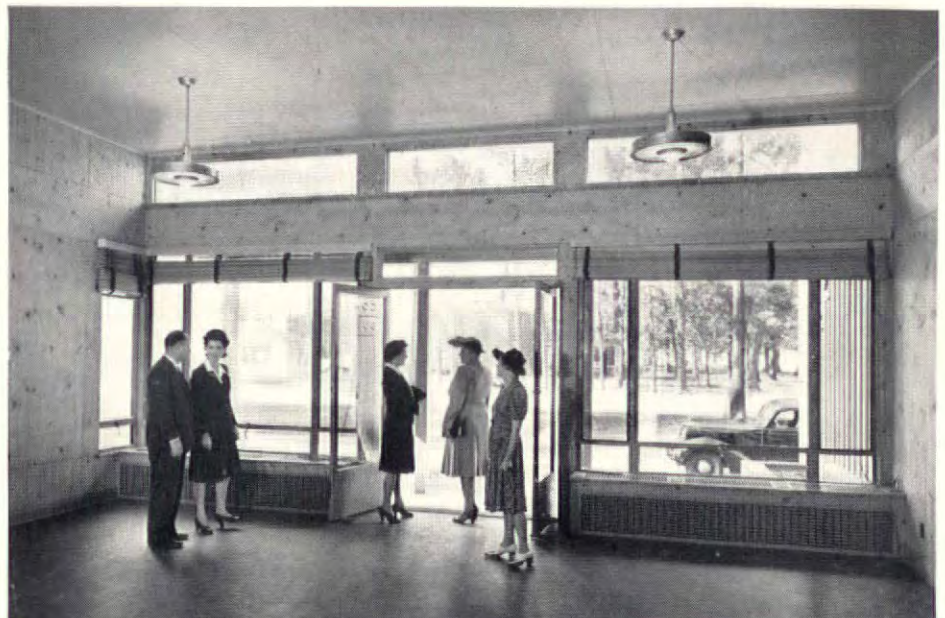
The nursery playground adjoining the nursery wing on the south is overlooked by a terrace, reached from the central lobby. The nursery kitchen serves directly onto this terrace by combination serving door and window. Playground activities may be observed from windows in management offices visible in the foreground of the picture.



The nursery and playroom have southern exposures. An accordion partition divides the space into two rooms, each 20 by 24½ ft. The nursery has plenty of cabinet and closet space and room for storing day cots. Cleared of childrens' paraphernalia, it is used by adults for meetings.



Lobby is large enough to be used as a gathering place during community activities, as well as for general circulation within the building and between the two terraces. Clerestory sash yields excellent light from above the terrace roofs which shade the doorways and windows on either side of the room. Interior walls are natural cedar.



(Continued from page 75)

he stands within it. He can as easily be lost as can a New York World's Fair visitor once he has departed from a main axis. It is one thing to grasp a plan from an airplane view but quite another to sense it from the ground. Study of scale, street widths, interval and articulation of every detail on the site will save many disappointments as between what the aerial observer sees and what the ground observer feels from their respective vantage points.

Principle FIVE. Let unexpected things happen, if they're not *too* unexpected. The eye and the mind require enough repetition to establish an idiom, at least enough of it so they can rely on it as a basis, so that they know where they stand. But they finally rebel if it's too inevitable. So if culs-de-sac generally end in a group of buildings (photo 7), let there be an occasional open-ended one, particularly if there are trees around the end. If you're generally looking at something, then for Heaven's sake, let's occasionally look through or beyond it (photo 1). If the little courts generally have a two-story brick head (photo 3 is typical), let there occasionally be a one-story head (photo 2). The idiom, the sense of conviction, the feeling of community are still there—in fact they are heightened by this occasional departure, provided the departure isn't arbitrary or too far away from the feeling of the community.

Principle SIX. What else does it take to create the feeling of community? Well, it takes a focus or it takes several, which heighten the whole thing and pull it together. The houses are modest as they should and must be. But the communal and recreational facilities can supply what each family can't afford for itself. Thus we

have the community house, and we have big playgrounds in common—remember that for once we don't have to measure land with a micrometer. And at Bellmawr we were lucky that a school was needed.

What we tried to do was to open the plan as much as possible toward these, so that from anywhere in the community one would be conscious of these community symbols: The School, the Community House, the Commons. In fact there is a clock tower on the community house to accentuate this feeling of focus even more.

In carrying out these ideas we made a number of mistakes. For example, after worriedly weighing the matter, we placed a one-story group ("C" on plot plan) across the view from Princeton Avenue to the community house. We felt that otherwise the view would be too long and monumental. The contours seemed to indicate that this low building would not block the view. Actually it does block the view.

Some of our curved streets turned out as fine as we had hoped. But it was a mistake to place the curved cul-de-sac Beechwood Place opposite the straight one of Laurel Place. The curvature is too great, and they are not properly related.

The two diamond-shaped quadrangles on Victory Road (photo 5, "A" and "B" on plot plan) turned out well. They give a generous feeling of space as one enters the project creating the impression of small plazas. But they would have been better had the roofs been hipped instead of gable (we were able within our budget to get some hipped roofs, and chose only the long 4-unit buildings).

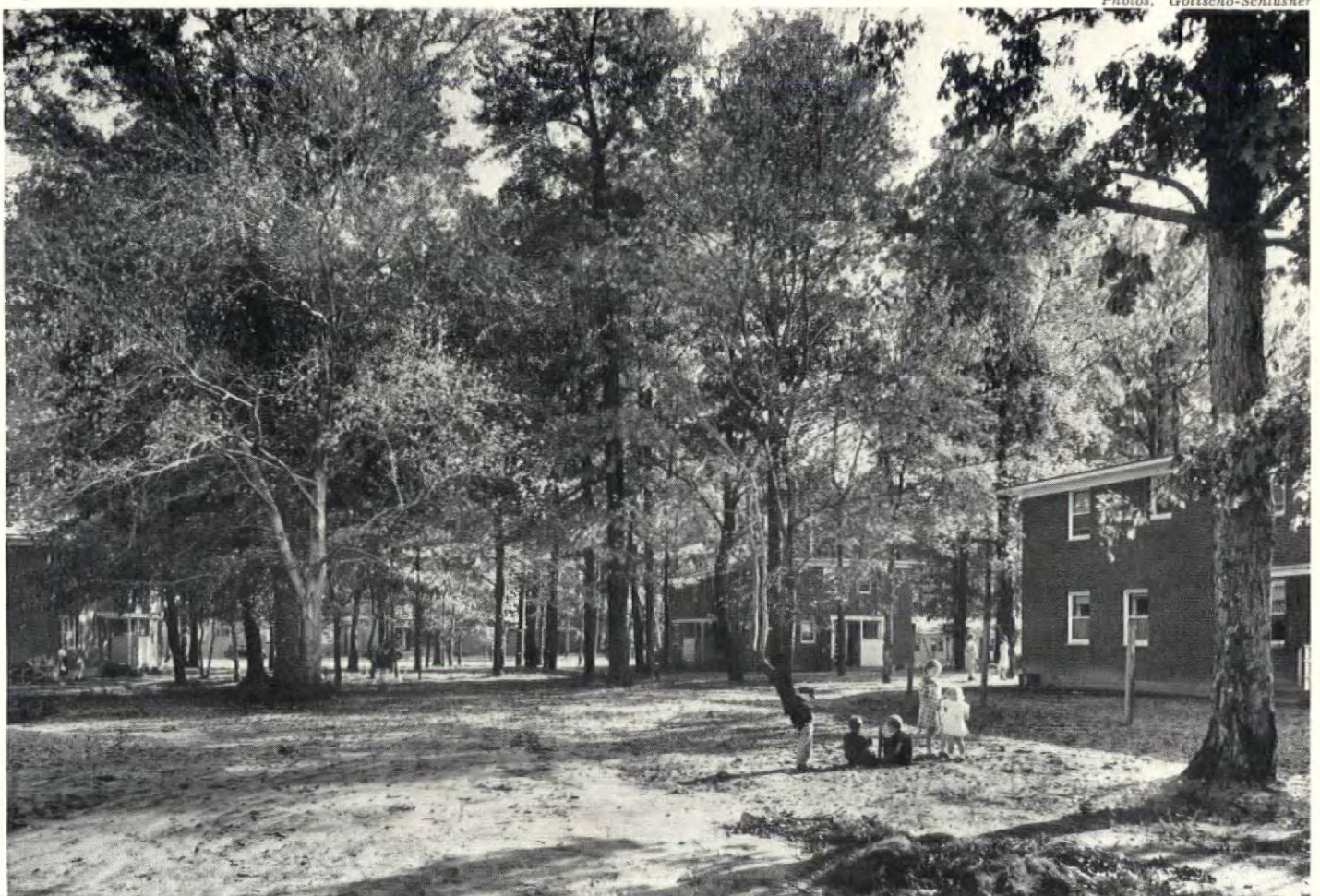
We believe we have developed a project which is a real community. To what degree we have succeeded may be judged from the photographs and plans.

Photos, Gottscho-Schlusner

6

7

8



ADDITIONS TO WHEATON COLLEGE

NORTON, MASS.

HORNBOSTEL & BENNETT
ASSOCIATED ARCHITECTS

LIBRARY ADDITION

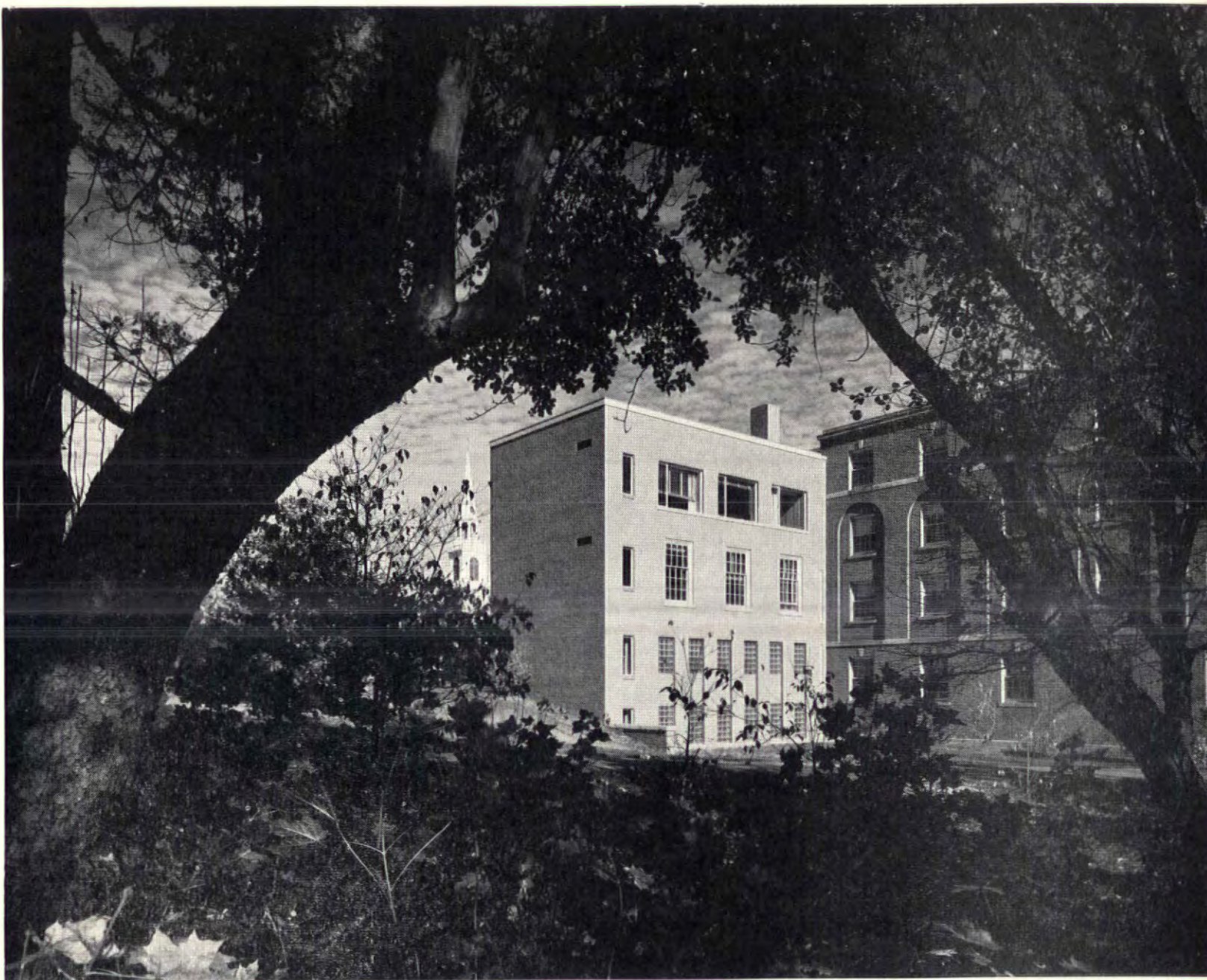
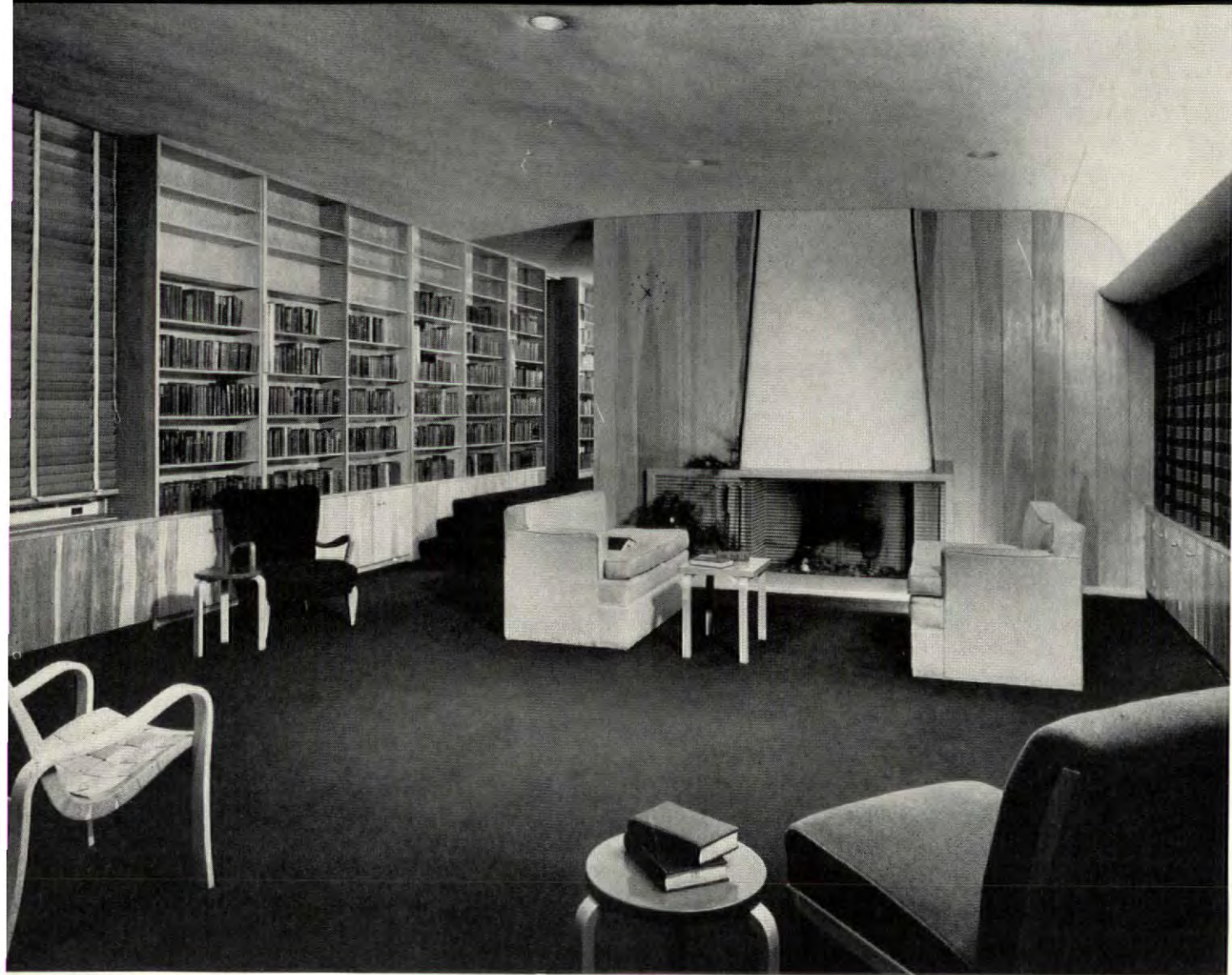


Photo. Ezra Stoller



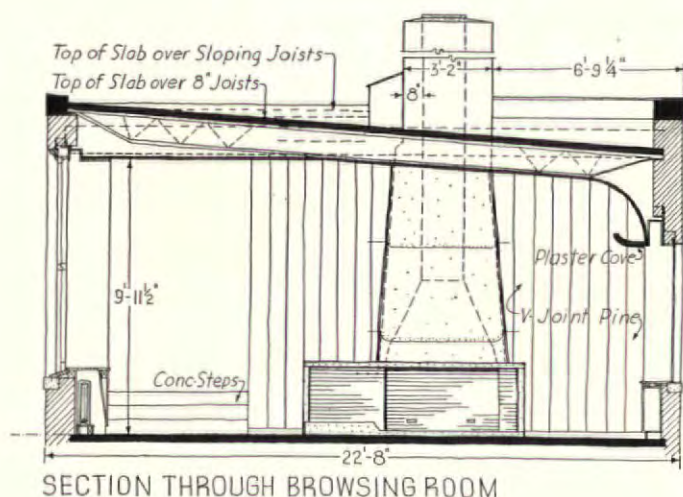
The problems presented by the design of an addition to an existing building are quite different, obviously, from those of an independent structure, and they are further complicated when both architect and client agree that a contemporary solution is indicated. Here a degree of harmony was established by the use of brick, and by fenestration which does not clash too violently with that of the older building. The difficulties of such a job are considerable, for the free and flowing shapes characteristic of modern architecture do not blend easily with the rigidly symmetrical facades of earlier academic buildings.

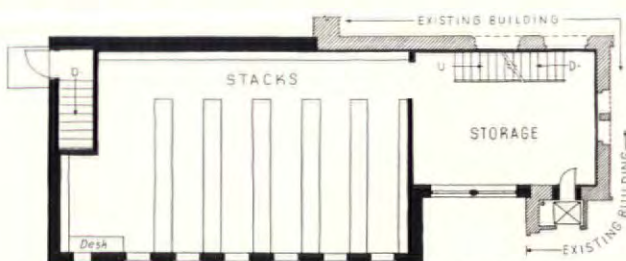
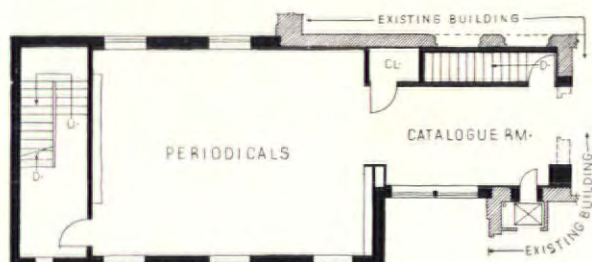
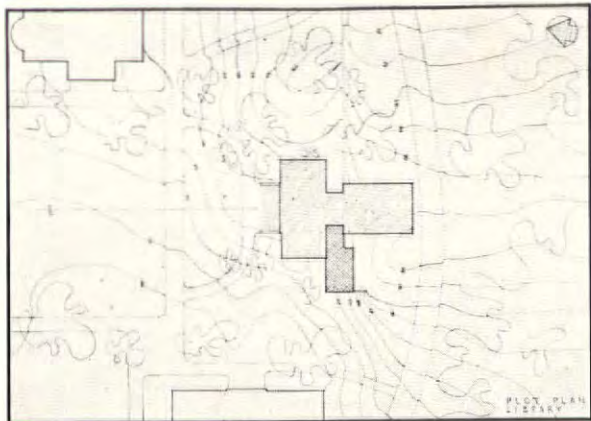


BROWSING ROOM

Within the library annex there was no problem of harmonizing new rooms with the old, and consequently no compromise was considered necessary. These interiors are comfortable and informal, modest in their use of furniture and equipment, and they show a high degree of practical imagination. In the Browsing Room above, for instance, the main lighting unit and the bookshelves have been designed in a piece: the trough on the right illuminates a sloping ceiling which in turn casts a diffused light on the books on the opposite wall. Supplementary illumination is furnished by the recessed units in the ceiling. On the other side of the fireplace is a small picture galley, illustrated on the opposite page. Unlike the other rooms in the new wing, the periodical room had to be connected directly with the main reading room, a requirement which had a great deal to do with fixing the plan. The room has been executed in a combination of painted plaster and wood, and is especially noteworthy for its excellent lighting and furniture. The display of current magazines has been admirably provided for: a series of sloping racks set into a separately lighted alcove combines easy visibility with a small space.

HOWARD W. MARSHALL CO., INC.
GENERAL CONTRACTOR





BASEMENT

SCALE IN FEET
0 5 10 15

CONSTRUCTION OUTLINE

FOUNDATIONS: Reinforced concrete. Waterproofing—A. C. Horn Co. and Master Builders Co.

STRUCTURE: Exterior walls—solid brick. Interior partitions—hollow tile gypsum blocks, U. S. Gypsum Co. Structural steel—Truscon Steel Co. Floors—concrete.

ROOF: 5-ply, 20 yr. built-up, The Barrett Co.

SHEET METAL WORK: Flashing—spandrel and copper. Gutters—copper.

SOUND INSULATION: Ceiling (2nd. and 3d. fl.)—Sabinite plaster, U. S. Gypsum Co.

WINDOWS: Sash—steel, Croft Steel Windows Co. Glass—Pittsburgh Plate Glass Co.

DOORS: Roddis Lumber & Veneer Co.

HARDWARE: Schlage Lock Co., Oscar C. Rixson Co., J. H. Judd & Son.

PAINTS: Pittsburgh Plate Glass Co., E. I. Du Pont De Nemours, Inc.

ELECTRIC INSTALLATION: Wiring system—rigid conduit. Fixtures—Kelly & Thompson. Fans, etc.—B. F. Sturtevant Co.

HEATING: Two pipe steam system. Radiators—American Radiator Co. Valves—Ashton Valve Co., Kieley & Mueller Co., Jenkins Bros. and Crane Co. Thermostats—Minneapolis-Honeywell Regulator Co. Unit ventilators—John J. Nesbitt Co.



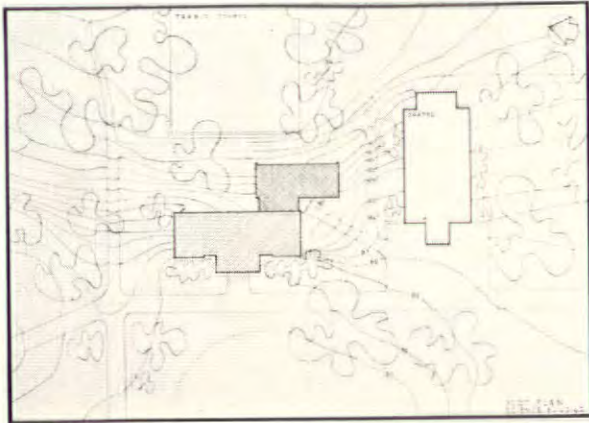
EXHIBIT SPACE

PERIODICALS





HORNBOSTEL & BENNETT
ASSOCIATED ARCHITECTS

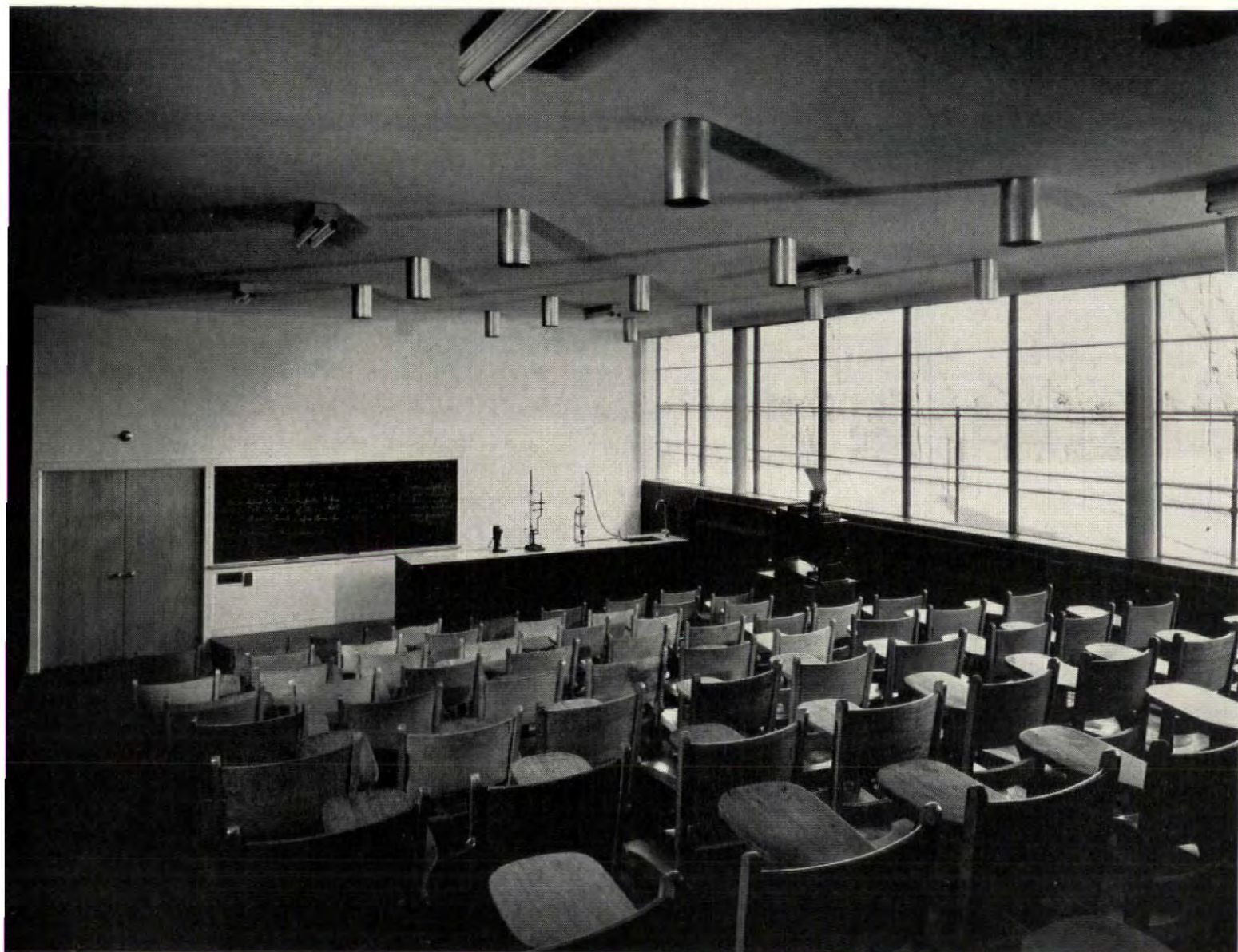


PLOT PLAN

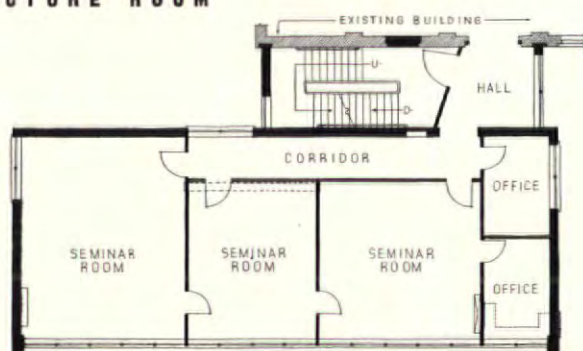
The addition to the Science Building presents in highly dramatic form the contrast between old and new in the design of educational buildings. It was put up with a budget of \$30,000 and was planned to give the laboratories a maximum of natural light. Viewed against its own very conservative architectural background it certainly represents a drastic departure from the local tradition. Nevertheless, if it is the purpose of a college to give its students the best in contemporary thinking, no better method of expressing this purpose could be found than in buildings which openly employ contemporary techniques of design and construction. The striking contrast which appears in the facing illustration gives a dynamic impression of continuing vitality which is a far more accurate picture of the college of today than the elaborate, expensive medieval and Georgian fakery characteristic of most pre-war university building. The wisdom shown by Wheaton College in adopting its current building policy is no less admirable than its courage in breaking away from a long-established trend.

SCIENCE
BUILDING

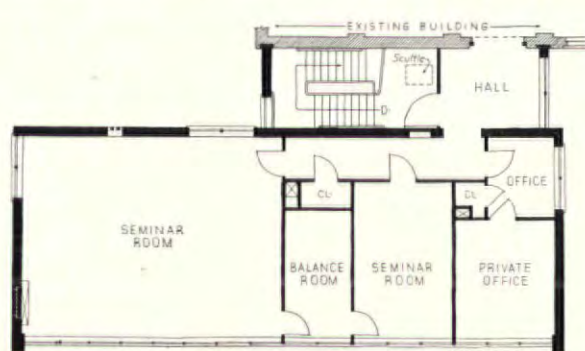




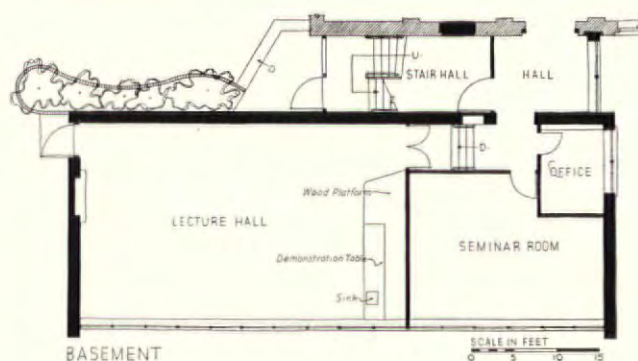
LECTURE ROOM



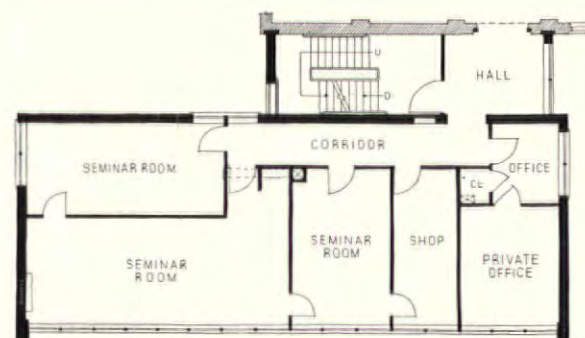
FIRST FLOOR



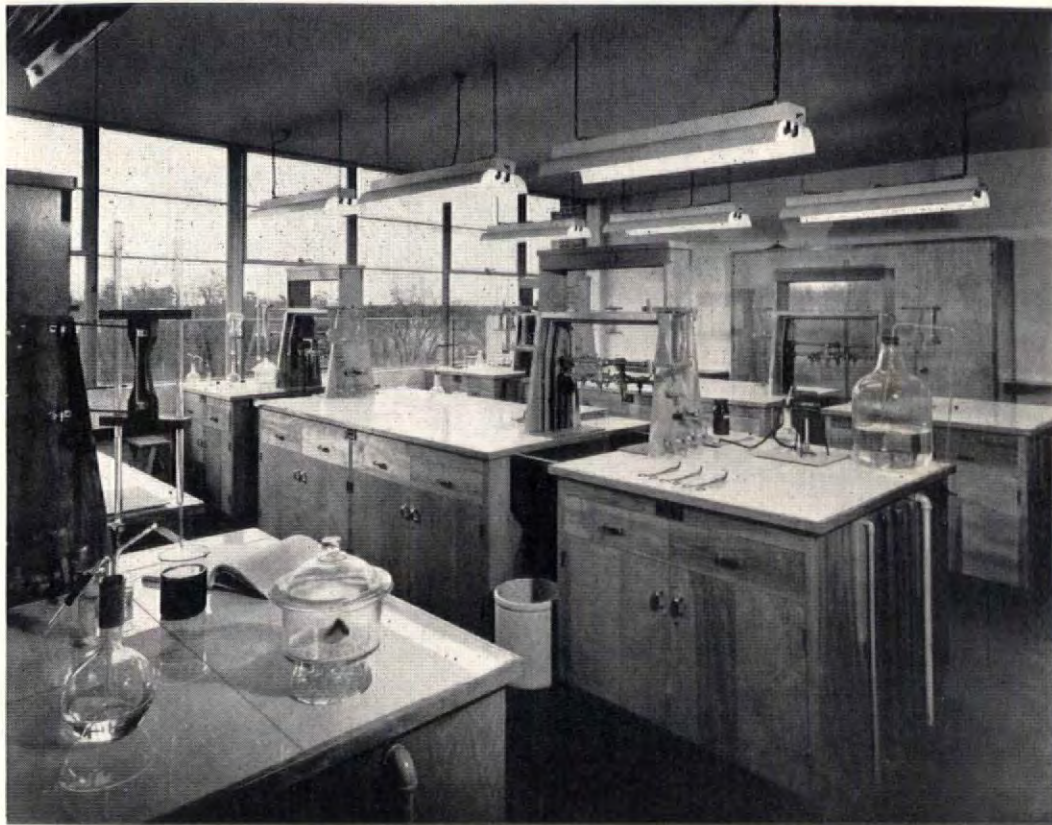
THIRD FLOOR



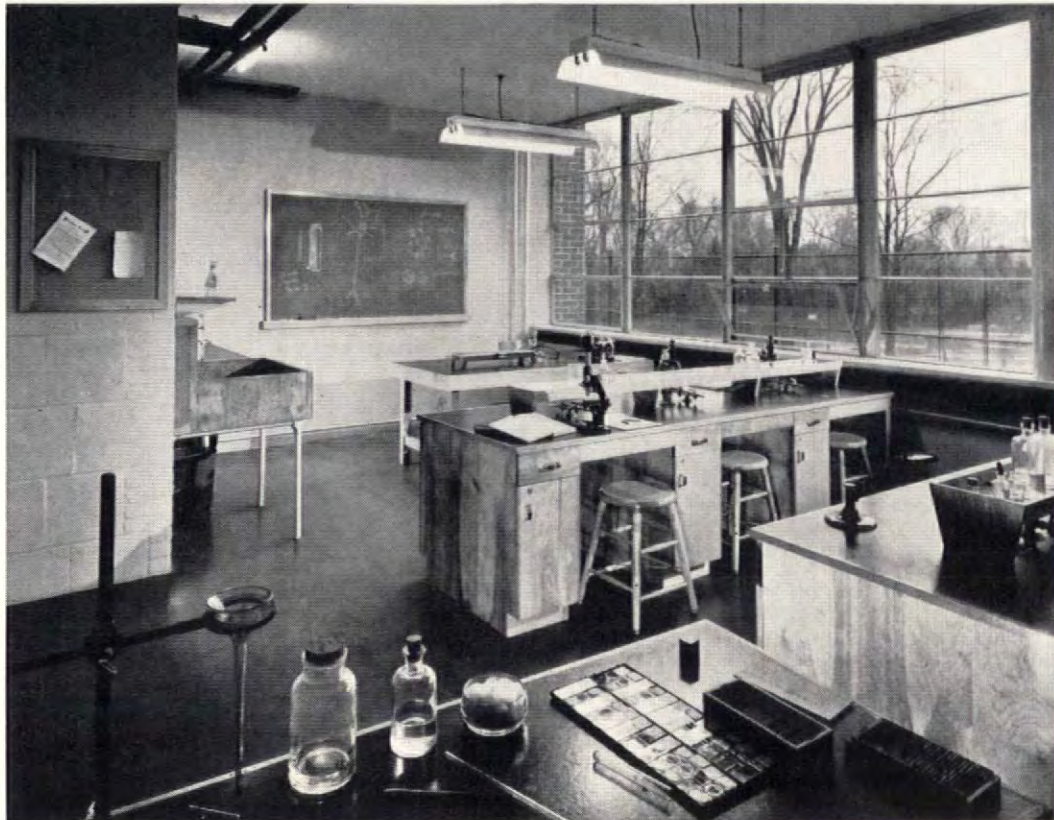
BASEMENT

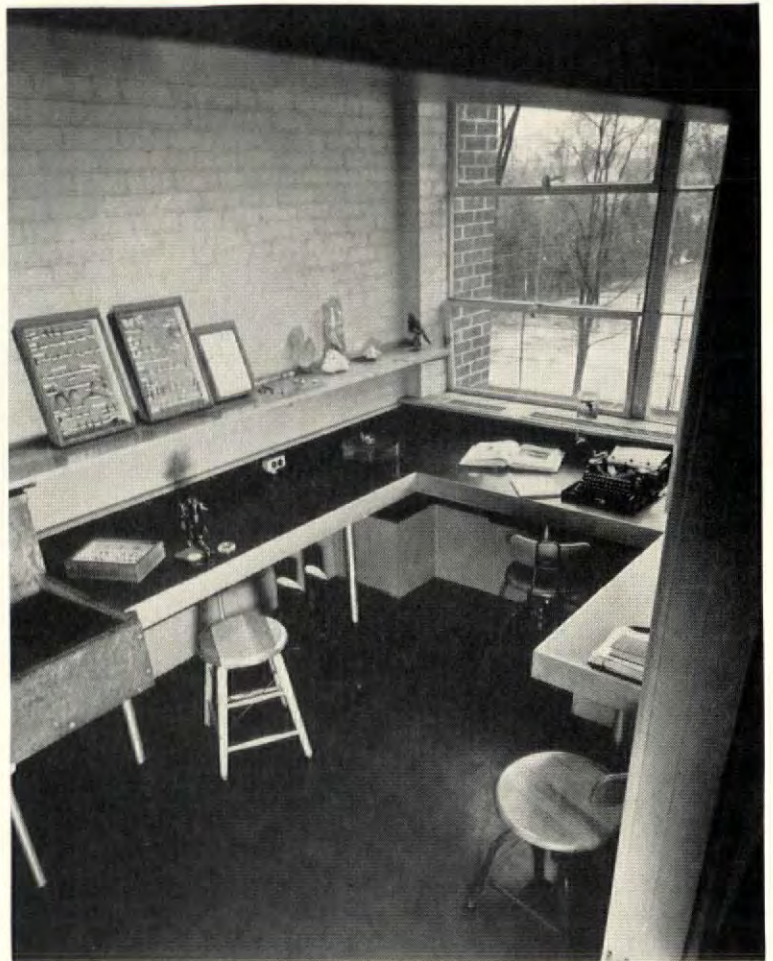
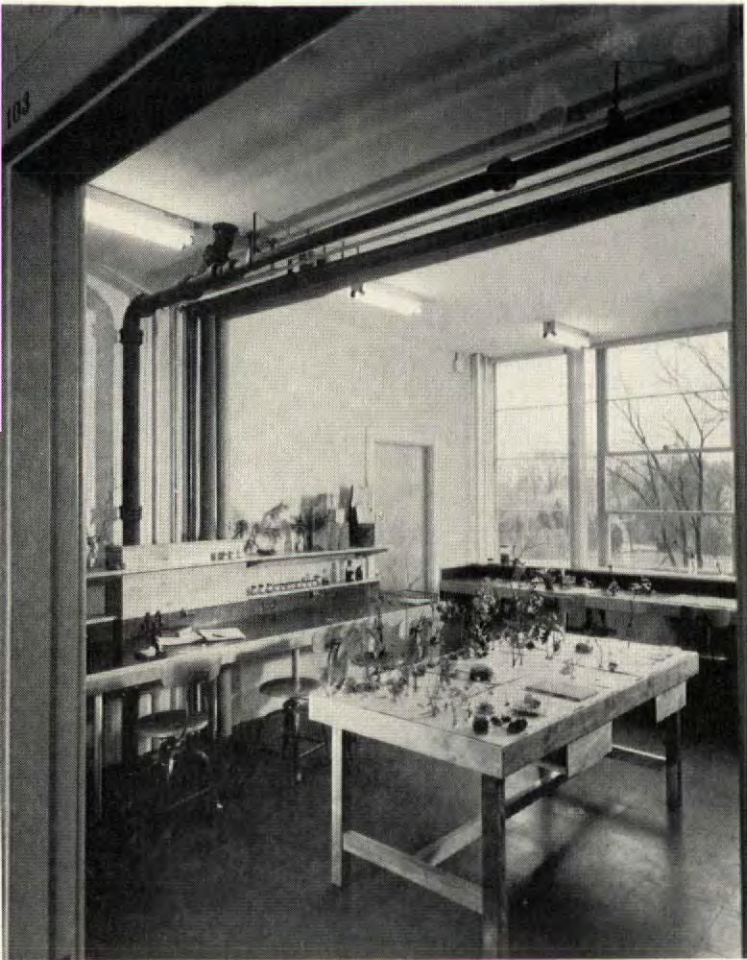


SECOND FLOOR

**CHEMICAL LABORATORY**

The excellent natural lighting provided by the system of fenestration adopted is especially apparent in the interior photographs shown here. Many of the rooms, originally laid out as multi-purpose interiors, suitable for seminars, etc., have been subsequently developed as laboratories. Because much of the piping in a building of this type must be accessible for inspection and replacement, many of the lines have been exposed within the rooms. It will be noted on the plans that each floor, unlike the library addition, connects directly with the old building.

BIOLOGY LABORATORY



The treatment of exposed piping is best shown in the photograph above. The architects made a definite attempt to emphasize the lines rather than hide them and used a variety of colors to create a decorative accent. The small chemistry laboratory at the lower right is on the top floor, a location dictated by the necessity of carrying the fume hood flues directly to the roof.

CONSTRUCTION OUTLINE

FOUNDATION: Reinforced concrete. Waterproofing — A. C. Horn and Masters Builders Co.
STRUCTURE: Structural steel—Truscon Steel Co. Interior partitions—terra cotta tile brick.
ROOF: 5-ply, 20 yr. bonded, The Barrett Co.
SOUND INSULATION: Lecture room ceiling—acoustical plaster, U. S. Gypsum Co.
WINDOWS: Sash—steel, Croft Steel Window Co. Glass—double strength, quality A, Pittsburgh Plate Glass Co.
HARDWARE: Schlage Lock Co. and J. H. Judd & Son.
PAINTS: Pittsburgh Plate Glass Co.
ELECTRICAL INSTALLATION: Switches—Bryant Electric Co. Fixtures—Kelly & Thompson. Panel boards, etc. —J. G. Knight, National Electric Products Co., General Electric Co. and Bull Dog Electric Products Co.
PLUMBING: Sinks—Alberene Stone Corp. Hot and cold water pipes—Revere Copper & Brass Co. Fittings—Crane Co., Walworth Co., Josam Mfg. Co., Jenkins Bros., Inc., Laboratory shower—Crane Co.
HEATING: Radiators—American Radiator Co. Valves—Ashton Valve Co., Kieley & Mueller Co., Jenkins Bros. and Crane Co. Thermostat—Minneapolis-Honeywell Regulator Co. Unit ventilators—The Herman Nelson Corp. Kewanee Boiler Corp. Pumps—Nash Engineering Co. Water tank—Patterson-Kelley Co., Inc.
SPECIAL EQUIPMENT: Laboratory table tops—tempered Vitrolite, Libbey-Owens-Ford Glass Co. and Presdwood, Masonite Corp. Darkening curtains—Athey Screen Co. Fume hoods and steam baths—Hamilton Mfg. Co.



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All Parkerized and Painted after fabrication.

You will better understand the widespread choice of Ro-Way Overhead Type Doors when you examine these exclusive improvements and see the extra values they give.

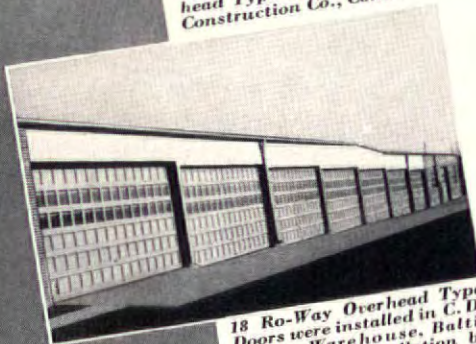
Write for Ro-Way's 72-page "Time-saving Specification Book" for Architects. Please attach professional card or letterhead.

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Garage of Consolidated Motor Lines, Cambridge, Mass., equipped with Ro-Way Overhead Type Doors. Franklin Construction Co., Contrs.



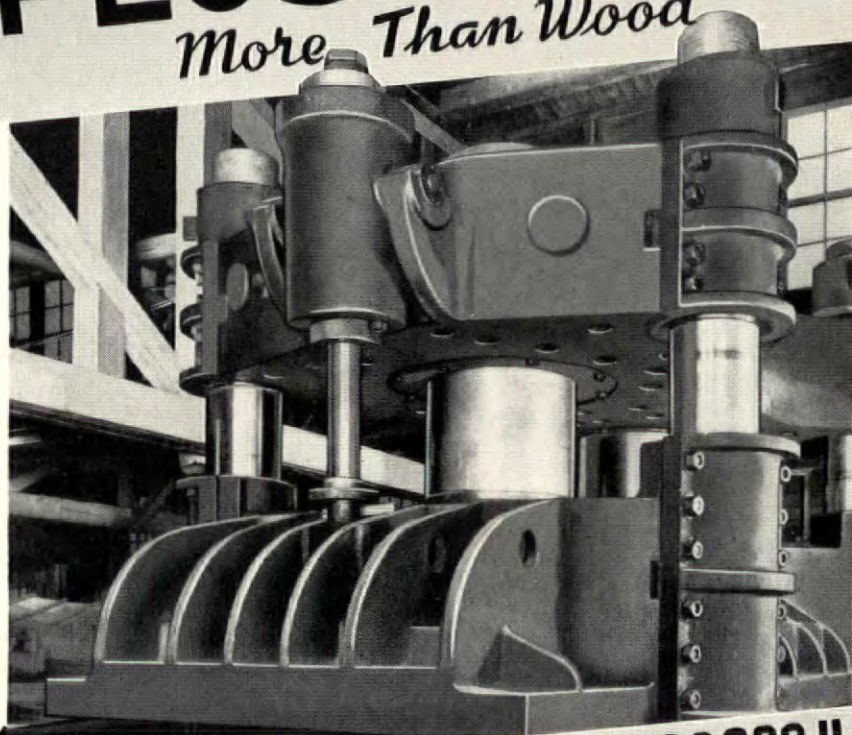
18 Ro-Way Overhead Type Doors were installed in C. D. Kenny Warehouse, Baltimore, Md. Installation by Kirson Const. Co., Contrs.



Warehouse of American Stores Co., Baltimore, Md. Equipped with 7 Ro-Way Overhead Type Doors. Consolidated Engr. Co., Contrs.

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300 K.V.A., 540,000 B.T.U.'s per hour

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that can be made to your order

- The most powerful press in the plywood industry, plus the largest high frequency electrostatic generating unit ever applied to wood for this purpose, combine to make Pluswood—a resin impregnated high density plywood of new wonders. A non-conductor, it has amazing properties of density and hardness. In addition, it has excellent qualities of resistance to abrasion, moisture, swelling, shrinking and corrosion. To your order, Pluswood can be made thick or thin, pliable or brittle to predetermined strength—and you can have it all of the way from little pieces to the full capacity of the press platen, 7' x 18' with 2' opening.
- A dependable, responsible organization stands behind Pluswood, from forest through saw mills, veneer mills and factory—established by the Lullabye Furniture Corporation, since 1897 America's foremost manufacturer of juvenile furniture. Write now for data that may help your thinking on the product improvement you want to have ready when the war is won. There is no obligation.



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RESIN Impregnated in freshly cut green veneers to obtain a more complete diffusion of the resin.

HEAT 300 K.V.A. high frequency electrostatic generating unit—largest in the country for this purpose — delivering 540,000 B.T.U.'s per hour.

PRESSURE Largest and most powerful press in the plywood industry—with total pressing capacity up to 5,000,000 pounds.

PLUSWOOD Incorporated, Oshkosh, Wis.

Associated Companies { NORTHERN HARDWOOD VENEERS, Inc., Butternut, Wisconsin
LULLABYE FURNITURE CORPORATION, Stevens Point, Wisconsin
ALGOMA FOREST PRODUCTS, Ltd., Bruce, Ontario, Canada

MONTH IN BUILDING

(Continued from page 35)

Government, military, naval, and local personnel and regulations, toward month's end they were well along to completing their reports, which Moses will coordinate into recommendations.

Their findings will, of course, not be made public. But it seems a safe guess that, when they look at housing, they will conclude, first, there still is not enough of it and, second, the main reason there is not is the impossibly complex procedure, which starts with determining the housing need and ultimately ends with war workers under roof. Long before this, everyone has stopped disilusioned war workers, unable to find shelter, head back home.



HIGGINS, EGGERS—2 DECADES

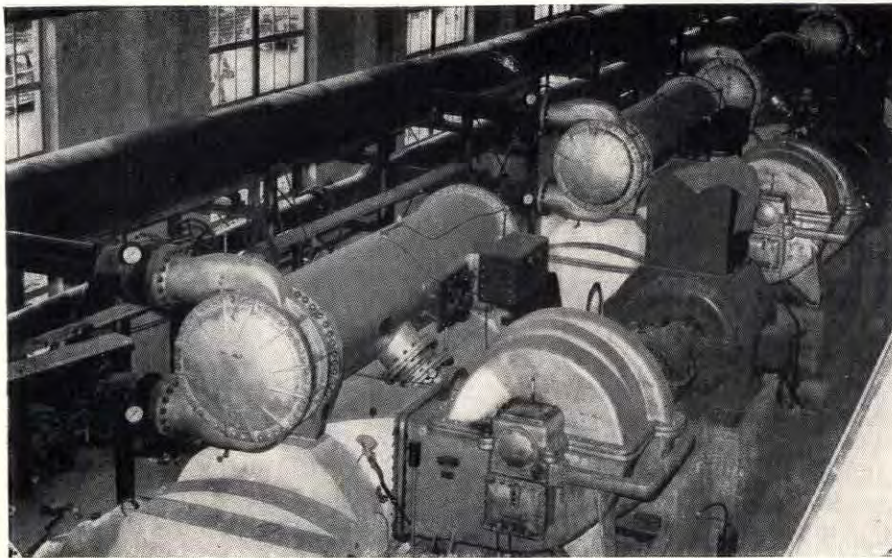
On December 12, at a surprise dinner given by their associates in Washington, Daniel Paul Higgins, left, and Otto R. Eggers celebrated their 20th year of successful architectural partnership. Ambitious, progressive, the Eggers-Higgins team completed the designs for the National Gallery of Art, the Jefferson Memorial, other impressive public buildings started during the lifetime of the late, great John Russell Pope.

Those familiar with the Moses technique would not be surprised if he recommended placing each such area under military control with a single high local authority charged with the job of making the area function at its full production possibilities. That the conflicting agencies, including the Army and Navy, would accept such a proposal perhaps is hoping for too much. That any milder correction of the present cumbersome setup can do the job seems equally doubtful.

REALTORS CONVENE

The National Association of Real Estate Boards, meeting in St. Louis last month at its 35th annual convention, sat pat in its denunciation of rent control as currently administered, resolved firm adherence to the principles of "home ownership and private real estate ownership." At this "National War Conference," the NAREB

(Continued on page 92)



Design and Construction directed by Lt. Colonel Clarence Renshaw, District Engineer of Arlington, Virginia. *Chief Architects*, G. E. Bergstrom and D. J. Witmer. *Mechanical Engineer*, Charles S. Leopold, Philadelphia, Pa. *General Contractors*, joint organization of John McShain, Doyle & Russell and Wise Contracting Company, Inc. *Mechanical Sub-Contractor for Refrigeration Plant*, Carlson Bros. of Michigan; for the *Building Conditioning*, Baker Smith, Inc. and Mehring & Hanson Company. *Refrigeration Machines and Weathermaster Units* by Carrier Corporation.

12 CARRIER CENTRIFUGAL REFRIGERATION MACHINES provide a cooling capacity of 13,200 tons. This is equivalent to the melting of 26,400,000 pounds of ice daily.

WORLD'S LARGEST OFFICE BUILDING

COMPLETED FOR WAR DEPARTMENT



CORRIDORS AS WELL AS ALL OTHER space are served by Carrier Weathermasters designed as an integral part of the building.



This most coveted honor, the Army-Navy "E", was awarded to Carrier Corporation for excellence in war production.



7,800 WEATHERMASTER UNITS supply a total of 3,900,000 cubic feet of conditioned air per minute. Each office enjoys desired temperature and humidity supplied by the Carrier Weathermaster unit serving it.

Individual Weather Control for each Office

A huge army of government employees — 35,000 strong — moved into Arlington, Virginia recently as the War Department occupied its tremendous new building on the shore of the Potomac just across from the nation's capital.

One of the outstanding features of the building is the Carrier Air Conditioning System. As a result of it, several million square feet of interior space, including basements, that otherwise would have been wasted except for storage, have be-

come available for regular use.

In addition, the air conditioning helps to keep manpower at peak efficiency by offsetting the enervating heat prevalent on the shores of the Potomac in summer and the vagaries of Washington weather in winter.

Just as the Pentagon Building is the largest office structure in the world so is the Carrier Air Conditioning System the largest of its type ever installed.

Carrier
AIR CONDITIONING
REFRIGERATION

WHAT'S THAT KANGAROO DOING ON A RECEPTION ROOM FLOOR?



THE kangaroo you see below is the trade-mark of Pocket Books, Inc., New York. He has gone to work . . . helping to advertise his company's wares . . . on an Armstrong's Linoleum Floor.

You can use Armstrong's Linoleum to do a similar job for your client. This flooring lends itself to the inlaying of all types of Linosets—trade-marks, monograms, or other identifying insignia—at a cost within the most moderate budget.

An Armstrong Floor has other advantages for your client. He'll find it low in cost, long in wear. He'll appreciate its easy maintenance, its quiet and comfort.

Write today for your free copy of our color-illustrated booklet, "Better Floors for Better Business." Armstrong Cork Co., Floor Division, 2301 State St., Lancaster, Pa.



In recognition of their skill and workmanship in producing a wide variety of war materials, the workers in our Lancaster plants have received the Army-Navy Production Award.



ARMSTRONG'S LINOLEUM, LINOFLOR LINOWALL

Custom Laid or  Standard Designs

MONTH IN BUILDING

(Continued from page 90)

meeting had a calm aspect.

►Only war-like reaction (boos) was to Paul A. Porter, Deputy Administrator in charge of the Rent Division of the office of Price Administration who said: ". . . In the fulfillment of this task of controlling rents we had to issue regulations and require the landlords of the country to register their rental dwellings. In retrospect, we feel that these regulations have been generally fair and equitable, and they have been effective . . ."

Defiantly resolved the convention: "As to control of residential rents, the Association states it will continue to aid OPA in any way it can to bring about fair administration of rent control regulations. To eliminate distinct injustices worked by these regulations, it recommends:

"That wider discretionary powers be given to local area rent directors.

"That in conformity with the Price Control Act OPA give prompt relief to prop-



FRIEDSAM MEDAL TO FARNUM

AWARDED to Royal Bailey Farnum, chief executive of the Rhode Island School of Design, Providence, R. I., the Friedsam Medal, at a midnight dinner of the Architectural League in New York. Founded in 1923 by the late Col. Michael Friedsam, president of B. Altman, New York department store, the medal is presented annually to a person who has contributed conspicuously to the advancement of American art. Farnum's citation included "professor of art and educational administrator in Europe, State Director of art instruction in Mass., N. Y." League President T. Scott Williams (see cut above) presented the medal.

erty owners in any community where taxes and other costs are such as make ownership unprofitable. Action of this kind will reassure millions of property owners who are now fearful that rent control will be operated without regard to the necessities or the basic rights of owners."

►Other belligerent notes were struck. Hugh Potter of Houston, Texas, chairman of the Home Builders Emergency Com-

(Continued on page 94)

5,500,000

C.F.M. AAF *Filtered Air*

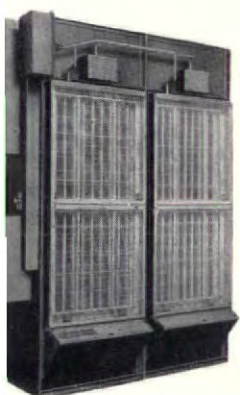
Largest of all individual building installations, American Air Filters in the huge Pentagon building clean billions of cubic feet of air every day to protect the health and comfort of thousands of government employees working there.

We are today engineering air filter installations for public and private buildings in use by war agencies, manufacturing plants engaged in war materials production, barracks, cantonment recreation rooms, class rooms and theatres.

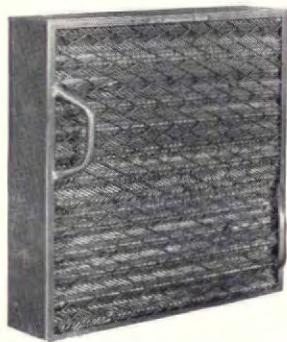
The complete line of AAF air filters for heating, cooling, and ventilating service range from large automatic and electrostatic filters to unit type filters used singly or in batteries.

Complete information and bulletins describing the full line of AAF filters and other dust control equipment are available on request.

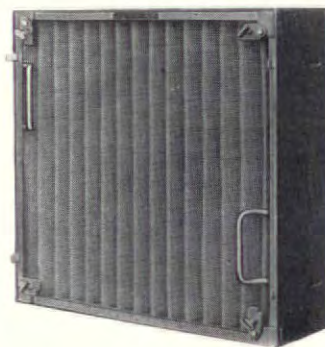
BAKER SMITH & CO., INC., MEHRING & HANSON CO., *Heating & Air Conditioning*
CHAS. S. LEOPOLD, *Consulting Engineer*



ELECTRO-MATIC



M/W UNIT



AIRMAT UNIT



R/D UNIT



MULTI-DUTY



AMERICAN AIR FILTER COMPANY, INC., 427 CENTRAL AVE., LOUISVILLE, KY.

INCORPORATED
IN CANADA, DARLING BROTHERS, LIMITED, MONTREAL, P. Q.

There's a
NEW *obligation, now... when*
homes are painted!



Perkins, Wheeler and Will, Architects

THE obligation used to be moral. Now it's very *realistic* and *vital*. Neither materials nor manpower can be wasted in America's Victory Program.

The paint used on homes must protect for the maximum number of years. That's why the paint made with Eagle White Lead continues to stand in such high favor with architects, builders and maintenance men. This paint wears stubbornly and slowly. Its tough, elastic film does not crack or scale... leaves a perfect surface for repainting when repainting finally becomes necessary.

Eagle White Lead has been protecting and beautifying American homes, through war and peace, since 1843.

THE EAGLE-PICHER LEAD COMPANY
CINCINNATI, OHIO



MONTH IN BUILDING

(Continued from page 92)

mittee, decried Government "bungling" of war housing.

"We believe the WPB now recognizes that use of private builders is essential to an adequate war housing program... But in twenty-five or thirty busy centers even now nothing like the necessary amount of public and private housing is going up. It is unfortunate that there still exists in Washington an intelligent, active group of men who seem to be working to do away with all private home building."



RODIER RIDES AGAIN

As per FORUM's guess (Dec., p. 104) Gilbert L. Rodier has moved upstairs, from director of war housing in the District of Washington to Acting Director of the Technical Division of the FPHA, succeeding A. C. Shire, who moved on to BEW.

►In its final session, NAREB asked:

1. Use of their productive power to supply needed war housing instead of expanding Government agencies to undertake such construction.
2. Continued support of NHAdministrator Blandford in the war housing conversion program.



NAREBOSS WILLMORE

►Elected to office for 1943: President, Cyrus Crane Willmore of St. Louis (see cut); large, genial, successful Willmore is president of Cyrus Crane Willmore Organizations, Inc., past president of the St. Louis Real Estate Exchange, has been vice president of NAREB, chairman of its land developers and home builders division.

(Continued on page 96)



PENTAGON BUILDING

Arlington, Virginia



RAYMOND installed the pile foundations for the above structure for which over forty-one thousand concrete piles were placed aggregating over 1,100,000 lineal feet. The general contractors were John McShain, Inc., Doyle & Russell and Wise Contracting Co., Inc. The work was done under the Direction of the Corps of Engineers, Arlington District. The project is described in this issue.

Raymond Concrete Pile Company

Branch Offices in Principal Cities

140 CEDAR STREET, NEW YORK, N. Y.





J. E. Hutchison, of Moody & Hutchison, Consulting Engineers, Philadelphia, Pa. Member of American Society of Heating and Ventilating Engineers.

"The wisdom of providing adequate control of volume and distribution of heat is being proved today as the fuel situation becomes more critical," says J. E. Hutchison. "The present users of modern steam heating system controls are enjoying even temperatures with minimum fuel consumption. Irrespective of the fuel or firing method adopted, satisfactory heating results cannot be obtained without effective volume and distribution control. Without this control, heating is uneven and fuel consumption excessive."

Moody & Hutchison have specified the "Controlled-by-the-weather" Webster Moderator System of Steam Heating for Cooper Hospital, Camden, N. J., and for the Academic Building and Cadet Barracks, U. S. Military Academy, West Point, N. Y. In the latter installation, eight heating zones are controlled from one central point. This firm made plans for Webster Vacuum Steam Heating Systems installed in many outstanding buildings, including the Municipal Court Building, Philadelphia; the Federal Reserve Board Building and Folger Library, both in Washington, D. C.; Bancroft Hall, U. S. Naval Academy, Annapolis, Md.

WARREN WEBSTER & CO., Camden, N. J. Pioneers of the Vacuum System of Steam Heating Est. 1888 : : Representatives in 60 principal U. S. Cities

**STEAM Heats
America . . .**

MONTH IN BUILDING

(Continued from page 94)

GROUP HOUSING—AND HEALTH

After months of intensive study by beset California housers (FPHA and the Local Housing Authorities), first details of a plan to include tenants of public housing projects in the state's California Physicians Service were issued recently. Important because it reflects a wide concept of the function of a housing project as community development, the plan is now operating fully in Marin County, on all Vallejo projects (30,000 persons) in California.

How it works: The facilities of the California Physicians Service, created in 1939 by the State's Medical Association, are extended to in-migrant war workers in public projects, a group hitherto excluded as not being permanent community residents. California's present physician-shortage made some solution of the need imperative. The state had one doctor for 820 persons—now has 1 for each 1,131. A flat monthly fee is paid (\$2.50 for single persons, \$4 for couples, \$5 for families of 3 or more) in return for "all necessary medical and surgical services for acute illnesses or injuries." Including maternity care, x-ray and laboratory services and complete hospitalization (21 days in most cases, 10 days for maternity), only mental disorders, drug addicts and chronic alcoholics, etc., are excluded.

A full-time resident physician and nurse are provided for each 1,500 persons on a project. Complete equipment is provided by CPS.

Who participates: Thus far in California, through contracts entered into between FPHA, Local Housing Authorities & CPS, four projects in the state are now using the plan. Originally compulsory, membership is now on a purely voluntary basis. Most tenants join up eagerly (all Marin County tenants are members).

Group health fight: Contract medicine, in the form of services to Henry Kaiser's workers in his specially-built hospital, was hotly contested by balding, belligerent Dr. Morris Fishbein. Workers would be treated with much the same service as CPS's plan for a monthly fee.

WEINFELD RESIGNS

Since 1939 New York State Commissioner of Housing, Edward Weinfeld last month left the office to which he was appointed by ex-Governor Lehman. Following close upon his annual report to the Governor and the Legislature, in which able, public-housing minded Weinfeld reported that housing shortages in the state were still acute, his resignation, marking the first sweep of Tom Dewey's brisk Republican broom, was a loss to the state, and to efficient public housing.

Good Paint *Always* Saves More than it Costs



Cape Cod Cottage, built 1785. Recently moved to Brockway, Lake Tahoe, California, and painted with Cabot's DOUBLE-WHITE.



DOUBLE-WHITE house, Chestnut Hill, Pa. Architect, J. Liner Conarroe, Philadelphia.

● In war or peace, Cabot's DOUBLE-WHITE and Gloss Collopakes are used by leading architects because they help to create beauty and save real wealth. By our patented Collopping process, oil and pigments are inseparably united. They form a smooth, tough, wear-resistant film that stands up for years.



The White Book — FREE

Shows many prize-winning houses painted with Cabot's DOUBLE-WHITE, Old Virginia White, Gloss White and Gloss Collopakes (colloidal paints). Contains full information. Write for your copy and color card today. Samuel Cabot, Inc., 1265 Oliver Building, Boston, Mass.

Cabot's
DOUBLE-WHITE
and Gloss Collopakes
(The Colloidal Paints)

PENTAGON BUILDING

WAR DEPARTMENT



Like so many other great structures, the War Department's New Pentagon (World's Largest Office Building) is served by

Corbin Hardware



PENTAGON BUILDING

P. & F. CORBIN Division, New Britain, Conn.

BUILDING'S YEAR AT WAR

(Continued from page 73)

versy, FORUM editors have polled about one hundred clear-thinking people, representing all divisions of Building, to assay the probable effect of prefabrication on these groups.

Whether the comment is from an architect, a banker, a dealer, a realtor or a manufacturer, the overall judgment of these people indicates a strong acceptance of prefabrication's future. It is only when the discussion relates to the various types of prefabrication currently practiced—whether houses completely made in factories, or parts made in factories and assembled at the site, or parts made at the



Prefabrication in the plant . . .

site and there assembled—that differences of opinion appear. The very facts that each of these methods has its proponents,

and each of these methods has functioned effectively in the war program suggest that at least in the early stages of the postwar period all three forms of prefabrication will be employed.

Commenting on the impact of prefabrication on each of the component groups of the building industry, the following attempts to summarize majority opinion:



Courtesy Ltoovey-Queens-Ford Co.

. . . and in the field

NEW, LOW-COST "AWNING-TYPE" WINDOWS

FOR STANDARD 2 x 4 FRAME
OR THIN WALL CONSTRUCTION

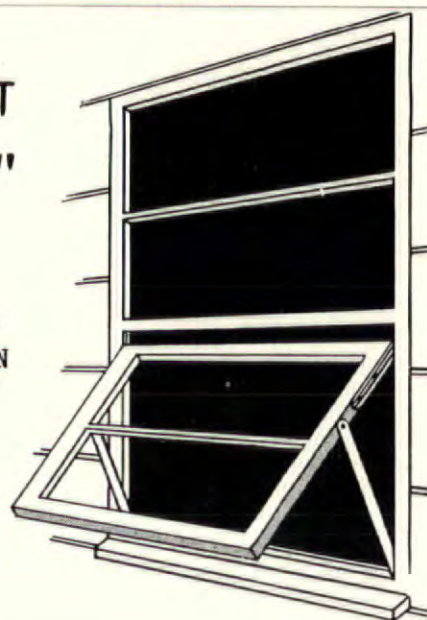
Use these versatile low-cost windows for barracks, housing projects, factories, temporary schools, dormitories, etc.

They set right in the studding . . . require no frames, sash weights or balances.

Pella Windows come completely assembled (except for the lock handle). No fitting is necessary on the job. Sash and frame are of white pine, toxic treated with Woodlife.

Standard sizes include 14 ventilating and fixed units. Units can be side-hinged for casement style. With few exceptions, all can be glazed with standard size lights . . . no cutting. "In" or "out" opening. Low-cost frame screens available.

TO YOUR SPECIFICATIONS -- We will gladly re-adapt these Pella units if quantities warrant.



| TABLE OF SIZES | | | | |
|--------------------------------|--------------------------------|--------------------------------|--------------------------------|-------|
| 16" x 12" GLASS 2' x 3 1/2" | 24" x 12" GLASS 2' x 3 1/2" | 32" x 12" GLASS 2' x 3 1/2" | 40" x 12" GLASS 3' x 7 1/2" | |
| 22140 | 32140 | 42180 | 521100 | |
| 23140 | 33160 | 33161 | 43180 | 53100 |
| 24141 | 34160 | 34191 | 44180 | 54100 |

RUSH your request for Free Full Size Details to Rolscreen Company, Dept. 213, Pella, Iowa

Pella

AWNING-TYPE WINDOWS

Made by makers of Pella Rolcreens, Venetian Blinds, Casement Units

ARCHITECTS

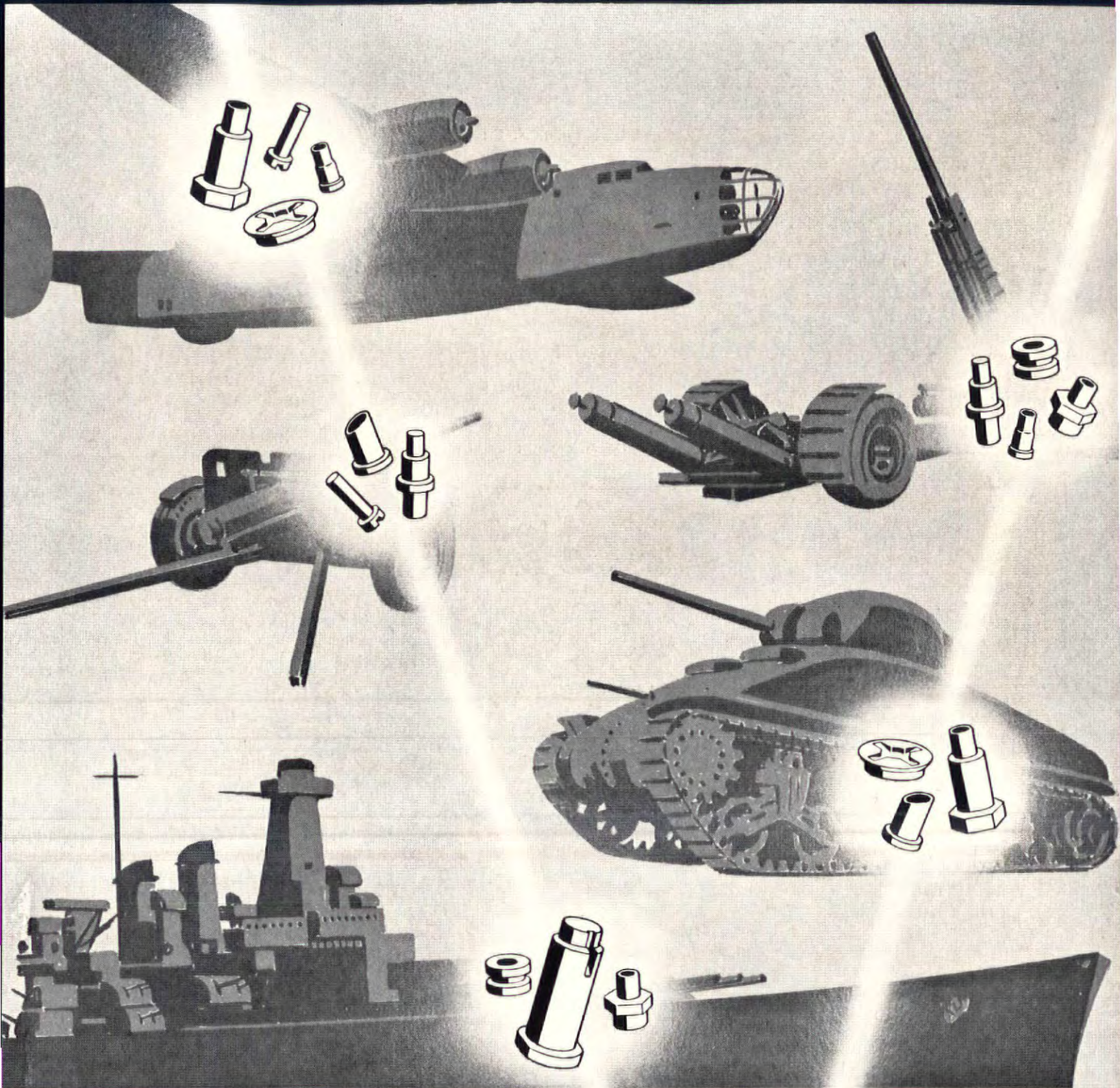
It is believed that prefabrication will permit the participation of architects in the low-cost house field, which until now has rarely claimed the profession's interest. Further, it is believed that competition will force enough emphasis on design to force prefabricators in turn to retain architects as members of their organizations or on a consulting basis; and finally that prefabrication will aid in the development of integrated housing developments, and that architects will in some cases design the actual housing units and in all cases handle site layout and the other buildings necessary to community life.

Representative of these opinions is the following by S. W. Morgan, Dean of the School of Architecture at Princeton University: "There should be great opportunities for architects in relation to the whole housing question, including prefabricated projects. The great demand will be in site planning, since this cannot help remaining the tailor-made part of the job. However, the experience of the automobile industry shows us that there will be many openings for designers who will control the current 'units' or 'models'. Such men will be part of a hierarchy rather than independent professionals, but they will be well paid and have the security which group-action brings. In fact it is doubtful in my mind whether individualism will not have to make many concessions to collective action in all fields of activity during the next several decades."

THE HOME DEVELOPER

The general feeling is that this group will maintain its position regardless of other trends, since its major function—that of building communities rather than isolated houses—will remain paramount.

(Continued on page 100)



DOOR CLOSERS

NOW 100% SMALL PARTS PRODUCTION FOR



VICTORY

BUILDING'S YEAR AT WAR

(Continued from page 98)

If it can be demonstrated that prefabrication produces a better, cheaper and more saleable house, even as compared with quantity conventional building, then the development builder will buy the prefabricator's product or turn to modified prefabrication on his own account. In any event, all believe that the demonstrated efficiency of this group assures its established position after the war, although a few doubt that the development builder will ever be able to serve the low-cost market.

Strongest expression of the above views was that given by Realtor-Builder Ed

Mendenhall of High Point, N. C.:

"It seems to me that prefabrication is ideally suited to large projects and if this be true, I believe that not only will reputable builders be drawn into the field, but that they will find it a profitable adventure. It appears likely that the large building organizations will prefabricate their own houses and will actually control the entire production and selling of the unit, including the land development."

THE GENERAL CONTRACTOR

The position of the general contractor remains cloudy, with every shade of opinion from that which points out that he has "tasted the heady wine" of large-scale housing and will be reluctant to leave this

field, to that which claims the demands of urban rehabilitation will find the general contractor fully occupied with his normal pursuits. There is no agreement on whether general contractors would risk financing large-scale rental projects, and there are several who question the ability of the general contractor to provide management essential to the success of such projects.

THE SMALL BUILDER

Majority opinion holds that the local "carpenter-builder" will continue to operate in a variety of roles: first as always building a few houses in a conventional way simply because prefabrication will not become universally used overnight; second, as a dealer and erector of prefabricated houses; third, as a service and general repair man in his community. Those who look to his early extinction believe that the prefabricated house will offer so much better value in design, plan, and precision construction as to make the competition impossible for the carpenter-builder to meet. The comment of F. S. Cannon of the Railroadmen's Federal Savings and Loan Association of Indianapolis is interesting:

"The small builder has always been financed by the material dealers. These distributors will find ways to keep this class of builders busy. This hookup will tend to keep them out of the prefabrication field unless the small yards can be persuaded to enter this field."

THE BUILDING MATERIAL AND LUMBER DEALER

As in the case of the small builder, opinion varies greatly on just where the dealer and prefabrication will come together and with what effect. Some believe prefabrication will by-pass the building material dealer entirely; others believe the by-pass will operate only in the case of large-scale developments. Some believe the present dealer is the logical distributor for prefabricated houses, particularly in the smaller community, and others are completely certain that a new type of dealer, one whose prototype is the automobile dealer, will dominate. Still others foresee the possibility that the dealer will himself fabricate at least panel sections which will conform to established prefabrication systems. Says F. J. Plimpton, President of the Producers' Council:

"In the future this dealer will carry less stock, and the more aggressive dealer will develop into a local distributor for prefabricators; or there will be those who will prefabricate for this particular trade. The local building and supply dealer has become so firmly entrenched in American life, it is doubted he will be eliminated. Rather, he should be one of the first to develop with the trend."

Says Foster Gunnison, President of the Gunnison Housing Corporation, "The

(Continued on page 102)

LOW COST FLOORS FOR WAR HOUSING!

FACTORY-FINISHED STREAMLINE FLOORING SAVES TIME AND MONEY!

HERE'S the floor that's ready to use the instant it's laid! Completely finished at the factory, it requires no sanding or finishing on the job. No need to install temporary wiring for sanding machines. Bruce Streamline Flooring actually saves days of time, expedites the work of other trades, helps you avoid penalties. No delays due to slow drying weather. Streamline lays fast, too, because the 3 1/4 inch strips cover 44% more area than the usual 2 1/4 inch strips. Fewer pieces to handle; fewer nails to drive.



WIDELY USED ON LARGE WAR HOUSING PROJECTS EVERYWHERE

Streamline has been used on large housing projects from coast to coast. War housing contractors tell us it costs less than an ordinary floor finished on the job... say it's the greatest improvement ever made in hardwood flooring. For further information and a copy of our booklet, "Low Cost Floors for War Housing," write to:

E. L. BRUCE CO.
1656 THOMAS ST. MEMPHIS, TENN.





**Your Thoughts for the Future should revolve
around the New Truscon Post-War Portfolio in SWEET'S**

● This is an encyclopedia of *new* ideas . . . a portfolio packed full of "what to do for tomorrow" . . . a reference manual of compact, concise information that should be right at your fingertips when planning post-war construction.

Truscon's new catalog in the 1943 SWEET'S is more important today than ever. It will give you added inspiration in your creative work . . . its compact, concise information will make your actual planning and specification more simple and easy.

It will simplify much of your drafting and designing work. Individually bound Truscon product catalogs also are available, marked with correct AIA file numbers for accurate and easy filing. Send for this material now.

TRUSCON
Steel Company

YOUNGSTOWN, OHIO

Subsidiary of Republic Steel Corporation

BUILDING'S YEAR AT WAR

(Continued from page 100)

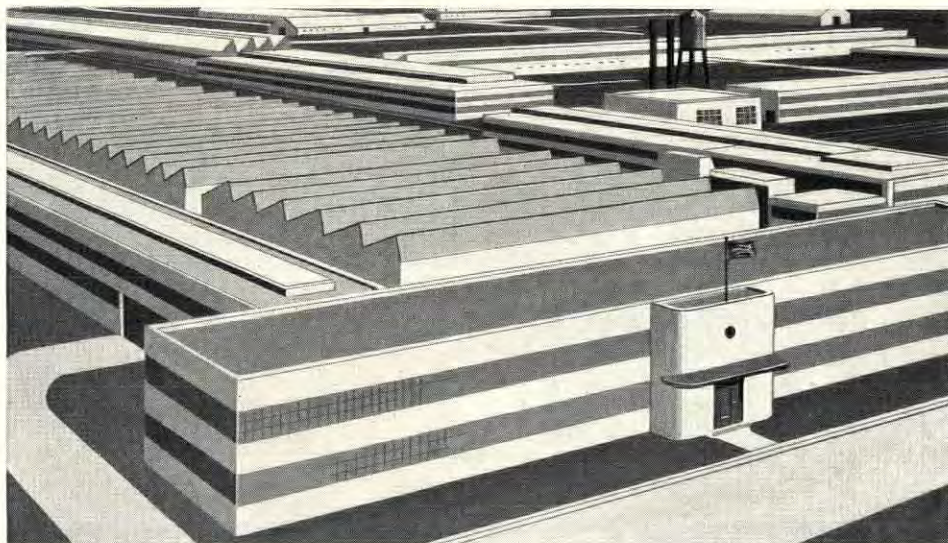
building material and lumber dealer as a man could become an excellent prefabricated home dealer because he is usually a fairly good business man and has money with which to start. His great drawback is an utter lack of sales mindedness and knowledge of modern merchandising methods. While he would be fairly good on the erection end, he would not make as good a salesman as one who had been trained as an automobile dealer.

"If a lumber dealer happened to be of the type and temperament who could absorb modern merchandising principles, it would be far better for him to finance

an entirely separate dealership rather than try to mix it in with his own operation. Lumber dealers who are unable to do this will be bypassed by other prefabricated home dealers in his area and will thus be left with a more limited business."

THE MANUFACTURER OF BUILDING MATERIALS AND EQUIPMENT

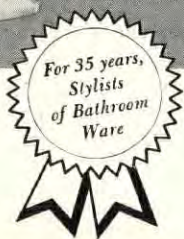
In general there is the feeling that manufacturers, particularly those with strongly established dealer outlets, will be tempted to protect the dealer. Also it is recognized that the position of the prefabricator as a quantity buyer places him in a forceful trading position. General opinion holds that as prefabrication grows, more and more manufacturers will sell direct.



Actual plant not shown

A measurable demand exists for integrated mechanical units combining bathroom and kitchen, which can be used in prefabricated houses and in conventional houses as well. There is no considerable feeling that many materials and equipment manufacturers will attempt to provide complete prefabricated houses, but as in the above example, the tendency may well be for them to develop more highly prefabricated house parts. It seems clear that the position of the established manufacturer will be one of caution, leaving it largely to the pressure of coming events to determine his ultimate policy. Of particular interest is the comment of a leading glass manufacturer who during the war period has turned over available plant facilities to the manufacture of prefabricated houses. Says G. P. MacNichol, Jr., Vice President of the Libbey-Owens-Ford Glass Company:

"Manufacturers of building materials undoubtedly will be affected by increasing prefabrication volume. However, until prefabrication has progressed considerably beyond its present stage of development, it can supply only a small fraction of the demand. We believe the local dealer must continue to be a principal distribution outlet for the manufacturer. It is possible that a manufacturer may enter the field of prefabrication, as we have, but entry into this field cannot be justified merely as a means to hold the sales volume on the manufacturer's regular products. Generally speaking, a prefabricating business must stand on its own feet."



Huge New Aircraft Parts Plant Installs Fixtures by ELJER

This enormous new aircraft parts plant, built for Defense Plant Corporation, has installed 900 Eljer lavatories, more than 1500 special type Eljer closets, and several hundred Eljer china sinks. This is another indication of Eljer's ability to meet schedules under today's conditions.

It is also an indication of American industry's recognition of the morale and sanitation values of adequate, modern plumbing facilities.

ELJER CO. • FORD CITY, PA.

Write for our Condensed Catalog

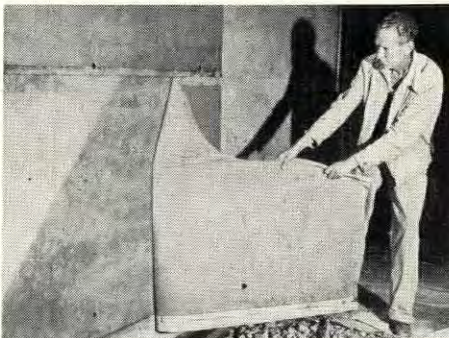
Building Reporter

(Continued from page 8)

dents, will not absorb moisture and is not in any way affected by water. Available in all regular widths.

Manufacturer: New York Wire Cloth Co., 500 Fifth Ave., New York, N. Y.

CONCRETE FORM LININGS strengthen concrete, improve finish, speed setting.



Name: Hydron.

Purpose: To provide efficient throw-away liners not using restricted materials.

(Continued on page 104)

THERE ARE OVER 5 MILLION ELJER FIXTURES IN USE

Today it's
EXTRA SPEED
that counts!



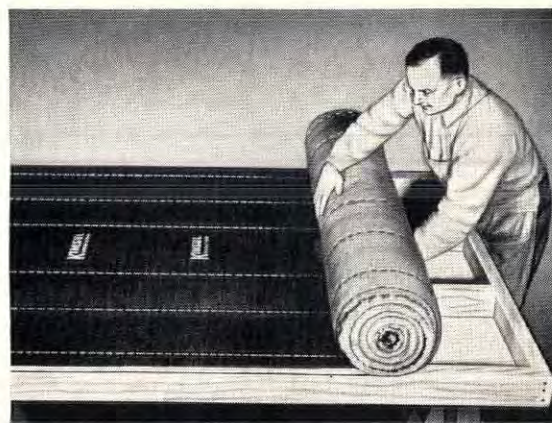
And here's **EXTRA SPEED** for wartime builders:

KIMSUL* Insulation saves valuable installation time!

★ This is a time when America is making every minute count. That's why wartime builders are quick to take advantage of the fact that the new giant-size KIMSUL* Insulation saves valuable time required for installation.

This flexible blanket insulation is now furnished up to 4 ft. wide and wider in some specifications by 250 ft. long. Photo at right shows how huge blanket of KIMSUL is applied right over face of framing members—covering entire prefabricated section in one rapid operation. Sheathing, flooring or interior finish is then attached to framing members directly over KIMSUL.

Users report that as much as 1,000 sq. ft. of construction can be insulated with KIMSUL in as little as 1 3/4 hours! And along with its greatly

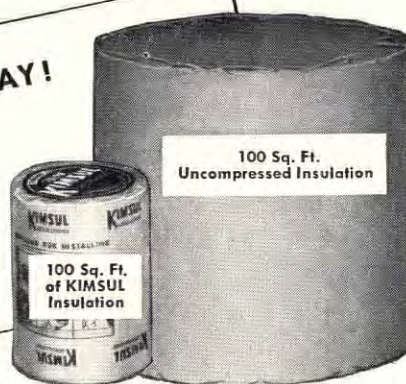


increased speed of installation, KIMSUL remains one of the most efficient insulations known. Conductivity is .27 Btu/hr./sq. ft./deg. F./in. (Peebles). Write today for all the facts!

*KIMSUL (trade-mark) means Kimberly-Clark Insulation.

KIMSUL SAVES EVERY WAY!

Different from all other insulations, KIMSUL comes in rolls compressed to 1/5th its installed length. As compared with all other insulations, KIMSUL requires only 1/5th as much transportation space...only 1/5th as much storage space...only 1/5th as much handling.



KIMBERLY-CLARK CORPORATION
Established 1872
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Neenah, Wisconsin

- ☐ Send a representative.
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Building Reporter

(Continued from page 102)

Features: Hydron form linings are light, easily handled, flexible for curved surfaces. Consisting of an absorptive material faced with fabric, they are applied to concrete forms by stapling. After concrete has been cast, forms are removed and fabric is peeled off, leaving a smooth surface that needs no brushing, scraping or other finishing operations.

Manufacturer: U. S. Rubber Co., Rockefeller Center, New York, N. Y.

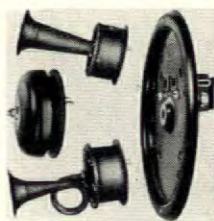
INDUSTRIAL SIGNALING system features interchangeable equipment.

Name: Uni - Pact Signals.

Purpose: To compensate for varying plant noises which rise to a point where installed signals will not overcome them, or drop so that signals in use are too loud.

Features: A variety of signals may be plugged into a uniform adapter plate. Thus, a horn or powerful trumpet may replace a bell, etc.

Manufacturer: Schwarze Electric Co., Adrian, Mich.



NEW PRODUCT LITERATURE

CONCRETE TECHNOLOGY. *Cement Dispersion and Air Entrainment in Concrete Pavement Construction*, by Edward W. Scripture, Jr., Director of The Master Builders Research Laboratories. Research Paper No. 39, 24 pp., 6x9, presents a detailed and partly technical account of the character, development and use of HP-7. HP-7 is essentially a combination of an air-incorporating agent with a cement-dispersing agent which, when added to a paving mix, is claimed to improve all the essential qualities of concrete—transverse strength, resistance to wear, freedom from scaling. Pamphlet includes reports of tests on various ordinary and special concretes at 3, 7 and 28 days. The Master Builders Co., 7016 Euclid Ave., Cleveland, Ohio.

ELECTRICAL. *Architect's and Engineer's Data Book, 1942-43*. Spirally-bound book, 178 pp., 9x11, divided into two sections.

The *Equipment Section* deals with electrical apparatus manufactured by Westinghouse including motors of all sizes, controls, switchgear, transformers, protective devices, circuit breakers, no-fuse load centers, panelboards, household equipment, mechanical equipment such as stokers, turbines, elevators. Gives descriptions, illustrations, applications, features, typical specifications.

The *Engineering Data Section* covers such information as suggested adequate standards for residence wiring, oil and air circuit breaker application data, transformer and motor application data, National Electrical Code application data, how to determine feeder sizes, voltage drop curves, commonly used symbols for one-line electrical diagrams, information on estimating costs. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

FIRE EXTINGUISHER MAINTENANCE. Folder, 6 pp., 8½x11, gives directions for inspecting, recharging and maintaining portable fire extinguishers. Pyrene Mfg. Co., 560 Belmont Ave., Newark, N. Y.

INDUSTRIAL CRAYON GUIDE. For a *Safechek* in *Modern Industry*. Timely bulletin, 14 pp., 7½x9, intended to help firms doing new types of work select the correct marker for the right job. Lists markers for practically every industrial need: crayons for use on all types of metal, glass, rubber, cardboard, wood; crayons for tailors, for railroads, for lumber and textile mills; carpenters' chalk, charcoal pencils. Information is also included on writing and drawing inks, modeling clay, mucilage. The American Crayon Co., 942 Hayes Ave., Sandusky, Ohio.

PLASTICS. *Cellulose Plastics in War and Industry*. Manual, 64 pp., 8½x11, of specifications, properties and application of sheets, rods, tubes, films, foils, molding materials, plasticizers, cements, dopes, glazing materials. Handsome presentation of information, hitherto unpublished, that may suggest new approaches and new directions for those who now seek, in plastics, an answer to the shortage-born problems that hamper America's production effort. Replete with illustrations, charts, tables. Bound into the book is an interesting outline of the company's history. Celanese Celluloid Corp., 180 Madison Ave., New York, N. Y.

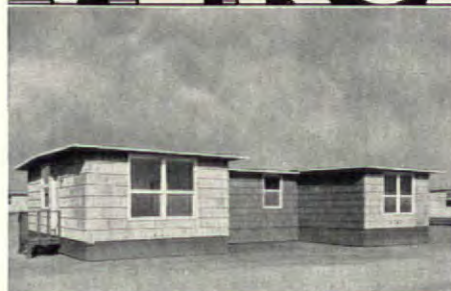
PLYWOOD. *Weldwood—the Modern Material of Infinite Application*. Fourteen-page presentation, 8½x11, stresses the versatility of Weldwood which has long been acclaimed for its strength. Scores of new applications are described—ranging from templates to aquaria, from boat hulls to dinettes and luxurious Teak Weldwood walls. Well organized, profusely illustrated. United States Plywood Corp., 616 West 46th St., New York, N. Y.

RESURFACERS. *Over the Rough Spots*. Catalog, 52 pp., 5½x8½. Tidy, carefully prepared array of technical data on Stonhard products designed to solve maintenance problems in connection with Underfoot Surfaces, Roofs, Sidings, Wall Surfaces, Waterproofing, Acid-Proofing, etc. Includes a description of Stonpach for quickly and permanently repairing floors subject to acids, oils, grease, moisture, heavy traffic. Stonhard Co., 401 North Broad St., Philadelphia, Pa.

WOOD BIBLIOGRAPHY. *Lumber Literature*, 55 pp., 4x9. Revised, up-to-date edition lists in 53 classifications nearly 300 pieces of literature, 131 of which are illustrated. Indexing by title, subject and publishing organization makes for convenient reference. Neat format. National Lumber Manufacturers Assn., 1319 Eighteenth St., N. W., Washington, D. C.

WOOD KITCHEN CABINETS. *Modern Hardwood Sectional Kitchen Units*. Folder, 8 pp., 8½x11, contains descriptions, drawings and photographs of a large number of I-XL wood cabinets. I-XL Furniture Co., Inc., Goshen, Ind.

VERSATILE



Exterior shingle type. Chesterton project
Plywood dormitories. Vallejo project



"Victory House" random board prefabrication
Exterior plywood type. Pacific Beach



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THE AMERICAN ROLLING MILL COMPANY



FORUM OF EVENTS

(Continued from page 4)

AWARDS

To CARLOS LAZO JR. of Mexico City, the Delano and Aldrich Scholarship, given to an outstanding young foreign architect for four months or more of travel and study in the U. S. Mr. Lazo was born in Mexico City in 1914, worked in the offices of the Palace of Fine Arts and of the Monument of the Revolution, studied at the National School of Architecture in Mexico City, has designed and built

several private houses, apartment houses and hotels.

The award, which has hitherto always been given to a Frenchman, was announced by Leopold Arnaud, Dean of the Faculty of Architecture at Columbia University, and Chairman of the Committee of Pan-American Affairs of the American Institute of Architects.

TRAVELING TOMES

The Public Library of Edmonton, Alberta, with one main library and one branch, found that it could not adequately service the scattered residents of the city, (Edmonton's area: equal to that of Buffalo, New York: population: one-sixth

as large as Buffalo's). Public Library officials considered a "bookmobile," found that the cost was prohibitive, then evolved a kindred idea: to convert a discarded street car into a traveling branch of the



Public Library. Street Railways mechanics put a 32-year old tram in running order. Street Railways carpenters remodeled the interior, built shelves to accommodate 2,000 books. After the last touches had been completed and additional lighting provided, the new "branch" made its maiden voyage in October, 1941.



The traveling library, servicing two districts both five miles from the main library, is staffed by five persons, lends out an average of 1,700 books per week, has registered 2,000 borrowers since it began service.

ANNOUNCEMENTS

As ever quick to present timely material, the Museum of Modern Art in New York exhibited *Useful Objects in Wartime*. The exhibition, which was divided into three sections, dealt with supplies necessary for adequate civilian defense, articles asked for by men and women in the Army and Navy, and household objects made of non-priority materials. Objects for civilians included baking pans made of fiber (cheap enough to be discarded after use), a plastic sink stopper, a pastel rug of cotton string, a cornnusk doormat and—boon to carless housewives—an open-top hamper cart for the free-wheeling of groceries.

The story of the men who built our huge industrial plants and Army cantonments, who constructed naval bases and airfields from Dutch Harbor to the Caribbean, is told in a series of bi-monthly radio programs entitled *Construction Goes to War*. The quarter-hour program, written, di-

(Continued on page 108)

OBTAINABLE NOW .. FIRE RESISTANT ARCHES & BEAMS

Above: "Unit" glued laminated beams in machine tool plant, Defense Plant Corporation.

Below: One of many airplane hangars built with "Unit" glued laminated arches.

Copyright 1943, Unit Structures, Inc.



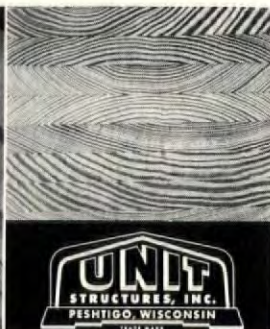
.. shop-fabricated for permanence, by scientific UNIT ^{GLUED LAMINATED} process

There is a vast difference between gluing on the job site by haphazard methods, and advanced techniques whereby "Unit" laminated arches and beams are glue-welded under rigid shop-control ... Practical for spans of 200 feet and over, "Unit" special equipment, trained personnel, and proved methods (US Patents Nos. 2177395 and 2172093) are now

serving leading war construction firms. Ample facilities for quick deliveries. Simpler detailing, faster erection save additional time. Engineering service available ... For quick action and permanence, work with established specialists (since 1934). Write, phone or wire UNIT STRUCTURES, INC., PESHTIGO, WIS. Plants at Peshigo and at Sayville, L. I., N. Y.

◀ New 12-page 2-color catalog ...

(also included in 1943 Sweet's), just off the press, illustrates every conceivable application. Deals with glued laminated construction exclusively. Functional designs and beautiful finishes, facts on fire-resistance are eye-openers. Ask for free copy on your letterhead.



THE UNWANTED STEPCHILDREN

You've never seen *lignin* . . . no one ever has. Lignin is the binding agent which gives natural wood its great mechanical strength.

But because it cannot be isolated unchanged, lignin has often been regarded as an unwanted stepchild.

Down in Mississippi there's another "stepchild," too . . . thousands of acres of second-growth timber, not commercially marketable as lumber. And yet from these lands come some of the most amazing materials ever produced . . . the *Masonite* Presdwoods.**

You see, Masonite *explodes* these hardwoods and softwoods, neither removing the lignin nor damaging the cellulose fibres of which wood is composed. The result is a mass of fibres of varying degrees of plasticity.

In this Masonite process the fibres are interlaced so as to provide equal strength in all directions. They are then welded together again under varying heats and pressures, using lignin's great bonding power to produce hardboards of different weights and densities.

Masonite Presdwoods—made in this way from ligno-cellulose fibres of varying degrees of plasticity—are suitable for many special purposes and uses.

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Naturally, the Masonite Presdwoods are not now readily available for civilian use. When Victory is won, Presdwood will again be ready for the homes you design. Masonite Corporation, 111 W. Washington St., Chicago, Ill.

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MASONITE

PRESDWOODS

THE LIGNO-CELLULOSE HARDBOARDS

FORUM OF EVENTS

(Continued from page 106)

rected and narrated by Hardy Burt, widely-known commentator on industry and the war, features "minute-messages" by top-ranking Government spokesmen, is sponsored by the Associated General Contractors of America.

The first issue of *Sweet's Catalog File for Product Designers* will be compiled and distributed early in 1943 by Sweet's

Catalog Service, division of F. W. Dodge Corp., will contain catalogs of manufacturers of materials, parts and finishes, and sections on manufacturing techniques and work equipment used by designers.

EDUCATIONAL

Instruction in the now all-important art of military and industrial camouflage is being given at educational institutions throughout the country:

► At Yale's School of the Fine Arts professional architects and engineers are learning how to disguise industrial areas so that they seem like residential sections when viewed from the air, how to camou-

flag airplanes by making them like ducks, dark on top and light beneath, how to hide shadows of buildings with long nets sloping from the roof.

► At Cooper Union precautionary camouflage, which includes the remodeling of old buildings and the erection of fake buildings and bridges, is being studied.

► At New York's City College 75 professors have gone back to school, are hiding toy soldiers behind bits of foliage, and in addition to their course in camouflage are taking refresher courses in technical and scientific subjects (navigation, physics, trigonometry, military personnel testing) to prepare themselves for the taking over of colleges by the Armed Forces.

To investigate the heat flow through wet building walls of various types the School of Engineering at Oregon College, Corvallis, in conjunction with the Oregon Chapter of the Committee on Research of the American Society of Heating and Ventilating Engineers, have instituted a research program which will be carried on in the domestic heating lab of the college under the supervision of Professor Earl C. Willey.

COMPETITIONS

To the top man in any Illuminating Engineering Course in U. S. and Canadian universities the F. W. Wakefield Brass Company of Vermilion, Ohio, is donating expenses of admission into the Illuminating Engineering Society, in an effort to bring the professional society in touch with the student.

The James F. Lincoln Arc Welding Foundation of Cleveland, Ohio, announced a new project — the first \$6,750 Annual Engineering Undergraduate Award and Scholarship Program. Its object: "to encourage engineering students to study arc welded construction so that their imagination, ability and vision may be given opportunity to extend knowledge of this method and thus aid the war effort and the economic reconstruction in the peace which is to follow." Its candidates: any resident engineering undergraduate student registered in any school, college or university in the U. S., or any cadet registered in the U. S. Military Academy, U. S. Naval Academy, and Coast Guard Academy. The awards will be made for papers describing the conversion from other methods to arc welded construction of parts of machines, complete machines, trusses, girders or structural parts.

PERSONAL

SUREN PILAFIAN announces a change of address to 112 Madison, Detroit, Ill.

ERRATUM

FORUM (December, p. 35) incorrectly referred to the Gulick-Thompson report as a WPB instead of an NRPB publication.



MASS PRODUCTION

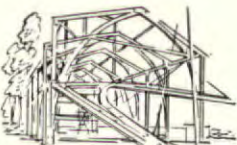
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152' "STEEL-STRENGTH" BEAMS OF WOOD AND LAUCKS GLUE



LAUCKS GLUE LAMINATED ARCHES FOR ARMY CHAPEL

TODAY—the building of wartime homes calls for speed, strength and durability.

Prefabricated Products Co. is meeting these needs with wood and Laucks Glues. In a model prefabricating plant using Laucks Glue guns, walls are glued to studding and plywood is end-jointed for a 1000-home project, speedily and economically.

Investigate how Laucks Glues and Resins can save time, money and critical materials on your job—in laminated arches or beams, in prefabricated and all types of dry-built construction with plywood and wallboard, in farm structures, etc.

For information, write Laucks where 20 years' laboratory research and practical experience guarantee the right use of the right glue.

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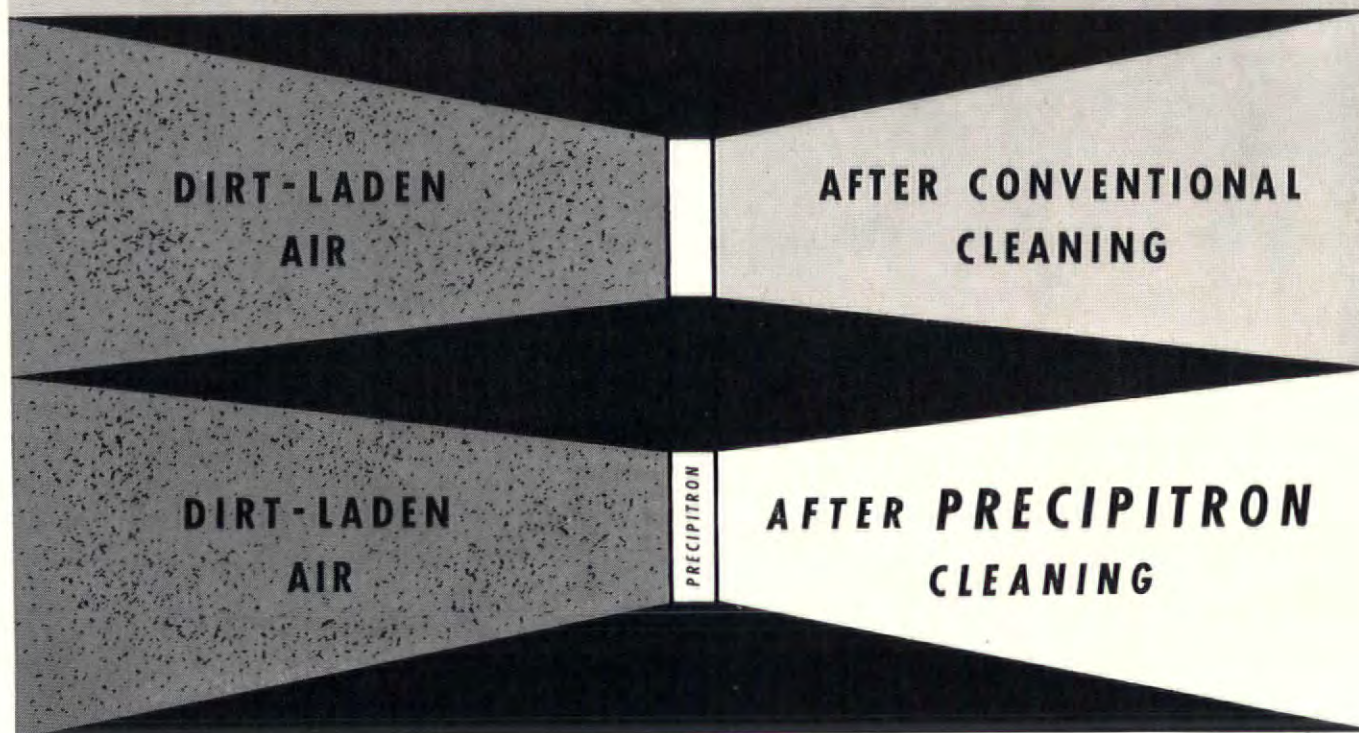
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**It removes the *dirt you don't see*, too...
90% of *all* particles down to 1/250,000 of an inch**

For every sizable speck of soot or dirt in the air there are literally thousands of smaller particles entirely invisible to the naked eye. These small particles are elusive fellows—less than 25% being “captured” by conventional air cleaning methods. And they can be a menace, too—particularly in industrial operations where clean air is a prime essential.

Precipitron, because it operates on an entirely different principle, removes 90% of *all* particles including those small as 1/250,000 of an inch. Dust, haze, and even tobacco smoke, disappear as if by magic.

The Precipitron is a simple device with no more moving parts than a storage bat-

tery. Hidden away in a ventilating duct, this Westinghouse electric air cleaner operates silently and efficiently. As each particle in the air stream passes through the Precipitron it is given an electric charge and then drawn off to oppositely charged plates. Since there are no filters to become clogged, resistance to air flow is negligible.

Today, Precipitron is enlisted 100% in the country's service. Its job is that of supplying electric air cleaning as an aid in speeding America's war production. For full information, write Westinghouse Electric & Mfg. Co., Edgewater Park, Cleveland, Ohio. *Plants in 25 cities, offices everywhere.*

*Trade-mark registered in U. S. A.

Westinghouse



Precipitron

BOOKS

(Continued from page 18)

been selected with such care that they come close to telling the story by themselves. The three shown on page 18, are typical of hundreds. The air view of Manhattan's "Golden Horn" needs no words to explain the results of unrestricted building on small plots. The old print is equally clear in its suggestion that artillery was a basic cause of the abandonment of the medieval fortress-city plan, while the view of old Stockholm (bottom) shows auto-

mobile traffic as a force of comparable potency. To tell this story in pictures literally every type of illustration has been used: there are photographs, old prints, contemporary cartoons, newspaper clippings, charts and plans. Arranged on large pages which are horizontal rather than vertical in shape, they create a certain visual excitement which is communicated to the ideas themselves.

The book is organized into some fifteen parts, the most important of which deal with dwelling, work, recreation and transportation. In most of these sections the treatment is historical as well as critical, an approach which is most valuable

in suggesting the complexity of the background against which planners must work. The nature of this background is indicated by the chapter headings: "What is the best size for a city?" "Skyscraper." "Housing on the wrong site," "How our cities lost their open spaces," "Urban problems and the layman."

In passing on from a description of urban problems to their analysis, the author makes extensive use of the studies of the C.I.A.M. (International Congresses for Modern Architecture), a group formed in 1928, with headquarters in Switzerland and a membership of architects from all over Europe. Among the activities was the preparation of plans of thirty-three large and small cities with a view to analyzing their characteristics. At the Fourth Congress, held in 1933, these analyses were summed up in a "Town Planning Chart" which forms the framework of Mr. Sert's book. The great richness of content, therefore, stems largely from the work of professionals throughout Europe. The author has fully acknowledged his debt to his collaborators.

The critical point in any study of large-scale planning inevitably hinges on economic factors rather than technology. It is fairly obvious that the advocates of ribbon developments, satellite towns and self-contained garden communities can argue with each other interminably over the merits of their respective schemes and that they will all get nowhere until some scheme for large-scale control of land is in operation. It is even more obvious that without controls over the size and location of industry the city and regional planner will operate in a partial vacuum: no planner can lay out a town until he knows how many people will find work in them. The great weakness of this book is that it has slurred over both points. There is, to be sure, a suggestion that property owners pool their equities, thereby creating larger land units, but there is no accompanying proposal for implementing this scheme. In view of the extremely intelligent and objective handling of the book it is most surprising to find the bases on which future planning will rest so casually treated. With this important reservation, the book remains a splendid job, and it is to be hoped that it will have the success it deserves.

NEW COMMERCIAL AND TECHNICAL DICTIONARY, Spanish-English. English-Spanish. About 45,000 words. 6x9. Thumb-indexed. \$10.

A valuable reference for the technician or business man who has occasion to deal with the Spanish-speaking countries. The dictionary was compiled by a Spanish engineer, and contains the words most commonly used by mechanical engineers, aviation and shipbuilding technicians, and workers in plastics, industrial chemistry, meteorology, etc.



Plan to Save Man-Hours in VERTICAL Handling of War Materials

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WATERFILM — THE FASTEST STEAMING BOILER on the market has proven its economy and efficiency of operation to American home owners and industrialists. They recognize the value of these features — Rugged Steel Construction which assures durability and efficiency of operation . . . Smartly Finished Jackets to please every type of home owner . . . Built especially for automatic firing with oil, gas, or stoker.

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PLANTS: JERSEY CITY, N. J. & DOVER, N. J.



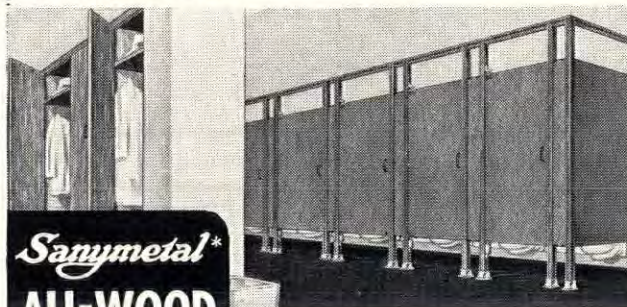
One
 time when a
 girl says
"Dammit"
 because she
 is a lady!



... and that's when she finds someone has skimmed on toilet room facilities . . . or permitted the use of makeshift, unsanitary toilet compartments.

Being a lady . . . she intensely resents having to loiter with toilet room "standees" . . . or submit to primitive privacy.

... and when she's "burning up", mister,—her production isn't!



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ALL-WOOD
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Compartments
 With Complete
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Providing adequate, modern toilet and washroom facilities helps forestall lost time, indispositions and fatigue due to irregular habits, and resentment—particularly among women workers. In planning industrial toilet rooms utilize these "ready" benefits of Sanymetal All-Wood Toilet Compartments and Sanymetal's 27 years of specialized engineering experience:

SAVE TIME. No need to work out a design. Sanymetal Engineers have worked out the most practical design with the most practical materials available.

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CONVENIENCE AND SANITATION are embodied in Sanymetal All-Wood Toilet Compartments in a degree unappreciated and unapproached by those lacking Sanymetal's 27 years of specialized experience in building toilet compartments.

ONE ORDER COVERS ALL MATERIALS for the complete installation—partitions, doors, posts, headrails, hardware, fittings.

COMES READY TO INSTALL. No time lost assembling materials.

Write for Bulletin No. 900. For fast action, see phone book under "Partitions" for Sanymetal Representative.

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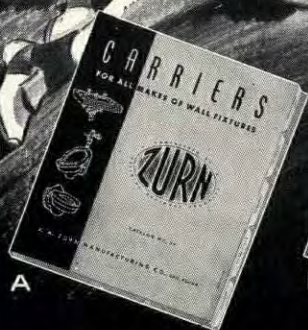
THE SANYMETAL PRODUCTS CO., INC.

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BUILDING • PLUMBING • DRAINAGE PRODUCTS

present may unfold a for your city!

A SITUATION confronting the American people today is the obsolete condition of our cities and towns. And the obsolete condition of your city or town is no exception! The blight of obsolescence has been no respecter of cities and towns. It holds all cities in its grasp! When the war is won, this condition of obsolescence will be no longer tolerated. We should recognize this fact now.

Our towns and cities have never adjusted themselves to automobile transportation, and the economic conditions, and living standards developed by the automobile. Now, air transportation may compel further changes. Rapid progress in sanitation, new materials, new methods of construction, and developments such as prefabricated housing are speeding up the rate at which obsolescence occurs. This obsolescence is most obvious, of course, in the blighted, close-in areas common to every city—areas that are incapable of yielding revenues adequate to pay taxes.

You can forget about the rebuilding of America's cities on a national scale. *Your own community demands of you a bold break with the present in order to plan a brighter future for your city.* The task confronting you and your talented fellow citizens is stupendous and breath-taking. The research and planning that must precede the rebuilding of your town or city requires your talented effort and that of other architects and engineers and professional town and city planners. Someone in your community must become inspired to undertake this work. Imagination, boldness, courage to sustain venture-some enterprise—these are the qualities of thought and action that will give proper direction to replanning and rebuilding your city.

Even a war economy places no limitation or restriction on imagination or the courage to sustain venturesome enterprise. The talented citizens of some communities are already engaged in conducting research, and planning a brighter future for their town or city. Indeed, their pioneering and experience offers guidance for those who have the vision, the trained ability, and experience to organize, and vitalize, and manage a replanning and rebuilding program for your community. The time in which to do this is already short and the responsibility of preparing actual rebuilding projects to provide employment in the post-war period increases day by day. Furthermore, the preparation of rebuilding projects will make it possible for government agencies, private industry and organized labor to work together and produce post-war prosperity and security.

J. A. ZURN MFG. CO.

Sales Office and Factory: ERIE, PA., U. S. A.

A—Zurn Engineered Carriers afford 4-Point Protection for wall fixture installations.

B—Zurn Roof Drains are available for every type of roof construction.

C—Zurn Floor Drains and Accessories meet every floor drainage requirement.

D—Zurn Plumbing Drainage Fittings include every item required for the installation of plumbing drainage systems.

Factual information on the many different phases involved in replanning and rebuilding an urban center may be obtained from many sources, among which are these: The National Resources Planning Board, National Planning Association, American Society of Planning Officials, Federal Housing Administration, which offers "A Handbook on Urban Redevelopment of Cities in the West," Federal Works Agency, and many others.

Zurn believes that it fulfills one of the responsibilities of leadership by pointing out the necessity of planning now a brighter future for your city. And through continuous research and engineering activity, Zurn is making it easier to build the city of the future. Perhaps, with the aid of information that we have acquired from organizations, commissions and agencies that are active in this work, you may be able to overcome inertia and indifference, and inaugurate a program. Such assistance is available to you, and you are invited to write for our portfolio entitled "A New Era for Building is Only Marking Time."



ENGINEERS in their specialized field are on the alert, researching, inventing, designing to meet new needs that urban reconstruction will require. They are making and testing one device after another in a continuous endeavor to improve building and plumbing drainage systems. Their job is to supply Engineered Protection for human health in modern structures. Not for one moment are they in any way neglecting the performance of a vital service to the winning of the war. Indeed, they are helping to speed the construction of war production plants and housing for war workers and ships to solve our transportation problem. But to neglect the development of new devices for a new era of building would be unthinkable. While at war, we should prepare for peace.

J. A. ZURN MFG. CO., ERIE, PA., U. S. A.

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Form No. 43-1

P. S. Please attach to your business letterhead

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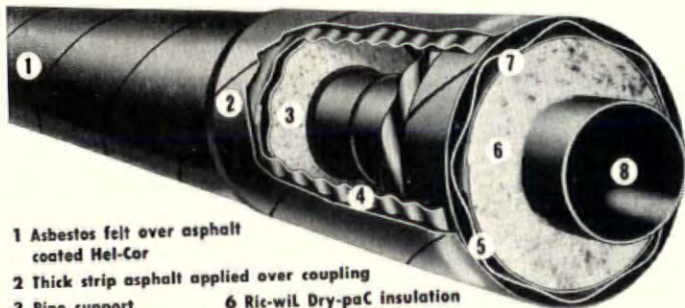
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—with the Bonds you buy today.

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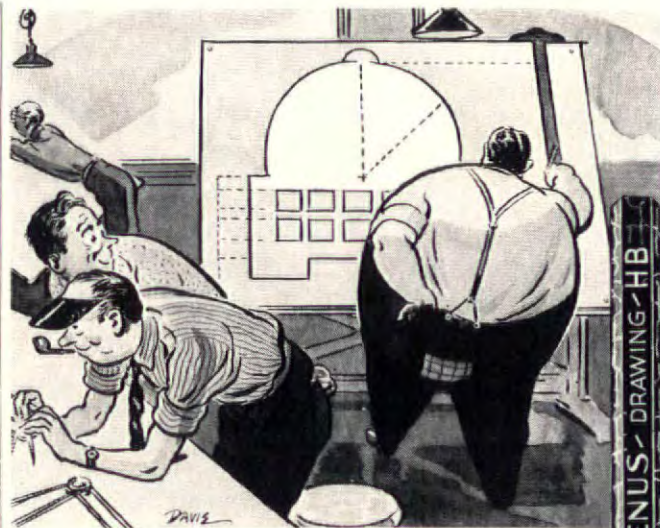
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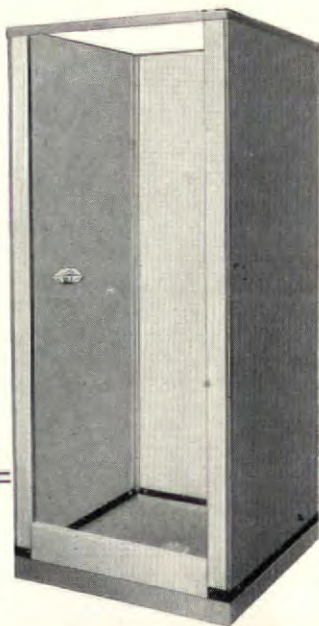
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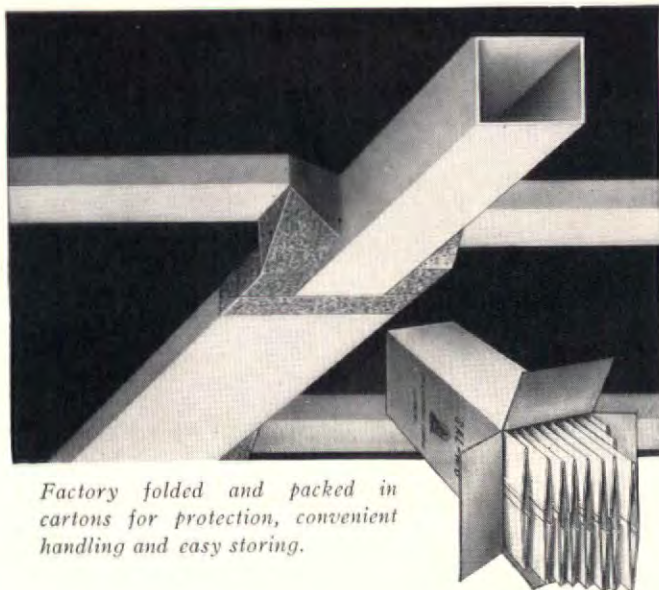
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**NEW NON-METALLIC MATERIAL
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who asked for it!



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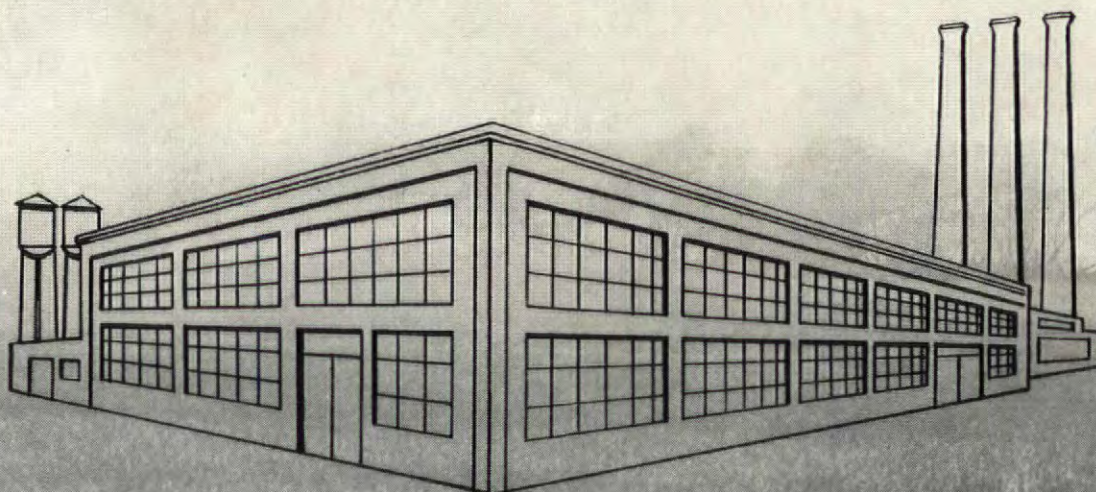
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FINISHED BY THE FIRST?



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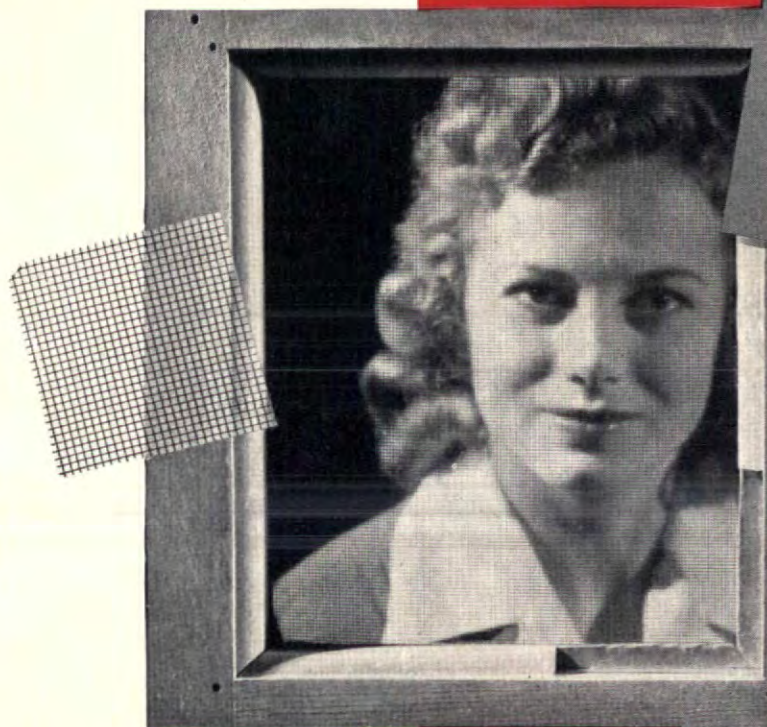


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WITH ATLAS HIGH-EARLY CEMENT
A UNIVERSAL ATLAS PRODUCT

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NON-SHATTERING PLASTIC GLAZING
materials developed by

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