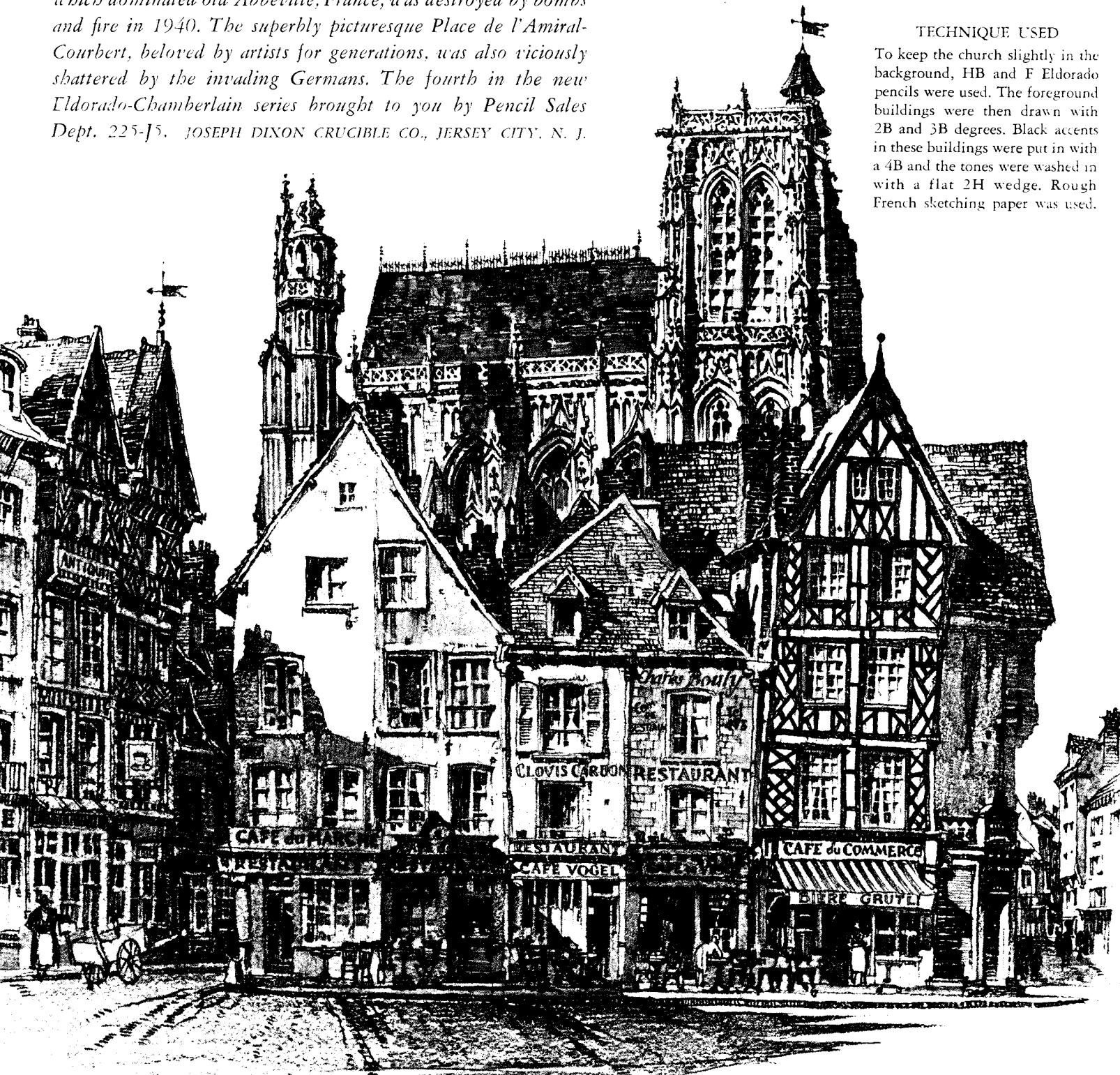


"SOLITARY AMID SILENT RUINS..."

One of the most exquisite late Gothic facades in the world distinguished the Church of St. Vulfran. This lovely structure, which dominated old Abbeville, France, was destroyed by bombs and fire in 1940. The superbly picturesque Place de l'Amiral-Courbert, beloved by artists for generations, was also viciously shattered by the invading Germans. The fourth in the new Eldorado-Chamberlain series brought to you by Pencil Sales Dept. 225-J5. JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J.

TECHNIQUE USED

To keep the church slightly in the background, HB and F Eldorado pencils were used. The foreground buildings were then drawn with 2B and 3B degrees. Black accents in these buildings were put in with a 4B and the tones were washed in with a flat 2H wedge. Rough French sketching paper was used.

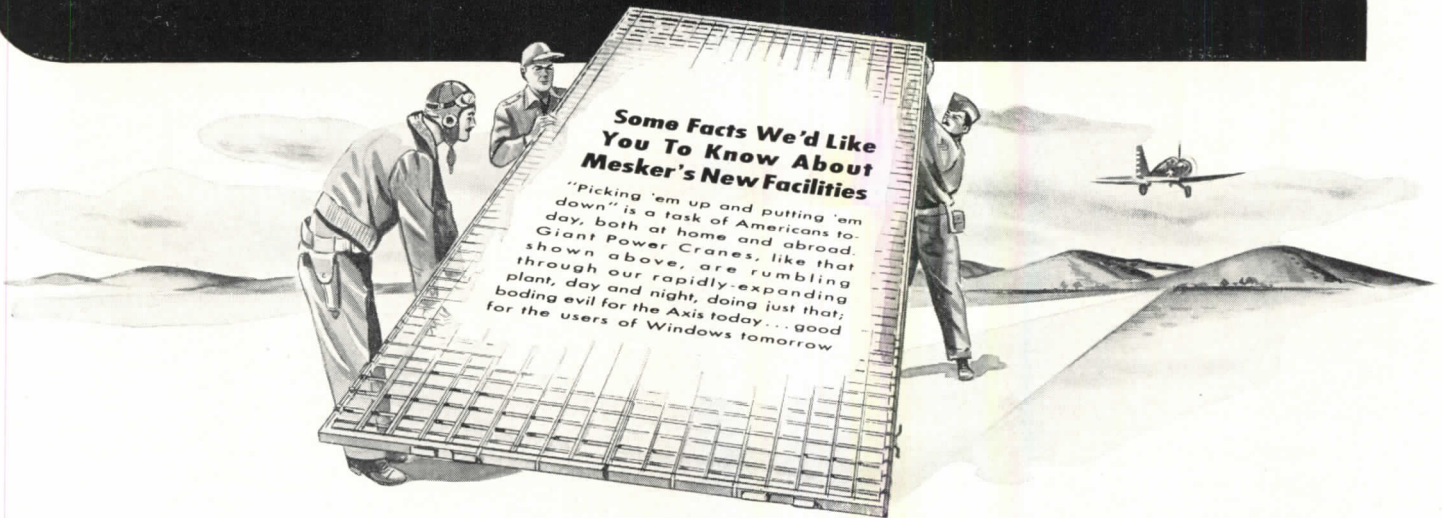


Samuel Chamberlain  
WITH DIXON'S TYPHONITE ELDORADO

CHURCH OF ST. VULFRAN - ABBEVILLE

**TYPHONITE**  
**ELDORADO**

EVERYTHING WE ARE DOING TODAY...



**Some Facts We'd Like  
You To Know About  
Mesker's New Facilities**

"Picking 'em up and putting 'em down" is a task of Americans today, both at home and abroad. Giant Power Cranes, like that shown above, are rumbling through our rapidly-expanding plant, day and night, doing just that, boding evil for the Axis today... good for the users of Windows tomorrow

**Mesker Engineers..the country over..**

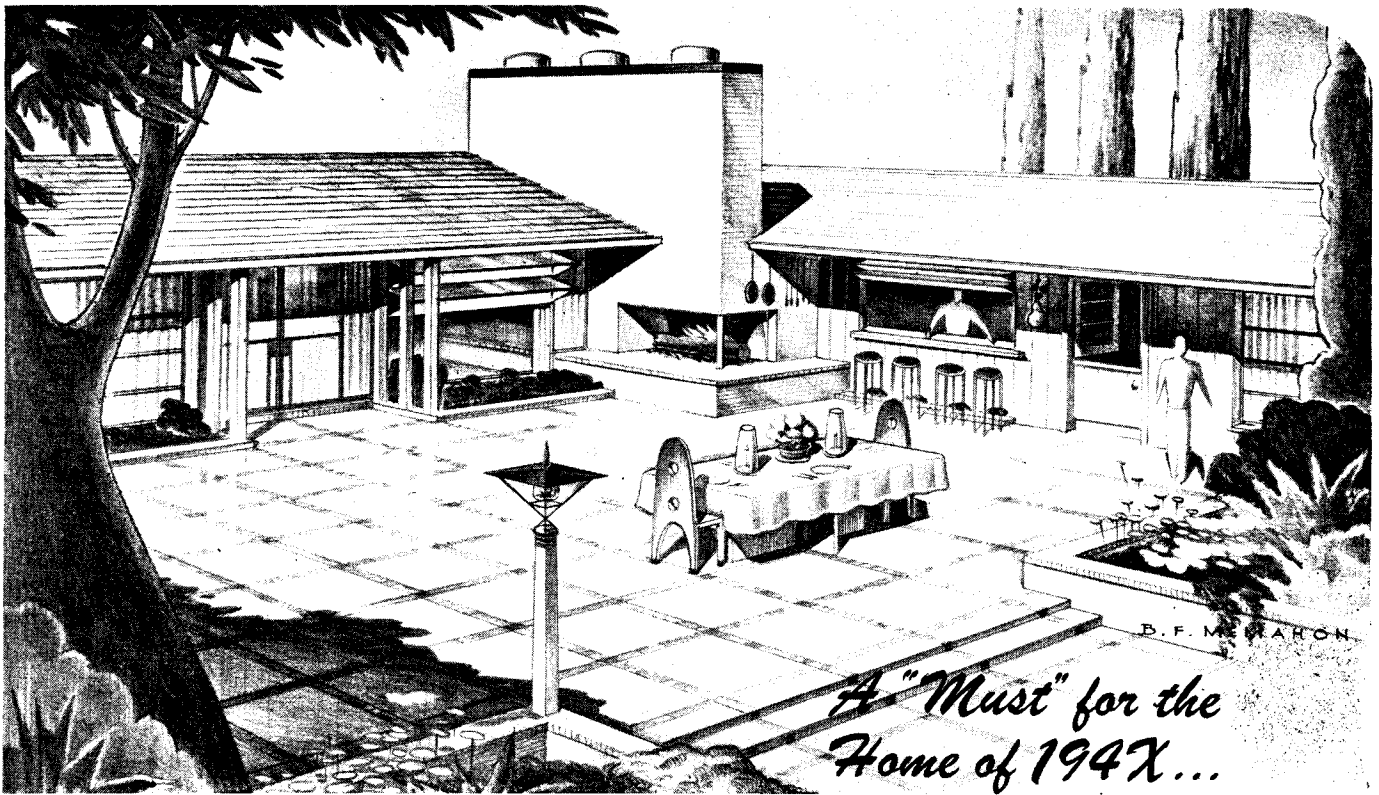
*Mesker*

424 SOUTH SEVENTH STREET •

**YESTERDAY AND TOMORROW**

CASEMENT WINDOWS • MONUMENTAL WINDOWS • INDUSTRIAL WINDOWS • SCREENS • INDUSTRIAL DOORS • DETENTION WINDOWS • REINFORCING MESH GRATING...plus... tomorrow... some other interesting new products!

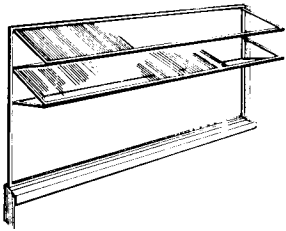
IS DESIGNED TO HELP YOU TOMORROW



*A "Must" for the Home of 194X...*

## MESKER METAL WINDOWS

*Weather-Conditioned*



Architect McMahon's Home of 194X above is an excellent example of the trend of the times . . . toward more and larger window openings. This is understandable, since *windows ARE cheaper than walls*. Further, properly Weather-Conditioned, their insulation values are high. For example, in a typical residence today, heat losses from conduction through walls are 27% . . . *only 28% through glass!* This is based on tests where "ordinary" windows . . . NOT Mesker Weather-Conditioned Metal Windows . . . were used. For the truly WEATHER-TIGHT window *in the future*, keep your weather-eye on The Windows OF The Future . . . *Mesker Metal Windows!*

### Do You Have Your "Red Book of Steel Sash?"

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.

**IMPORTANT!**  
Our warehouse stock of steel windows are now available to anyone without priority, as long as they last. Consult your Mesker Engineer.

**In War and Peace . . . at your service!**

# Brothers

ST. LOUIS, MISSOURI, U. S. A.

### TODAY

STEEL AMMUNITION CASES · PRE-FABRICATED STEEL AIRPLANE RUNWAYS · OIL AND WATER STORAGE TANKS FOR THE NAVY'S FIGHTING SHIPS . . . other products which necessarily must remain military secrets.

Here is  
 one man's answer to  
 the  
 question of

*Radiant heating for 2-story homes*

**BYERS  
 WROUGHT  
 IRON**

JOHN W. LINCOLN, Architect and Engineer

What an architect puts in his own home is always news—and in the case of the John W. Lincoln residence, Stonington, Conn., it takes on added interest. This house provides one architect's answer to a question many architects have asked: what about Radiant Heating for 2-story structures?

The residence is 2-story, 9-rooms, and was completed in the spring of 1942. Pipe coils were fabricated from Byers Wrought Iron Pipe: 700 feet of 1 1/4 inch, and 400 feet of 3/4 inch. These footages include all supplies and returns. First-floor coils were laid on a gravel bed, and topped with 3 inches of concrete; floor covering is asphalt tile. Second-floor coils are fast-

ened to ceiling joists, with insulation above. Heating boiler is stoker-fired hot water, with circulating pump.

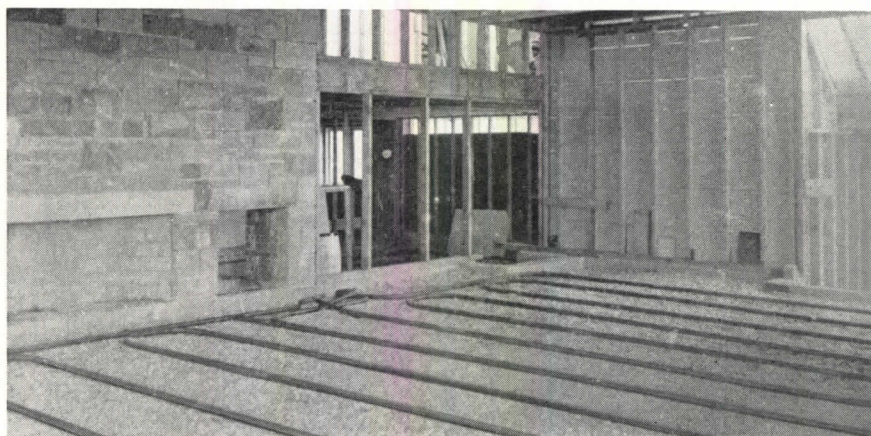
The unusually cold winter just past gave the system an immediate and severe test, with temperatures that dropped to 15 to 20 degrees below zero. Mr. Lincoln reports "entire satisfaction."

The steadily accelerating use of Radiant Heating has provided dozens of case histories that make it unnecessary to theorize about its advantages, its planning or its installation. Past experiences have also made it unnecessary to guess or gamble in selecting durable materials for the pipe coils. Byers Wrought Iron has served for many

years in applications where identical corrosive conditions existed, and its unusual durability is recorded in the files and in the minds of users. When you are thinking of Radiant Heating, think of Byers Wrought Iron.

Do you have our technical bulletin "Byers Wrought Iron for Radiant Heating Installations"? It gives you in condensed form a wealth of information on the calculation and installation of these systems. We will gladly send you a complimentary copy on request.

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



*Corrosion costs you more  
 than Wrought Iron*

**BYERS**  
 GENUINE WROUGHT IRON  
 TUBULAR AND HOT ROLLED PRODUCTS  
 ELECTRIC FURNACE ALLOY STEELS • OPEN HEARTH ALLOY STEELS  
 CARBON STEEL TUBULAR PRODUCTS

## RECORD

COMBINED WITH AMERICAN ARCHITECT AND ARCHITECTURE

VOL. 93

MAY 1943

No. 5

## CONTENTS

<b>BUILDERS OF REPUTATION</b> . . . . .	41
An Editorial . . . by Kenneth K. Stowell	
<b>PLANNED FOR THE PANORAMA</b> . . . . .	42
A large house that lives up to its site and its possibilities in providing for its owners' way of life. Richard J. Neutra, Architect; Van Evera Bailey, Supervising Architect.	
<b>COMPACT COTTAGE IN NEW ENGLAND</b> . . . . .	46
A thrifty use of space provides the utmost in convenience for modern living in congenial, traditional surroundings. Royal Barry Wills, Architect.	
<b>A VIEW DICTATES A DESIGN</b> . . . . .	48
Orientation, ventilation, and insulation are three especially interesting aspects of this ingenious small house. Pomerance & Breines, Architects.	
<b>THE REMEDY IS REMODELING</b> . . . . .	52
A mundane bungalow is given character and a new life by concentrating changes where they count. Bolton McBryde, Architect.	
<b>LIGHTING FOR EASY SEEING</b> . . . . .	54
Recent research provides a new point of view for architects and engineers who must provide proper modern lighting conditions in all types of buildings. By Matthew Luckiesh, D.Sc., D.E.	
<b>DESIGNED BY AND FOR DESIGNERS</b> . . . . .	60
Offices of William Wright Crandall, Industrial Designer, and J. Hamilton Coulter, Architect.	
<b>HOSPITALS</b> . . . . .	61
. . . <b>BUILDING TYPES STUDY NO. 77</b>	
1. <b>Planning of Postwar Hospitals.</b> By Isadore Rosenfeld	
2. <b>The Integrated Hospital.</b> By Isadore Rosenfeld	
3. <b>Hartford Hospital, Prewar and Postwar.</b> Coolidge Shepley Bulfinch and Abbott, Architects	
4. <b>Functional Planning of Hospitals.</b> By Louis Allen Abramson	
5. <b>St. Joseph's Hospital, Stamford, Connecticut.</b> Raphael Hume, Architect; Charles F. Neergaard, Consultant	
6. <b>Hospitals for War Workers</b>	
a. Marysville Community Hospital, Marysville, California. Douglas Dacre Stone and Lou B. Malloy, Architects	
b. Vallejo Community Hospital, Vallejo, California. Douglas Dacre Stone and Lou B. Malloy, Architects	
c. Humboldt, Tenn., Hospital. Dent and Aydelott, Architects	
d. Arlington Hospital, Arlington, Virginia. Buckler and Fenhagen, Architects	
7. <b>New Plan Standards for Hospital Nurseries.</b> Nursery layouts developed by the Federal Security Agency, U. S. Public Health Service; Marshall Shaffer, Architect, in cooperation with the Children's Bureau, U. S. Department of Labor	
8. <b>Mass Methods for Hospital Meals</b>	
<b>TIME-SAVER STANDARDS—Basement Waterproofing</b> . . . . .	79
<b>HARDWARE DESIGN AND ENGINEERING</b> . . . . .	84
A noteworthy installation at Washington's Hotel Statler.	
<b>THE RECORD REPORTS</b> . . . News from the field . . . . .	7
<b>POSTWAR NOTES AND PLANS</b> . . . . .	18
<b>REQUIRED READING</b> . . . Reviewed by Elisabeth Coit, AIA . . . . .	26
<b>FOR BETTER BUILDING</b> . . . News of materials, equipment and methods . . . . .	88
<b>INDEX TO ADVERTISEMENTS</b> . . . . .	130

## NEXT MONTH

"HOUSING and the Democratic Process," by Joseph Hudnut, is stimulating and thought-provoking in its point of view, and may bring up short some of housing's blithe assumptions. Mr. Hudnut, in this article, points up the lost-sight-of or never-considered questions that may well re-orient the thinking, the research, and the practice of all who look forward to providing homes for Americans in the postwar period . . . Our June Building Types Study digs into the small house, the market, the product, the merchandising, and the factors that will determine the who, what, why, when, and where of prefabrication. The approach in this study is realistic rather than romantic, and provides a clearer understanding of the factors, problems and trends in the construction of postwar homes. There is emphasis on the place of the architect and engineer in progressive home building techniques. . . . Paint has made astounding progress, and further developments are in sight. Just what these paints are, are doing, and can do, and how they can be best specified and used, is told in a thoroughly practical article for all architects and engineers. . . . These are but three of a dozen interesting features of our June issue.



Copyright 1943 with all rights reserved

F. W. DODGE CORPORATION

H. JUDD PAYNE, Vice President in charge of MAGAZINE DIVISION

EDITORS: *Editor-in-Chief*, Kenneth Kingsley Stowell, AIA; *Managing Editor*, Emerson Gohle; *Associate Editor*, Seth Talcott, AIA; *Associate in South America*, Edmund T. Whiting, AIA; *Art Director*, William K. Allen; *Desk Editor*, Florence A. van Wyck.

CONSULTANTS: *Industry relations consultants*: Thomas S. Holden. *Statistical consultant*: Clyde Shute. *Building economics consultant*: Norbert Brown. *Field research consultant*: Clifford Dunnells, Jr.

ARCHITECTURAL RECORD (combined with American Architect and Architecture) is published monthly by F. W. DODGE CORPORATION, 34 No. Crystal St., East Stroudsburg, Pa., with Editorial and Executive Offices at 119 West 40th Street, New York, N. Y. Thomas S. Holden, Pres.; Howard J. Barringer, Vice-Pres. and Treas.; Irving W. Hadsell, Vice-Pres.; Chauncey L. Williams, Vice-Pres.; Sanford D. Stockton, Jr., Secy.; Walter F. De Salx, Asst. Treas.; Edwin H. Freed, Asst. Treas. Member Audit Bureau of Circulations and Associated Business Papers, Inc. ARCHITECTURAL RECORD is indexed in Reader's Guide, Art Index and Industrial Arts Index. Subscription rates: United States and Possessions, Canada, Cuba, Mexico, Central and South America, \$3 the year, \$5 for two years, \$6 for three years; elsewhere, \$5 the year; single copy, \$1. Circulation Manager: A. L. Erickson. Every effort will be made to return material submitted for possible publication (if accompanied by stamped, addressed envelopes); but the editors and the corporation will not be responsible for loss or damage. Other Dodge Services: REAL ESTATE RECORD AND BUILDERS' GUIDE, SWEET'S CATALOG FILES, HOME OWNER'S CATALOGS, DODGE REPORTS, and DODGE STATISTICAL RESEARCH SERVICE.

# NEW NAVAL MEDICAL CENTER

where

**WATROUS FLUSH VALVES**  
are playing their part in the  
efficient operation of this  
great institution



Naval Medical Center, Bethesda, Md. Designed by Navy Department, with Paul P. Cret as Consulting Architect. Consulting Engineers: Moody & Hutchison. Plumbing Contractor: Standard Engineering Co.

OFFICIAL U. S. NAVY PHOTOGRAPH

**I**N the first three months of fighting in the Solomons, it is reported that the fatalities among the wounded were less than 1% of the Navy and Marine casualties.

This is striking evidence of the really outstanding record being made by the medical service of the Army and Navy during this war.

Washington headquarters for the Naval medical service is the new Naval Medical Center at Bethesda, Maryland, pictured here. The beautiful, well-equipped buildings

which house this center indicate the excellence of functional design that forms an inherent part of Navy building construction.

The Imperial organization is proud of the fact that Watrous Flush Valves are playing their small, but important part in the efficient operation of this great institution.

**THE IMPERIAL BRASS MFG. CO., 1240 W. Harrison St., Chicago, Illinois**



## HERE'S SIMPLIFIED SPECIFICATION DATA on Flush Valves for Wartime Projects

*This bulletin provides:*

- ✓ Information on Watrous "V" Flush Valves which are available for essential wartime construction.
- ✓ A simplified reference chart which shows the proper flush valve combinations to use to comply with War Department specifications.

Write for your copy, or see the 1943 Sweet's Catalog File, Section 27, Catalog No. 39.

# Watrous Flush Valves

## WASHINGTON NEWS

By J. MAXWELL DICKEY

Getting Materials Under CMP Regulation No. 6 • Manpower Freezing Headaches • Adjusting Construction Contracts • New Life for National Resources Planning Board?

THE ALMOST forgotten construction regulation under the Controlled Materials Plan is again just about ready to burst into bloom. Draft copies have been circulated in WPB for final comments and suggestions. Officials are now confident that CMP Regulation No. 6 will soon be formally released.

There does not appear to be anything in the new regulation very different from provisions that appear in all of the other CMP orders. Prime consumers will have to apply for allotments of controlled materials immediately after filing their applications for authority to begin construction. Sub-contractors or secondary consumers will make their allotment applications when the prime contractor requests them to apply. Tight restrictions on the allotments of carbon steel and wrought iron as well as aluminum and copper will prevail. Alloy steel may be listed with no break-down required.

Under present plans a controlled material required for an authorized construction project may be ordered prior to receipt of an allotment if delivery can be made before July 1. In such a case, however, the tentative Construction Regulation states that all other existing Priority Regulations and Orders will govern. Even though controlled materials may be obtained without an allotment, any authorized CMP order will take preference.

CMP No. 6 will also cover purchases of second-hand materials inasmuch as all such purchases must be shown and any allotments already made will have to be adjusted according to the amount of used controlled materials purchased. It is this section that has caused much of the delay in issuing the regulation.

The new regulation will provide for all types of construction and will assign the correct procedure necessary for a specific project. Form CMP L-127 will be used for allotments of materials for a project costing less than \$10,000. War Housing is divided into

two classes: (1) Privately owned; (2) Publicly owned. For authority to construct war housing privately owned, PD-105 and 105-a must be filed. Form P-55b must also be filed in the local FHA office. Application for controlled materials will be filed on Form CMP H-1, a copy of which must also be filed with the local FHA office. For publicly owned war housing, Form P-19-h must be used in applying for authorization to construct. CMP H-1 will be used for obtaining CMP allotments. The CMP H-1 form must also be filed with FPHA. For publicly financed war housing conversion, CMP H-1 will be used. For privately backed war housing conversion, a letter to the Construction Division of WPB at New York is all that will be required. Construction work for the Army and Navy has not yet been settled as far as the new regulation has been formulated.

Basically, CMP Regulation No. 6 is a procurement procedure, and the tight provisions of L-41 will still govern what materials may be obtained for construction projects. One key man in the CMP section of WPB

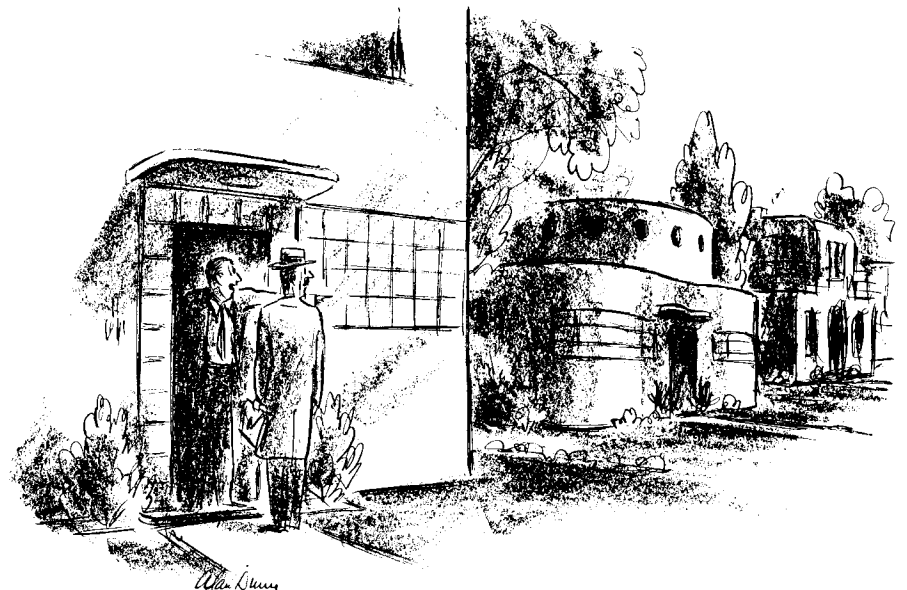
pointed out that designers should learn what CMP is and how it works because many critical components that ordinarily may go into a construction project may now be impossible to obtain.

### Newest and Toughest Industrial Headache

The biggest problem in the war effort today is the critical manpower situation. Architects, engineers, and other designers or construction men engaged in essential activities such as war housing and ship-building are among those affected by the new regulations issued by the War Manpower Commission.

Thus far in the wartime industrial picture we have been faced with three major production barriers. First there had to be a conversion from a peacetime industrial machine to one geared for total war. This was especially difficult because of the gigantic size of our production capacity. The "Business as Usual" mental complex also had to be overcome. Then, when the conversion problem was pretty well licked, business, particularly in the construction field, found itself running out of necessary materials. After various priority plans had been tried without success, the Controlled Materials Plan finally was devised. Ap-

(continued on page 10)



"After the second house beyond the polystyrene you'll come to a two-story phenol-formaldehyde—that's it."

—Drawn for the RECORD by Alan Dunn

# A

## Speaks of Oil Burning



**Charles F. Neergaard** is an expert on hospital planning and equipment and has acted as consultant on many of the country's finest hospitals, including the St. Joseph's Hospital in Stamford, Connecticut, published in this issue. Mr. Neergaard reviewed his experiences with oil burning systems about two years ago, and today he comments on hospitals of our post war era.

**I**N September, 1940, Mr. Neergaard said, "A hospital should be essentially a clean, quiet building. The use of oil burners eliminates dust and noise which inevitably accompanies the delivery of coal and the removal of ashes. The comfort of the patient demands a reliable and properly controlled system of heating. It has been my experience and that of the engineers with whom I have been associated that oil burning systems used in hospitals have proved dependable and efficient and where the Petro equipment has been installed it has given excellent performance in every respect."

Today Mr. Neergaard says,

"We are learning more every day about the hospital of the future, its functional planning and the inter-relationship of services and workability. We are studying the ven-

tilation, lighting and heating of the hospital, its operating facilities and patient accommodations; also the more practical aspects of public and private financing for health-care in cities and smaller communities, because the demand for new structures will be widespread.

"My opinions on oil burners have not changed. The use of oil has now given way to war requirements, but in our postwar world when equipment is again available, oil burners in hospitals will provide essential comfort, economy of performance, and quiet, clean operation.

"In the recent installation of Petro equipment in the St. Joseph's Hospital, the architect, the engineers, hospital officials and myself were well pleased with its results."



# PETRO

Cuts Steam Costs





# Hospital Expert

## Systems for the Hospitals of the Future

### Based on His Experiences of the Past

Because Mr. Neergaard is a leader in his field, his thoughts about the post-war developments in that field are probably similar to the advances contemplated by other experts for their various fields of future construction.

Practical vision of this kind is a challenge to every organization making building equipment or accessories. The challenge was anticipated and accepted by Petro; it is guiding our engineers and our research.

Petro's expansion and conversion to 100% war production has been achieved and is maintained without seriously curtailing our research and improvement program; in some respects that program has been benefited.

Much helpful knowledge already has been gained from Industry's war effort. Petro systems designed and installed for normal times have carried terrific overloads month after month. Such conditions telescope time for research engineers.

Each month of such operation provides data and observations which would require years of peace time to equal. Similarly, our manufacturing processes on war material have developed much that will be directly beneficial when large scale production of Petro oil burning equipment is resumed.

Because no changes in Petro equipment are ever made until ample proof of betterment is established, no specific report or prediction can be made now. But when the forward looking architect, engineer, or builder is once more free to build the "structure of the future", he can be sure that the Petro oil burning equipment which will be offered for his consideration will deserve a place in his better building.

And at that time, qualified Petro engineers will be available to consult and cooperate on the selection, specification and installation of oil-firing equipment that will squarely meet the future's standards of operating efficiency.



### **OIL IS AMMUNITION USE IT WISELY**

Full data on Petro Industrial Burners are in our Catalog in Sweet's—and in Domestic Engineering's—Catalog files, or we will gladly send copies on request.



## **PETROLEUM HEAT AND POWER COMPANY**

**STAMFORD**

—Makers of good Oil Burning Equipment since 1903—

**CONNECTICUT**



# **PETRO**

**Cuts Steam Costs**



(continued from page 7)

parently CMP has smoothed the flow of vital materials to necessary war producers. Now industry is confronted with a new bottleneck—the manpower shortage, becoming increasingly dangerous with alarming speed.

Several voluntary plans designed to remedy the growing mal-labor practices have been tried unsuccessfully. Thirty-five industries, including the construction industry, have been declared "Essential Activities." One of the most difficult manpower problems is job-hunting.

On April 8 the President issued his now-famous "hold - the - line" order. While the executive action was aimed primarily at stabilizing wages and living costs, it served also as an ultimatum to keep people in their jobs if they are essential to the war effort. Carrying out the terms of this order, WMC issued regulations to prevent employees engaged in an essential industry from leaving that job for another which offers a better wage.

The new WMC regulations do not freeze a worker in his job. They do go a long way toward stabilizing wages, in that a worker whose pay is frozen either by the War Labor Board or by the Treasury no longer can shift from one job in an essential industry to another simply in order to increase his income.

#### Renegotiation of Construction Contracts

More praise and criticism have been heaped on the renegotiation of contracts with the government than on almost any other single government wartime control. While much of the critical slurrage has been without basis, there is a lot of room for honest and constructive criticism.

The various Price Adjustment Boards handling renegotiation of war contracts originally focused their attention on ordnance, aircraft, ship-building, and similar war equipment contracts. The review of construction contracts is just beginning. Large amounts have been found to be excessive profit margins in many construction contracts.

Price Adjustment Boards have now gained cost experience because of the renegotiating of hundreds of contracts. Profiting by this experience,

some of the government agencies coming within the authority of the Renegotiation Act have established a method by which contract prices are readjusted from time to time as the work under the contract progresses. A definite contract price is agreed upon between the contractor and the government with the provision that such price will be subject to review at the end of a certain specified period of time. Usually this is based on three or four months, at the end of which period a complete analysis is made as to the contractor's profit picture. If it is shown that no excessive profit has been made at the original price, the agreement will be continued for an additional three or four month period. If, at the end of any period it is shown that an unreasonable amount of profit is being made, there will be a downward price adjustment. The advantage in this new pricing method is that the contractor may retain all agreed funds with no refund needed.

#### National Resources Planning Board May Live

Administration leaders have been quietly circulating among members of the Senate with a view toward establishing a new lease on life for the National Resources Planning Board. While the House eliminated the entire amount approved by the Budget Bureau, \$1,400,000, for the Board's continuation during the coming year, a strongly backed White House compromise in the Senate seems assured of getting through. Opponents to the Board's now famous "cradle to grave" report will attack the agency on the Senate floor, but the compromise probably will pass.

★ ★ ★

#### METAL WINDOWS RESTRICTIONS REMOVED

Restrictions on the sale and delivery of completely fabricated metal windows in distributors' and manufacturers' inventories were removed with issuance of Limitation Order L-77 as amended. Heretofore a rating of A-10 or higher was required for sale or delivery of these products. The amended order also changes the basis for manufacture of such win-

dows. Previously they could be produced under a preference rating of better than A-2. Hereafter a rating of AA-3 or higher will be necessary. This change brings the order in line with present rating patterns. In addition, the amended order takes cognizance of the fuel shortage by permitting the manufacture, without a rating, of metal storm windows from material partially fabricated prior to the issuance of the new order. The existing regulation, that deliveries of material for manufacture into metal windows can be made only under the Production Requirements Plan, is eliminated.

#### "COMMAND CONSTRUCTION" CATEGORY ENLARGED

The category of "command construction" as defined in Priorities Directive No. 2 has been enlarged by an amendment to include the remodeling of buildings ordered by either the Chief of Staff, U. S. Army, or the Chief of Naval Operations, U. S. Navy, provided the total estimated cost of all materials to be incorporated into each structure is less than \$10,000, WPB has announced.

In addition to the type of project added by this action, "command construction" includes the following types of construction to be built under contracts let by the Corps of Engineers or the Bureau of Yards and Docks: airfields, military housing, alien housing, facilities for the repair or manufacture of finished items of munitions, having a value when completed of less than \$500,000; overseas or theater-of-operations construction; seacoast fortifications, ports and depots, camouflage and other passive defense projects (whether or not owned and operated by the Army and Navy), and emergency flood control projects having a value of less than \$100,000.

The amendment takes effect immediately.

#### FIRST QUARTER CONSTRUCTION CONTRACTS

Construction contracts awarded in the 37 eastern states during the first quarter of this year reached a total of \$1,083,876,000, according to the F. W. Dodge Corp. While this was a

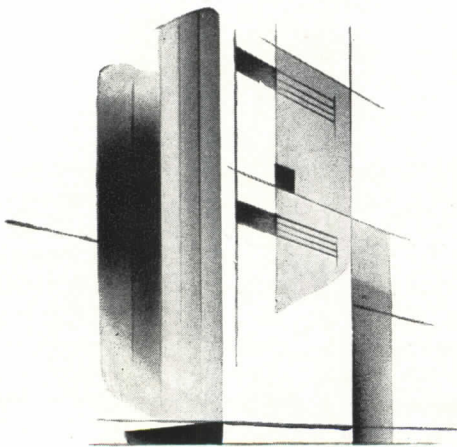
(continued on page 12)



**At Every  
Architect's  
Command . . . A. H. I. L.\***

**A**IR CONDITIONING by Worthington! For your big industrial and commercial installations, of the types Worthington has installed in the bomber plants, the engine-test stratosphere chambers, and hush-hush projects that will become headline news only after Hitler is licked. For your retail shops and remodeling jobs, the new streamlined Worthington Air Conditioning that springs brand new from the designers' boards. With the war-impelled demand for advanced engineering behind it, Worthington has moved up in Air Conditioning to where the **WORTHINGTON** name identifies equipment on which the architect and engineer must be informed.

*\*After Hitler Is Licked*



Our engineers will be glad to collaborate in any advanced planning to which their specialized knowledge can make a useful contribution. Worthington Pump and Machinery Corporation, Harrison, N. J.



CA 3-26

*Air*  
**WORTHINGTON**  
*Conditioning*

**AND WORTHINGTON REFRIGERATION**

(continued from page 10)

decline of 20 per cent from the high record total of the first quarter of 1942, it was slightly in excess of 1941's first-quarter total.

Non-residential building contracts declined only 7 per cent in dollar volume, as compared with the first three months of 1942. Hospitals, social and recreational buildings, and miscellaneous war buildings increased in volume. Industrial plant contracts continued in very large volume compared with peacetime records; they amounted to \$224,536,000, a decline of only 18 per cent from the first quarter of last year.

Residential building contracts, amounting to \$275,893,000, were down 44 per cent; the decline in number of new dwelling units was 36 per cent. Within the residential classification apartment building contracts, amounting to \$95,697,000, were more than double the amount recorded in the first quarter of 1942, indicating something of a shift in the make-up of the war housing program. Heavy engineering contracts (public works and

utilities) were down only 7 per cent in dollar volume as compared with the first quarter of 1942.

## COST OF BUILDING UP

The cost of building a standard 6-room frame house rose 0.6 per cent during February, the result of a 0.3 per cent increase in the price of materials and a 1.2 per cent rise in labor rates, according to a recent report of the Federal Home Loan Bank Administration. February's index of total costs for the structure was 3.5 per cent higher than that of February, 1942. During the twelve months' interval, materials prices rose by 2.2 per cent while labor rates went up 6 per cent. The cost of wholesale building materials, as reported by the Department of Labor, increased by 0.4 per cent in February—to an index of 123.1 as compared with 122.6 in January and 122.9 in February, 1942. Lumber was the only commodity that showed as much as a 1 per cent advance in cost during February.

## CONSTRUCTION DECENTRALIZATION ORDER INTERPRETED BY WPB

In delegating to Regional Offices the power to authorize the beginning of certain types of construction costing less than \$10,000 (see ARCHITECTURAL RECORD, April, 1943, pp. 10, 12), WPB did not ease in any respect the restrictions which had existed previously in regard to construction of this kind.

The order, which became effective March 8, was strictly one of decentralization, and in no way implied any relaxation of wartime construction restrictions. This was emphasized by WPB officials in a recent release because the order has been widely misinterpreted.

The decentralization brought about by the order should result in considerable time-saving in the granting of preference ratings, since in the past applications to begin construction of this kind had to go to WPB national headquarters. In delegating this authority to the field, WPB acted only

(continued on page 14)

## When You Come To Frying Equipment...SPECIFY



For Appetizing, Golden-brown Fried Foods  
WITH Genuine Economy

★ **REDUCES COST** — The modern construction and automatic Gas-Heat control of the PITCO FRIALATOR eliminates fire hazard, saves the chef valuable time, and reduces fuel cost. It prevents the destruction of food and fat through uniform temperature control and insures the elimination of burned sediment or particles of food which fall below the heating tubes into the cool zone. The cooking fat is kept clear and clean and can be used over and over again. Fat Cost is a primary factor in fryer operation. It exceeds the initial cost, interest and depreciation on the equipment, and fuel cost by a wide margin. You can enjoy the many advantages of a PITCO FRIALATOR and save enough on your fat bill alone to pay for the machine in a very short time.

★ **IMPROVES QUALITY** — The PITCO FRIALATOR sanitary process always produces the finest in delicious, crisp, golden-brown foods, retaining all of their natural sealed-in flavors. You absolutely cannot receive burned sediment and black carbon specks in a FRIALATOR nor have the taste of one food imparted to another.

★ **SPEEDS SERVICE** — Modern PITCO FRIALATORS are Gas-Heated with automatic thermostat control. Heat is applied through heavy baffled steel tubes which have a large upper area of heat-transmitting surface evenly distributed. These tubes pass directly through the center of the kettle near the surface of the frying fats, where the heat is most needed, directly above the sediment or cool zone. This patented feature of applied heat in the art of deep fat frying produces quickly the desired degree of heat which is automatically maintained during busy periods.

★  
**J. C. PITMAN & SONS, Inc.**  
711-719 Broad Street, Lynn, Mass.



RANGE UNIT

Do Your Part—  
Conserve

FAT  
•  
GAS  
•  
SPACE  
•



STANDARD UNIT

Bring VICTORY closer by buying  
MORE War Bonds and Stamps

PITCO FRIALATORS Are Manufactured in Various Sizes

for All Purposes

MODEL	HEIGHT	WIDTH	DEPTH	SIZE OF FAT CONTAINER	FAT CAPACITY
No. 10 Counter	17"	12 1/4"	20"	10" x 10"	15 pounds
No. 10 Leg	36"	12 1/4"	20"	10" x 10"	15 "
No. 14 Round	34"	16 1/2"	30 1/2"	14" Dia.	34 "
No. 14 Square	34"	16 1/2"	30 1/2"	14" x 14"	31 "
No. 18 Round	34"	20 1/4"	36"	18" Dia.	68 "
No. 18 Square	34"	20 1/4"	36"	18" x 18"	64 "
No. 20 x 20	34"	23"	38"	20" x 20"	95 "
No. 24 Round	34"	27 1/2"	42 1/2"	24" Dia.	125 "
No. 24 x 24	34"	27 1/2"	42 1/2"	24" x 24"	160 "
No. 24 x 34	34"	37 1/2"	42 1/2"	24" x 34"	250 "
No. 24 x 34—HD	44"	50"	48"	24" x 34"	290 "
No. 24 x 54—HD	44"	70"	51"	24" x 54"	485 "

Leading Installations Prove the PITCO FRIALATOR Superiority



Philip Will, Jr., A. I. A., and a plywood control part for a bomber. Mr. Will is a member of Perkins, Wheeler and Will, known particularly for their interesting, original residences. Most recently, their new Crow Island School at Winnetka, Illinois, has attracted wide attention for its fresh solutions to many school problems.

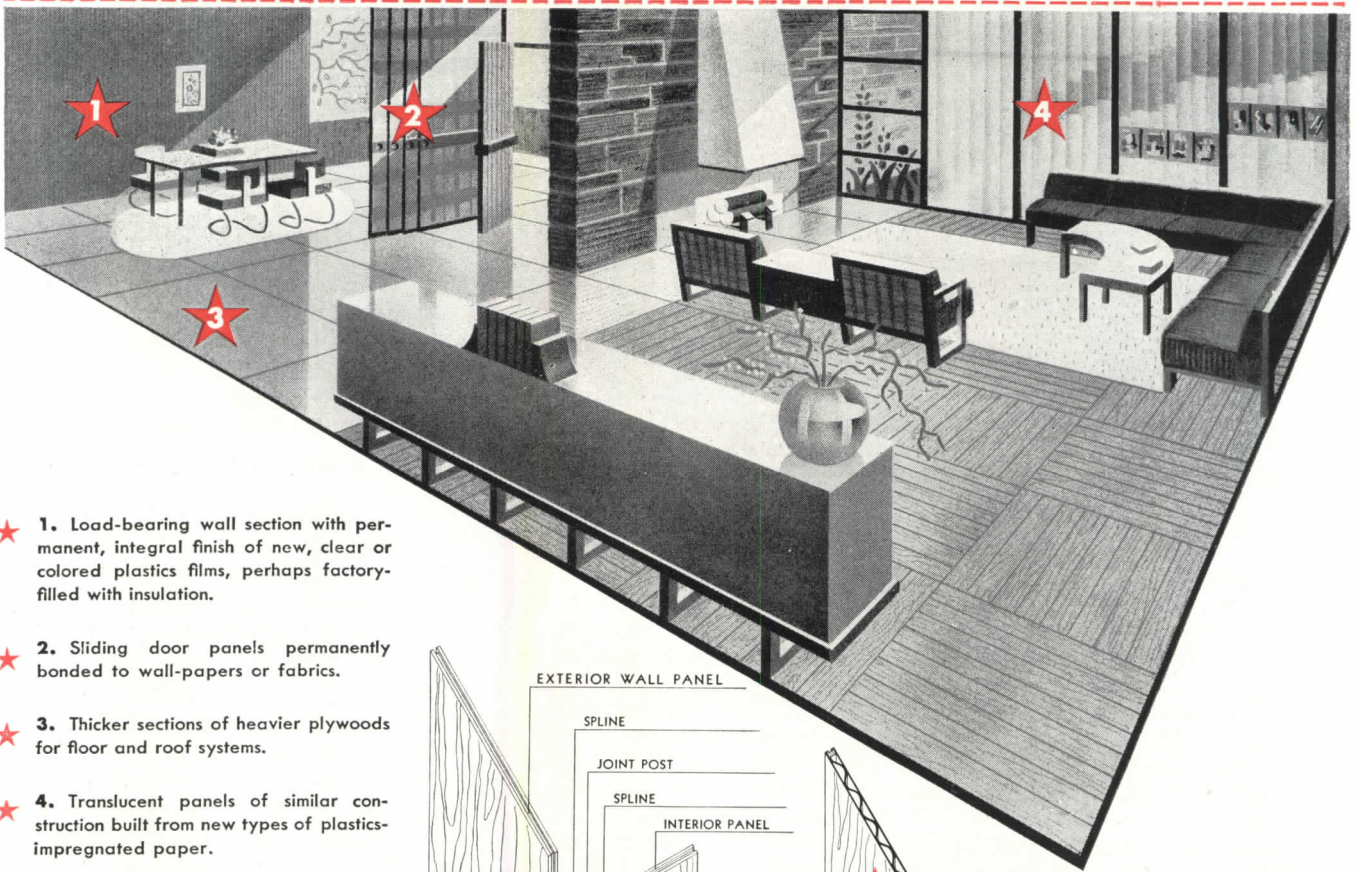
## FROM A BOMBER PART... PRE-FABRICATED STRUCTURAL WALL SECTIONS FOR 194X?

To fill wartime needs, plastics have developed surprising new muscles — and a more brilliant peacetime future than plastics producers themselves ever dared predict. This is particularly true of plastics in combination with other materials. For example, the light but amazingly sturdy and durable plastics-bonded plywoods now being molded into large, complicated shapes for aircraft.

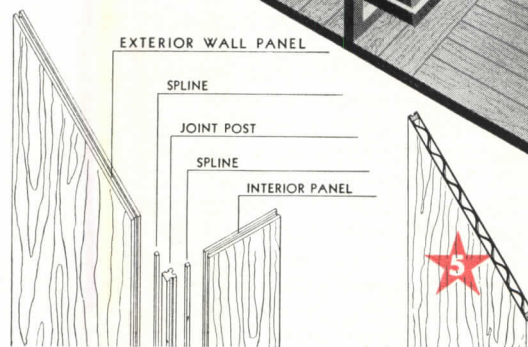
Impressed by possibilities of these new plywoods, Chicago Architect Philip Will, Jr., has suggested this stimulating series of

pre-fabricated structural wall sections to permit custom-built individuality without sacrifice of mass-production economy.

Panels would be formed into one integral unit from three sections of plywood with the inner section corrugated to impart load-bearing strength and added rigidity. New plastics glues and recently developed new tools, based on induction heating principles, may even make it possible to bond panels like these quickly... and economically... into one, monolithic unit... on the site.



- ★ 1. Load-bearing wall section with permanent, integral finish of new, clear or colored plastics films, perhaps factory-filled with insulation.
- ★ 2. Sliding door panels permanently bonded to wall-papers or fabrics.
- ★ 3. Thicker sections of heavier plywoods for floor and roof systems.
- ★ 4. Translucent panels of similar construction built from new types of plastics-impregnated paper.
- ★ 5. Panels are nominally 4' x 8' but filler post is thickness of panel, so actual panel width is 4' less panel's thickness to permit assembly on 4' module without cutting.



### The Broad and Versatile Family of Monsanto Plastics

(Trade names designate Monsanto's exclusive formulations of these basic plastic materials)

LUSTRON (polystyrene) • SAFLEX (vinyl acetal) • NITRON (cellulose nitrate) • FIBESTOS (cellulose acetate) • OPALON (cast phenolic resin) RESINOX (phenolic compounds)

Sheets • Rods • Tubes • Molding Compounds • Castings • Vupak Rigid Transparent Packaging Materials



### WHAT WILL THE FUTURE BRING?

Frankly, despite wartime advances, problems are posed above that no one in the plastics or building materials industry has yet fully solved. It is logical to assume, however, that the two industries, working together, will produce materials for 194X equally as exciting as these suggestions. And it is equally logical to assume that postwar plastics materials and techniques will contribute equally stimulating new ideas to your particular field... When the time comes to talk "future" on your products, you will find Monsanto, as one of the country's largest plastics producers, an excellent source of information. MONSANTO CHEMICAL COMPANY, Plastics Division, Springfield, Massachusetts.

# Looking Ahead in Air Conditioning with Charles S. Leopold



**CHARLES S. LEOPOLD** is the consulting engineer who has designed many of this country's largest air conditioning systems, including those for the Nation's Capitol and for the War Department's huge Pentagon building. As *Kinetic's* guest commentator for the month, he gives us some of his thoughts on air conditioning for the present and post war period.

"Air conditioning is not a new science. The fundamentals were known and applied in the last century.

"In the period 1900-1920, the greatest increase in use was for industrial processing of materials which were affected by the moisture content of the air.

"In the early twenties, conditioning for the alleviation of discomfort was popularized by its use in moving picture theatres. The conditioning of department stores, office buildings, and other commercial structures and dwellings soon followed.

"At present, conditioning is finding widespread use in industry for processes involving moisture control, air cleanliness, precision machining, special laboratory needs, and the maintenance of proper atmospheric conditions for large industrial buildings, including enclosed structures of the blackout type.

"It is reasonable to believe that the widespread use of air conditioning in the office buildings, stores and hotels of the South will rapidly be extended to their manufactories. Major strides in this direction are being made under the pressure of war production.

"The effect of widespread use of controlled atmospheres on the geographical availability of skilled labor offers interesting speculation, both as to the effect on the efficiency of native labor and labor which migrates to the less temperate areas.

"Throughout the country there has been a wide application of air conditioning in industry, both for product control and workers' efficiency. Due to the vast numbers of people who for the first time are now working in conditioned spaces there will be an accelerated demand, similar to that occurring in the twenties, when this war is successfully concluded. How much of this demand will be realized in new installations will be largely a matter of post war economics.

"Additions to the engineering development of air conditioning have continued through the war period, particularly in the low temperature air field. These additions, for a large part, have been refinements. Basically sound air conditioning has been obtainable for many years and nothing in the new development has as yet indicated obsolescence of previous good installations."



Among refrigerants "Freon" is unmatched in the combination of safety features it brings to refrigeration and air conditioning. By specifying "Freon," the architect can avoid any possibility of penalty to his client in insurance rates and promote safety of life and property. Kinetic Chemicals, Inc., Tenth and Market Sts., Wilmington, Delaware.

**FREON**  
REG. U. S. PAT. OFF.  
*safe refrigerants*

"Freon" is Kinetic's registered trade mark for its fluorine refrigerants.

## THE RECORD REPORTS

(continued from page 12)

to simplify construction procedures and to speed the processing of construction applications.

The types of construction affected by the order are non-war residential, agricultural, and many types of commercial construction whose total cost is less than \$10,000. They must also be essential.

Restrictions which have covered all construction will continue in force, as the order merely transfers to the field offices the processing of applications in order to expedite the issuance of preference ratings where justified. Since war-housing applications always have been processed in the field, this construction will not be affected by the order. All applications for preference ratings for privately-financed war housing will continue to be filed with field offices of FHA.

### IRON AND STEEL CONSERVATION ORDER REVISED

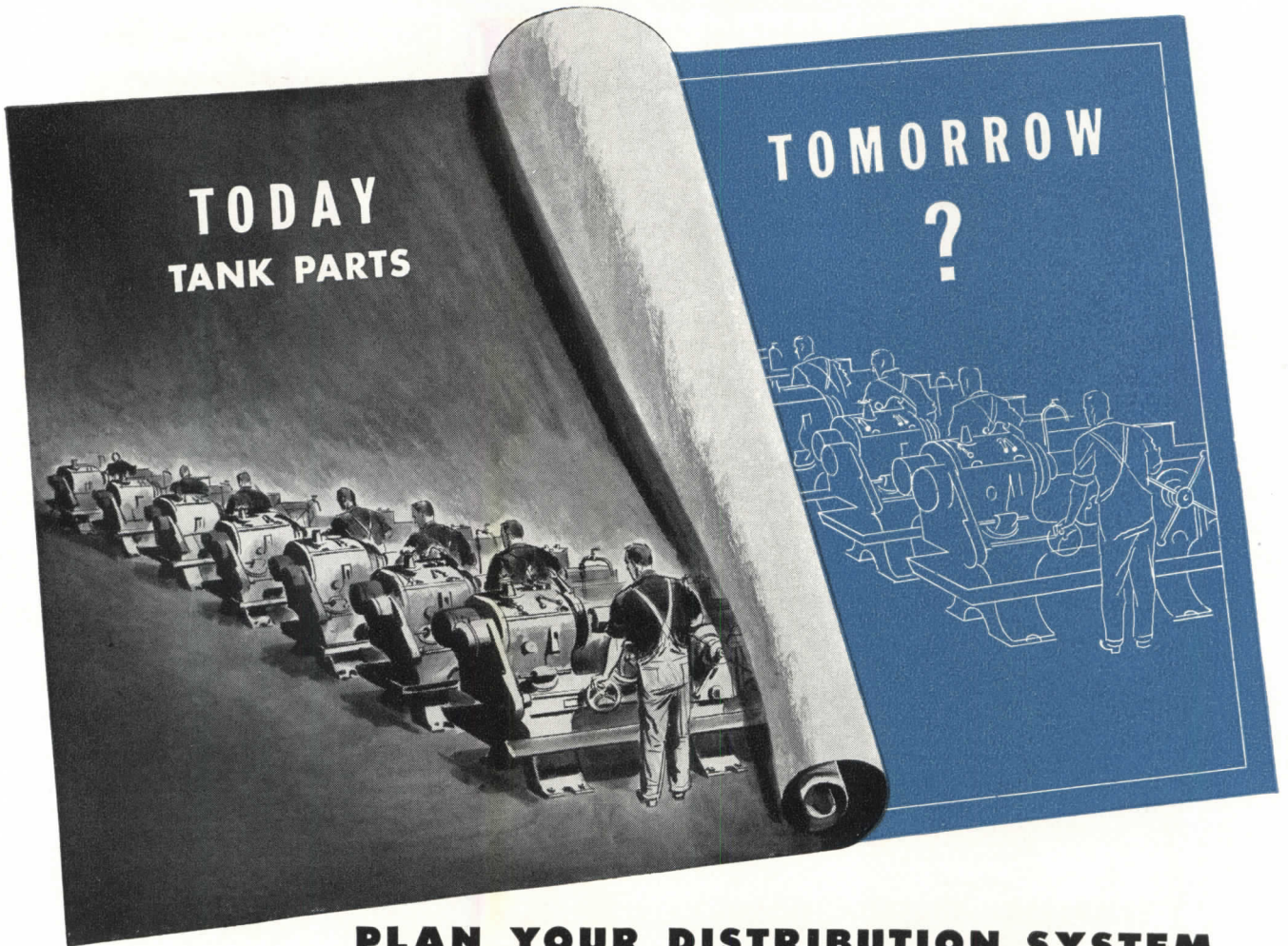
Many civilian products in which the use of steel has for some time been barred will soon be available to consumers in limited quantities as a result of an action recently announced by WPB which releases certain stocks of partially or wholly fabricated steel parts.

By an extensive revision of Order M-126 (Iron and Steel Conservation), these inventories, which have been frozen for three to eight months, are permitted to be used in about 20 items for which they were originally intended. The inventories are estimated roughly at 3,000 tons. No new steel may be used in the items involved.

Many of the products of which there will be a limited production as a result of the action are not essential. The frozen inventories are being released because they consist of only a small tonnage of light gauge steel, not satisfactorily usable in war production or for scrap purposes. Included in the list are: beds (except spring frames), cold and warm air registers, awning frames, linoleum binding, culverts, floor and counter covering trim, screen frames.

The amended order also deletes a number of items from the prohibited list of products either because of the essentiality of the items, or the insignificant amount of steel required for their manufacture.

(continued on page 16)



**PLAN YOUR DISTRIBUTION SYSTEM**

**FOR** *Quick Conversion*

Future demands on your plant depend on events no man can accurately foretell. Sound practice today calls for farsighted planning—to insure the ability to make quick production shifts economically.

Such shifts depend to a large extent on your plant distribution system. For on it hinges the ability to meet quickly changes in the nature, location and density of loads.

That's why we say *plan now for maximum flexibility in your plant distribution system*—to give increased efficiency and sabotage protection today, to facilitate speedy and economical conversion tomorrow.

Westinghouse has designed and built hundreds of distribution systems for all types of plants.

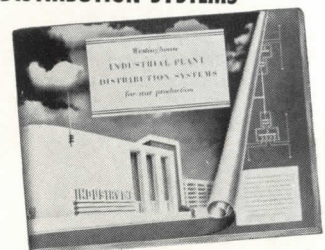
Thus our engineers are in a position to recommend the “one best” distribution system for your plant—the system that provides maximum flexibility with the least use of critical materials.

To bring this broad engineering experience to bear on your particular problem, call our local office. Or send for the helpful booklet below. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pennsylvania.

J-94562

**UP-TO-DATE FACTS ABOUT DISTRIBUTION SYSTEMS**

Keep up-to-date on latest plant distribution systems. Send for 24-page Booklet, B-3152, which briefly describes different plant distribution systems, and points out the advantages of each.



**Westinghouse**  
PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE



**PLANT DISTRIBUTION SYSTEMS**

(continued from page 14)

## INSURED FINANCING TO CONTINUE

Insured financing under Title I of the National Housing Act will continue to be available for war housing conversions and essential repairs under amendments to the Act recently voted by Congress and approved by President Roosevelt. The amendments extend the Federal Housing Administration's Title I insurance au-

thorization to July 1, 1944, from July 1, 1943, the previous expiration date.

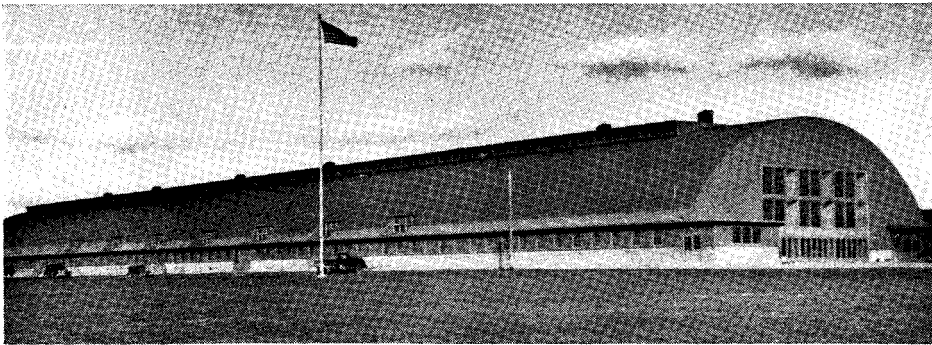
Under Title I special provisions are available for insurance of loans by private lending institutions which finance the conversion of existing structures to provide additional living quarters for essential war workers. Title I loans for such purposes may be for amounts up to \$5,000, to be repaid in equal

monthly installments over periods of as long as 7 years.

Title I loans also are available for financing essential repairs and maintenance of existing structures. Such loans may be for amounts up to \$2,500, with a maximum term of 3 years.

Also available are Title I loans in amounts up to \$2,500 for fuel conserving installations and improvements.

## ONE OF SIX 620-FOOT DRILL HALLS ON \$50,000,000 NAVY PROJECT



## Volume War Construction for the U. S. Government

**TODAY WE BUILD FOR VICTORY . . . under direction of the War, Navy, and other Government agencies.**

**TOMORROW WE BUILD FOR PEACE . . . under direction of the Country's greatest Industrial Leaders.**

### Over \$130,000,000 in Government War Contracts

• The peacetime resources and methods of the John A. Johnson Contracting Corp. have been converted to wartime demands. Speed is the important element today. Our organization and its engineers are working night and day to help the Army and the Navy accomplish more in less time.

Upwards of 130 millions of dollars worth of U. S. Government War Contracts have already been successfully completed, and within estimated costs.

### Unique Records Established

The John A. Johnson Contracting Corp. is equipped to handle the largest construction contracts. A \$36,000,000 Army Camp for the War Department, and a \$50,000,000 Naval Training Station for the Navy are

but two of our outstanding accomplishments. Each of these projects was started and substantially finished in less than six months and during periods of acute labor and material shortages.

### We Propose to Keep the Pace

Everything our organization has to contribute — its entire personnel — its capital — its full energies — and its fighting spirit are being thrown into the "all-out" effort to win the war. We count ourselves fortunate indeed that we have been given the opportunity to make a substantial contribution to the fight for Victory.

Our varied experience can perhaps be of value to you. Write Department 31 for illustrated brochure.

## JOHN A. JOHNSON CONTRACTING CORP.

A FIRM FOUNDATION SINCE 1896  
270 41st Street, Brooklyn, N. Y. Tel.: SOuth 8-3200

BROOKLYN, N. Y. — PHILADELPHIA, PA. — WASHINGTON, D. C. — ATLANTA, GA.

## SPECIALIZED PERSONNEL NEEDED

The National Roster of Scientific and Specialized Personnel, now a part of the Bureau of Placement, War Manpower Commission, is being called upon to supply the names and qualifications of increasing numbers of professionally and technically trained men and women who have declared themselves available for war work. Demands have been heaviest for those trained in engineering and the physical sciences.

Anyone who has had professional training or experience in engineering and/or related fields, is unemployed or employed in less-essential activity or is not fully occupied in his present employment, is urged to write immediately to The National Roster of Scientific and Specialized Personnel, War Manpower Commission, Attention Qualifications Section, Washington, D. C. The following information should be given:

1. Whether now available for employment;
2. Types of work qualified to do;
3. Conditions under which employment will be accepted;
4. Whether or not already registered with the Roster (if not, registration papers should be requested, and field or fields of specialization should be stated).

## INCANDESCENT LIGHTING FIXTURES REGULATIONS

In a move to channel all incandescent lighting fixtures into war work or defense housing and other essential civilian uses, and to conserve critical materials, the WPB has issued Limitation Order L-212. The new regulation restricts the sale of industrial and utility lighting fixtures to orders carrying a preference rating of A-1-j or better. However, sales of fixtures made of materials acquired prior

(continued on page 100)





Heating and Air Conditioning Contractor:  
Asbestos Duct Company

**Careyduct**  
THE ALL-ASBESTOS INSULATED DUCT

FOR BETTER HEATING AND AIR CONDITIONING  
IN THE  
*Nation's Service*

Careyduct is conserving thousands of tons of steel in air conditioning systems . . . saving manpower by eliminating shop fabrication . . . increasing efficiency of air conditioning with great savings of fuel . . . solving difficult installation problems where space is limited.

Careyduct production is now devoted almost exclusively to war needs. But in the vast expansion of air conditioning to come after the war, CAREYDUCT will play an important part . . . building upon its solid foundation of superior performance. Now is the time to become thoroughly familiar with this ultra-modern duct. Write for Careyduct Manual. Address Dept. 21.

**THE PHILIP CAREY MFG. COMPANY**

*Dependable Products Since 1873*

In Canada: The Philip Carey Company, Ltd.

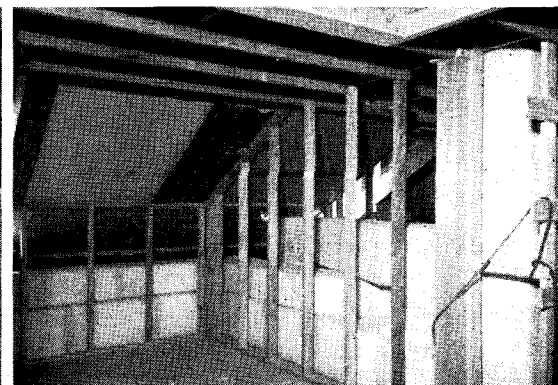
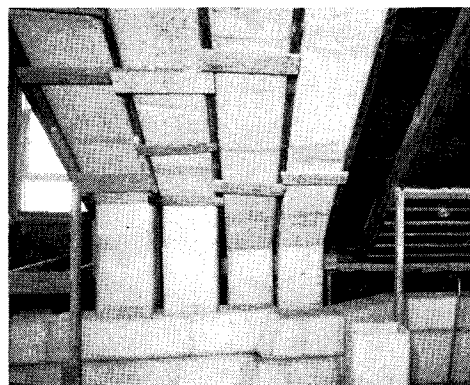
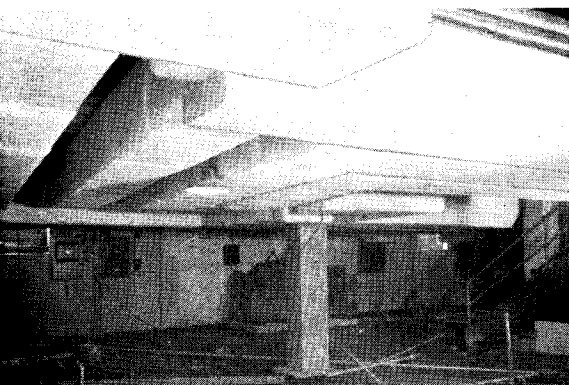
**Lockland, Cincinnati, Ohio**

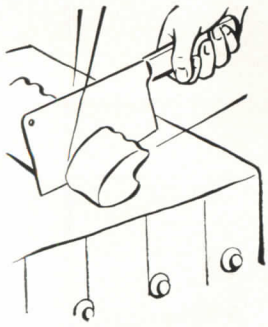
Office and Factory: Lennoxville, P. Q.

*Careyduct is both duct, and insulation combined in strong, rigid, fireproof units . . .*

*Careyduct is a natural sound absorber . . . hushes noise . . .*

*Careyduct permits use of smaller sizes with higher velocities . . .*





# BUTCHER BLOCK STAMINA

*for Heavy-Duty Floors*



*National Biscuit Company, Atlanta Bakery floored with Northern Hard Maple. Photo, courtesy G. H. Tennant Co., Minn. Louis Wirsching, New York City, Architect.*

## Tough-Fibered, Tight-Grained Clean HARD MAPLE!

Watch your butcher working at his block! Those guillotine blows of his heavy cleaver are falling on Northern Hard Maple, the wood that's tough enough to "take it" and stay clean, wherever used and however hard the job.

Put the same tight-grained material in any floor subject to very heavy use. Add to it all the punishment such floors usually get! Hard Maple will easily stand up under it, over year after year of bright cleanliness, comfort under foot, and low cost of upkeep. Traffic moves safely, easily over Hard Maple's velvet-smooth, non-slippery surface.

There are so many sound, logical reasons for Northern Hard Maple floors in food plants, textile mills, stores, schools and other type buildings, including housing, that there is good reason to consider it first, for remodeling and reconstruction jobs. Hard Maple is available in strips or blocks. See Sweet's, Sec. 11/57.

**MAPLE FLOORING MANUFACTURERS ASSOCIATION**  
1782 McCormick Building, Chicago, Illinois

*Write for illustrated literature featuring grades, specifications, etc.*

Floor with  
**MFMA Maple**  
REG. U. S. PAT. OFF.  
(NORTHERN HARD)

## POSTWAR NOTES AND PLANS



RICHARD J. NEUTRA

### NEUTRA HEADS CALIFORNIA STATE PLANNING BOARD

The greatly accelerated industrial development which the war has brought to California makes concrete planning ahead a vital necessity, Richard J. Neutra, recently named Chairman of the California State Planning Board, said in his first message to state legislators and county and municipal planning commissions.

"Successful planning needs full familiarity with local circumstances," Mr. Neutra said. "The most successful plan will never be the one developed by 'out-of-town' planners, or the one semi-dictatorially imposed from a distant capital bureau. . . . State planning should be largely stimulation and coordination of plans of local governments, industries and civic organizations."

Since without adequate information on probable future employment markets, Mr. Neutra continued, "not even the bare population trend in a certain locality can be predicted," and nothing can be foretold about the building needs of that community, all private enterprise "must be stimulated to lay its own plans, and to keep the community candidly informed of them. . . . Not on illusions of a vague optimism, but on the bearing ground of facts must forecasts be based, and plans must be paid by those who prove ready and truly capable of laying them."

### NRPB ESTIMATES FEDERAL POSTWAR CONSTRUCTION TOTAL

In the second part of "The National Resources Development Report for 1943" the National Resources Planning Board estimates that a total of \$7,695,000,000 in Federal construction and improvement projects was potentially available last January for postwar work. This represents an increase of \$1,335,000,000 since January, 1942.

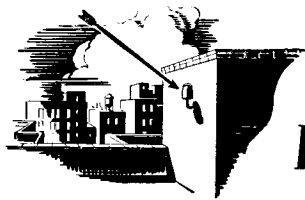
"Projects in the program," the report states, "range from small works costing \$1,000 or less to large and complex projects costing \$1,000,000."

### NEW YORK STATE POSTWAR PLANS

The New York Postwar Planning Commission has adopted a recommendation that \$400,000 a year be appropriated to the State Department of Architecture for drawing of plans. This figure is based on a decision to count on at least \$10,000,000 of postwar works annually, outside of highways and housing.

Recognizing the increasing tendency of local communities to plan their own postwar projects, the Commission also urged the state to make grants for local aid up to 50

(continued on page 104)



Look on the roof of

# The Best Heated Building in Town

Here is the symbol of heating "Controlled-by-the-Weather."

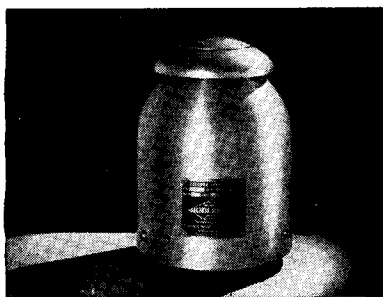
It is the Outdoor Thermostat of the Webster Moderator System, an automatic central control that is saving precious fuel for hundreds of America's best heated buildings and releasing much needed transportation facilities for other purposes.

The Webster Moderator System supplies steam *continuously* to all radiators, automatically changing the heating rate with changes in outdoor temperature. No "off" and "on" heating. No annoying "now hot — now cold" conditions.

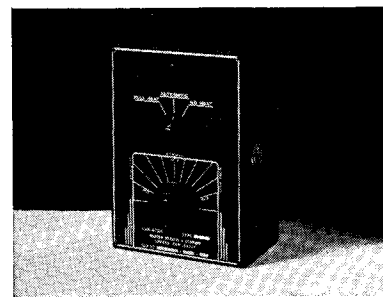
"Control-by-the-Weather" prevents wasteful overheating . . . reduces costly window opening in periods of mild weather. Radiator temperatures may vary from 212° to 150°, or even as low as 90°, depending on the need for heat.

The Webster E-4 Moderator System is a steam heating control that anybody can understand. There are just four control elements—an Outdoor Thermostat, a Main Steam Control Valve, a manual Variator and a pressure Control Cabinet. These elements, plus small metering orifices to assure each radiator its share of steam, result in the highest expression of comfort and economy in modern steam heating.

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



Outdoor Thermostat automatically changes heating rate when outdoor temperature changes.

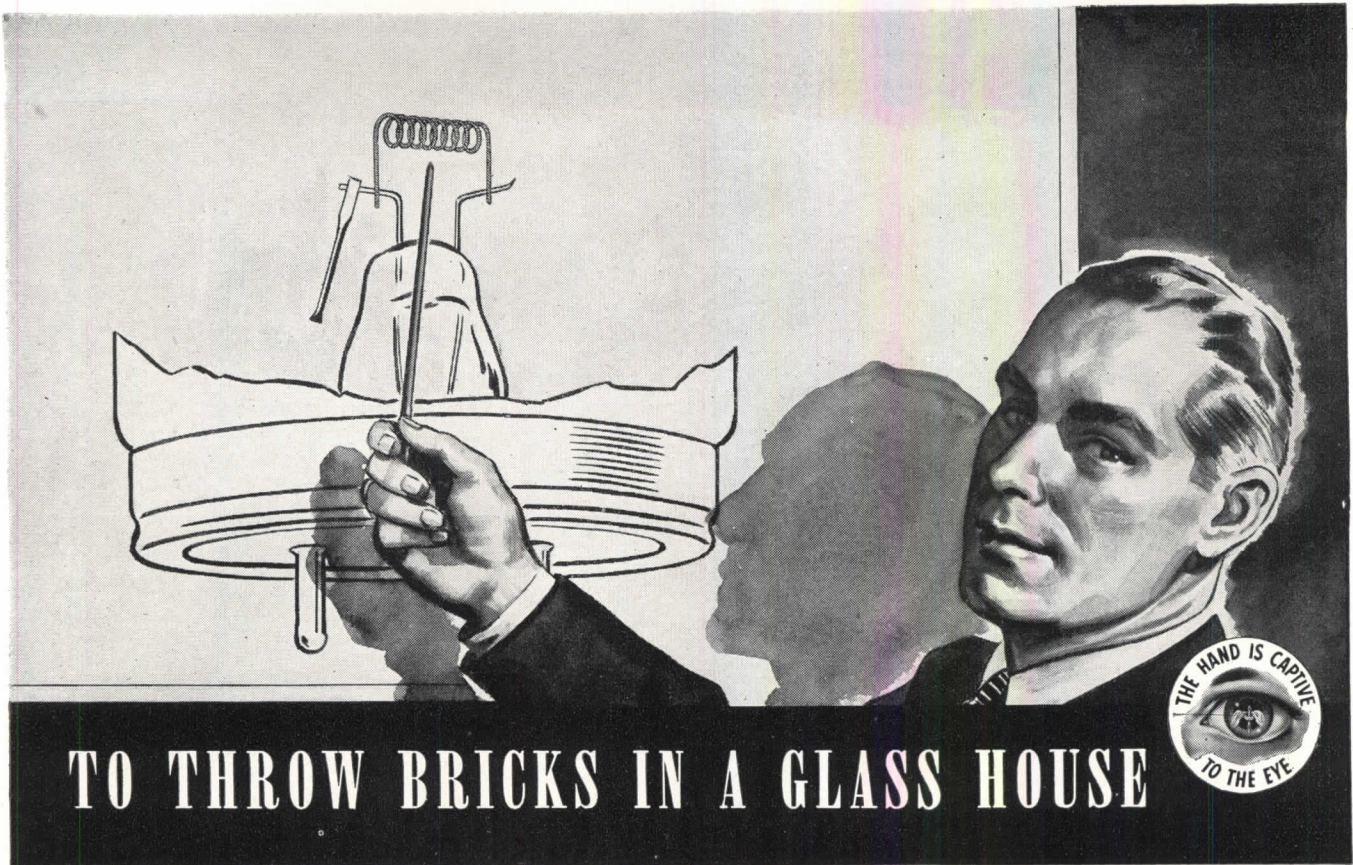


Variator provides desirable manual operation to supplement automatic control.



For men who are planning building construction or modernization both now and after the war, we have a free book giving case studies of 268 modern steam heating installations—banks, hospitals, hotels, apartments, office buildings, industrial plants, large buildings of every type. These are reports on actual installations of the Webster Moderator System, with photographs of buildings, proof of heating comfort, savings in dollars and cents. Study this 75-page book at your leisure. Your nearest Webster Representative will call only if you invite him. Write for "Performance Facts" today.





## TO THROW BRICKS IN A GLASS HOUSE

Hair-fine tungsten, almost invisible to the naked eye until coiled and recoiled, constitutes a cathode. It is coated with a compound which allows it to throw electrons, the bricks of the universe, in the glass house of a fluorescent lamp.

The cathode is a delicate but tough electronic element in the production of fluorescence, which provides the best lighting known for war plants today—and for your home when Victory is won.

At the flick of an electric switch, the cathode throws free electrons—billions of them—into the low-pressure mer-

cury-argon vapor inside the lamp. Free electrons batter mercury atoms, throwing them off balance electrically and into violent motion. In regaining electrical balance, mercury atoms generate ultra-violet rays. This "Black Light" magically makes the "powdered daylight" coating inside the tube fluoresce in a cool, glarefree, shadowless glow more constant than daylight—and just as kind to the human eyes.

During more than ten years of independent research, Sylvania engineers have led in the development of more efficient, more durable cathodes. Electron-emissive material, which is ex-

pendent in the process of light-making, largely determines lamp life; therefore its chemical formula and application to tungsten are the subject of tireless study.

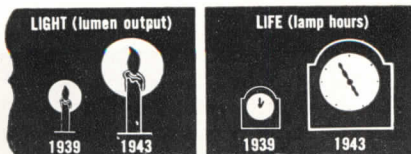
Improvements in material and process specifications are made every week at Sylvania. Many of them, like the "Mercury Bomb" method of precise mercury measurement, conserve strategic materials and labor. But all of them step up fluorescent performance on such counts as lumen output, lamp life, uniform colors, quicker starting—and at progressively lower cost.\*

While today's Sylvania Fluorescent Lamps are serving three-shift days in America's war plants, tomorrow's are being made even better. Specify Sylvania replacements for the latest in fluorescent research.

### FAR MORE LIGHT AND LIFE FOR YOUR MONEY

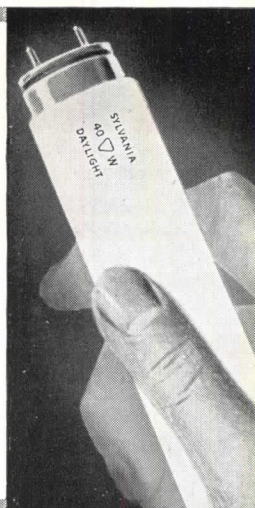
\*Compared with 1939 a dollar invested today in Sylvania Fluorescent Lamps buys more than four times the lumen output and approximately five times the lamp life.

SYLVANIA  
FLUORESCENT  
DOLLAR  
BUYS:



(Based on decreasing price and increasing efficiency and durability of Sylvania 40-Watt White Fluorescent Lamp)

*Even on existing circuits, a change-over to fluorescent—Sylvania Lamps, Fixtures and Accessories—will probably more than double the light you get for the same wattage.*

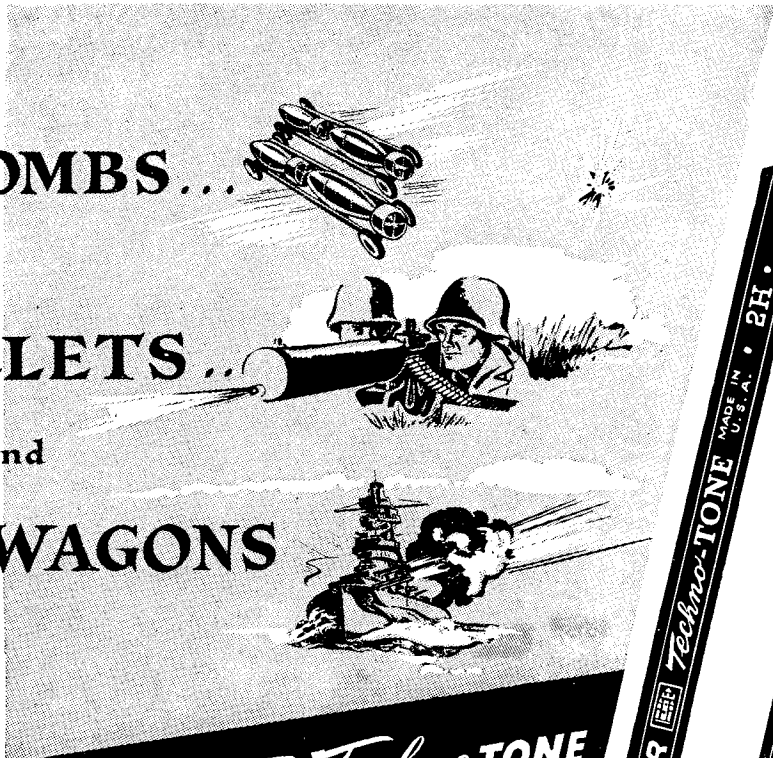


## SYLVANIA ELECTRIC PRODUCTS INC.

formerly Hygrade Sylvania Corporation  
Salem, Mass.

*Incandescent Lamps, Fluorescent  
Lamps, Fixtures and Accessories,  
Radio Tubes, Electronic Devices.*

# BOMBS... BULLETS... and BATTLEWAGONS



*begin  
with*

**WINNER** Techno-TONE  
DRAWING  
PENCILS

BAM! WHAM! There's one for the Axis from Uncle Sam.

Implements of War are first conceived in the brain, then translated on paper through the medium of drawing pencils.

Because WINNER Techno-TONE meets every need of the most exacting pencil user, it is the favorite of architects and artists, engineers, designers and draftsmen. WINNER Techno-TONE adds distinction to every sketch, drawing or rendering. With it genius becomes articulate. We will gladly send you a free sample of your favorite degree.

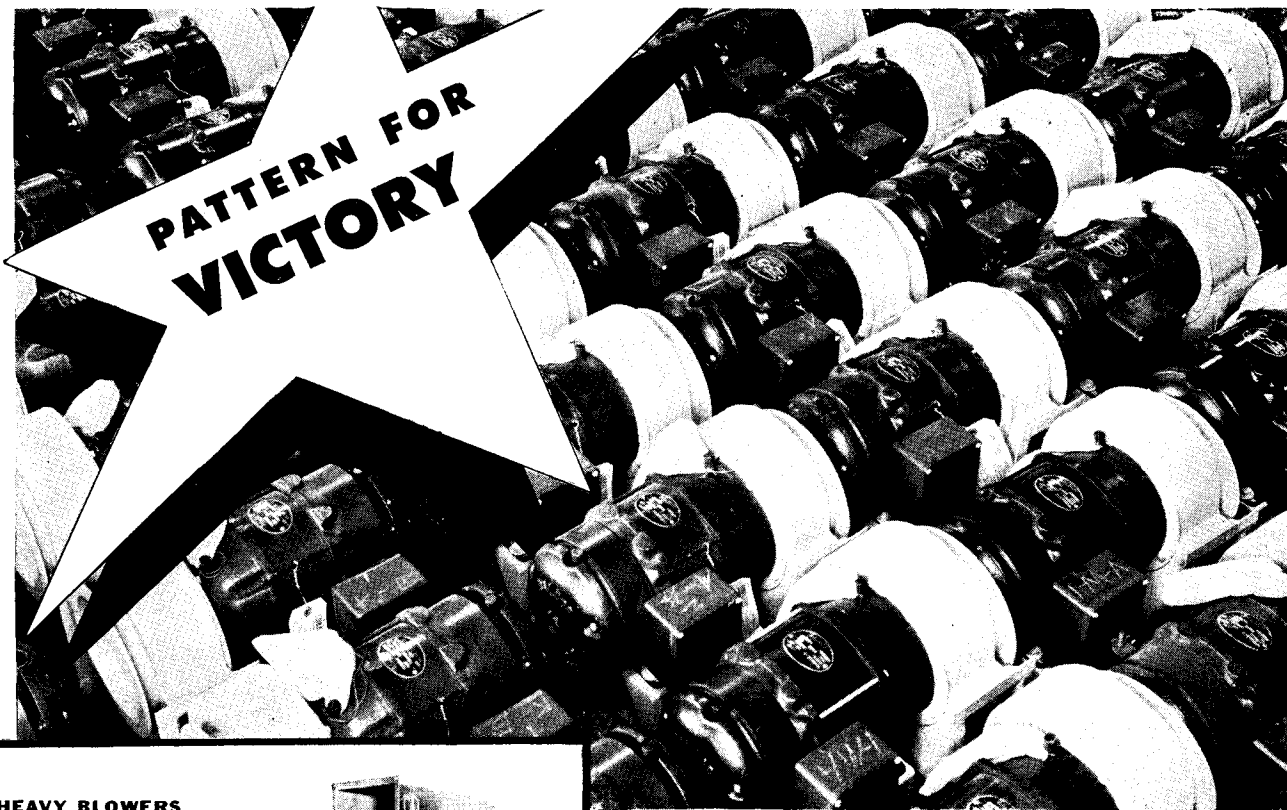
Write Dept AR-5, A. W. Faber, Inc., Newark, N. J.



★  
Companion Pencil—  
WINNER Thin Colored  
Checking —  
Superb colors and  
strength. Choicest  
for all prints: 2381  
Red; 2382 Blue;  
2383 Green; 2385D  
Yellow; 2437D Orange.  
10¢ each.  
\$1.00 dozen. Would  
you like a sample?

★  
WINNER Techno-TONE is  
available in 17 scientific-  
ally graded tones—6B to  
9H. Polished rich green.  
Made in U.S.A.

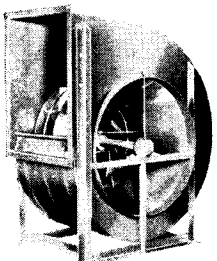
**A\*W\*** **FABER Inc.** NEWARK, N. J.  
13c each    2 for 25c    \$1.25 dozen  
AT ALL DRAWING AND ARTISTS MATERIAL DEALERS AND LEADING STATIONERS



**PATTERN FOR  
VICTORY**

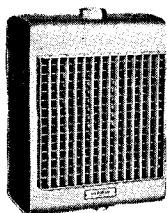
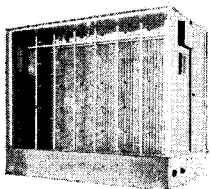
**HEAVY BLOWERS**

Backwardly curved blade type shown (also blowers with forwardly curved blades), also available in types and capacities ranging from 2,000 to 70,000 c.f.m. Used currently by many Government Services for large scale air handling jobs. Made in single and double inlet, and in a variety of air discharge arrangements.



**AIR WASHERS**

Single and double stage air washers are made in various capacities for all needs. They are used in installations where dependable equipment is required for air cleaning, cooling, humidifying or dehumidifying. Air Washers operate with cold water or refrigerating apparatus. For special installations such as shell-loading rooms or food-processing plants, double stage Air Washers help maintain safe atmospheric conditions at all times.

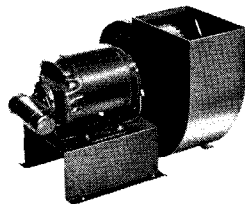
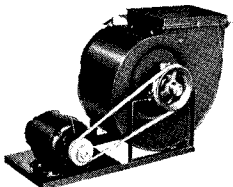


**UNIT HEATERS**

Suspension type small area heater for use with steam. Deflecto Grilles distribute heat where needed. This type of heater is ordinarily used to supplement central systems in large Defense plants, Army camp barracks and community buildings.

**"E" BLOWERS**

Belt-driven exhaust blower for light duty work where static resistance is low. Designed and built to meet today's requirements for flexible operation. Type "E" Blowers are easy to service — are available in several discharge arrangements. An adjustable pulley permits 30% speed variation to handle air as required in different installations.



**"SU" BLOWERS**

Direct-driven exhaust blowers are designed for use where space is too limited for a belt-driven exhauster. Built strongly, mounted rigidly to prevent vibration. Slow speed motor operates the wheel. A type of blower that is efficient for exhaust applications in warehouses, factories, barracks or mess halls.

# USAIRCO

## Blowers Ready for Action!

Row upon row of high-pressure, high-speed exhaust fans are ready to be crated and sent into war service.

Designed by USAIRCO Engineers for air handling in small areas, these compact USAIRCO Blowers pack unexpected power. They provide constantly clean and fresh air to areas difficult to ventilate. Men and the machines they work with are more efficient when USAIRCO exhausters are operating.

Midget exhausters, along with USAIRCO Heavy Duty Blowers, Light Duty Blowers both belt-driven and direct-driven, Unit Heaters, Coils and Air Washers are serving the war effort — delivering rated capacities in Army Cantonments, Mess Halls, Factories, Air Bases and in food processing plants. For all air conditioning needs, USAIRCO equipment gives dependable performance.

USAIRCO maintains a record for delivering duty-ready equipment on time.

*Send your inquiries to USAIRCO. Cooperating engineering data and counsel are available.*

**UNITED STATES  
AIR CONDITIONING  
CORPORATION**

Manufacturers of the most complete line of air-handling equipment. Factory representatives in principal cities.

**NORTHWESTERN TERMINAL  
MINNEAPOLIS • MINNESOTA**



# Is one of your clients

# looking for a power plant?

Good power plant equipment is scarce today. Here is an opportunity to acquire a complete plant in first-class operating condition. It is *available immediately* at a fraction of the original cost.

The plant is located in the North American Building, Chicago, one of the finest office buildings in Chicago's Loop, where it formerly supplied light and heat. It consists of three Ridgeway generating units and two Ridgeway motor-generator sets, with control panels, complete switchboard, etc. Principal items of equipment are:

Generator No.	1174	1175	1176
Design	60-B01	40-D01	30-E01
Capacity K. W.	350	200	100
Amperes	1520	870	435
Volts	230	230	230
Temperature rise C	35	35	35
Engine No.	2808	2809	2810
Horsepower	525	300	150
Bore in inches	24	19	14
Stroke in inches	26	24	16
Revolutions per minute	150	170	225
Total weight	96,500	64,000	34,800
Motor Generator Sets No.	1177	1179	
Capacity K. W.	6	9	Generating units are direct connected. Direct current, laminated fields. Control panels equipped with Weston instruments, in excellent condition.
Amperes	50	75	
Volts	120	120	
Temperature rise C	35	35	

*The original cost of this plant was \$75,000. It can be bought today, "where and as is," for only \$18,000. To the purchaser, such a reduction should mean remarkably low-cost power.*

**Wire or write CENTRAL REALTY & INVESTMENT COMPANY**  
**36 South State Street, Chicago, Ill.**

No Wonder Baltimore War Workers Exclaim

*"Have You Seen  
HUTZLER'S STORE?"*



Architect: James R. Edmunds Jr.

Eleanor LeMaire, New York City, Designer

## QUIET, CONVENIENCE, BEAUTY Make a Miracle of Modern Merchandising

HUTZLER BROTHERS' Department Store in Baltimore has torn a page from the book of the future—given its patrons the benefit of tomorrow's ideas today. These photographs convey something of the beauty and convenience which thrill hard-working, victory-minded Baltimore women when they take time off to relax—to renew their spent energy for the big job still ahead. But only those who have sensed the serene quiet of the place can know what a relief it is—how it contributes to a sensation of restfulness and peace!

**CELOTEX**  
SOUND CONDITIONING

COPYRIGHT 1942, THE CELOTEX CORPORATION

Sold by Acousti-Celotex Distributors Everywhere  
In Canada: Dominion Sound Equipments, Ltd.

### BACK OF THE QUIET IN HUTZLER'S STORE . . .

Providing Celotex Sound Conditioning service for Maryland, Virginia, and the District of Columbia, Hampshire & Decker, Inc., maintain offices in Baltimore and Washington. Back of the quiet in Hutzler's Store is the experience gained by this firm in completing over 7,000,000 square feet of acoustical installations since 1929. Similar experience is available to architects through any member of the nation-wide Celotex Sound Conditioning organization.

THE CELOTEX CORPORATION • CHICAGO

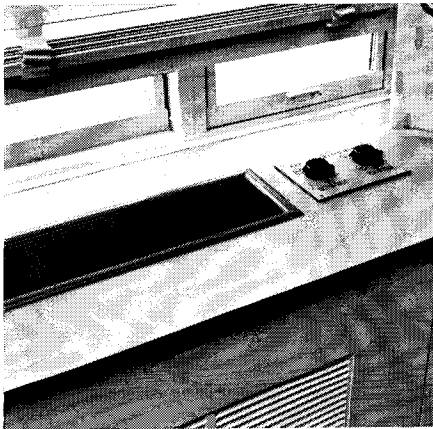


# WORLD'S LARGEST completely Air Conditioned Hotel opens in Nation's Capital



Heating and Ventilating Contractor: Mehring and Hanson Co., Chicago, Ill. Architect and Consulting Engineer: Holabird and Root, Chicago, Ill. General Contractor: Harris Co., New York.

## New Statler in Washington, First Hotel To Install Carrier Conduit Weathermaster System



Every guest room has a Carrier Weathermaster unit with individual control. Positive circulation of outside air is also provided.

• Year round air conditioning of the entire building is an outstanding feature of the new Statler Hotel, most recent addition to Washington's rapidly rising skyline.

Two Carrier Centrifugal Refrigeration Machines provide a daily cooling capacity equal to the melting of 1,100 tons of ice. Individual Carrier Weathermaster units serve conditioned air to each guest room. Lobbies, dining rooms, corridors, and all public spaces are air conditioned from the central plant.

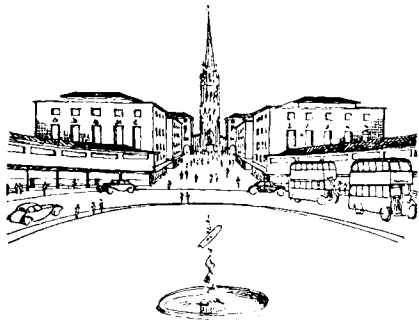
The air conditioning equipment was designed as an integral part

of the building thus gaining space equivalent to two extra floors while keeping the height of the structure within building code requirements.

Occupants of guest rooms may dial "Warmer" or "Cooler" as desired. All air delivered to guest rooms is 100% outside air. Heated or chilled water is circulated in Weathermasters. In rooms receiving the full heat of the sun, cooling can be obtained while heating is being used in rooms which have northern exposure.

CARRIER CORPORATION, SYRACUSE, N. Y.





Sketches on this page from "Plan for the New Coventry." Above, proposed shopping center; right, Earl Street from Jordan Well; lower right, the Civic Buildings

**REBUILDING BRITAIN.** Published for the R.I.B.A. London, W.C. 1 (12 Bedford Sq.), Lund Humphries, 1943. 80 pp. 7½ by 9½ in. illus. 3 s. 6 d.

"ONLY THE MEN and women who compose the British public," the Royal Institute of British Architects understandingly declares, "can choose what they want." And again, "the people of Britain will get the reconstruction they deserve . . . it's up to all of us to express our needs."

In this spirit the British architects have set forth to help the people of Britain to realize those needs. They have succeeded admirably. "Rebuilding Britain"\* is written in laymen's language, but with a great deal of skill and unobtrusive leadership. From it emerges the understanding that today's problem is but a part of a continuing one ably tackled by an Ebenezer Howard, a Toni Garnier, a Le Corbusier and many others; that there is need and room for soaring, spacious cities as there is for the garden city and undeveloped areas.

The 66 excellent illustrations included in the booklet—halftones and line drawings—show some of the good work already achieved: an inviting school; a light-colored store, easy to keep shining even in a city atmosphere; a lovely road house; a city park where sheep may safely graze; good, solid, old stone houses, and an equally good Crystal Palace; attractive, comfortable hostels, delightfully situated, for industrial workers.

A stimulating chapter on "What You Can Do" concludes the main part

\* For further comment on this book, see Douglas Haskell's article, "Britain's Plans are Bold," ARCHITECTURAL RECORD, April, 1943, pp. 42-49.

of the pamphlet. A very serviceable annotated list of two dozen planning books and an account of the activities of the RIBA Committee on Reconstruction up to the opening of the Rebuilding Britain exhibition at the National Gallery, conclude the book.

**PLAN FOR THE NEW COVENTRY.** By D. E. E. Gibson, A.R.I.B.A., and others, 1943. 16 pp. 7 by 10½ in. illus.

COVENTRY'S city architect and his assistants in a well-designed brochure distinguish between the wholesale re-planning desirable for many reasons and the rebuilding practicable to re-make the congested part of the city most heavily blitzed and which "urgently needed replanning before." Suggested sketches and plans show possible treatment.



**LIVING IN CITIES.** By Ralph Tubbs, A.R.I.B.A. Harmondsworth, Middlesex, Penguin Books, 1942. 54 pp. 8¾ by 7 in. illus. 1 s.

THIS LOVELY little Penguin book by a member of the RIBA Committee and designer of the Living in Cities exhibit, is a primer of urban living, setting forth, chiefly by means of pictures, the city's role in protection, in promoting culture, its potential beauty, with good examples from the folk type to those in the grand manner. A masterly concluding page is devoted to "correcting some misconceptions," such as that modern architecture means flat roofs and white concrete walls, that architects seek to impose an international style or living in flats or skyscraper cities, that the garden city is the whole solution of the residence problem.

**CALIFORNIA'S MISSIONS: THEIR ROMANCE AND BEAUTY.** By Hildergarde Hawthorne. Illus. by E. H. Suydam. New York (35 West 32nd St.), D. Appleton-Century, 1943. 237 pp. 6½ by 9 in. \$5.00.

A WEALTH of information on the origins, development, decline and restoration of the missions, well digested and

conveyed in Miss Hawthorne's characteristic facile style in such a way as to infect the reader with the author's enthusiasm. To good general descriptions of the fabric which houses each mission are added many details about materials and decoration; and the 48 full-page pencil drawings by the late E. H. Suydam are extraordinarily well matched with the text. In contrast with the solid buildings are the clear sunny atmosphere and the smallness of the human figures.

**JEFFERSON: THE ROAD TO GLORY, 1743 to 1776.** By Marie Kimball. New York (2 West 45th St.), Coward-McCann, 1943. 358 pp. 6 by 9 in. illus. \$4.00.

WELL WRITTEN, well printed, containing not a little new matter, a good book at any time. It has heightened appeal by its publication on the 200th anniversary of Jefferson's birth, on the occasion of dedication of the Jefferson monument.

We are interested here particularly in the architect, the gardener and landscape architect. Mrs. Kimball tells of the influence of his parents' home and those of his friends on the William and Mary student from the country who finds the college buildings "rude misshapen piles which but that they have roofs would be taken for brick kilns," and traces the evolution of Monticello from Jefferson's first idea of a small house with a room for himself and one for a friend.

We see here the books he read on architecture and gardening; we follow in detail in the planning and replanning; the calculations for brickwork and the preparation of the lumber; the hardware; the order of the building—outbuildings first to serve as bachelor quarters during the erection of the house, the costs; the time consumed—by Julius Shand, for example, who "fills the two-wheeled barrow in 3 minutes and carries it 30 yds. in 1½ more;" provisions for vegetables and

(continued on page 28)



# BLACKOUT CONTROL WITH



*Tone Values  
from black to  
grays*

**SHARP-DISTINCT-OPAQUE**

*This drawing is one of a series made with Art-Guild BONDED LEAD drawing pencils*

Art Guild pencils are available in 17 precision-milled degrees—6B to 9H. Beautifully finished in green lacquer, they come neatly packed in a metal box.  
**Try them at our expense.** We will gladly send you a few Art Guild pencils for personal test. Just drop us a note on your letterhead, specifying the degrees you prefer.

**LINTON PENCIL CO., Lewisburg, Tenn.**

112 West Ninth Street  
Los Angeles, California

**SALES OFFICES**  
38 South Dearborn Street  
Chicago, Illinois

3525 Southwestern Boulevard  
Dallas, Texas

# RE-LIGHTING

the new **manpower** *requirement*  
production

## OPERATION STUDY SHEET

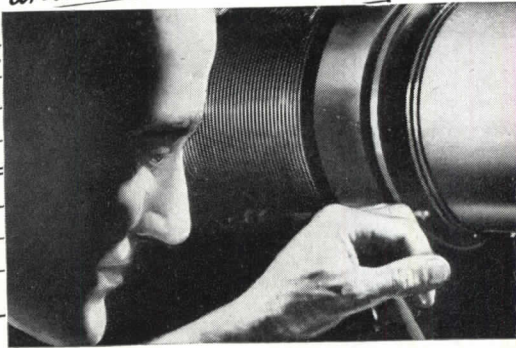
Working Conditions *Poor light, caused by im-  
properly located lamps. Heavy shadows  
on work area confuse and  
slow up worker...  
considerable spoilage--  
accident hazard.*

Machine No. *349*

Capacity

Size

Department



*Vital* to reduce rejects, increase production

Operation study sheets all too often record "poor light" as a major cause of poor quality production—of too many units that cannot pass inspection. This condition is particularly noticeable on night-shift work because—

Most plants operating today were designed and built for peacetime, *daylight* working schedules. Wartime production demands night work; and *lighting based on daylight conditions is inadequate to serve the needs of night workers.*

The answer to this problem is *re-lighting*. You can quickly, easily, and with little expense increase the efficiency of your present lighting equipment by re-locating lamps to eliminate glare and shadow, increasing lamp wattages where necessary, or installing additional equipment to insure uniform lighting levels throughout your plant. A Silv-A-King lighting engineer can tell you exactly what is necessary.

Silv-A-King has specialized in industrial lighting for 22 years. Silv-A-King quality equipment (fluorescent or incandescent) plus a Silv-A-King "engineered layout" makes an unbeatable combination.

BRIGHT LIGHT REFLECTOR COMPANY, INC.  
308 Morgan Avenue, Brooklyn, N. Y.



Send for your copy of our  
16-page book: "Light Is An Essential  
Production Tool"



SILV-A-KING MAKES *Light* WORK FOR YOU

## REQUIRED READING

(continued from page 26)

fruit; for a park and for an ornamental garden to complete "the house of which Jefferson was the architect and often one of the workmen, rather elegant and in the Italian taste . . . the difference between this and the other houses of the country [being] . . . that Mr. Jefferson is the first American who has consulted the fine arts to know how he should shelter himself from the weather." Thus the Marquise de Chastellux, as recorded in one of the nearly seven hundred notes and references, showing the extent of the material sifted by Mrs. Kimball in forming her opinions, for which she would have us believe Fiske Kimball "has made her fight, bleed and die."

## PERIODICAL LITERATURE

**COLONIAL STYLE.** By Henry Swanzy. *New Statesman and Nation*, London W. C. 1 (10 Great Turnstile, High Holborn), Jan. 23, 1943. pp. 55-6.

MANY correspondents remark on the beauty and harmony of Italian public works in Africa. The Italians have the advantage that their colonies were a late child of a very old and beautiful cultural region, whereas "British colonies do not generally lie in such favored zones . . .; have not had money lavished upon them . . .; those responsible for building them are mostly engineers of the Public Works Department with little or no architectural experience . . . [Still] the dowdy provincialism of most British colonies . . . is difficult to excuse." Form and color have a great effect on colonial peoples; and "we may hope perhaps that . . . the campaign in North Africa will have something of the effect of the Crusades on the visual education of the men who will be returning . . ."

**HOUSES FOR MILLIONS.** By Richard M. Bennett. *The Nation*, New York (55 Fifth Ave.), March 6, 1943. pp. 340-2.

**YOUR HOME . . . TOMORROW.** By John Tjaarda. *The American Magazine*, New York (250 Park Ave.), May 1943. pp. 44-5; 115-8. illus.

**HOUSES FOR HUMAN BEINGS.** *Fortune*, New York (Time and Life Bldg., Rockefeller Center), April 1943. pp. 101-5, etc. illus.

THE SHAPE of things to come in building houses, as seen by an architect, a designer, and an editorial group.

"Give people better-engineered

(continued on page 30)

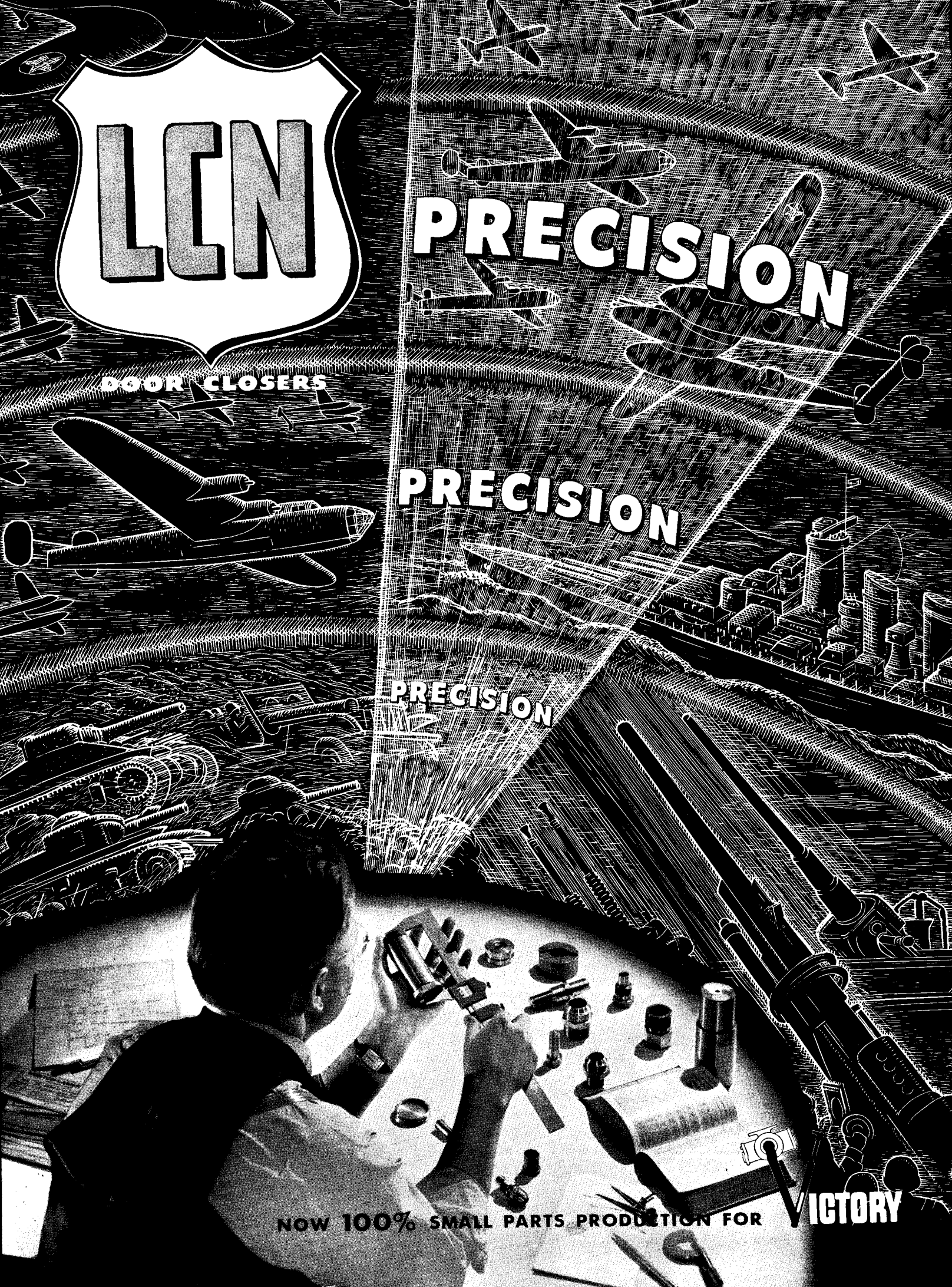


**PRECISION**

**DOOR CLOSERS**

**PRECISION**

**PRECISION**



**NOW 100% SMALL PARTS PRODUCTION FOR**

**VICTORY**

# REQUIRED READING

(continued from page 28)

By ELISABETH COIT, AIA

houses and let style take care of itself," say Fortune editors in a digest of "material drawn from several sources," one of them identified. Give people what they need—and occasionally demand—for comfortable living, including windows that function, quiet latches, warmed towel racks, insulation to preserve the family's sanity in spite of the telephone, proper space and acoustic conditions for television

and radio; use some of the newer materials: look at plastics.

Mr. Tjaarda sees all these things as easy to come by. Having acquired a site, "instead of hunting up an architect and builder, we go to the city to the home dealer, just as we would to the automobile dealer"; the house will "cost about the same as a car, there will be several models on display." Additional prefabricated sec-

tions and service units are easily assembled at no great cost when visitors need accommodations.

In a few words Mr. Bennett presents some thoughts on client, materials, crafts. Today's experience is teaching families the advantages of community and neighborhood features. All people want improved equipment and at less cost, yet 69 per cent of American families want their own separate homes—oftenest of a Cape Cod cottage type. It will be interesting to see what happens with regard to the labor- and time-saving methods adopted by craftsmen for the duration. As to materials, an expert has pointed out that of the many uses suggested for plastics in a recent article only a very low percentage is valid; and "the only safe prediction about the materials industry is that the struggle for the postwar market will exhaust the ideas of the advertising agencies and bring prosperity to the professional and trade building magazines."



## THEY ALSO SERVE WHO SAVE

### SAVED 624 TONS OF COAL PER SEASON THROUGH CHANGE-OVER TO DUNHAM DIFFERENTIAL HEATING

(Sub-atmospheric Steam)

During six years, Dunham reduced heating steam requirements of Buffalo's Millard-Fillmore Hospital buildings 35.7%. Coal consumption required for all purposes including heating, and for generating high-pressure steam for hot water, sterilizers, kitchen and laundry was reduced 23.2%.

*Coal consumption for the six year period (under Dunham Differential operation) as compared to previous consumption rates showed a total saving for this period of 3743 tons—representing a saving of \$22,563.60, an average yearly saving of \$3,760.60.*

There are opportunities for cuts in fuel consumption in many types of Industrial Buildings. Further information will be provided gladly by C. A. Dunham Co., 450 E. Ohio St., Chicago.

**TOMORROW'S TOWN.** New York (512 Fifth Ave.) Nat. Com. on the Housing Emergency. v. 1. no. 1. April 1943. 4 pp.

THIS, the Committee's house organ, is to be published early every month and sent to members, who subscribe \$5 or more. An editorial, news notes, and a symposium on the Uthwatt report form the first number.

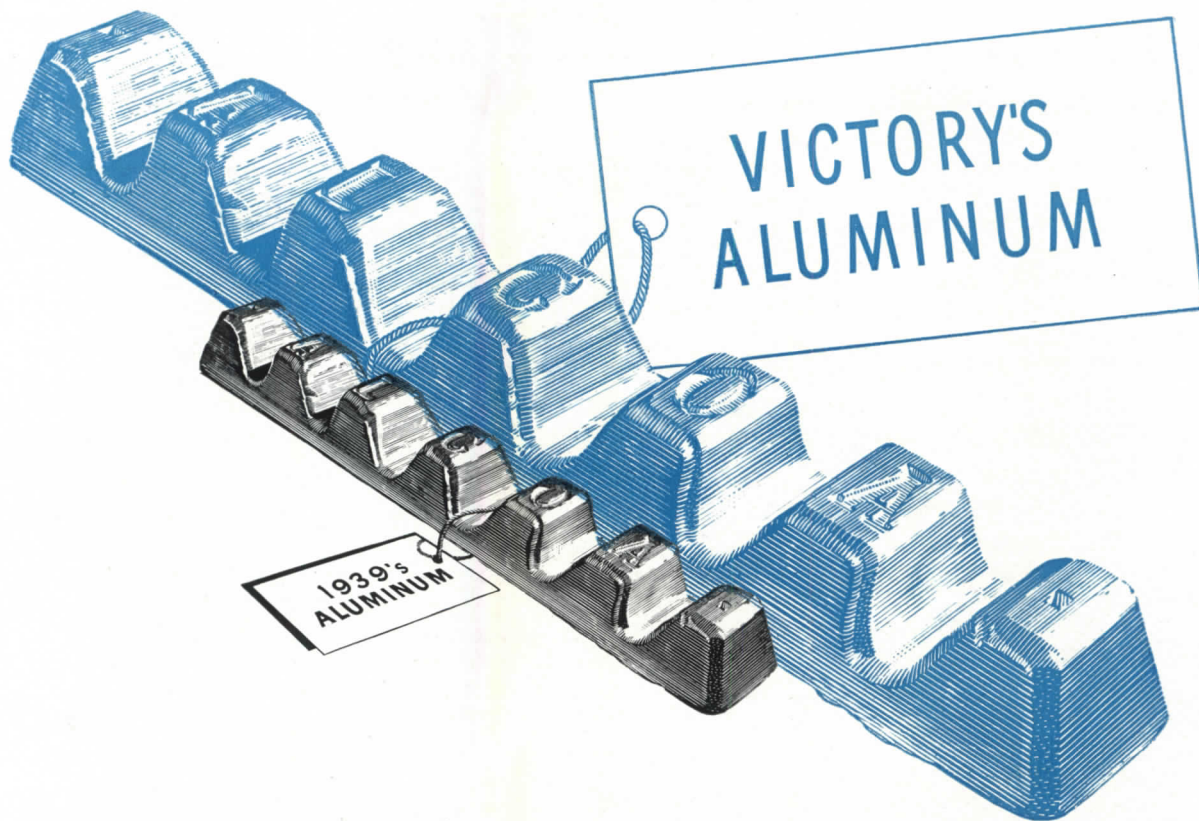
**PUBLIC BUILDINGS TO COME.** By Robert Moses. American City, New York (470 Fourth Ave.), March, 1943. pp. 35-6; 44.

CITING the last postwar and the depression in support of his argument, New York's Park Commissioner urges that although "most practical minds are fastened on the winning of the war, the spade work for postwar public works must be done now if anything is to grow up later." Some communities have discussed projects, few have anything useful as a basis for letting contracts. Local, state, and Federal co-ordination will be needed for projects such as the long projected Boston-Washington Highway. The Federal government is willing to contribute half the cost of plans and specifications; it is up to the communities to do their part, and get their corresponding share of the advantage.

REMEMBER—  
HE ALSO SERVES  
WHO SAVES

*Dunham Makes Fuels Go Further*

**DUNHAM**  
HEATING SERVICE



## How much will *You* want for postwar building?

**This you know:** When the shooting is over, there will be more aluminum . . . probably six times more . . . than there was before it started in 1939.

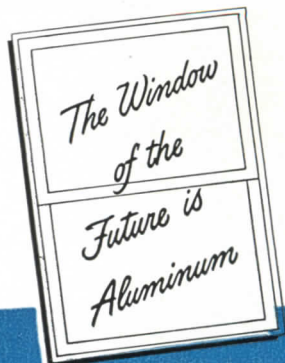
**This you should ponder:** The price of aluminum is lower today than it has ever been . . . 25 per cent lower, on ingots, than in 1939. You can toss out all the cost figures you ever used on aluminum. After the war, you will have a fresh new set to stir your interest.

**This you should investigate:** Aluminum technology is on the march to new horizons. Designers of war materiel are learning how aluminum alloys contribute to the betterment of those products; greater utility, longer life, finer appearance. Manufacturers and their workmen now accept the

fabrication of aluminum as a matter of course.

**This you remember:** Before the war channeled all aluminum into fighting equipment, aluminum was being widely used by architects and builders. Doors, windows and sills, skylights, coping, spandrels and decorative devices; all are now giving a good account of themselves on homes and buildings all over the country. Postwar construction is certain to employ aluminum in a big way.

**All of which calls for Imagineering.** Let your imagination play with these facts: more aluminum, cheap aluminum, new aluminum technology. Engineer them into your designs *now*, on the drawing board, and be ready when wartime shooting stops and it's time to get going on peacetime construction. ALUMINUM COMPANY OF AMERICA, 2167 Gulf Building, Pittsburgh, Pennsylvania.

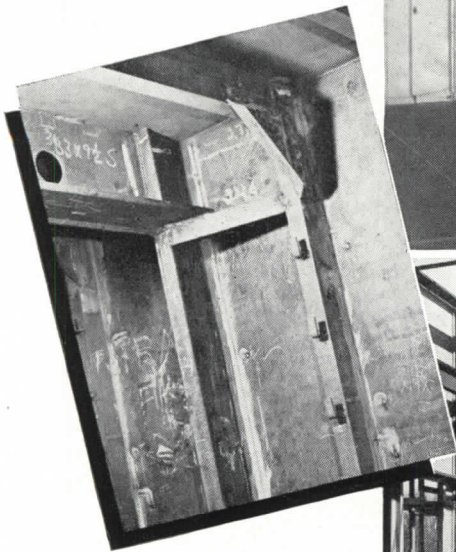


# ALCOA ALUMINUM

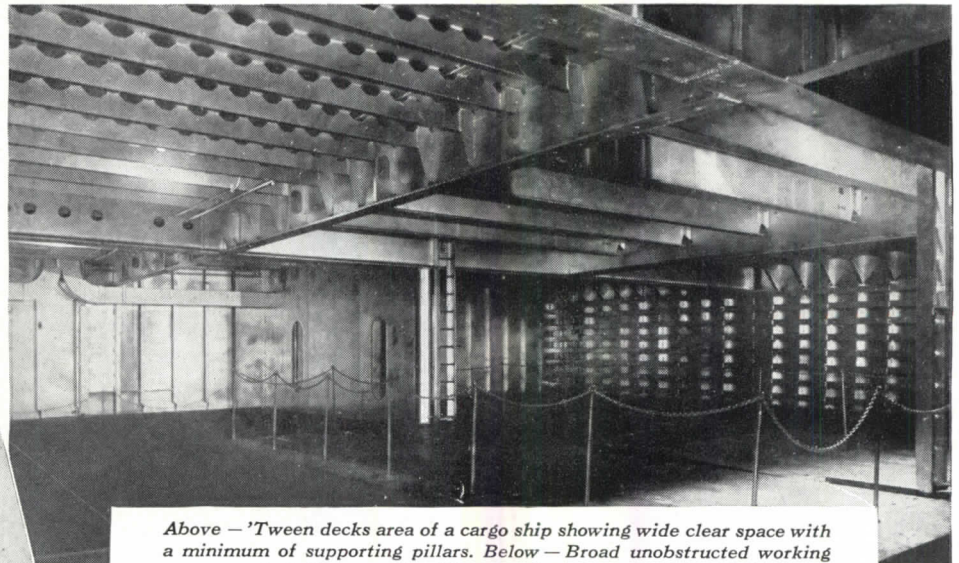


# WELDING *provides unobstructed working space*

## IN BUILDINGS AS WELL AS SHIPS



*Continuity of members at their intersections permits a reduction in their size and provides more lateral stability. Welding facilitates the making of such connections.*



*Above — 'Tween decks area of a cargo ship showing wide clear space with a minimum of supporting pillars. Below — Broad unobstructed working spaces and shallow overhead beams characterize welded rigid frame industrial buildings.*



By using continuous beams and girders, naval architects reduce to a minimum the number of supporting pillars in the holds of cargo ships and provide wide, unobstructed 'tween deck areas. This traditional ship design is effectively carried out in modern vessels by the use of welding.

Similarly the modern trend in building construction is toward providing ample clear working spaces by employing continuous beams and rigid frame designs. Welded design is naturally adaptable to this type of construction where strong rigid joints are required. It not only provides the necessary joint strength but also realizes important savings in cost.

The widespread use of welding in ship construction and many other war projects has accelerated the advancement of welding construction methods. In addition, many welding operators and structural steel fabricators are gaining broad experience that will help increase the efficiency of shop and field welding in post-war building construction.

Air Reduction will be glad to assist architects, designers, and structural engineers on any problems concerning the application of welding. For information write to the nearest Air Reduction office.

# Air Reduction

General Offices: 60 EAST 42nd ST., NEW YORK, N. Y.

IN TEXAS  
MAGNOLIA-AIRCO GAS PRODUCTS CO.  
General Offices: HOUSTON, TEXAS  
OFFICES IN ALL PRINCIPAL CITIES



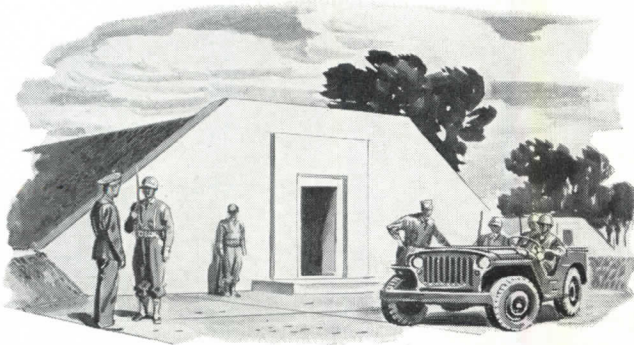
**IDLE CYLINDERS ARE PRODUCTION SLACKERS: *Keep 'em rolling for victory!***



# Koppers "C & C"\* Projects

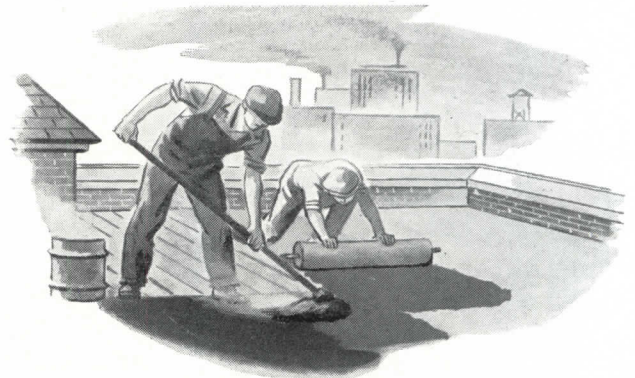
\*Current and Contemplated

*Better roofs may be born in an igloo*



**Current**

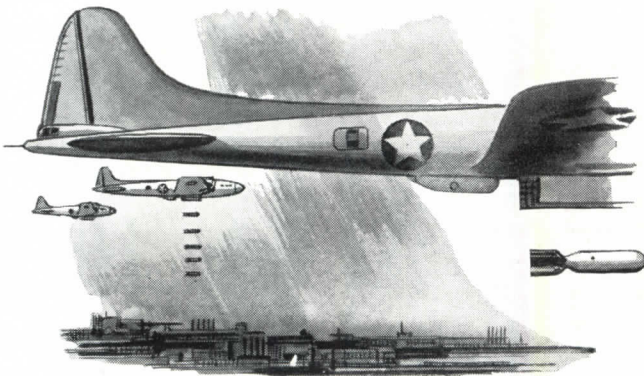
Koppers Coal Tar Products "keep your powder dry"—In concrete "igloos" covered with ground, the Army keeps its powder dry and safe from enemy eyes. This is fine for the powder but hard on concrete. To protect the concrete and exclude water, many of these igloos are sealed in watertight "blankets" of Koppers coal tar pitch and tar-saturated fabric and felt.



**Contemplated**

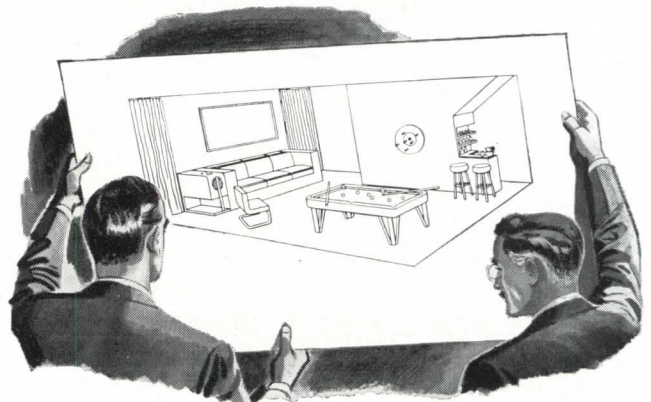
More roofing products may soon be available for non-war use— Many of the biggest wartime building projects are well along toward completion. More coal tar pitch roofing may soon be available. This will be good news for anyone who has roofing work to be done, because coal tar pitch and tar-saturated felt are such long-lasting materials.

*Better heat may be born on a drawing board*



**Current**

The Flying Fortresses that rain death on the Axis could not be produced so fast nor so well without America's rich reserves of bituminous coal. Millions of tons are delivered to the war industries, yet ample coal has been supplied for residential heating, and to the coke plants.



**Contemplated**

For dependability of supply, as well as for all around fuel economy, design your homes and buildings for solid fuel. Modern coal and coke stokers make this fuel almost completely automatic and permit wide utilization of basement for playrooms and other purposes.

**Koppers Company and Affiliates, Pittsburgh, Pa.**

## **KOPPERS**

THE INDUSTRY THAT SERVES ALL INDUSTRY

"...I'm not doing much building  
but I'm doing a lot of thinking!"

"Before the war I built quite a few houses...nothing spectacular, but generally acceptable...about 50 a year, averaging about \$5,500. And they were all pretty much alike.

"These last few months, I haven't been doing much building but I have been doing a lot of thinking...about what I'm going to build when the war stops.

"I'll let you in on one of my hunches. Houses have always had floors, walls, roofs, doors and windows, and while all these structural features are vastly better than they used to be, the most important improvement in living is in the operating equipment...the things we use to cook and heat with, and the numerous other devices which have made housekeeping easier.

"I used to figure that I would hold down both the amount and quality of operating equipment because that would make the house cheaper. What I failed to figure was that, by using the most efficient equipment, I would have a better house to sell, and at the same time I would save money for the owner in his monthly operating bills.

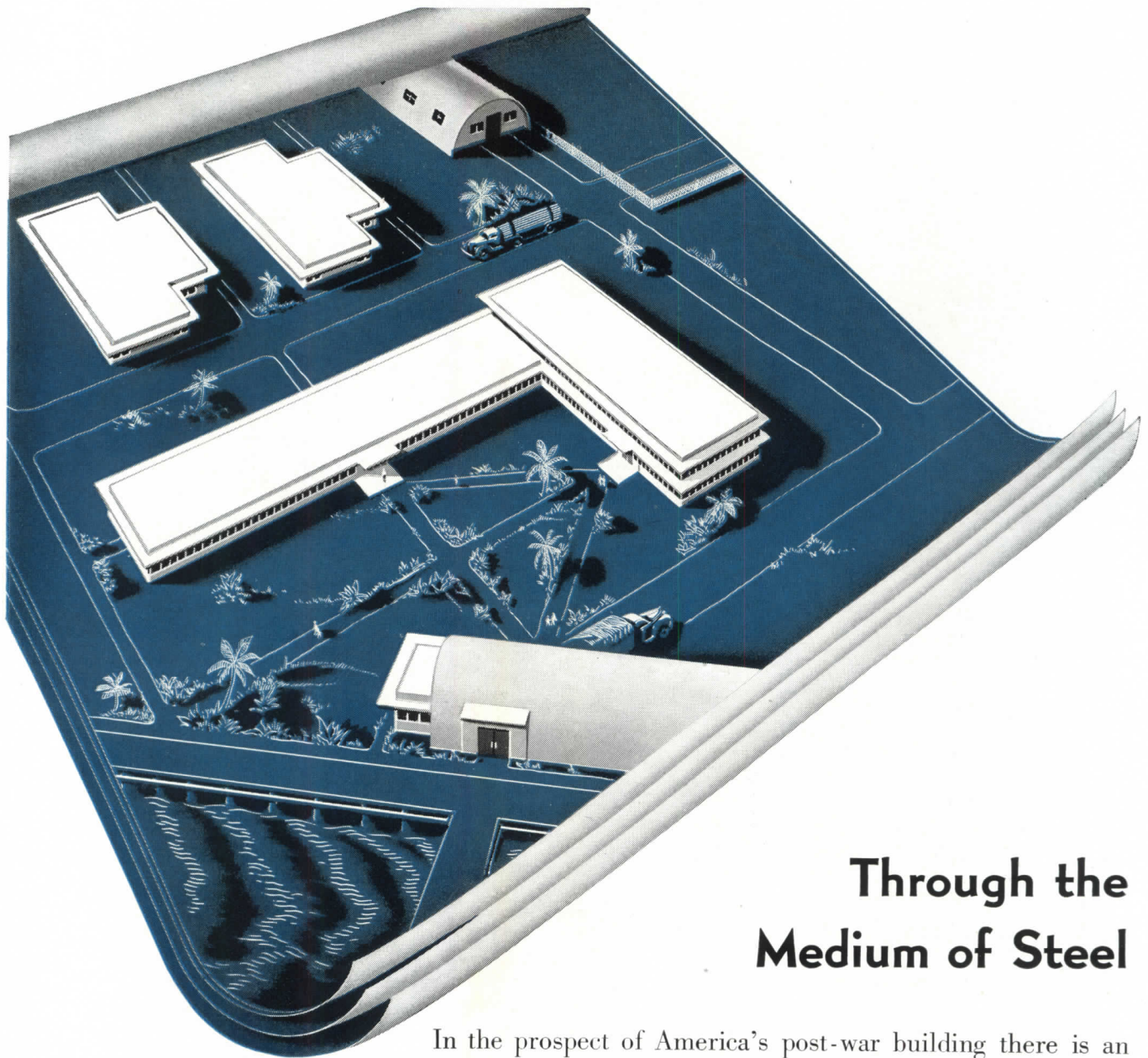
"So here's my No. One Memo for post-war building:  
Efficient, quality-built electrical equipment usually contributes more in operating economies than any increase it may cause in monthly amortization payments when financed under a long term mortgage.  
It can actually cost less to live better."

*We would be glad to receive comments or questions on this memo.*

**GENERAL  ELECTRIC**

HOME BUREAU

BRIDGEPORT, CONN.



## Through the Medium of Steel

In the prospect of America's post-war building there is an exciting challenge of new frontiers. Geographical limitations will be erased by the extension of air transportation, while boundaries of architectural thought and execution will be pushed back by new methods and materials.

Stran-Steel's wartime assignment has brought about far-reaching engineering developments in the structural uses of light gauge steel. Today this knowledge is of military value, and is being applied entirely to military uses. When the war is won, it will provide new latitude, new freedom of expression, in varied fields of peacetime construction.

# STRAN STEEL

DIVISION OF GREAT LAKES STEEL CORPORATION  
1130 PENOBSCOT BUILDING, DETROIT, MICHIGAN

UNIT OF NATIONAL STEEL CORPORATION

FOR  
**VICTORY**

all war-time  
construction  
is essential—

**COORDINATED  
SPEED**

is vital. If you  
can help on this  
job—*move fast*

F. W. DODGE



CORPORATION

**D O D G E  
R E P O R T S**

*Our War-Time Mast-Head!*

**AS IT APPEARS IN DODGE REPORTS**

F. W. DODGE CORPORATION

119 West 40th Street, New York, and Principal Cities East of the Rocky Mountains

**MAKE THIS TEST -**  
*Prove* **BRIXMENT** *is* **BEST!**



**1**

"Cap" one brick with Brixment mortar (left), and one brick with mortar made with 50-50 cement and lime. After mortars have hardened, place both brick in a pan of shallow water. (Photo 1.)



**2**

Keep about an inch of water in the pan. Even if soluble salts are present in the brick or sand, you will soon be convinced that *Brixment mortar helps prevent efflorescence.* (Photo 2.)

# **BRIXMENT** *Helps* **Prevent EFFLORESCENCE!**

EFFLORESCENCE is an outcropping of minute white crystals on brickwork. When these crystals occur on colored mortar joints, the condition is sometimes mistaken for *fading*.

Efflorescence is caused by the presence of soluble salts in masonry materials. When reached by water, these salts dissolve, and are drawn by evaporation to the surface of the wall.

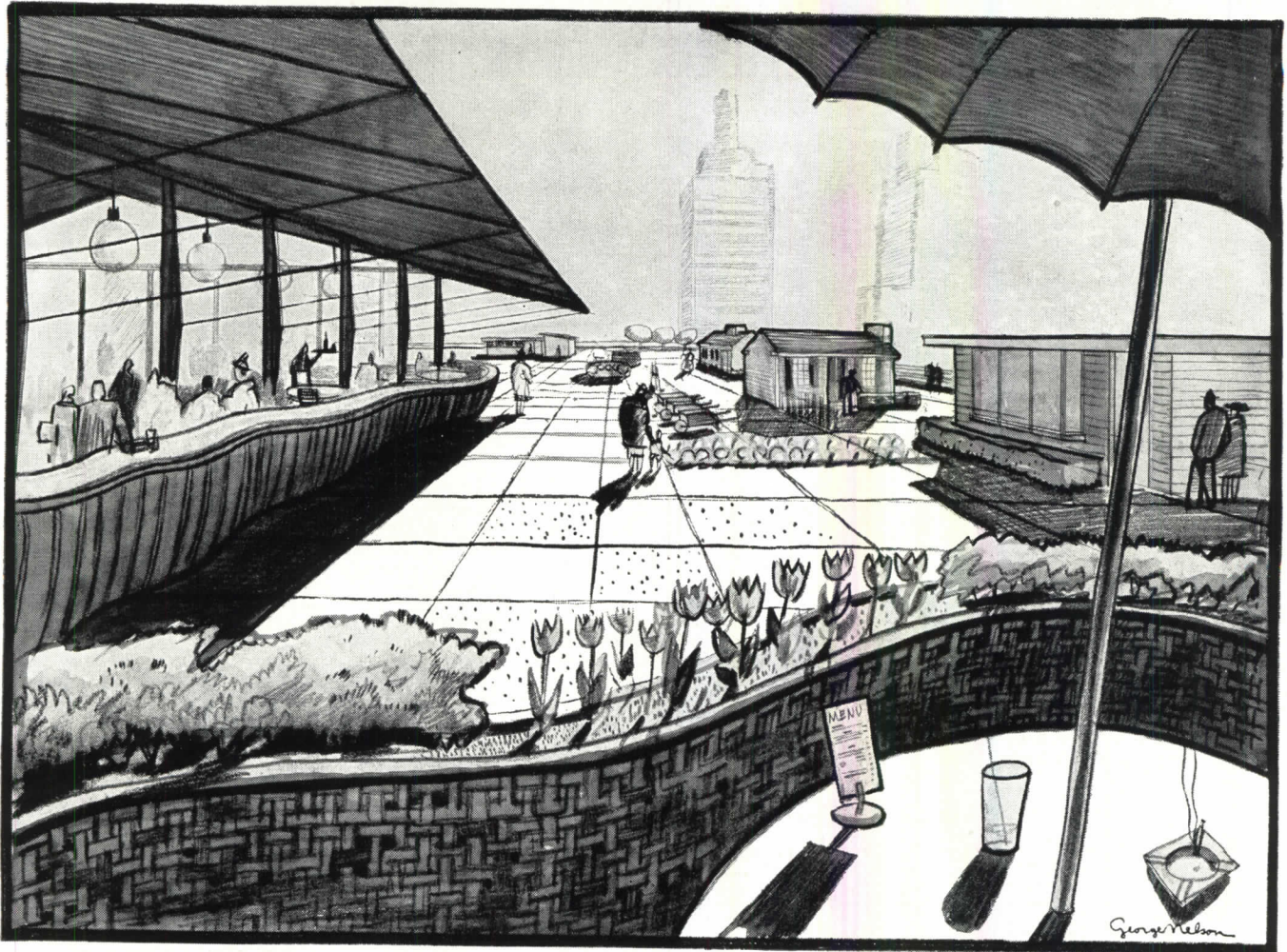
Brixment itself *does not cause efflorescence* because it is practically free from soluble salts. Even when such salts are present in the sand or brick, the waterproofing in Brixment mortar usually *prevents*

*them from coming to the surface. . . .* Bricklayers who have used Brixment mortar for years say they have far less efflorescence with Brixment mortar than with *any other kind.*



# **BRIXMENT** *For Mortar and Stucco*

*Louisville Cement Company, Incorporated, Louisville, Kentucky. Cement Manufacturers for Over a Century.*



DEPARTMENT  
STORE  
IN 194X

AN outdoor selling department that is *actually* out of doors... prefabricated houses for sale on the roof of a department store... This is just one example of the many functional possibilities of roofs in the post-war building era ahead. Designed by architect George Nelson of New York City, this project opens new horizons in department store roof design. Space is provided for assembled prefabricated houses, arrangements of outdoor game equipment, garden furniture and pools, where they may be exhibited in their proper surroundings. Featured also are an attractive soda fountain and

restaurant with tables indoors and out. The roof is appropriately finished to protect the waterproofing membrane and utilize important roof areas which are generally neglected.

\* \* \*

This is the first of a series of architectural designs providing greater utilization of roof areas, a development forecast by the Barrett Roofs which support roof-top gardens in Rockefeller Center, New York, and elsewhere.

In post-war buildings, traditional limitations of design will be put to test, and many new practices and techniques will unquestionably be developed. Just as Barrett Specification Roofs proved their adaptability to new architectural forms in the decades since 1854, so too will these famous coal-tar pitch and felt roofs continue to provide the maximum in dependable, long-lasting waterproofing and weather-proofing protection for the buildings of tomorrow.

**THE BARRETT DIVISION**  
ALLIED CHEMICAL & DYE CORPORATION

40 Rector Street, New York

2800 So. Sacramento Ave.  
Chicago, Illinois

Birmingham  
Alabama



\*Trade-mark Reg. U. S. Pat. Off.



## RE: HOSPITAL PROJECTS ...A PREGNANT SUBJECT

**SEVERAL MONTHS AGO** we published "Building Types Study No. 67" on hospitals and public health centers. The response, even for the RECORD's unusually responsive readership, was startling.

"... this material will go far toward raising the standards of design of these important buildings," wrote U. S. Surgeon General Thomas Parran. "A top-flight job, not only for the architectural profession but the public health profession," wrote Executive Secretary Atwater of the American Public Health Association. "We are now constructing a number of health centers," wrote the Texas State Health Officer. "We have been considering architectural questions in connection with a proposed building," wrote Dean Reed of Johns Hopkins.

**WHEN WE COUNTED** them up, the postman had delivered 63 letters, and requests for 359 additional copies of that issue. Compliments, thanks, and concrete word of medical buildings now in progress all over the United States.

In dollars and cents it adds up to this: Dodge Reports for the first two months of the year show 902 hospitals for a total of \$23,993,000 — actually 608 *more projects*, \$11,674,000 *more*

*investment* than in 1942's first two months. And that's only part of the picture, for Dodge Reports of V-Day projects show 316 hospitals now in designing stage to be built when peace comes, and to cost \$90,253,000. These V-Day hospitals, by the way, are the "why" of the "Hospital of Tomorrow" feature that appears in the RECORD for May.

**SUM UP** and you have three significant facts. First, the RECORD's undeviating service to architect-engineers in terms of work currently on their boards. Second, the RECORD's sheer editorial usefulness, as it shows up time and time again in spontaneous reader response. Third, the record amount of building being done today, and the sizable number of V-Day projects now actually in designing stage.



Fifteen new advertisers joined forces with the RECORD in January and February. The RECORD's advertising gain over the same two months of 1942 was 12½ per cent, against losses of 16½ per cent and 29½ per cent respectively by the other two publications in the field. For all the "reasons why," write . . . ARCHITECTURAL RECORD, F. W. Dodge Corp., 119 W. 40th Street, New York, N. Y.



(One of a series of advertisements sponsored by ARCHITECTURAL RECORD to inform business on the current activities of our readers.)





# *MH Electronics* ARE COMING!

Every day M-H Electronics are coming closer—closer to you. Today they are performing miracles on our fighting fronts, in warcraft and on protective devices. Tomorrow, when Peace comes, M-H Electronics will be applied to temperature and industrial control, to bring to you and your

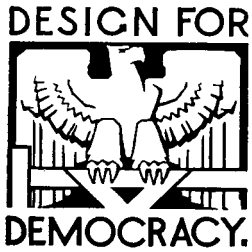
clients and customers new miracles of comfort, economy and convenience. M-H Electronics, like M-H Automatic Controls, will make possible better Automatic Heating. Minneapolis-Honeywell Regulator Co., 2804 Fourth Avenue S., Minneapolis, Minnesota. Branches in principal cities.

★ Listen: "JOHN FREEDOM"  
Blue Network Coast to Coast every  
Wednesday, 9:00 to 9:30 P. M. Eastern  
War Time; or see your local newspaper.  
"The Most Dramatic Show on the Air"

**MINNEAPOLIS-HONEYWELL**  
CONTROL *Systems*



# BUILDERS OF REPUTATION



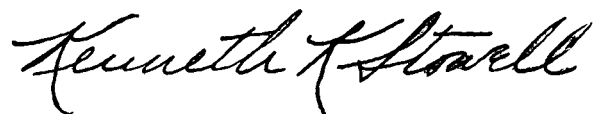
THE place of the architect in the building world today is the result of normal causes. The reputation of the profession has been established by the character, abilities, proclivities, methods, and achievements of the practitioners of the past fifty years — that reputation expresses the judgment of the public on the basis of its years of experience in dealing with architects. Every practicing architect — large or small, capable or inept, business-like or bungling, potent or effete — has contributed, and is contributing, to that reputation. By their works ye shall know them. True, the capable suffer from the works of the inept, the efficient from the ineffectual, and the public naturally does not discriminate.

♦ Owners by the score have come to me with their architectural troubles, their building difficulties, and all too frequently, their opinions of the ability and business methods of the profession have not been without some justification. Cumulatively, these opinions are the reputation of the profession. To the owners a building is a major, serious, practical, business operation, and their opinions are formed on that basis for in that realm they feel competent to judge even if they can't always appreciate subtleties or refinement in design. The architect's ability to solve the engineering problems, as well as those of plan and design, and his ability to deal with contractors to get the job done, right and on time, and within the stipulated budget, are at least as important in the owner's mind as any other factors.

♦ Consequently the building of a good reputation does not lie wholly in the appointment of a Washington representative or in a publicity and propaganda campaign. It lies with the individual practitioners and in the ability of the leaders and educators of the profession to bring the realization of this fact to the individual. Only by increasing the competence of the individual firms to operate as the efficient executives of building operations can the wished-for reputation be built. Without that, propaganda and lobbying for the profession as a whole are well nigh futile.

♦ The average young man entering the architectural profession in the past has been one of good cultural background, high integrity and purpose, possessed of ingenuity and inherent ability to express graphically the logical solutions to problems of space arrangement and its equipment. Too frequently, his education has been concentrated on developing that talent without sufficient training in the fundamentals of business processes and procedure, or the development of executive ability. Shortcomings in these two departments are at least partially responsible for the present reputation, of the profession in the public mind, however exaggerated this may be.

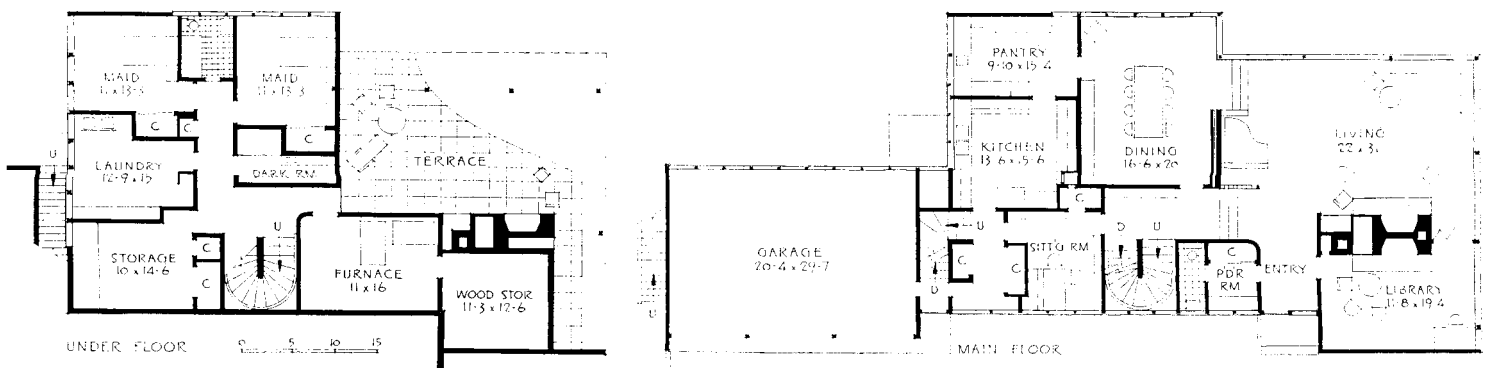
♦ To be "of ever-increasing service to Society," the profession must deliver the type of service the public wants in the way the public wants it. The public wants complete, efficient service — competent, creative ability plus efficient execution and administration on a business basis. We rarely find the requisite abilities and knowledge in one man. Because of the increased, and increasing, complexity of building operations, and the resulting need of specialized knowledge and ability, it seems logical that firms composed of experts in design, engineering, construction, and business are necessary to render this service. Whether these are partnerships or operate under the aegis of one dominant individual is beside the point. Such firms exist, many more can be formed now, technical teams for war or post war work. By such firms buildings will be built—and the reputation of the profession.

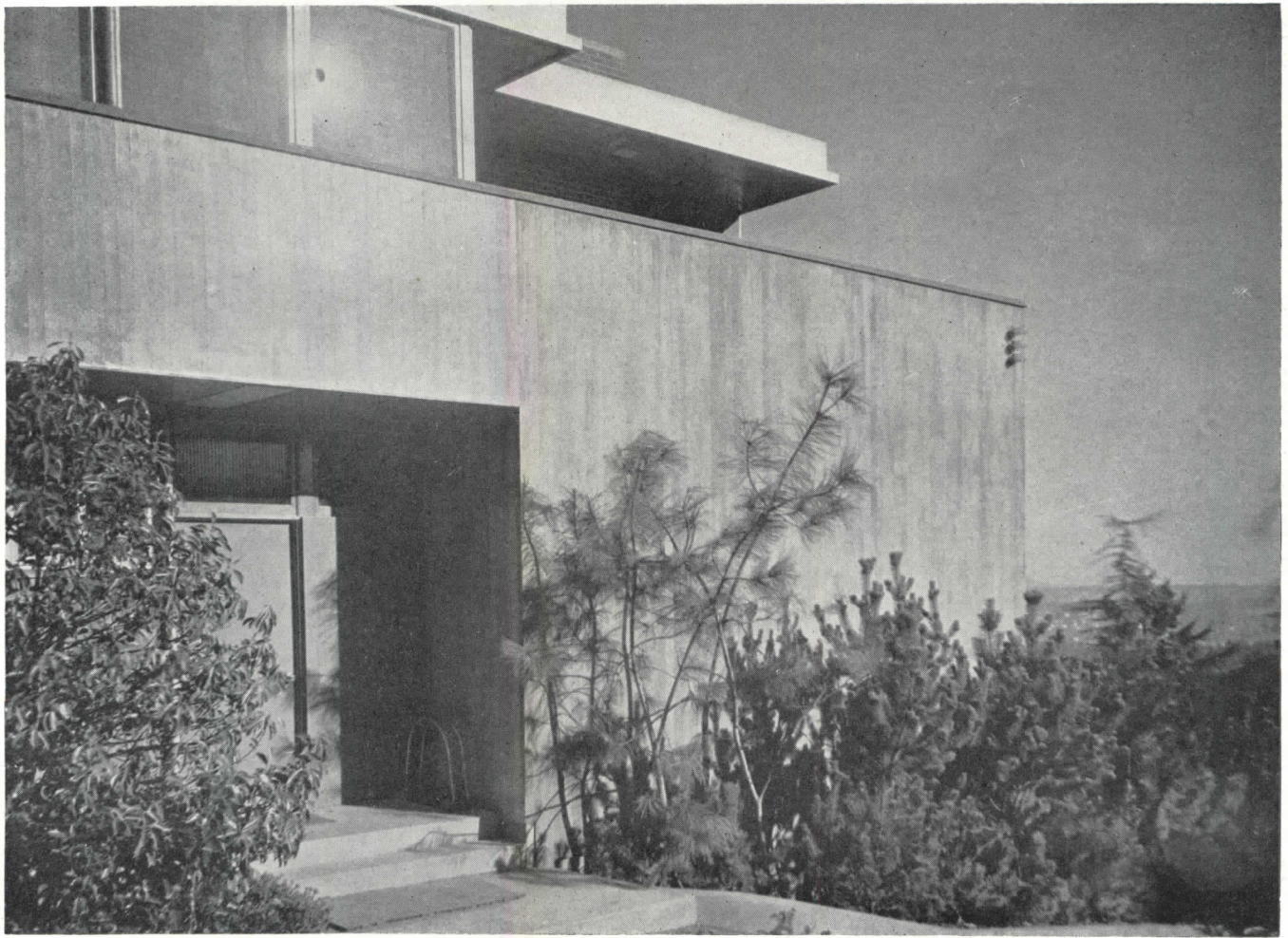
  
EDITOR-IN-CHIEF



# PLANNED FOR THE PANORAMA

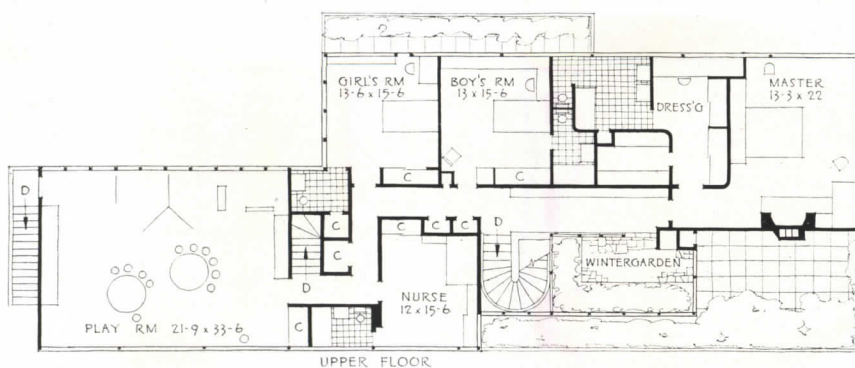
RICHARD J. NEUTRA, ARCHITECT; VAN EVERA BAILEY, SUPERVISING ARCHITECT



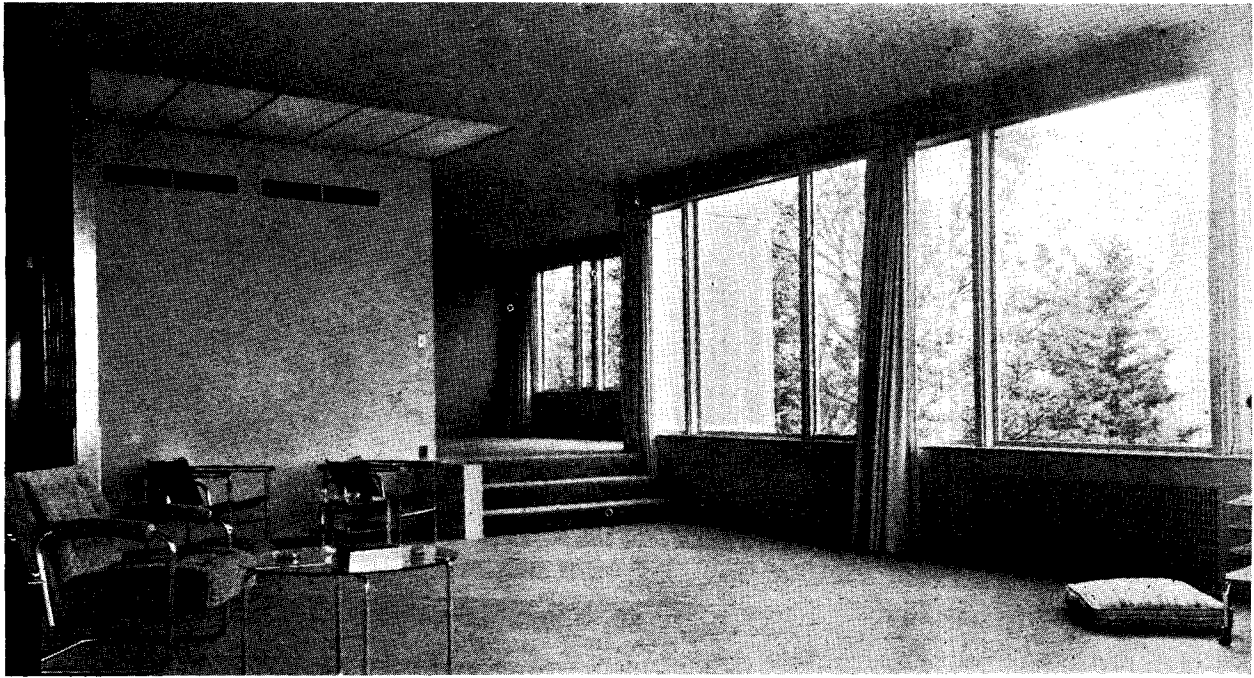


THE STEEP HILLSIDE chosen for the site of this spacious house, home of Mr. and Mrs. Jan De Graaff, Portland, Ore., was desirable, rather than the reverse. The owner, a commercial bulb grower, was not seeking a garden spot; he chose the views of mountain grandeur, and built a winter-garden on the second floor. The contemporary architecture was also his own wish. He was not interested in space economy, as the plans bear eloquent testimony. Literally nothing in the house is cramped, and the spacious-

ness permits a satisfying functional arrangement throughout. If the playroom seems almost flagrantly large, certainly both the children and the nurse will appreciate it, particularly in a climate that runs to long rainy spells. The house is of modified post and beam construction, with load-bearing mullions. Sheathing is diagonal braced ship-lap; the facing material is cedar. Exposed walls, floors and ceilings have cedar shaving insulation. Window sash are designed for possible double glazing.



House plans, as an architect rarely gets a chance to draw them—completely unhampered by requirements for space economy. Here is a children's playroom as large as an ordinary schoolroom, a master's suite as large as a small house, luxurious servants' rooms, and great storage areas. Unique features are an upstairs wintergarden, and an under-the-house terrace with a built-in fireplace

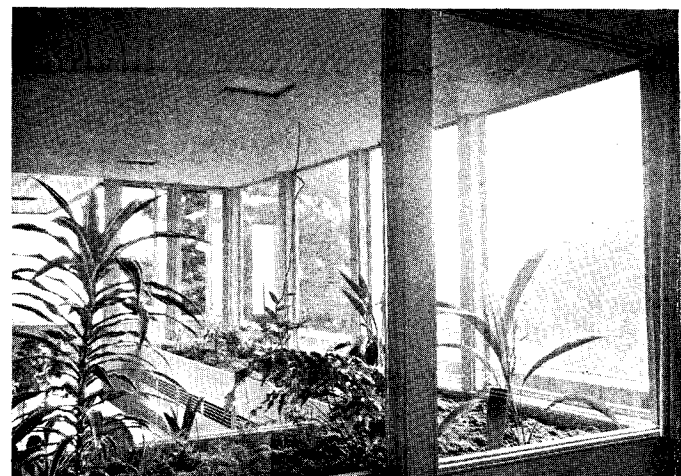
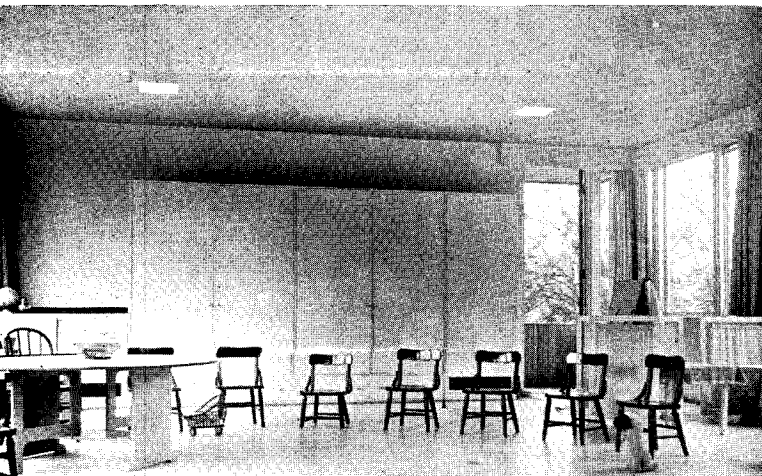


Erven Jourdan

Above: Living room, toward dining room. Right: Living room fireplace

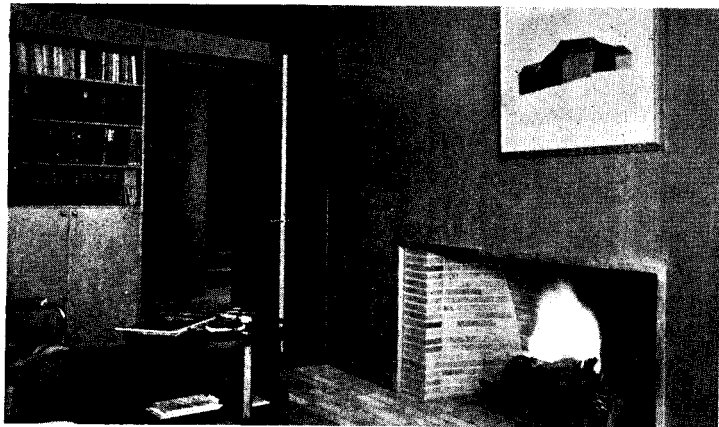
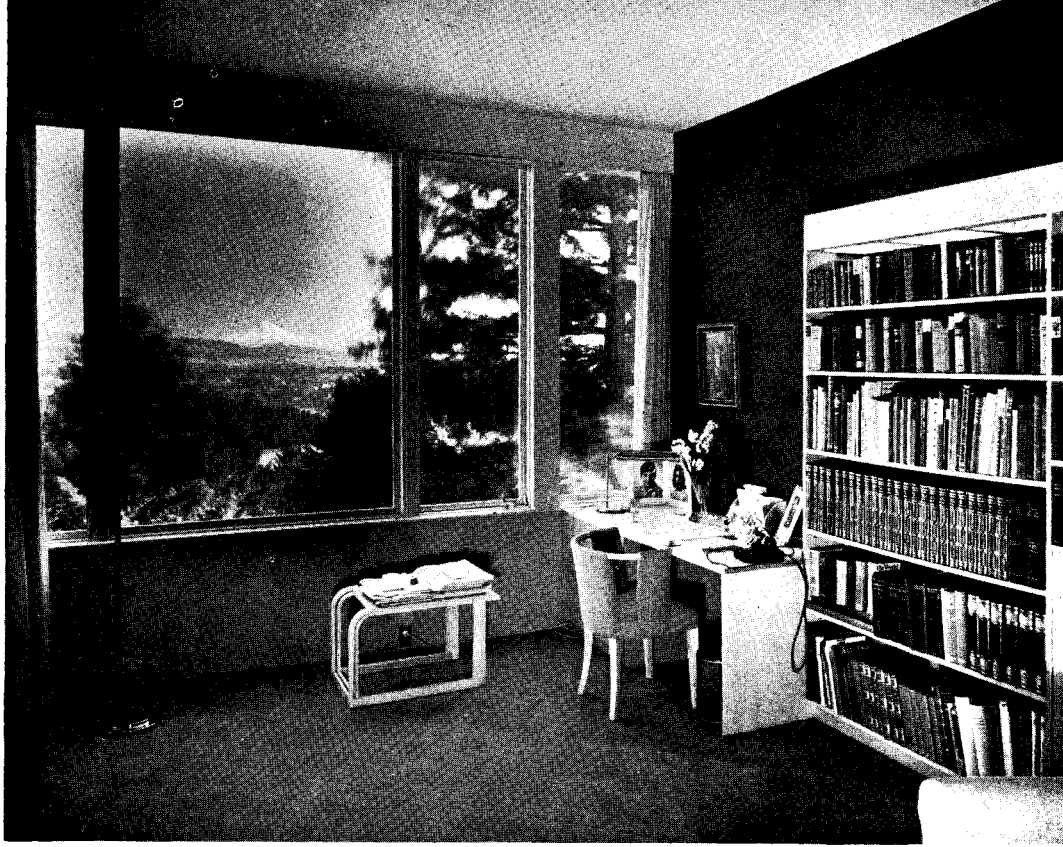


Below: A heaven for active children, a playroom as large as a 3-car garage.  
Below, right: View of wintergarden

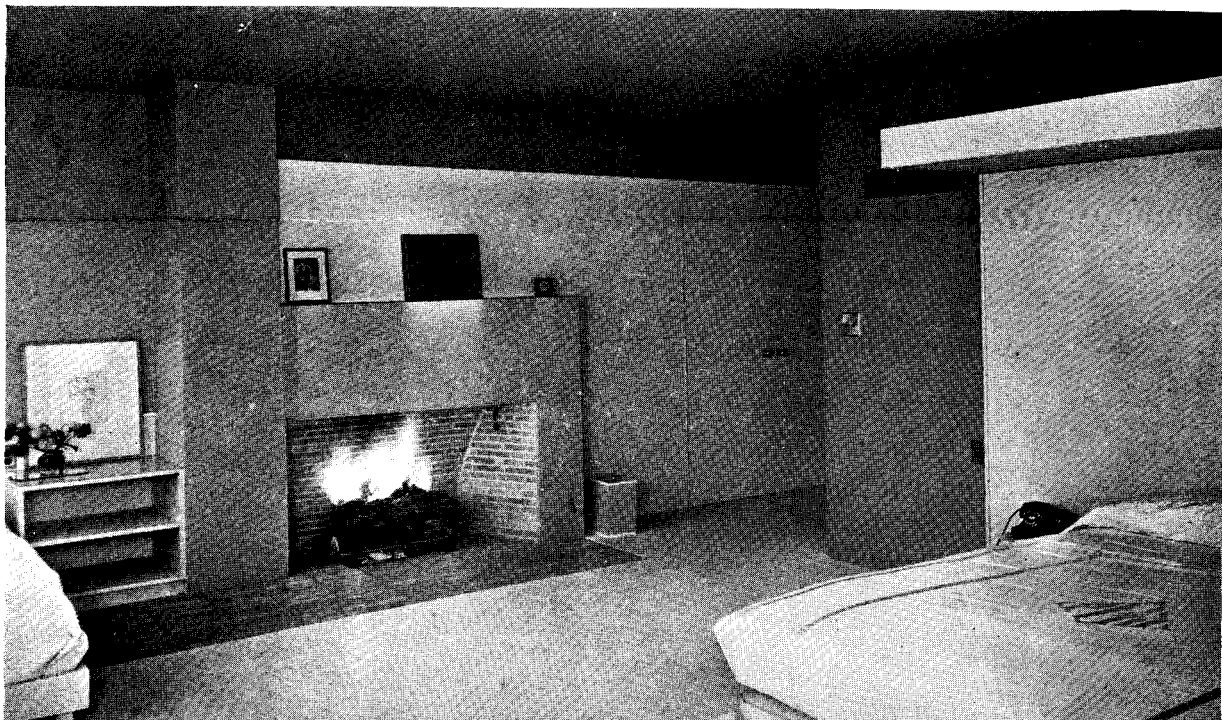


Right: For this view the site was chosen and the house designed—Mt. Hood as seen from library windows

Henry Eide



Left: Interior view of the library. Below: Interior view of master bedroom





## COMPACT COTTAGE IN NEW ENGLAND



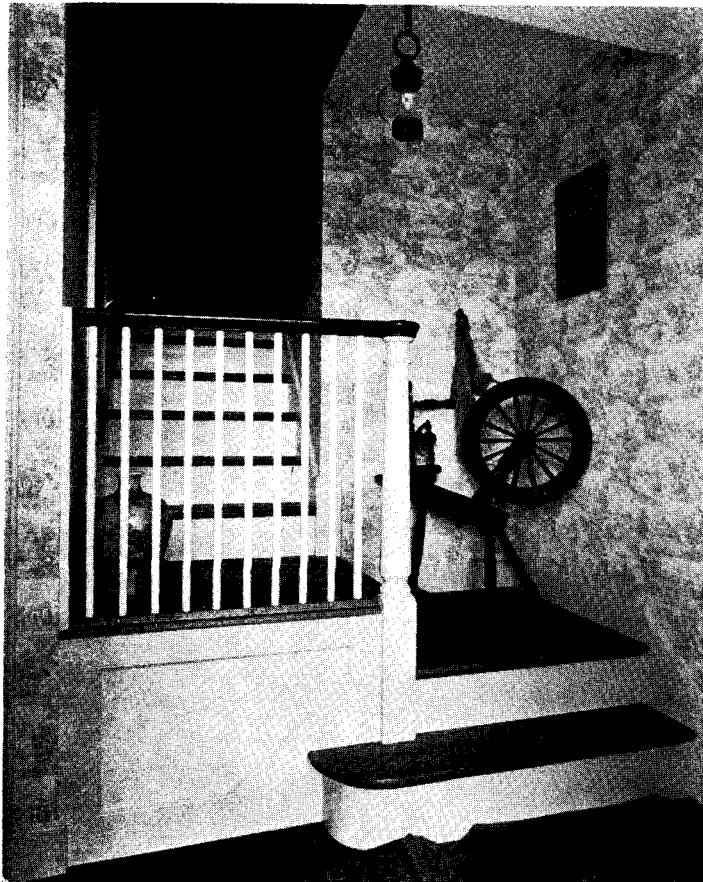
ROYAL BARRY WILLS, ARCHITECT

**T**HOUGH the Early American heritage of this little house supplies its essential character, its plan and its details were worked out for today's tastes and living habits. It is like its forebears in compactness and economy, but it manages to be spacious where a later day demands it, as witness the generous proportions of bathrooms and kitchen, also its closets. This combination was achieved by keeping so-called waste space to a practical minimum. The second floor, left unfinished in the original construction, is arranged for two generous-sized bedrooms and bath.

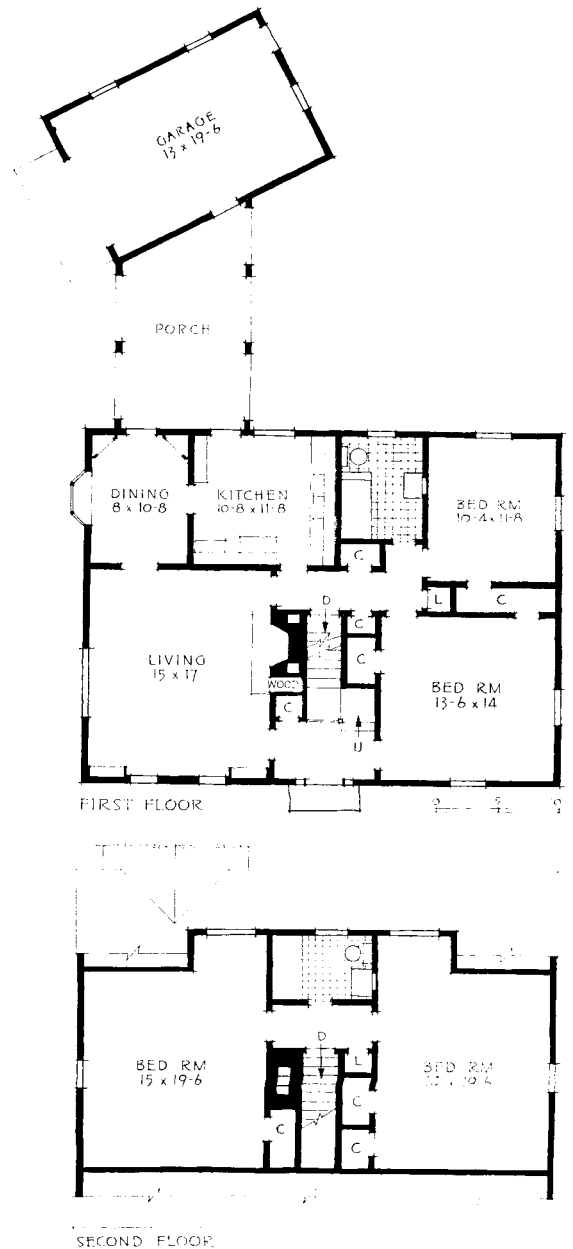
Interiors follow the simple Colonial tradition, executed with considerable restraint. The fireplace is of brick, with wood trim and wood mantel extending over a fire-wood compartment, at right. Woodwork throughout is painted white and walls are finished with wallpaper

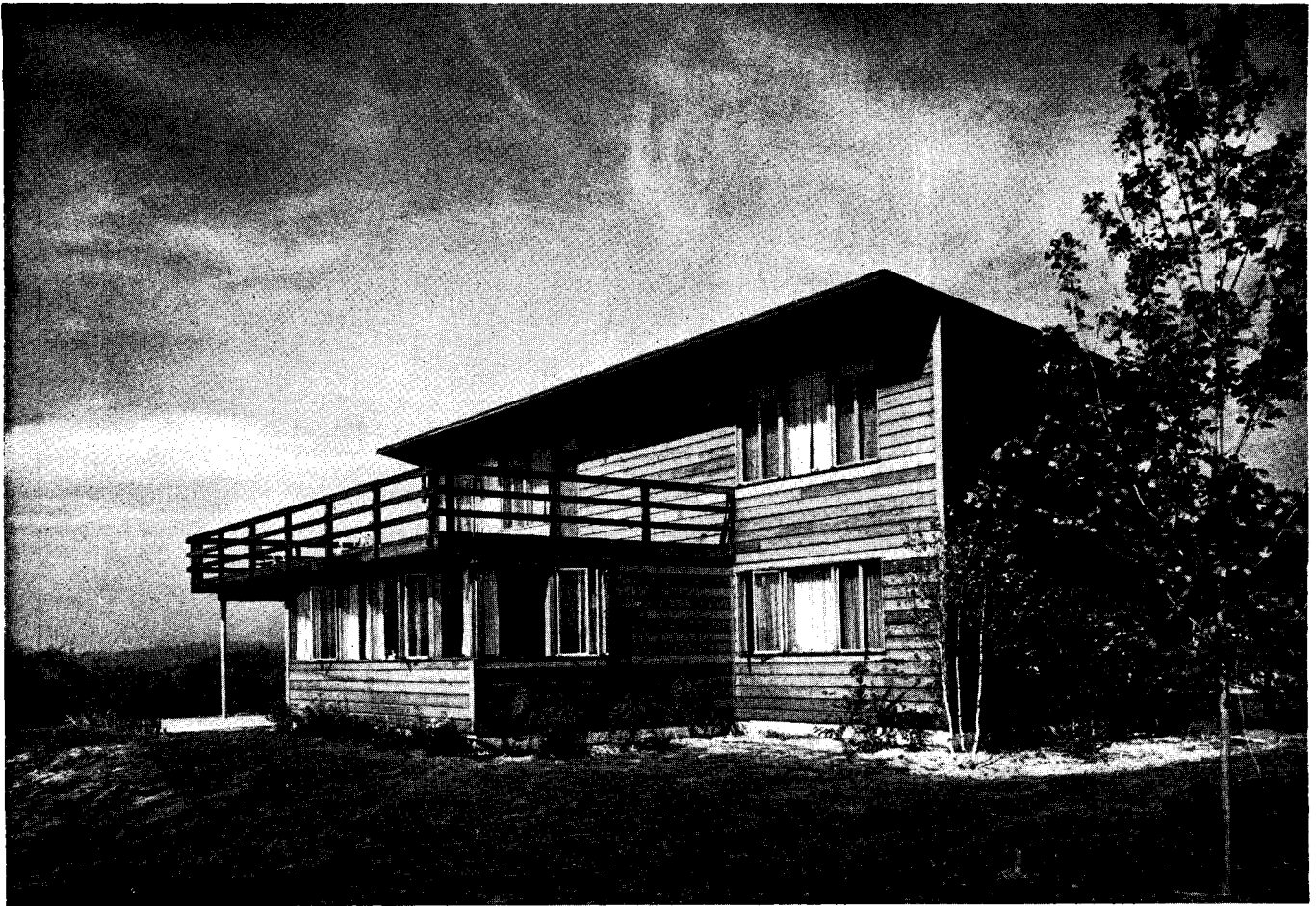


Landings add a note of graciousness to an otherwise straight staircase

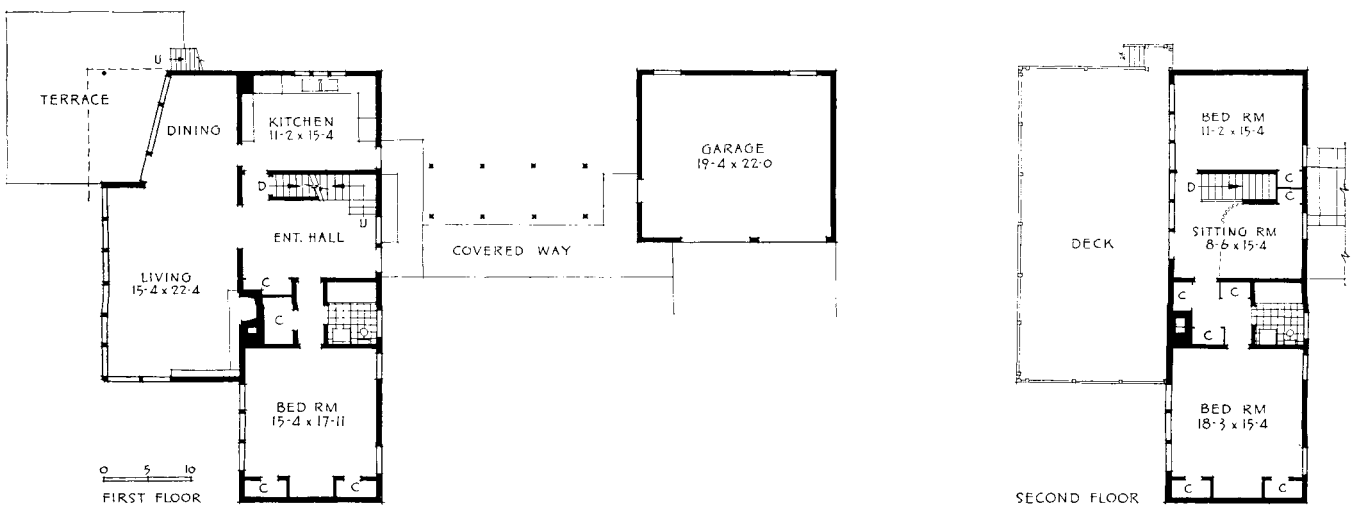


Haskell Photos

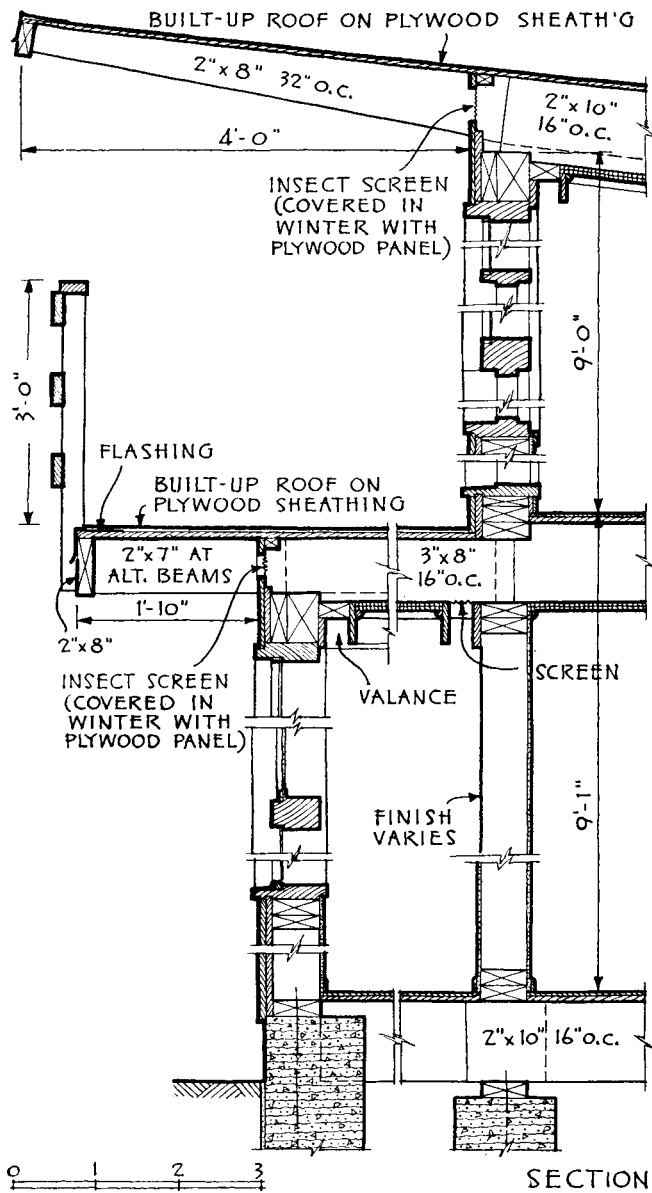




# A VIEW DICTATES A DESIGN





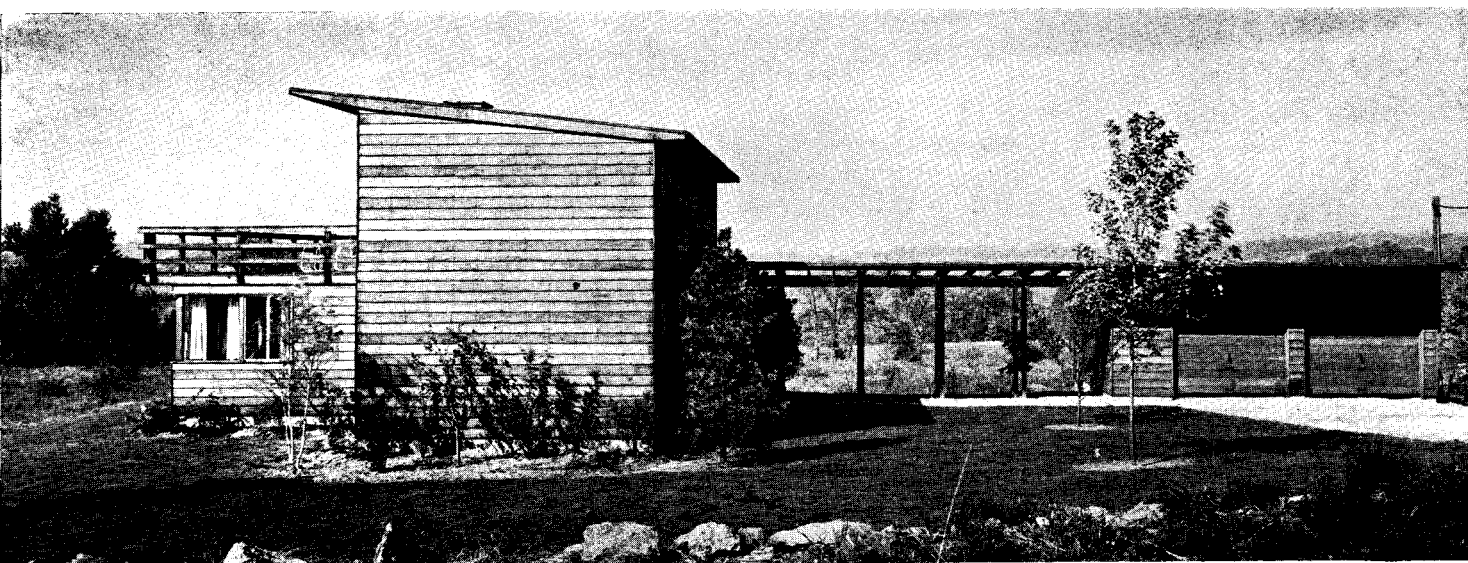


Full natural ventilation is achieved by openings between roof beams. Extension of the deck provides an opening at first floor ceiling; opening in living room ceiling at rear aids circulation

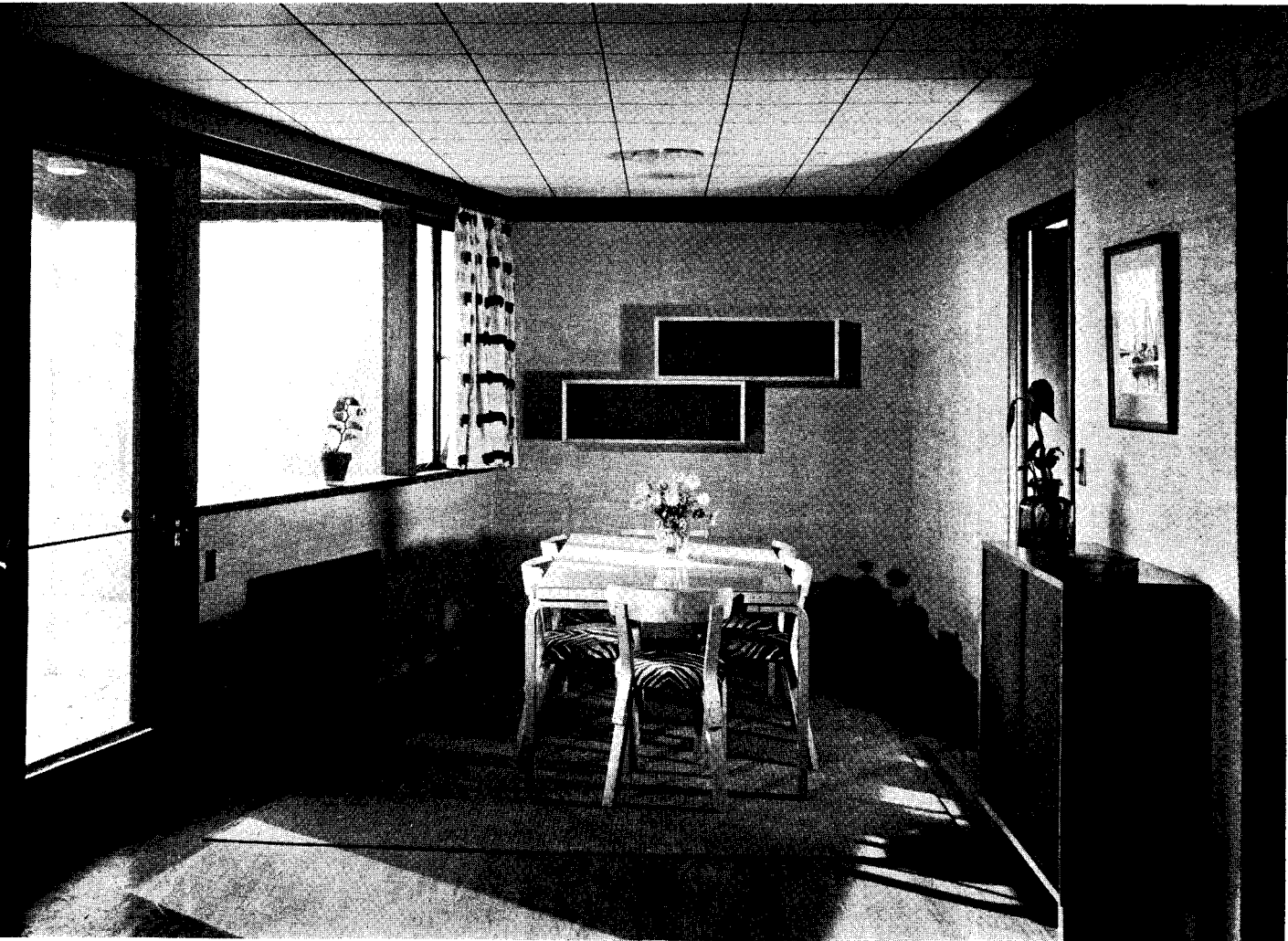
**POMERANCE & BREINES, ARCHITECTS**

**T**O TAKE ADVANTAGE of a fine view to the south with this house for Mr. and Mrs. Emmet G. Wood, Briarcliff, N. Y., it was necessary to establish a terrace level some 10 ft. above grade. The view also suggested the plan with the open deck over the living room. This in turn suggested the combination hall-sitting-room-guest-room on the second floor, opening out onto the deck. An outside stair leads from the deck to the terrace. Though the site is a full acre, economy dictated the second floor. (Further economy note: 16-ft. uncut floor joists were used throughout.) Exterior of the house, and garage, is of redwood siding.

The main roof is designed to shade the south side of the house in summer and admit sunlight in winter. There



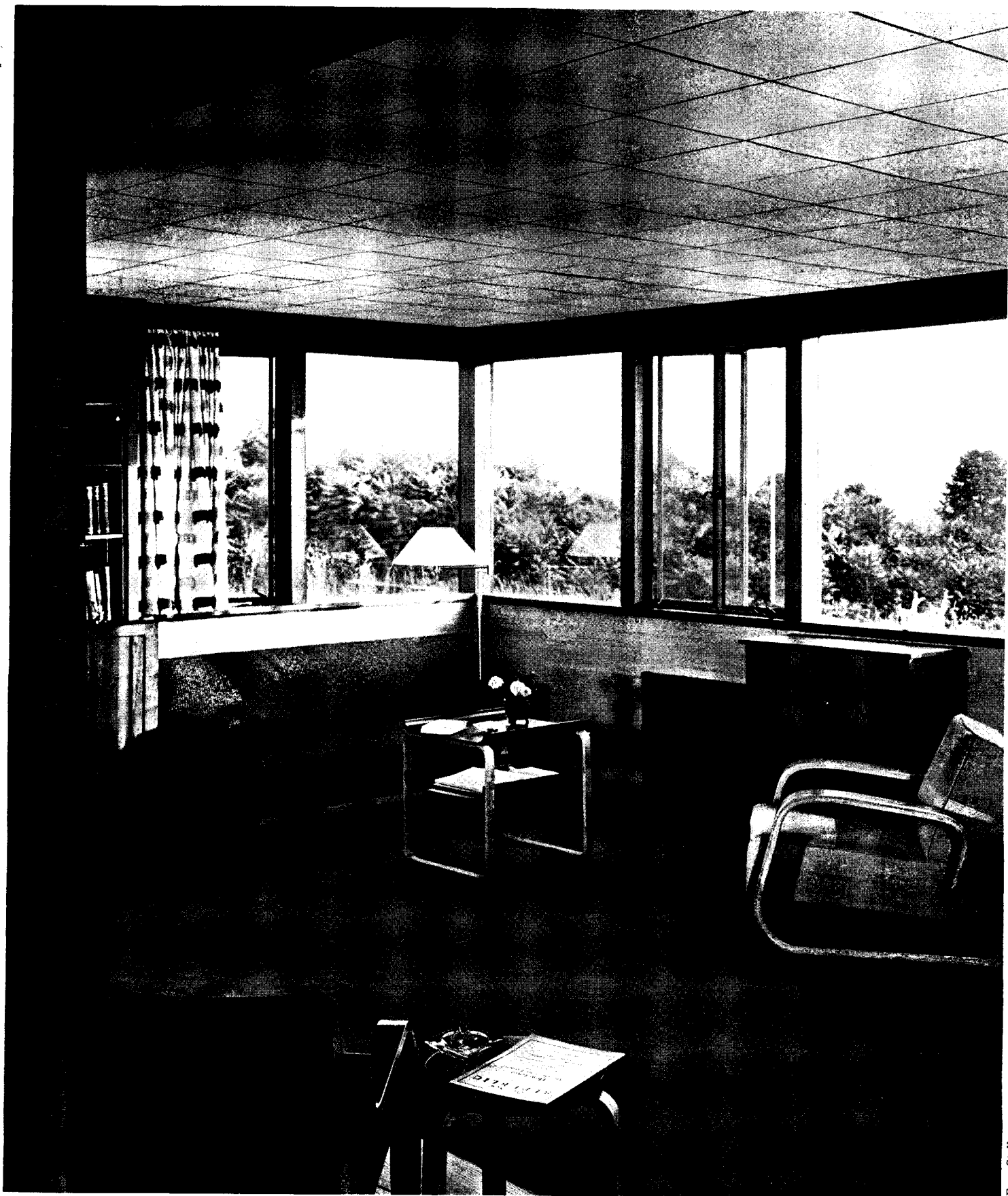
Esra Stolter



Interior walls are of composition board, finished with natural grass paper, burlap or redwood. Ceilings of finished insulating tile

are no gutters or leaders. Both main roof and living room roof have through ventilation (see section). The venting of the main roof was fairly simple, but the living room presented a problem in that it backed up against the main section, which prevented through ventilation. The solution was found in projecting the deck beams some 2 ft. on the south side to permit air up and under, then to open a space of about 3 in. at the living room ceiling where it abuts the two-story section. "We have always considered," say the architects, "that the usual ventilation of roofs and attics with louvers was inadequate. Experience proves that nothing less than 100 per cent ventilation is sufficient for most summer conditions." In winter the roof openings are covered with plywood inserts, held in place with wing nuts. Small holes in the inserts take care of any condensation.



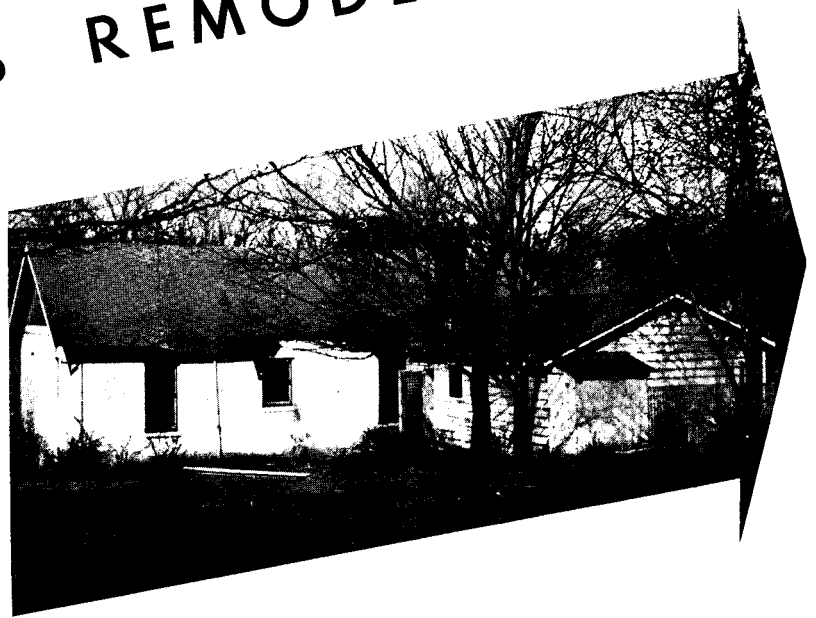


Erna Stoller

Living room and dining space are open on three sides (windows are continuous on south wall) to take full advantage of a fine view

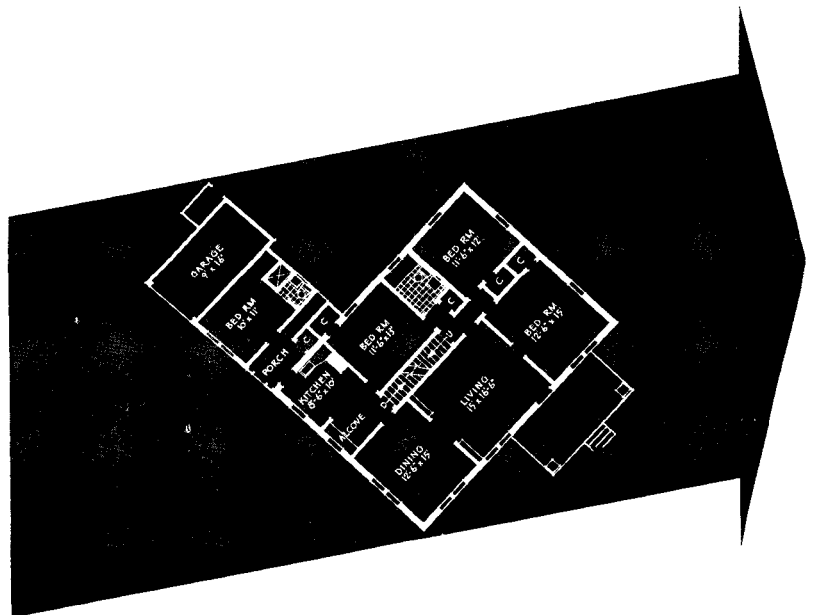


# THE REMEDY IS REMODELING



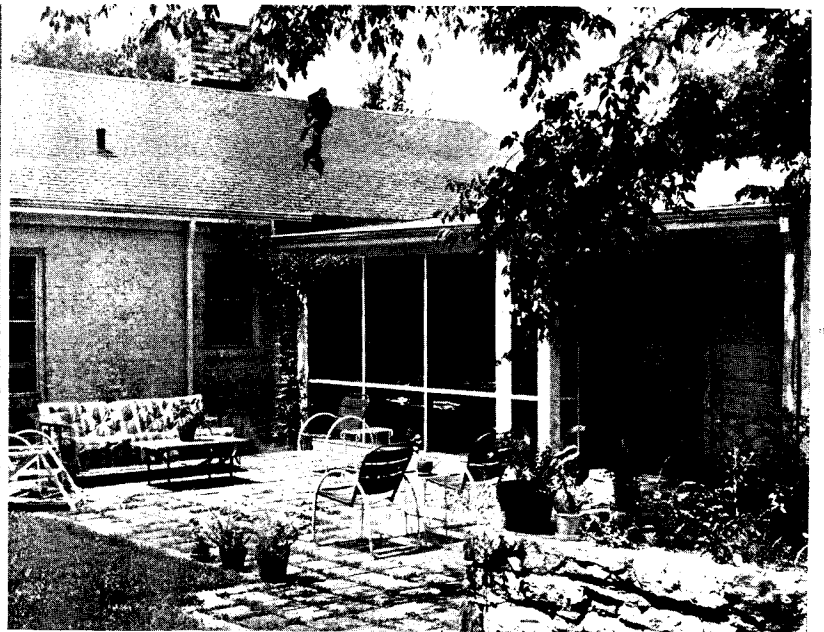
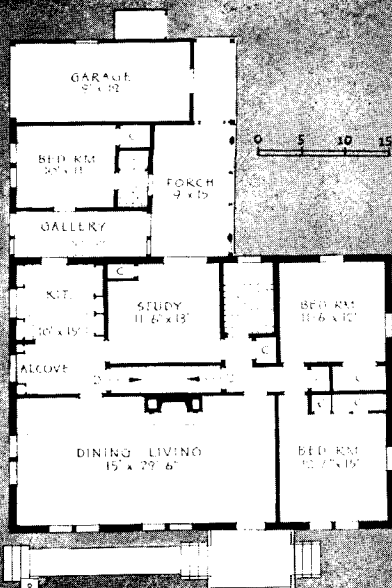
BOLTON McBRYDE, ARCHITECT

FOR a private postwar plan, an architect might do worse than to plan, now, the remodeling of a few of the beastly-looking bungalows that are blighting many American cities. If their owners could visualize such a transformation as is shown on these pages, much modernization work would be planned and waiting for the first lifting of building restrictions. This house in Nashville, Tenn., remodeled by an architect for his own use, involved principally visual, not structural, changes. As for the exterior, the removal of an unsightly front porch and a large dormer gave a good start. From there on it only required a new entrance, a new cornice detail, new windows in the old frames, to bring out inherent possibilities of the old house. Biggest expense items in the \$3,500 total were a new heating system, fireplace and new chimney, new kitchen equipment, concrete slab in basement, and a new roof. Also a summer ventilating system.





*Bolton McBryde*



# LIGHTING FOR EASY SEEING

BY MATTHEW LUCKIESH, D.Sc., D.E.†

**To provide good seeing conditions the architect must deal with the whole interior, not just the work plane. Science emphasizes the brightnesses of light sources and backgrounds and brightness-contrasts between the work and its surroundings**

**B**EWARE of the limitations of foot-candles. They are a measure of the *level of illumination* but they alone do not determine the *brightness*. And brightness is a controlling factor in lighting for comfortable seeing.

Note a white cuff projecting from a dark coat sleeve. Cuff and sleeve differ greatly in brightness even though they receive the same amount of light. If an illuminating engineer talks foot-candles and ignores brightness, his approach is inadequate. He belongs to the dark age of yesteryear before certain aspects of the science of seeing were available for specifying light and lighting on a brightness basis for easier seeing. He belongs in one of the dark-walled, dark-floored—and sometimes dark-ceilinged—dungeons along with the shades of those who designed those dark-stained areas.

Many dingy dungeons—old clubs, rathskellers, paneled living rooms and libraries—still exist as gloomy examples of an unenlightened era in which the rudimentary principles of good seeing conditions had not yet been established. In such interiors lighting for adequate and easy seeing is a practical impossibility. Thus the strategic position of the architect in providing good seeing conditions commensurate with the possibilities of modern light-sources and of modern knowledge of lighting for seeing. No practical lighting installation can produce satisfactory seeing conditions if the reflection-factors of great areas of walls, floors and ceilings are low. Even desktops, office equipment, machinery and other things in interiors occupy a large portion of the visual field. Their reflection-factors should not be as low as they generally are.

## Foot-Candles and Reflection-Factor

Consider this printed page as a visual task. A white paper reflects about 80 per cent of the incident light. Assume this paper does, and that it is illuminated with 10 foot-candles. Paint a portion of this page with black India ink and let it dry. The diffuse reflection-factor of the ink-smear area will be relatively low—say 8 per cent. Now to make it as bright\* as the white page the foot-candles must be increased ten-fold; that is, to 100 foot-

candles. But in the latter case the brightness-contrast between the "black" print and the background of low reflection-factor is much lower than that of the black print on white paper. To make up for this, in addition to maintaining the brightness, requires a total of 300 foot-candles to maintain the visibility of the one task equal to the other.

The visibility of this printed page—or of any object or task—depends upon the *size* of the critical details, their *contrast* with their immediate background, and the *brightness* of the background or entire task.

The printed matter is the same, unaltered in type-size, but of two greatly different brightness-contrasts, due to two backgrounds of greatly different reflection-factors. Ten foot-candles on one produces approximately the same visibility of the printed matter and the same ease of reading as more than 300 foot-candles does on the other. The example emphasizes the great importance of brightness and brightness-contrasts while revealing the limitations of the foot-candle as a basis of lighting for seeing. Up-to-date lighting specialists and lighting codes are beginning to recommend foot-candles upon this proper basis supplied by the science of seeing.



Figure 1: In the author's living room large areas—walls, carpet, furnishings—have relatively high reflection-factors; upward and downward light is balanced; thus contrasts are subdued

† Director, Lighting Research Laboratory, General Electric Company, Nela Park, Cleveland.

\*Brightness is measured in foot-lamberts. The product of the foot-candles and the diffuse reflection-factor results in foot-lamberts. For example, on a perfectly diffusing white surface having a (theoretical) reflection-factor of 100 per cent each foot-candle of illumination results in a brightness of one foot-lambert.

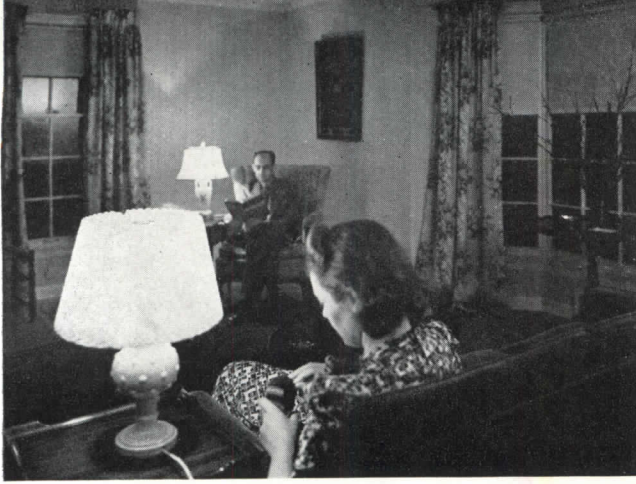


Figure 2: Brightness-contrasts of the work (sewing or reading) and the background cause eyestrain and fatigue. This lighting may be satisfactory for conversation, but not for critical seeing

### Brightness-Contrasts—Good and Bad

It is fairly obvious that high brightness-contrast is desirable in the visual task itself as, for example, this black print on its white background. When brightness-contrast is low, as in the task of sewing with black thread on dark goods the visibility of the task can be raised to a given standard only by greatly increasing the foot-candles on the task.

It is less obvious, but it has been well established that high brightness-contrasts between the visual task and its surroundings or in the surrounding visual field are decidedly undesirable. It has been proved that the visual sense is most sensitive when the surroundings of the task are approximately of the same brightness as the task itself. Of still more importance, *seeing* is easier under the same conditions. The latter has been proved recently by extensive researches which have established the rate of involuntary blinking as a sensitive criterion of ease of seeing.

Lighting for seeing cannot be appraised by mere inspection unless there are gross shortcomings, such as a very low level of illumination and obviously glaring light-sources. If a patient is in a very critical condition a glimpse by an experienced physician may be very revealing. A thorough diagnosis, however, searches out deeply hidden causes and effects. Much of the physician's technique has been established by controlled researches in laboratories. He bases his diagnosis and remedies on a foundation of medical science. So it is with lighting for seeing. Researches in seeing under laboratory conditions have revealed hidden effects of brightness and brightness-contrasts that are beyond mere inspection. Even if one performs a critical task of seeing under the actual conditions under study, certain far-reaching effects such as strain, tenseness and fatigue are not obvious.

In Figure 1 is shown a living room in which the reflection-factors of the large areas are reasonably high. Even that of the carpet is rather high, for a floor-covering. By balancing the amount of light emitted upward by the open-top portable lamps and the localized light emitted downward, good seeing conditions for any purpose are achieved. There are soft contrasts which provide variety and interest, but they are not harsh.

Compare the conditions illustrated in Figure 2. Here critical tasks are performed for hours. Regardless of the

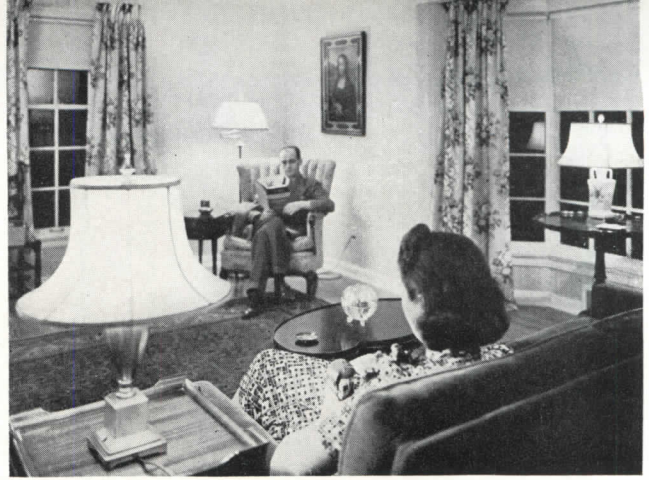


Figure 3: Seeing conditions are greatly improved by different types of lamps, and more of them, to illuminate the surroundings, even though providing no more light on the visual task

foot-candles in the tasks the brightness-contrast between the page of the book, for example, and the rest of the room is tiring. The seeing conditions are very poor for critical seeing. What light can do is illustrated in Figure 3. By the addition of a proper floor lamp and by substituting a suitable table lamp the seeing conditions are greatly improved even if no more foot-candles illuminate the visual tasks.

Seeing is a complex activity of the entire human being. The tools used are light and sight, but the entire human being is involved as a human seeing-machine. Muscular, neural and mental energies and strains and fatigues are involved. The cutting tool of a lathe apparently does the work but actually the strains are imparted to every part of the entire machine.

This is the appropriately extended concept of seeing which has been created and verified by the new science of seeing. Seeing is so complex that the factors and effects involved cannot be determined without measurements of external factors such as foot-candles, reflection-factors, brightnesses, visibility and of far more elusive psychophysiological effects of seeing.



Figure 4: Brightness-contrast between lighting units and ceiling is low; glare is minimized. Work sheets happen to be large, thus surroundings of the task are bright, and seeing conditions good



Figure 5: Floor covering and woodwork of relatively high light-reflection-factors make seeing for long periods much easier than in the usual dark-stained, dark-carpeted library of an earlier day

### Reducing Glare

The old bug-a-boo—preventable glare—aids in emphasizing the desirability of reasonably bright surroundings. Visualize a lighting fixture of bare bulbs seen against dark-stained walls. Whether or not one is fully aware of it, these glaring sources are doing their work. They are distractions which bid for the attention of the eyes and mind. The struggle goes on continually. The tenseness produced has actually been measured. The effect is cumulative, and results not only in localized eye-fatigue but also in fatigues throughout the entire muscular, neural and mental realms of the human being.

If the background against which these glaring sources are seen is increased in reflection-factor (and therefore in brightness) the glare is reduced. Actually the brightness-contrast is reduced and the distraction is proportionately diminished. Hold a lighted bulb at a window in the daytime. It becomes almost glareless against the bright background of sky. This is an extreme case but it demonstrates the undesirability of dark surroundings. Actually the brightness of interior backgrounds cannot be sufficiently increased to eliminate glare from sources as bright as tungsten-filament lamps. But high reflection-factors help materially.

In Figure 4 is illustrated a modern lighting system with especially designed troffers containing fluorescent lamps. The contrast between these lighting units and the ceiling is not high and, therefore, the glare is not noticeable. However, this photograph was made in the daytime when some daylight helped to illuminate the ceiling, directly and by reflection from the white work sheets. At night the ceiling is less bright compared with the lighting units, but these troffers do provide good lighting for easy seeing.

In the case of fluorescent lamps, whose brightnesses are low compared with filament lamps, glare can be greatly reduced by bright surroundings. In offices and schools, for example, enough light can be allowed to escape to a white or near-white ceiling to provide the desirable bright background and achieve a great reduction in undesirable brightness-contrast.

In a large industrial interior where direct-lighting fixtures are used the background—the ceiling—is dark for lack of light. In many cases it is worth while to consider painting it white, and to permit an appreciable amount of light to escape to the ceiling. In other interiors, such as offices and schools, good lighting for seeing requires a reasonable balance between upward and downward lighting. In too many cases of lighting with fluorescent lamps too little light is allowed to escape upward to the ceiling. In the opposite case of indirect-lighting the ceiling is a large expanse, far brighter than the visual task, and therefore is an undesirable distinction. The remedy is to put more light on the task.

### Brightness of Surroundings

The most subtle, far-reaching and neglected aspect of lighting for seeing is the brightness-contrast between the actual visual task and its surroundings. The motion-picture screen, relatively bright amid almost dark surroundings, is a good example of extremely undesirable seeing conditions. Eyestrain and fatigue of which one is sometimes conscious is commonly attributed to the motion, or flicker, of the picture. Actually these are largely due to the abominable seeing condition—the dark surroundings which constantly bid for attention. The only reason the public has not rebelled against these abominable seeing conditions is that viewing a motion picture is not really critical seeing. If one were reading fine print on the screen for two hours, the strain, tenseness and resulting fatigue would be decidedly obvious—and the dark surroundings would be the chief cause.

This emphasizes the vast difference between "conversational seeing" and "critical seeing" for prolonged periods. Poor seeing conditions in a library at home, for example, do not cause nearly as much strain and fatigue in casual seeing as in reading a book. The conditions represented in Figure 2 would be far less undesirable for conversational seeing than for critical seeing. However, the conditions in Figures 1 and 3 are suitable for all purposes. Figure 5 represents good seeing conditions due chiefly to



Figure 6: This desktop, with a reflection-factor of about 30 per cent, provides better seeing conditions than dark ones. The author recommends the idea generally for business equipment



light-finished woodwork, and relatively high reflection-factors of other large areas. The same principles apply to office, factory and elsewhere in the work-world.

Suppose this page is being read on the usual dark-finished desktop in an office. It will commonly be 10 or 15 times as bright as its surroundings. In Figure 6 the contrast between the typewritten page and its surroundings is greatly reduced.

Now suppose this page is being read at home under the light of a nearby portable lamp. The page is relatively bright compared with its background or apparent surroundings. Actually the surrounding field may be clothing, or floor covering of low reflection-factor. Besides, this page is probably receiving more light than the surroundings. At any rate it is not uncommon for a page to be a hundred times brighter than its surrounding field. This is true of the book illustrated in Figure 2. The high brightness-contrast is very undesirable. The reader's eyes may feel sandy or tired. He may think he has too much light on the page when actually for easiest reading he should generally have much more. He misinterprets the situation. Actually the dark surroundings are causing unnecessary strain. Incidentally the spot lights sold for reading in bed are examples of the worst in lighting for seeing.

Figure 4 illustrates a lighting system designed to reduce the contrast of the "fixture" with its surrounding ceiling. The interiors of these troffers are finished with aluminum paint. Glare is greatly reduced. Fortunately the large work sheets occupy a considerable portion of the visual field of each worker, thereby generally supplying "surroundings" of high reflection-factor. However, there is no good reason for not providing the tabletops with a higher reflection-factor than that of their very dark stain.

Must we have white floor-coverings, white clothes, white desktops, white surroundings in general? Even if these were ideal they would be impractical or "unnatural." All complex practices involve compromises. Furthermore, most visual tasks outside of offices and schools involve reflection-factors averaging far less than those of so-called white papers. In addition to this, a brightness-contrast between the central field (the visual task) and the surroundings of ten to one has been shown to be within reasonable bounds. In other words, the reflection-factors of surroundings might

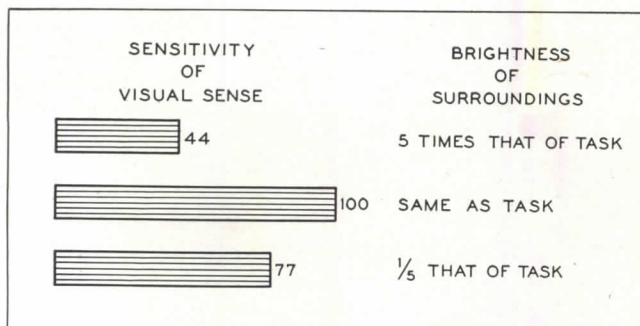


Figure 7: The eyes are more sensitive (better able to see) when the surroundings are as bright as the task. These data refer to the eye's real job, registering small brightness differences



Figure 8: Illustrating how the fundamental researches upon effects of surroundings were performed. The book was read amid surroundings of "infinite" extent and in varied brightness.

be 20 per cent, 35 per cent, 50 per cent, or 75 per cent depending upon the particular surface and area involved.

#### A Criterion of Ease of Seeing

Our ability to see small differences in brightness—low brightness-contrasts—is the most generally important and neglected factor in seeing. In Figure 7 is shown the contrast sensitivity of the eyes—ability to see small contrasts.—when the brightness of the surroundings is five times that of the task, equal to that of the task and one-fifth that of the task.

A still more important matter is the influence of the brightness of the surroundings upon ease of seeing. Since this influence is subtle and the effects are deeply hidden, a few glimpses behind the scenes will be helpful.

For many years we searched for a suitable criterion. Since relative ease of seeing is a matter of strain, tenseness, fatigue, etc., the criterion had to be a measure of these effects of seeing. For two decades our researches aimed to ascertain the influence of various factors in seeing upon such psycho-physiological effects as fatigue of eye muscles, the size of the pupil of the eye, various visual functions, general tenseness or nervous muscular tension, the heart rate, etc. Of all the known and unknown effects investigated the rate of involuntary blinking appeared most promising and inclusive. Forty different researches conducted during the past decade have established the blink rate while reading *under carefully controlled conditions*, as a very sensitive criterion of ease of seeing.

Figure 10: The photograph conveys some small idea of the contribution toward good seeing conditions of a light floor (this floor of "white" cement has a reflection-factor of about 40 per cent). Design and construction by The Austin Co.



The influence of the brightness of surroundings was long suspected as being important from the viewpoint of comfortable and easy seeing. It was studied by the method illustrated in Figure 8. The interior of a large sphere was painted a matte white. The book to be read was placed just in front of the center of the sphere. It shielded from the reader's eyes a filament lamp located at the center of the sphere. This lamp illuminated the inner surface of the sphere uniformly. The illumination on the printed pages to read was obtained independently by mirrors and a projector. Thus the brightness-contrast between the visual task and its surroundings could be controlled. These average rates of involuntary blinking of a large group of subjects are shown in Figure 9. It is seen that the blink-rate was lowest—seeing was easiest—when the surroundings were approximately as bright as the visual

#### Practical Recommendations

All equipment in offices such as desks, filing cabinets, and machines should have reflection-factors at least between 20 and 30 per cent. This is a large increase above the reflection-factors of common metal and dark-stained office furniture and the customary black of typewriters and other machines. The walls should have reflection-factors at least between 35 and 50 per cent. In large rooms where occupants are not as "intimate" with them the reflection-factors may be still higher, actually approaching white. The ceilings should be white or just off the white.

The same applies to classrooms in schools, and everywhere that critical seeing is done for prolonged periods.

Dark-stained woodwork and especially large areas of paneled walls should be abandoned. If wood is desired it may be bleached or even left in the raw with a suitable wax finish. Any step away from the low reflection-factors of dark stains is in the right direction. Even in libraries in homes, where taste and period style are dominating factors, the extreme dark finishes are scarcely desirable. In such cases if a good deal of light is emitted upward from modern sight-saving portable lamps, the walls are brightened somewhat in the right direction.

Floor coverings can be compromised to some extent, but in many places they will have much lower reflection-factors than good seeing conditions dictate. There is little excuse, however, for very dark modern coverings that are frequently specified in rubber tile or linoleum.

In factories one finds much more freedom. Walls can be nearly white, as the ceilings should be. There is no excuse for low reflection-factors of machinery and other large equipment. As in offices these may well have reflection-factors of 20 to 30 per cent. Large sheet metal equipment, ducts and the like, may logically be painted with aluminum paint. Certain surfaces of the machinery or equipment might even be coated with white paint to aid seeing.

Floors in large factories, particularly if they are of cement, can very readily be of high reflection-factor. Such floors have been advocated because they send light upward to under surfaces of machines and work. That is desirable, but the best reason is that they provide better seeing con-

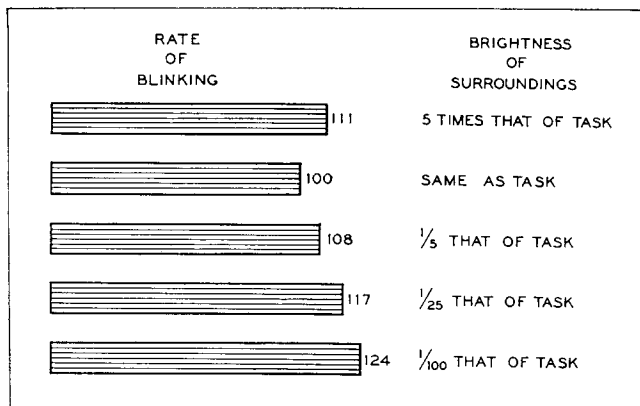


Figure 9: The average rate of involuntary blinking has been found a reliable criterion of eye comfort—the less often the subject blinks, the more conducive are conditions to easy seeing

task. It continued to increase as the surroundings were made darker or brighter than the visual task. Thus the undesirability of dark surroundings, commonly 10 to 100 times that of the visual task, is amply revealed.

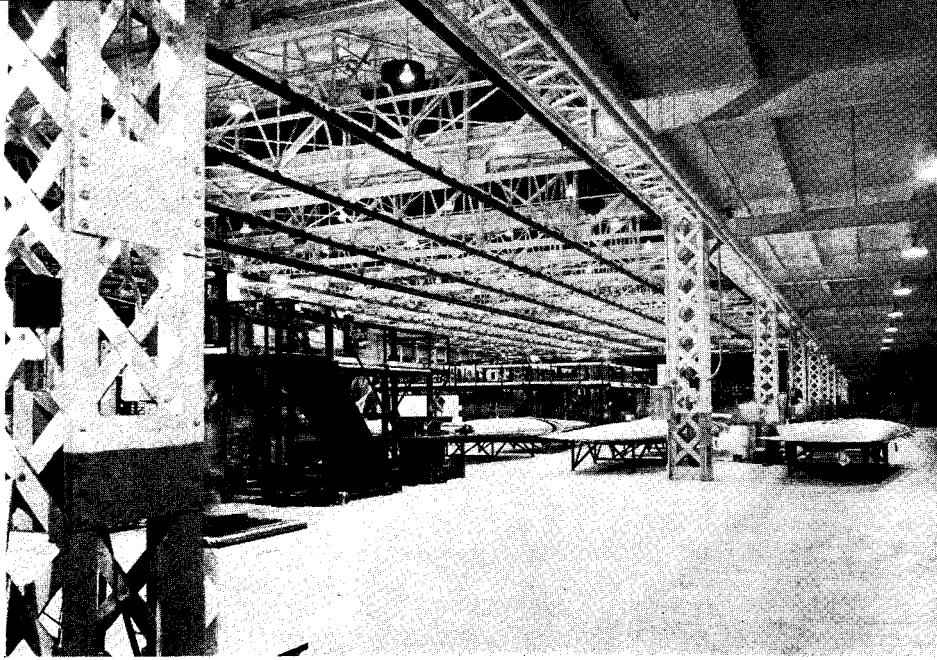


Figure 11: An interior in which lighting is not strait-jacketed by dark surfaces. Light ceilings, light floors, light steelwork, prepare the interior to "cooperate" with the lighting installation. Design and construction by The Austin Co.

ditions by reducing the contrast between the visual task and its surroundings. The floor is commonly the "surroundings" of a visual task.

If a cement floor having a reflection-factor of 40 per cent actually made seeing conditions worse, all the reflected light would not be worth while. But fortunately such a floor (Figure 10) very generally reduces the brightness-contrast and promotes better seeing in more important ways than conserving some of the light. Much brighter floors than are commonly encountered are practicable. The same is true of ceilings and other surroundings. They pay large dividends in easier seeing. Figure 11 is a daylight view of these important finishing touches which architects should specify.

#### Color Is Desirable

Everything we see is reducible to two fundamentals—brightness and color. Of these, brightness is generally far more important than color. However, there is no excuse for "penitentiary" grays. Environments even in factories have a right to subdued—grayed—colors. Every factory in every part of the country is worthy of some study as to color. Only one generalization can be made. Work is associated with sweat. It is generally easy for a worker indoors to keep warm; to keep cool is far more common a problem. From this viewpoint a color scheme of grayed greens, particularly bluish greens, has more to commend it than other color schemes. Of course, there are many exceptions.

Suffice it to state here that there is no mysterious magic in color. Its place in the work-world should be determined by the same considerations as elsewhere. Certainly we would soon tire of a brass band. Color should not be used any more garishly where one must work with it than where one lives with it.

This is also a suitable place to state that there is no magic in the color or spectral character of any illuminant which is suitable for general lighting purposes. Many researches have failed to ascertain any measurable differences in reading black print on white paper, for example, under a given level of illumination, whether the illuminant be daylight, tungsten-filament light, fluorescent light, or even

certain illuminants unsuitable for general lighting purposes. Any claim to the contrary is quackery—intentional or unintentional. There are, of course, special cases of color discrimination where the spectral character of the illuminant is important, but beware of any generalizations favoring any particular illuminant for performing the common tasks of seeing.

#### The Enlightened Era

It is high time to emerge from dark-age practices into an era of controlled brightness for easy seeing.

Don't stain or paint surfaces so that their reflection-factors are so low that lighting for easy seeing is strait-jacketed. On the contrary, demand that manufacturers of business equipment cease these practices. Sometimes it is difficult to break the habits of the past, but there are enough examples—good and bad—to be convincing. Besides, the science of seeing is a new and sound foundation for enlightened practices.

Don't be deceived by the shortcomings—even fallacies—of foot-candles. The purpose of light is to produce brightness—and, of course, color—with the cooperation of the surfaces it illuminates. Brightness is the factor to appraise. Prescribe foot-candles with reflection-factors in mind, so that the resulting brightnesses and brightness-contrasts are of the right magnitude—and in the right place.

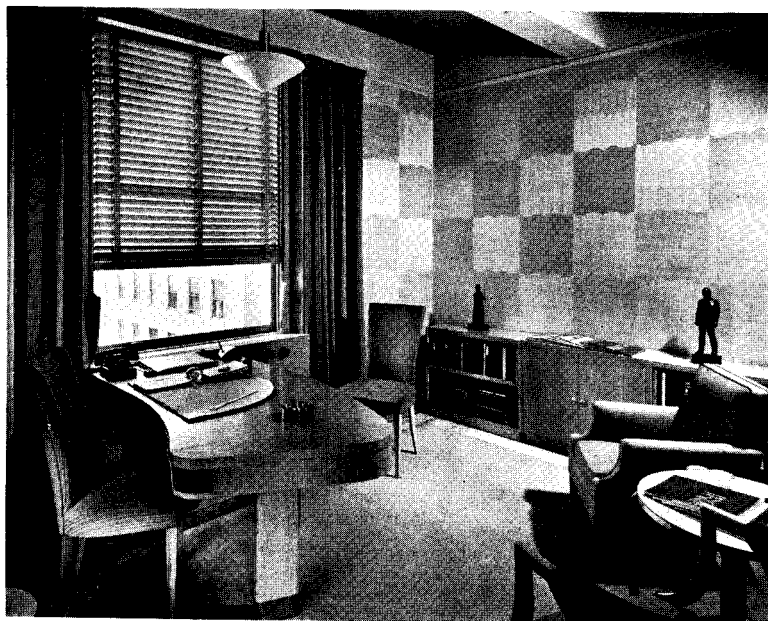
Don't assume it is any more possible for the unaided human being to diagnose seeing conditions—excepting for simple effects or gross defects—than for a physician to diagnose complicated cases by mere observation.

Don't be impatient with lighting practice. It is just beginning to emerge from an empirical era, just as medical practice was doing a half century or so ago. But already many sound facts of seeing have been established which show that more light and better lighting have tremendous possibilities ahead in conserving human resources and increasing the efficacy and efficiency of workers.

Don't overlook the opportunity that the architect has in playing an effective role in the movement toward easier seeing which is definitely under way.

**Bibliography on lighting researches on Page 98**

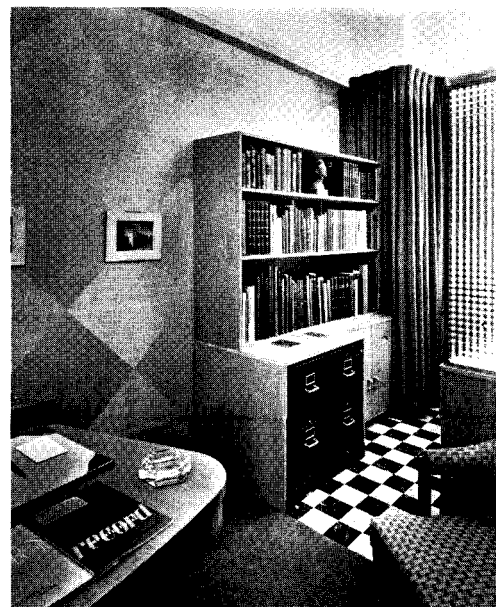
**T**HIS presentable and efficient suite of offices is the result of collaboration of an architect and an industrial designer in designing their own quarters in New York City, and the furniture and equipment for them. Certain walls are of patterned plywood treatment, in bleached finish. Furnishings in Mr. Crandall's office (right) in handwoven fabrics, in putty, steel blue and Swedish red. In Mr. Coulter's office (two photographs below) the window and work table are painted Adam green, textured draperies in darker green. Specially built bookcases, drawers, etc., are bleached oak. Upholstery in beige tan and red fabrics.



## DESIGNED BY AND FOR DESIGNERS



OFFICES OF WILLIAM WRIGHT CRANDALL,  
INDUSTRIAL DESIGNER, AND  
J. HAMILTON COULTER, ARCHITECT

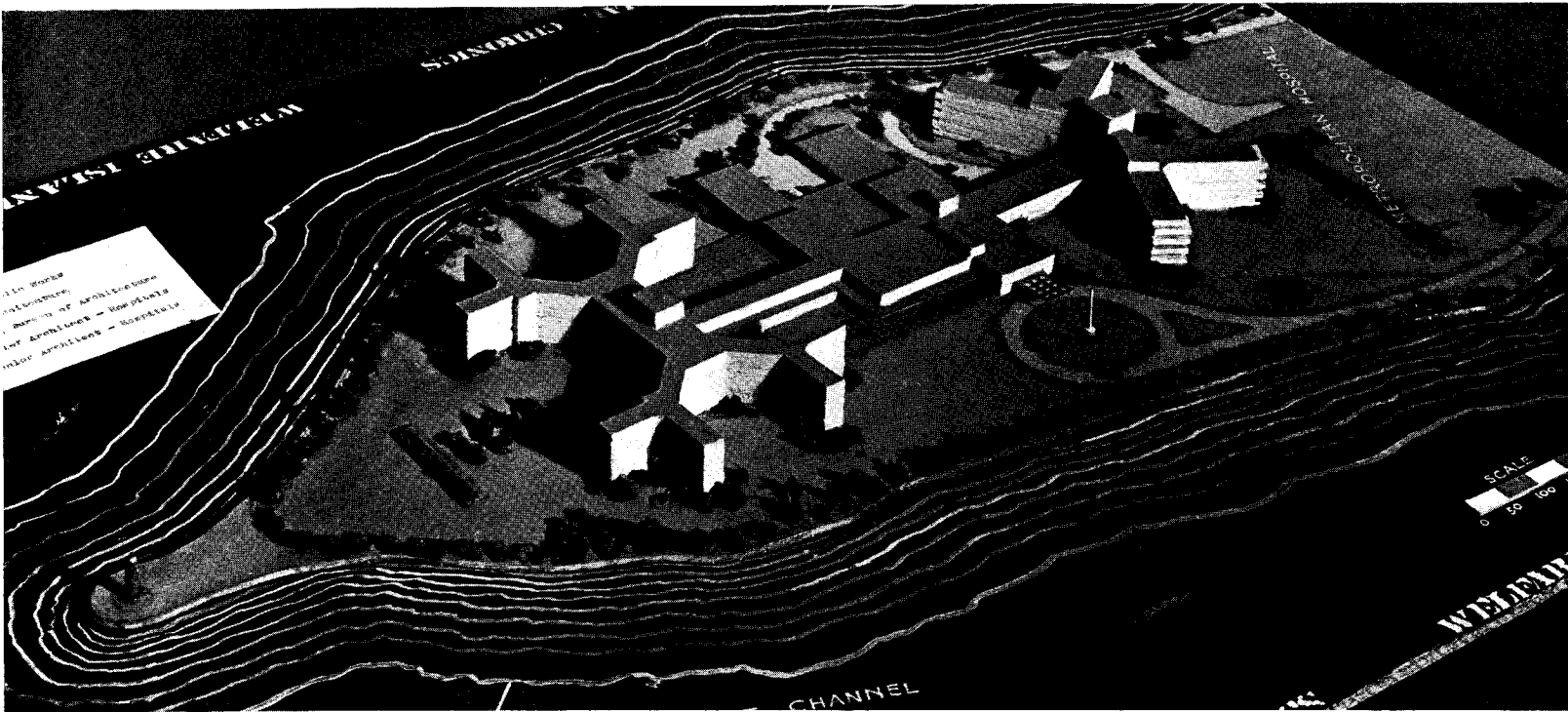


Herts Brothers

# HOSPITALS

ARCHITECTURAL RECORD'S  
BUILDING TYPES STUDY NO. 77

Gottsch-Schleisner



Model of New City Home for Custodial Chronics, Welfare Island, New York City . . . Isadore Rosenfield, Chief Architect, Hospitals; A. Gordon Lorimer, Chief, Bureau of Architecture, Department of Public Works, New York City.

## PLANNING OF POSTWAR HOSPITALS

By ISADORE ROSENFELD

WITH each item of news from the battlefronts one can sense the rising tide of popular clamor for a better postwar world. There seems to be a determination that this time democracy shall be implemented by constructive measures in all departments of human need. Among these is the cry for better health care, and hospitals are an indispensable instrument of such care.

Already there is evidence that city, state and federal agencies are thinking, studying and preparing for the postwar activity. In New York City alone the immediate postwar construction program is estimated at close to \$679,000,000, of which the share for the Departments of Health and Hospitals amounts to about \$84,770,000. The cost of studying the various projects and the preparation of the plans and specifications, to be ready for immediate construction the moment the war is over, amounts to over \$23,626,000. The above total figure for New York City does

not include the contemplated expenditures for housing, the various separate "authorities," nor state or federal projects that would be built in the New York City area. But even without these, if the entire nation were to spend in proportion, the sum would be \$12,610,000,000, and the sum for health centers and hospital projects about \$1,574,000,000.

Of course this is mere speculation, but it does give some conception of the magnitude of things to come. On the other hand, these sums do not reflect the entire need. They account only for such projects construction of which can be started at once after the war. All large works can be done only in stages. If the same tempo of construction were to be maintained over a period of say five years during which might be accomplished all that is seen as the need today, then the sums above mentioned might easily be doubled or trebled.

## Program needed

Unless the federal government, the various political subdivisions and communities cooperate in setting up criteria and standards, there is apt to be waste and chaos. Planning as a democratic process requires an objective attitude on the part of those who make the request, as well as on the part of those who have the power to pass upon them. Chaos may result from lack of knowledge, avaricious grabbing for as much as may be gotten, or from a desire to build one's self a monument out of proportion to the needs of the community.

## Cooperative federal direction indicated

In the case of hospitals it may be suggested that planning be left to local communities to make their own estimates of need, but there are many communities which do not have the least idea of how to go about it. Communities would differ widely in their point of view. This might result in discrimination as between economic strata or ethnic groups. Clearly, it would seem that the government would have to prepare questionnaires designed to bring out the pertinent facts. The government would have to plot out the findings of conditions so as to determine needs and relative needs.

## Standards should be established

Evaluation is possible only in terms of pre-established standards and norms. This in itself is a very difficult matter because there are no adequate standards and a process is yet to be developed which would furnish a reasonable and safe approach to the problem of allocation.

Hospitalization as a health measure can hardly be considered apart from all other health measures and living standards. A well educated community free from fear and want might need less hospitalization than a community that lives in fear, want and ignorance. A community which has a thorough-going program of preventative medicine and post-acute hospital care will need fewer beds than one which has little or nothing before or after hospitalization.

## "Beds per thousand"?

Five general hospital beds per thousand of population have been frequently spoken of as a proper standard of hospitalization. Recently the federal government, presumably for the purposes of the Lanham Act, reduced this to 4.5. All of our hospital literature speaks of so many beds per thousand as if these beds were equally available to every member of the community. In the average well-to-do American community a relatively small percentage of the population can afford to pay for hospitalization and the beds available to them at a price in the form of private and semi-private accommodations are frequently in excess of 4.5 per thousand. The percentage of idle beds in the private room category is not infrequently 40 per cent. For those unable to pay, the beds available are conversely considerably below 4.5 and the occupancy percentage high.

## Other factors

There are other factors that influence the standard of beds per thousand of population. One of them is the problem of home medical and nursing care. Undoubtedly,

adequate provision of such care should reduce the pressure on hospitals, and a study of this question is yet to be made. Another is the development of adequate out-patient clinics and health centers where proper advice or minor medication could frequently save a patient from hospitalization. The lack of provisions for the care of chronics either at home or in institutions causes the crowding of municipal hospitals, and to some extent, the free wards in voluntary hospitals. This is uneconomical and unjust to the acute patient who cannot obtain a bed in the hospital because it is occupied by a chronic. The average occupancy of a bed by an "acute" patient is 12 days, while that of a chronic is three months.

The inadequacy in provisions for convalescent care is still another factor that taxes the general hospital. When there is a shortage of beds, there is a tendency to discharge patients too soon. If the patient stays on, he occupies a bed needed by an acute patient. In a convalescent home, the convalescent patient would be happier; he would recover faster; he would release a bed to someone needing it more than he does; he would be provided for at far less cost than in a general hospital.

If it is assumed that 4.5 per thousand is correct for those unable to pay, it may prove to be excessive for communities having home care, out-patient clinics, chronic and convalescent institutions, and not enough for communities not having these facilities.

## Demand for hospital beds

This country now has about 3.7 general hospital beds per thousand. The Interdepartmental Committee to Coordinate Health and Welfare Activities in its report to the President estimates that this country needs 180,000 general hospital beds, 50,000 tuberculosis beds, and 130,000 mental disease beds: total deficiency, 360,000 beds. The estimated construction cost of these is respectively, \$630,000,000, \$150,000,000 and \$325,000,000, or a total of \$1,105,000,000. This sum does not take into consideration the cost of replacing hospitals that are obsolete, nor the cost of building health centers, out-patient clinics, chronic disease hospitals, and convalescent homes. As an example, the City of New York spent many millions of dollars in hospital construction in the last seven years, but the beds gained were not in proportion to the millions spent because a good deal of the money had to be employed to replace obsolete buildings and to provide out-patient and other services in which the hospital system was lacking.

This brief discussion can only highlight the outlines of the problem of providing for the health of our citizens and indicate the need for comprehensive surveys, studies and programs to meet the need. Any real solution involves the federal and local governments, social agencies, the medical profession and, last but not least, the best analytical creative talent in the building field. An adequate solution also involves huge expenditure of funds by government—national, regional and local—as well as by individuals and voluntary groups.

Whoever provides the funds, are we going to build general hospitals only, or are we going to be encouraged to build up integrated systems of health education, out-patient clinics, home care, chronic and convalescent care? The question can be answered only by further thought, exploration and the crystallization of a clear-cut plan.

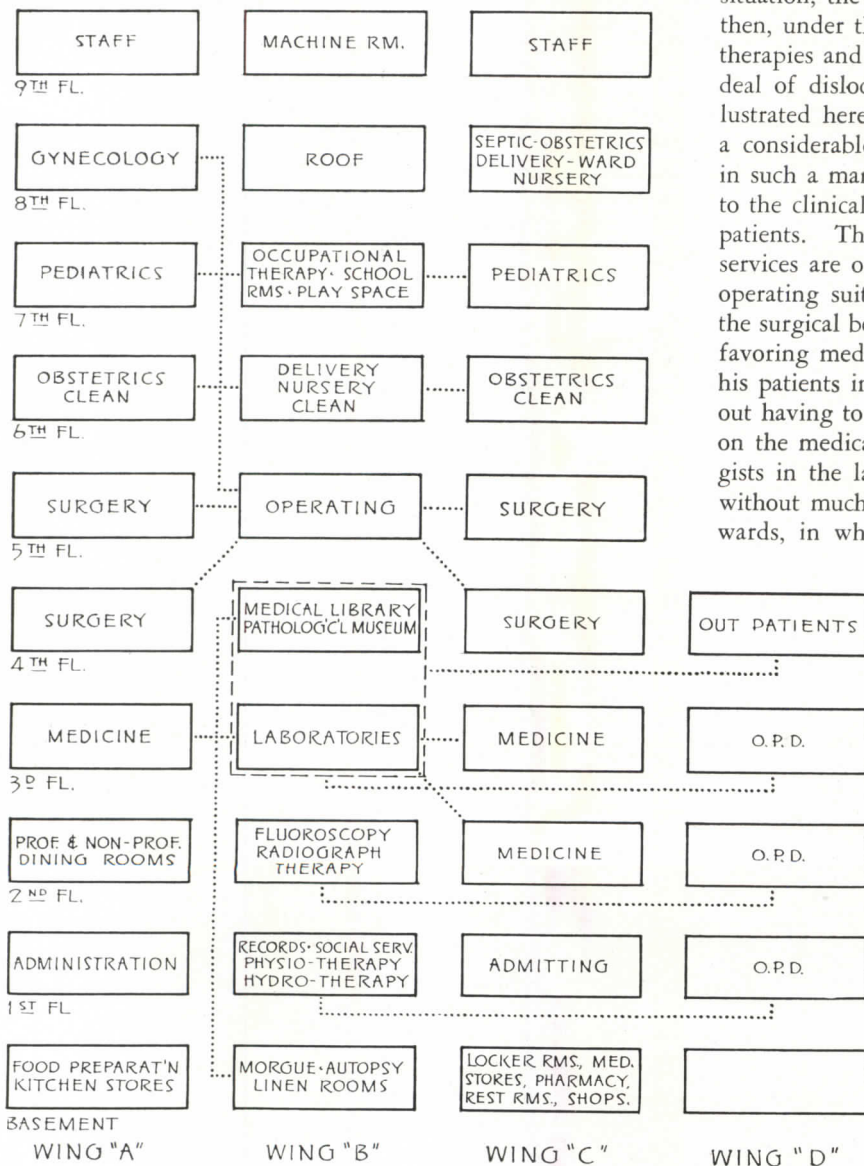
# THE INTEGRATED HOSPITAL

Planning for the better coordination of services; summarizing studies being developed by the Bureau of Architecture, Department of Public Works, New York City, and Lorimer Rich, Architect

THE postwar program in the City of New York calls for the construction of several new general hospitals, and major reconstruction of others. Rather than to follow old patterns, a study was made suggesting a somewhat new concept of relationships, here illustrated in the chart and diagrams for one such postwar hospital.

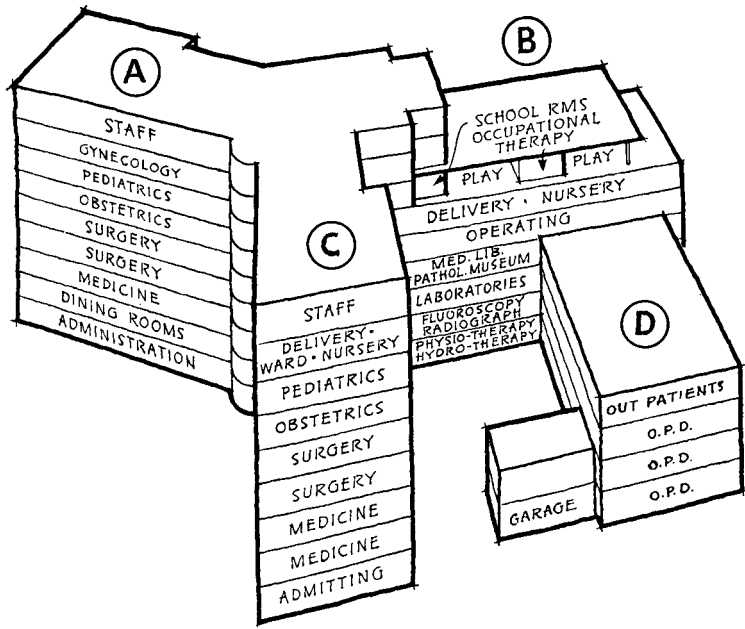
The principal parts in a hospital should be the out-patient department (D) which is, so to speak, the "first line of defense" against illness. Here the doctor and patient meet for the purposes of education, prevention and

minor medication, all of which are intended to arrest the illness, if possible, and to save the patient from becoming hospitalized. The ward sections (A and C) are, broadly speaking, the evidence of failure in the preventive department, as here the bedside care takes place. Between the out-patient department and the ward sections stands the unit (B) which serves both, as the link between the two major elements. This implies economy in construction as otherwise separate diagnostic and therapeutic facilities would be necessary for each element. There are other advantages in this arrangement. In the traditional hospital, in a city situation, the wards are arranged on the middle floors and then, under them and over them, are tucked in the various therapies and other auxiliary services. This involves a great deal of dislocation and vertical travel. In the scheme illustrated here an attempt has been made, and achieved to a considerable extent, to dispose of the auxiliary services in such a manner as to make them horizontally contiguous to the clinical subdivisions of both the in-patients and out-patients. Thus the delivery, nursery and other obstetric services are on the same floor with the obstetric beds. The operating suite is on the same level with at least half of the surgical beds. The laboratories are disposed in a manner favoring medicine, etc. This means that a surgeon can see his patients in the wards before and after operations without having to use the elevators. In like manner the doctors on the medical service can freely confer with the pathologists in the laboratory, and the pathologists, in turn, can, without much effort, watch the progress of patients in the wards, in whom they are interested for laboratory work.



DIAGRAMMATIC CHART  
FLOOR BY FLOOR

Each major working section of the hospital, such as surgery, laboratories, X-Ray, delivery, physio-therapy, etc., is placed adjacent to the wards for the patients it particularly serves, in wings A & C. This eliminates confusion and elevator travel, and is easier for both the staff and the patients. Wing B serves as a connecting wing between the out-patient department and the hospital proper and serves them both.

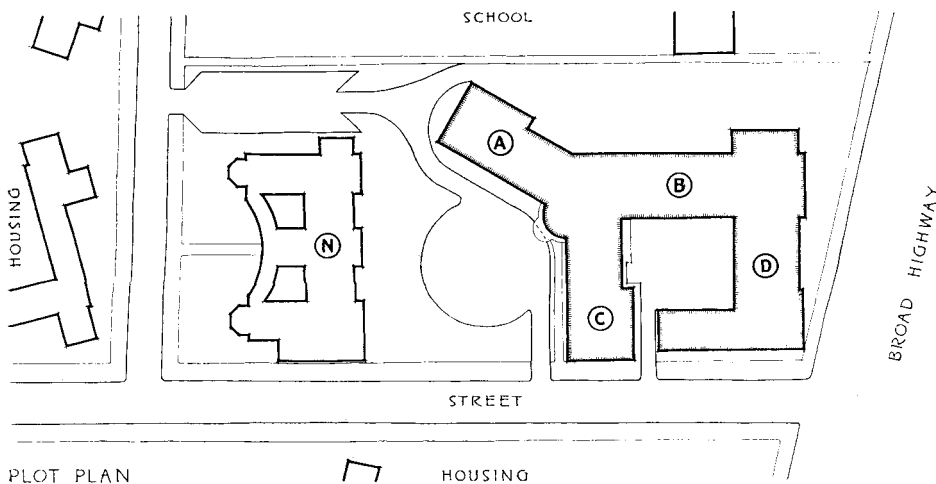
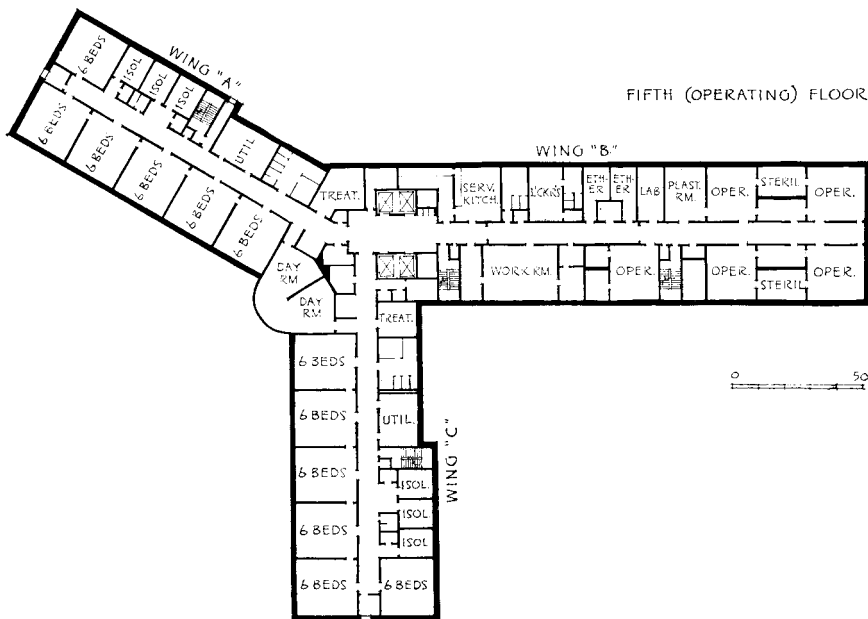


It is true that the ideologies above stated have not been fully realized here because the illustrated material represents a study of an actual hospital in this city undergoing a study of reconstruction. It is situated on a comparatively restricted site. The present hospital occupies building N. It was found virtually impossible to enlarge it. For that reason, and also in order to obtain continuous operation of the hospital, it is proposed that the new hospital, represented by A, B, C, D, be built first. When the patients are moved from N (the old building) into their new quarters, the old building would be altered into a nurses' home and training school.

A certain sequence in the disposition of the elements should be further noted. The out-patient building (D) faces on the main highway. The entrance to it is at the corner, thus being very easily accessible to people who come to the out-patient department by bus or otherwise. They are not obliged to traverse any part of the hospital. Element B contains the diagnostic and therapeutic services, and A and C, which are primarily the wards, follow. This arrangement puts the wards in the quietest part of the group, facing southeast, which is ideal, and permits a vista through the adjoining housing development. N, again, shields the wards from noises that may come from the south.

The floor plan illustrated is typical for all patients' floors so far as wings A and C are concerned. Wing B is occupied by the operating suite. This illustrates the simple, horizontal relationship between the wards and the operating suite. On other floors, wing B is occupied by other services, as shown on the organization chart. The hospital will have a capacity of about 600 beds.

*Isadore Rosenfield.*



The operating rooms, and their service rooms, are adjacent to the wards for surgical cases, in wings A & C. This eases the doctors' work for both pre- and post-operative treatment





## PREWAR • HARTFORD HOSPITAL • POSTWAR

COOLIDGE SHEPLEY BULFINCH & ABBOTT, ARCHITECTS



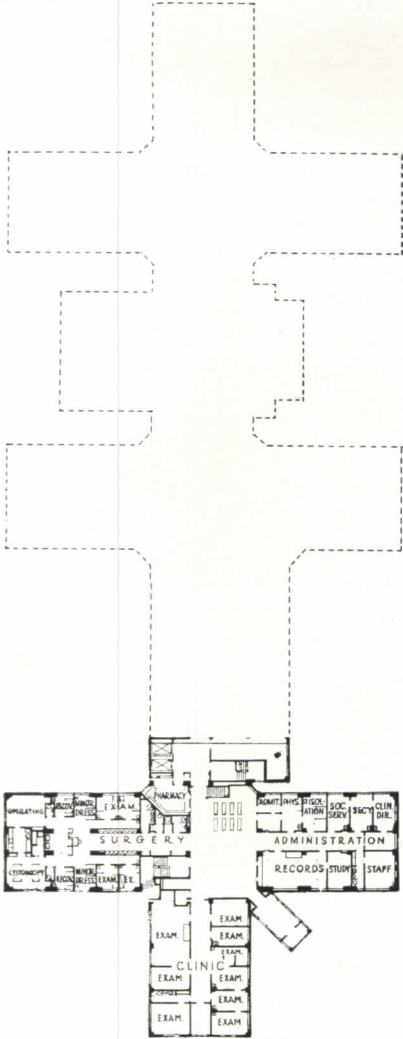
Arrow Photo Service

One small wing had been built when war suspended the project

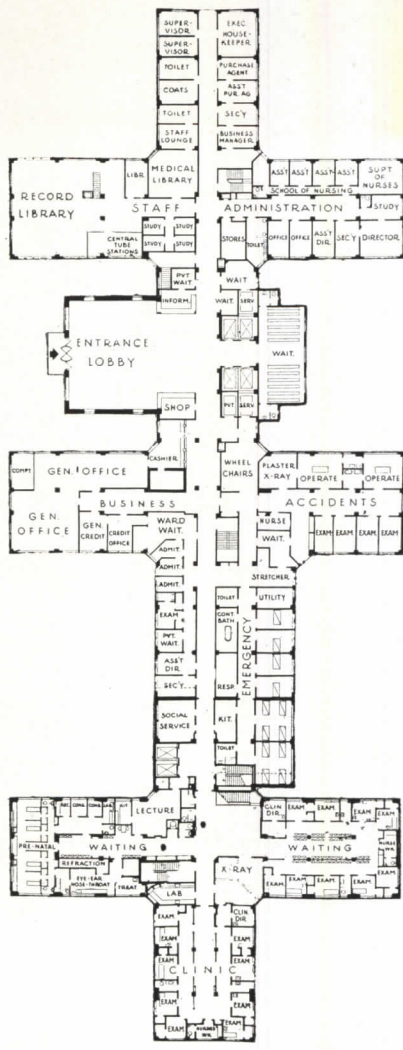
**H**ARTFORD Hospital is carrying a heavy home-front burden. Like many another large hospital in a war-active community, it urgently needs a new building. The war stopped its construction program after a small new section had been built, but the full project must proceed as soon as war restrictions are lifted. So planning is going forward on a postwar program that will not wait for the if's and maybe's of some vague wonder-world ahead.

As far back as 1938, Hartford Hospital, a voluntary general hospital, was operating at 81 per cent of theoretical capacity, whereas 80 per cent is regarded as a practical maximum. Plans for new buildings were actively discussed long before Pearl Harbor. The overload quickly became more acute, as Hartford boomed into one of the country's great war production centers. In 1941 all beds in the hospital were utilized at an average of 96 per cent, 'way beyond the critical stage. Sickness and injury do not wait for postwar; neither do the new babies.

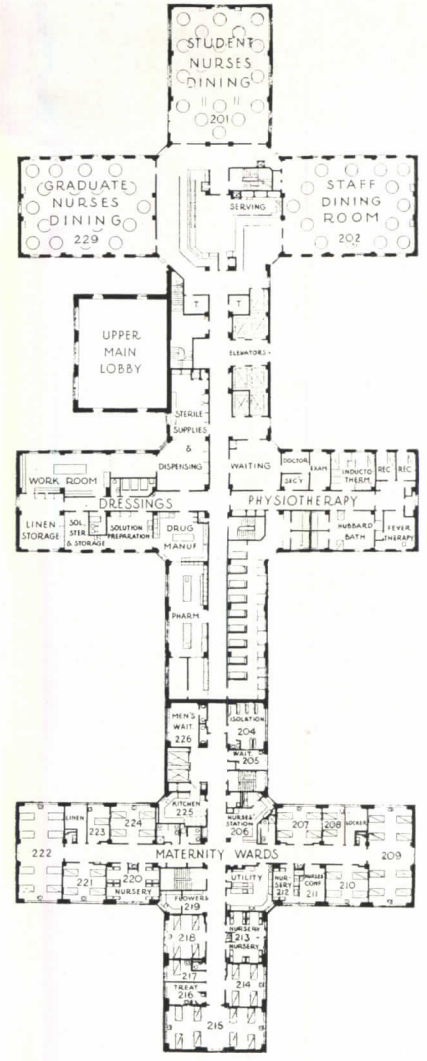
*(Continued on page 68; plans on pages 66 and 67)*



GROUND FLOOR



FIRST FLOOR



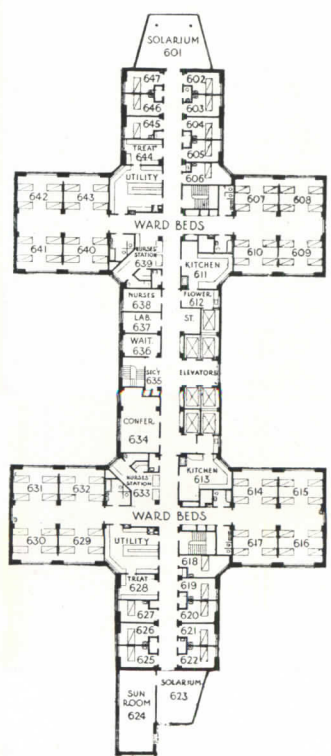
SECOND FLOOR

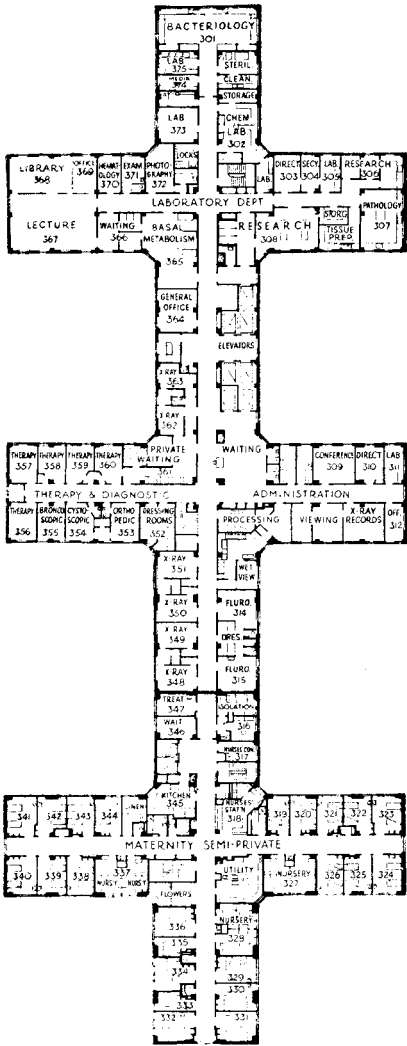
# HARTFORD HOSPITAL PLANS

Coolidge Shepley Bulfinch & Abbott, Architects

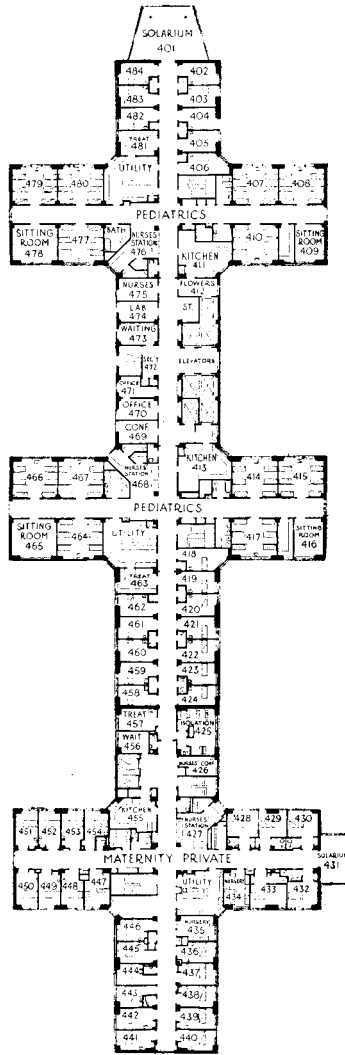
The dotted-line area in the ground floor plan (above) will eventually be utilized for kitchens, laundry, various shops and so on. At present these services are contained in other buildings of the hospital group. Certain of the existing buildings, however, will eventually be demolished for the development of a park area for the new building. Incidentally, the old group of buildings occupied a triangular plot bounded by three streets; the new structure required the enlargement of the area, which could only be done by the vacating of one of the streets by the city. When the large building is completed, it will contain the service areas mentioned, and the full plot will be redeveloped. Not shown here are plans of the eighth to thirteenth floors inclusive. Of these, the eighth is the only one with special departments—gynecology and urology. The ninth floor will contain wards and semi-private rooms; the tenth and eleventh, semi-private rooms; the twelfth and thirteenth, private rooms only

SIXTH FLOOR

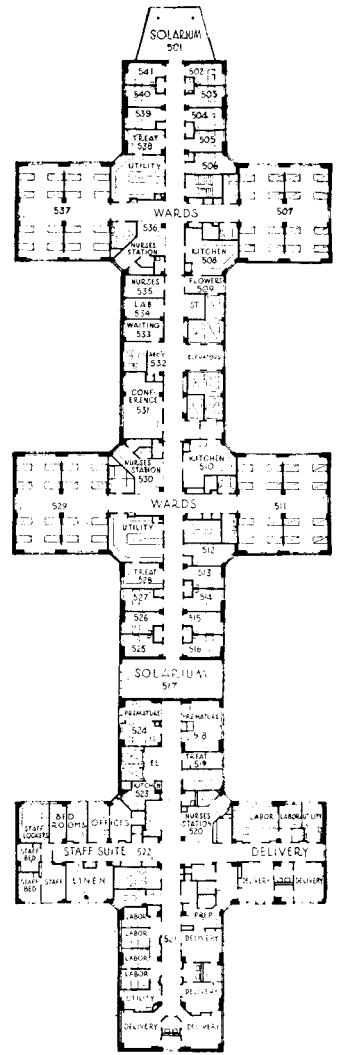




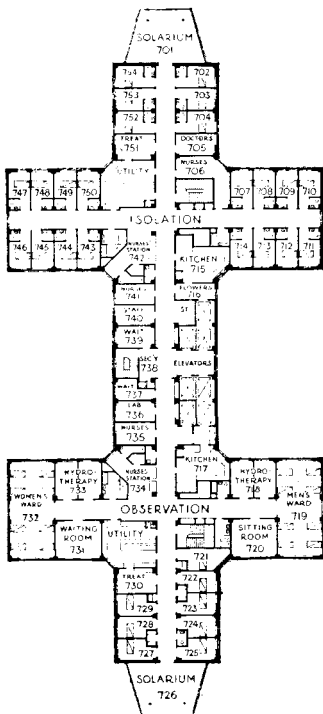
THIRD FLOOR



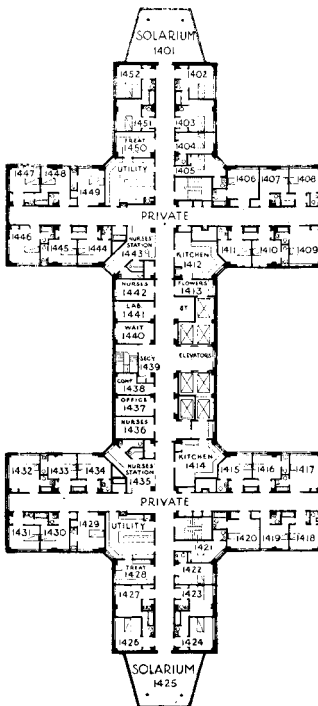
FOURTH FLOOR



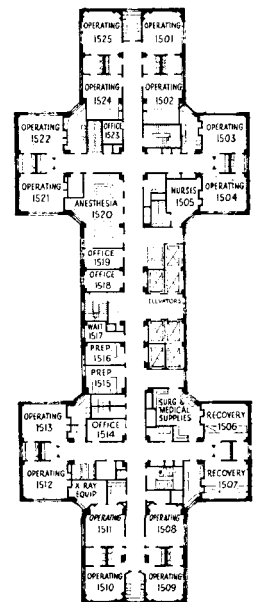
FIFTH FLOOR



SEVENTH FLOOR



FOURTEENTH FLOOR



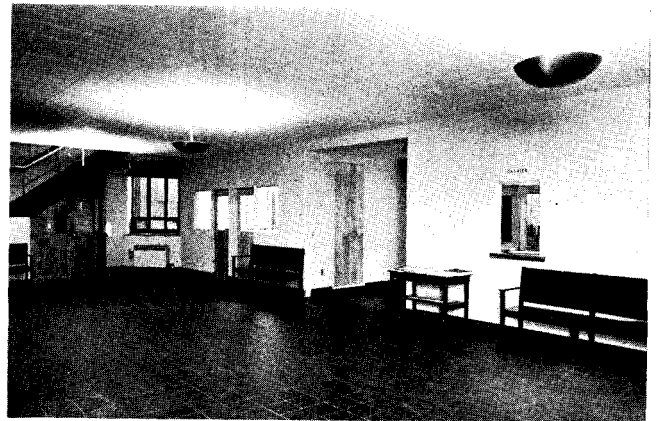
FIFTEENTH FLOOR



Above: Nurses' station in new maternity wing, Hartford Hospital

Right: Waiting room of the out-patient department, ground floor

Below: Utility room opposite nurses' station on each floor



The section of the building completed in 1942 is to be the maternity wing, the smaller section at the right in the perspective. The 15-story main section represents the huge postwar project for which working drawings are now in process.

Aside from the necessity for having plans ready, there is another reason for doing the planning now. Although because of the present overload the hospital staff is working under considerable strain, and might be inclined to feel it has little time for planning conferences, the executive committee points out that the staff is likely to be even more overloaded at the end of the war. If the planning sessions waited until then they would inevitably suffer from the haste. Moreover, the plans can now have unhurried attention from the architects and engineers, something which might not be possible should a building boom follow the war.

Hartford Hospital claims no distinction for its problem or for its procedure. But its situation does highlight a need for immediate planning for postwar requirements in many a similar community.



Arrow Photo Service

# FUNCTIONAL PLANNING OF HOSPITALS

By LOUIS ALLEN ABRAMSON

**Hospital planning usually assumes an upper-floor operating room, but another location permits an increasingly functional layout**

A COMPARATIVE analysis of general hospital plans, even those of very recent origin, reveals a marked dissimilarity in external form and internal arrangement of the various service subdivisions. In perhaps 95 per cent of the plans, however, the distribution of services is based upon the assumption that the operating theatres and their accessory rooms must be located on the upper floors—in space that would be highly desirable for patient accommodations. Is this location of the surgical department essential to its proper functioning, or is it merely a matter of precedent?

## Is natural light necessary for the operating room?

Through the collaborative efforts of surgeon and scientist it has been demonstrated that operating rooms can properly function under artificial lighting to the total exclusion of natural light. Even at its highest intensity, daylight lacks sufficiency and constancy, and frequently causes shadows which induce eye fatigue. In itself daylight cannot meet the critical demands of involved surgical procedures. Operating rooms, even when equipped with skylights, require artificial lighting which can be engineered to meet all primary and secondary criteria established by the surgeon. The traditional upper-floor location, northern exposure and broad windows, therefore, do not necessarily increase the efficiency of the operating room.

## What is the logical location for the operating room?

As an essential prerequisite of service, and without regard to specific site requirements, the emergency or accident service must be located at or adjacent to a grade entrance. By planning the operating rooms contiguously, an immediate advantage results: one or more of the operating rooms may assume a duality of function and the emergency operating room, sterilizing, supply and other service rooms may be either omitted entirely or at least restricted. Obviously, too, this fusion of services might well result in an economy in staff personnel. The most logical location for the operating rooms, therefore, would be close to the emergency service, and not on the upper floors.

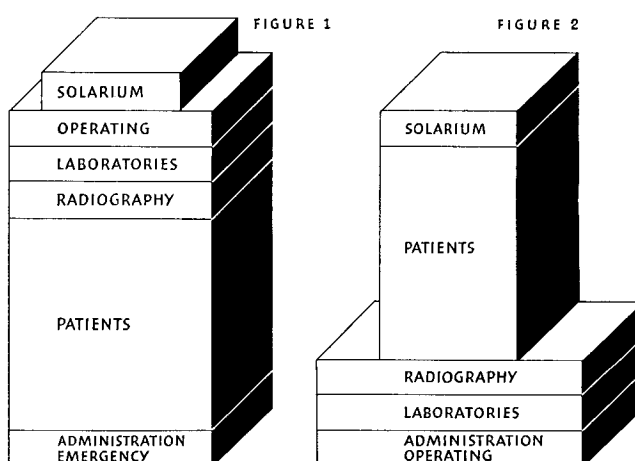
## A functional distribution of services

The objectives to be achieved in establishing an intelligent integration of hospital subdivisions or services are:

(a) a proper functional inter-relationship between such services and efficient workability between rooms within each service; and (b) the placing of patient accommodations for maximum environmental benefit to the patients. How best can these objectives be attained?

Diagnostic facilities are functionally related to the operating rooms and are customarily located nearby. These laboratories and radiographic services occupy extensive areas. Their location adjacent to a ground floor operating room not only would maintain this essential functional relationship, but also would release additional upper-floor areas for patient accommodations.

To lessen discomfort and post-operative shock, and to avoid dislocation of nursing service, surgery patients both prior to and subsequent to an operation should be exposed to a minimum of travel and traffic. It follows, then, that if the surgical wards adjoin the operating rooms, the distance between them diminishes and the relationship becomes



Distribution of services based solely upon functional criteria (Figure 2) compared with more usual distribution based on traditional upper-floor location of operating rooms (Figure 1)

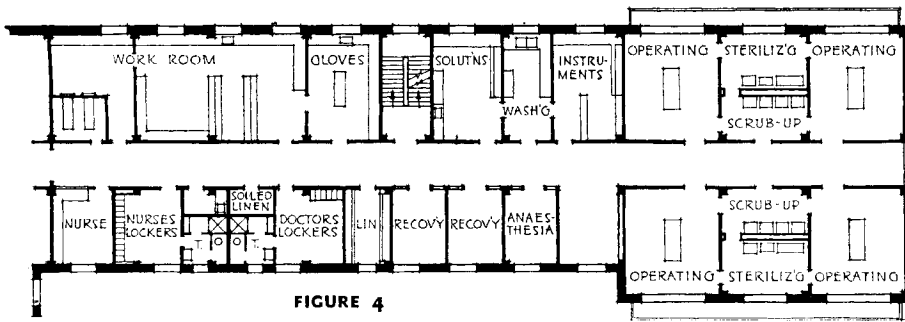


FIGURE 4

ESTIMATED DAILY TRAVEL IN FEET		FIGURE 3			FIGURE 4		
FROM	TO	N	F	A	N	F	A
Nurses' Work Room	Sterilizing Room	21½	21½	21½	95	95	95
Nurses' Work Room	Operating Room	9	45	28	71½	100	86
Instrument Room	Operating Room	20½	59	40	20½	46	34½
Solution Room	Operating Room	25½	74	50	35	61	48½
Nurses' Station	Operating Room	10½	50	30	108½	131½	121

N—Nearest F—Farthest A—Average

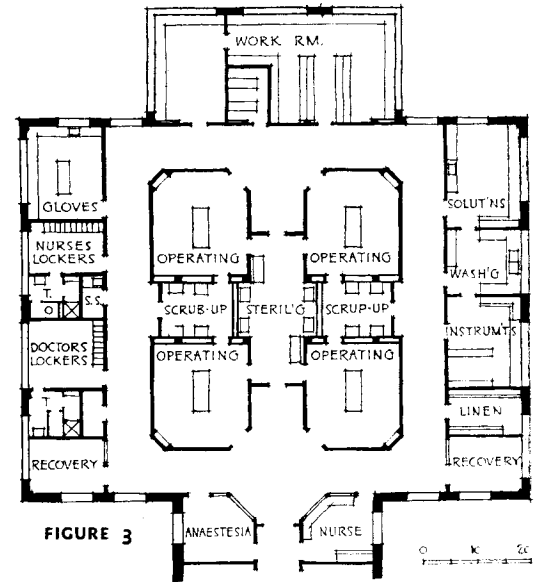


FIGURE 3

Identical in number of rooms and floor area per room, the two plans above show the advantages in time saved and distance travelled with the operating rooms planned as a central nucleus

increasingly functional. The maintenance of this relationship is important, as it has been estimated\* that of all the general hospital admissions in the City of New York, 60 per cent suffer surgical conditions, while 54 per cent submit to surgical operations.

With the surgical wards placed on the lower floors close to the operating rooms, the more desirable upper floors may be reserved for the non-surgical patients who are more easily influenced by environment and frequently more subject to the irritating impact of noise.

Thus has been evolved a distribution of areas based solely upon functional criteria (Figures 1 and 2), wherein the professional services absorb the less desirable stories and the acutely distressed group of patients an intermediate location, the much preferred upper floors becoming available for patients of the medical, maternity and other services—those patients who respond most readily to psychological and physiological advantages of environment and comparative quiet.

There are additional and collateral advantages resulting from the arrangements indicated in Figure 2. If the surgery service is housed on a lower story level, the designer is no longer troubled by the frequently perplexing problem of efficiently and effectively utilizing the "excess width" required by the operating rooms when superimposed upon the patient areas. At grade, the structural barrier of exterior walls no longer hampers him and the spatial limits become expansible and flexible, to be determined solely by the physical requirements of the working area.

Similarly, problems of stair and elevator traffic encroachment and of inter-service horizontal communication cease being. Obviously such circulation should not invade the

\* Calculated by Messrs. Goldwater and Golub, 1941 Hospital Year Book, upon statistics obtained from the United Hospital Fund.

operating service. Not always, however, can it be avoided when the latter is housed on upper floors.

#### Functional compactness in operating room design

If, then, natural light is admitted to be non-essential to surgical procedure, and granting the possibility of economic and functional advantages of operating rooms located on the lower floors, a departure from orthodox planning suggests itself (Figure 3). Here the operating rooms become "inside" rooms as a central nucleus around which the entire periphery is utilized for a compactly integrated grouping of nurses' service rooms—areas in which natural light and ventilation are desirable, and between which the avenues of traffic should be at a minimum.

The possibilities of such a plan are apparent when compared with the not uncommon and basically acceptable arrangement shown in Figure 4, based on the usual concept of an upper-floor operating room utilizing natural lighting. These plans are identical in the number and floor areas of corresponding rooms, but Figure 3 has a functional compactness and an integration of service relationships which Figure 4 lacks.

Apart from any other consideration, the plan proposed in Figure 3 certainly reduces traffic to an absolute minimum, and for that reason alone should not be dismissed on grounds of novelty. The table accompanying the two plans lists the most frequent avenues of traffic. If the average distances between given points are multiplied by the required number of return trips per nurse per day, the possible reduction in time lost and the probable conservation of physical energy are readily appraised. This principle of economy of motion is consistently applied in industrial planning. Why should not its humane advantages be given also to the men and women staffing our hospitals?



## ST. JOSEPH'S HOSPITAL, STAMFORD, CONN.

RAPHAEL HUME, ARCHITECT

CHARLES F. NEERGAARD, CONSULTANT

**A** BOLD, DIRECT design pattern characterizes this new general hospital which is conducted by the Sisters of St. Joseph. Its dignified, purposeful exterior, faced with limestone, closely follows the efficient interior arrangement. The two long lines of windows are made to count as a single motive by the use of dark brick between the piers. The fenestration is designed to conform to the necessities of plan rather than arbitrarily equalized spacing.

The building is set back from the street about 260 ft., and there is a parking area directly in front of the main elevation which faces east. Cars may drive up to the main entrance, or to a path leading to the clinic entrance.

The main entrance to the hospital is unusually attractive, since it does not lead directly into a corridor. The visitor, instead, finds himself in a spacious reception room naturally lighted by a large "picture window." The information desk is on the left, the general and administrative offices on



Grottscho-Schlesinger

The main entrance leads directly into a cheerful reception hall

the right. The first floor of the west wing is devoted largely to treatment and service rooms but also contains a chapel and a community room. The south portion of the first floor fronting on the street is devoted to a large clinic for the treatment and care of out-patients. This part of the first floor has an independent entrance. Here also are offices and a board room for members of the staff.

The second and third floors are devoted to patients' rooms comprising maternity, general female, general male, children's, and private patients' departments. There are three 4-bed wards, 36 semi-private rooms with two beds each, and 15 private rooms, some of which have adjoining toilets. At the south end of each floor, there is a semi-circular solarium. Part of the second floor is devoted to obstetrics and infant care, part of the third to surgery.

On the roof of the building there is a large solarium. Windows extending from floor to ceiling and giving an

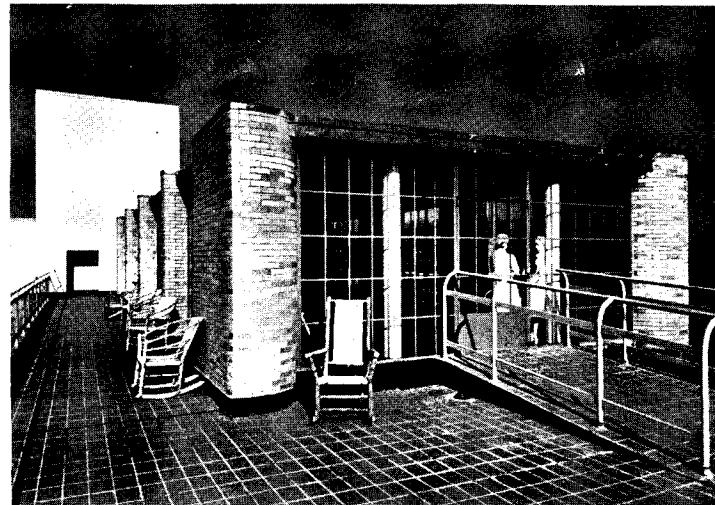
extensive view of the surrounding countryside, are set between rounded piers to admit the maximum of light. The tiled terrace surrounding the solarium is enclosed by parapets made with glass panels to afford unobstructed views.

Ambulances with emergency cases, and service vehicles, approach the hospital by a driveway which leads to a court in the rear where the ground drops down to the basement floor level. The basement contains a fully equipped emergency operating room, a large laundry, a kitchen, dining rooms for nurses, Sisters, and doctors, and ample storage spaces for the equipment. The heating plant is in the one-story extension at the west end.

Care has been taken throughout to provide quiet and cheerful surroundings for the patients. The color schemes of walls and furniture have been varied to give relief from monotony. All rooms in which sounds are likely to originate have sound absorbing ceilings.



Windows of the roof-top solarium extend from floor to ceiling



The piers are rounded to admit maximum amount of sunlight

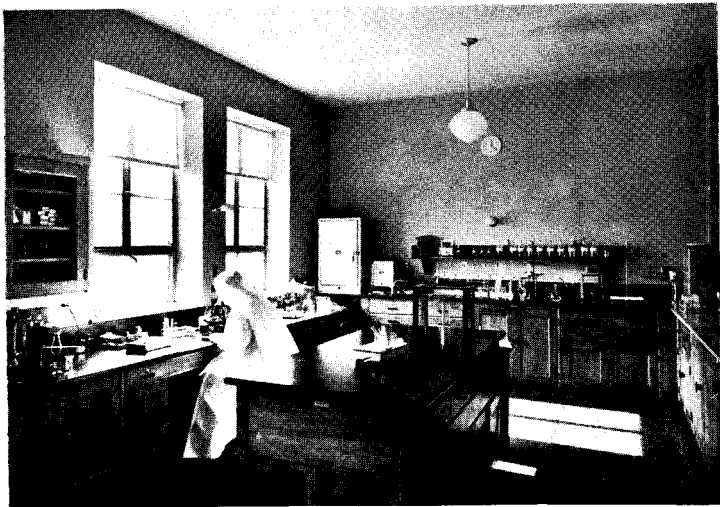


Raised gallery gives students a view of two operating rooms

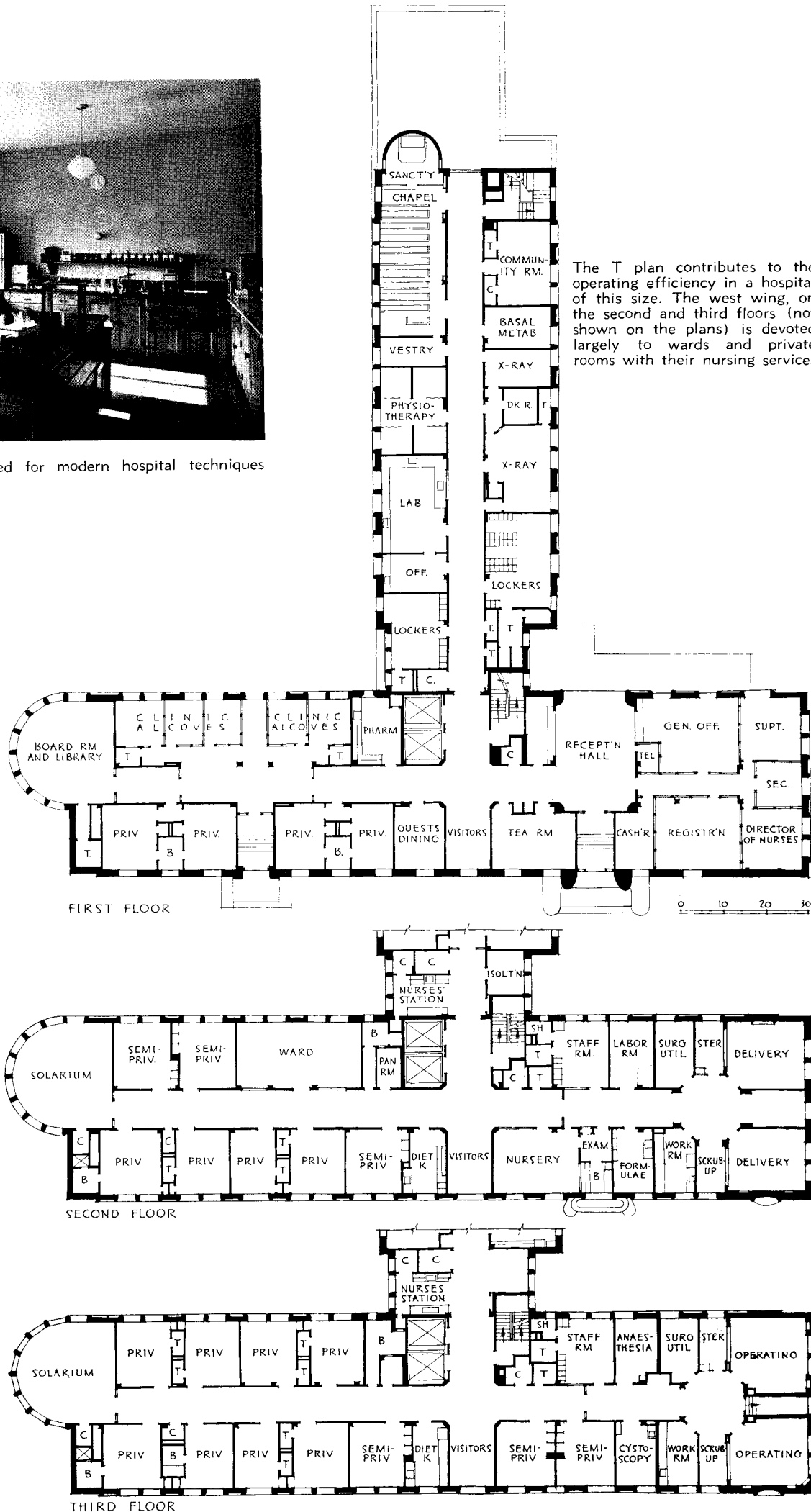


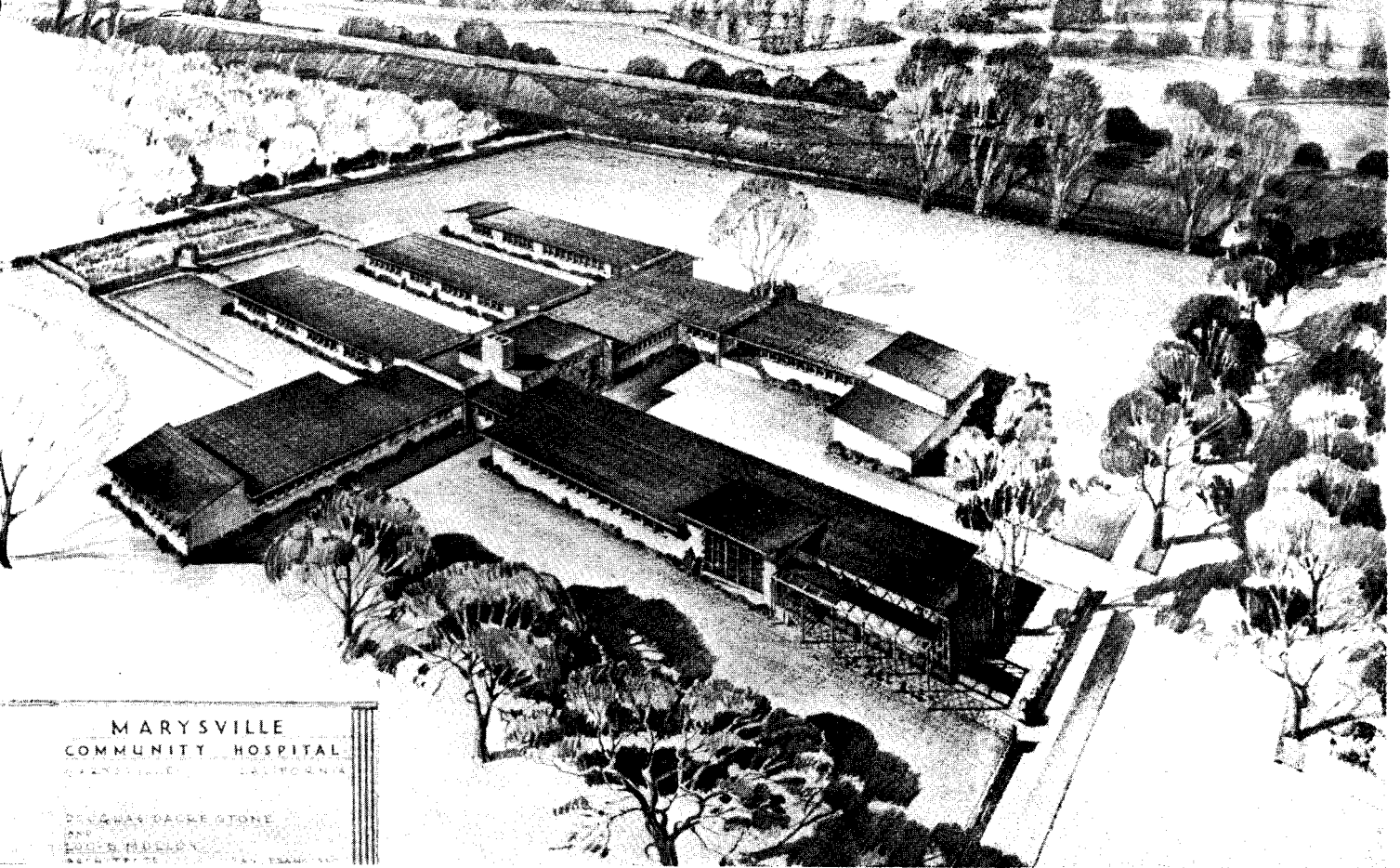
Cafeteria counter in the sunlit dining room in the basement





The laboratory is equipped for modern hospital techniques





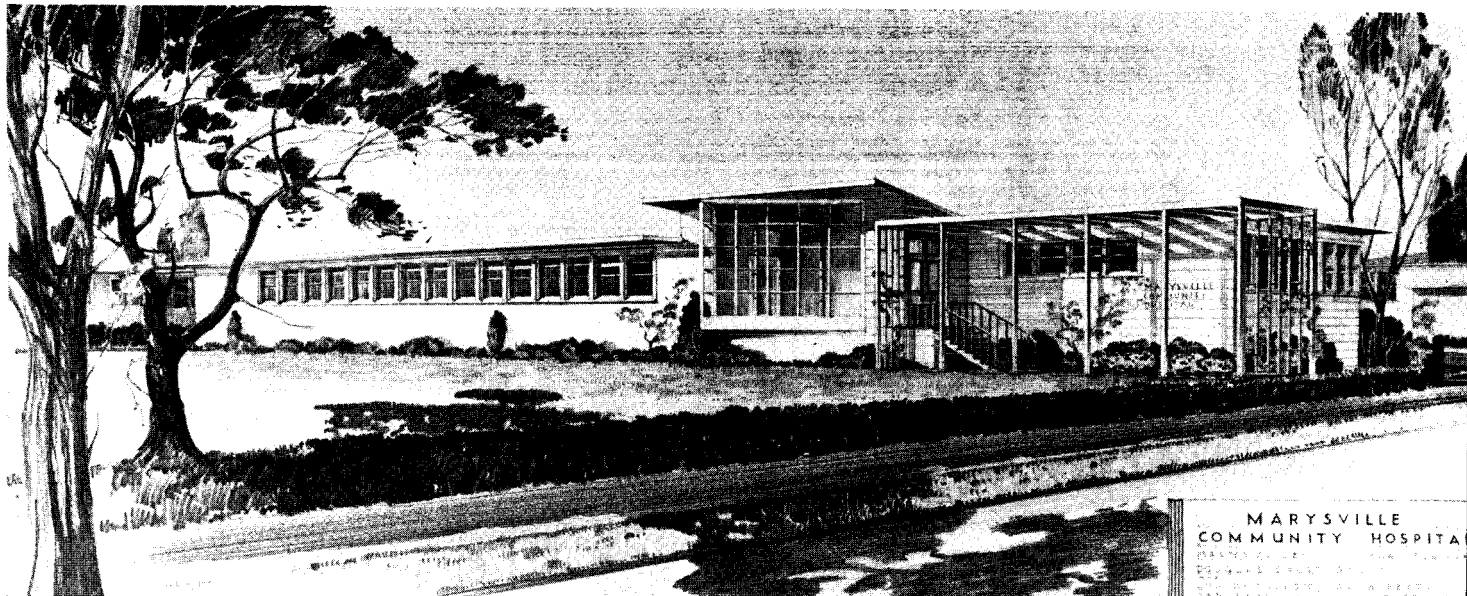
MARYSVILLE  
COMMUNITY HOSPITAL  
GRANDVILLE, CALIFORNIA

DOUGLAS DACRE STONE  
AND  
LOU B. MULLOY  
ARCHITECTS  
SAN FRANCISCO, CALIF.

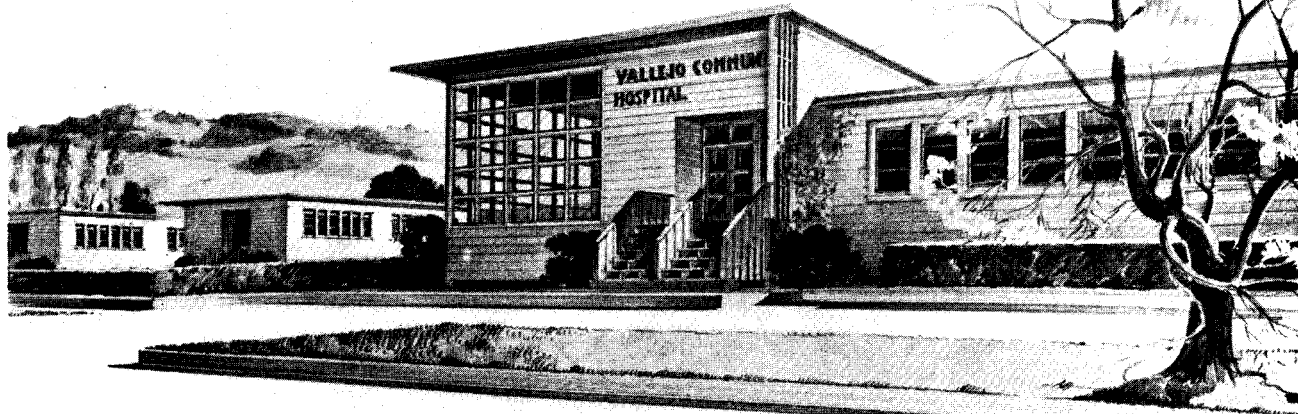
## HOSPITALS FOR WAR WORKERS

The hospitals shown in the renderings on these two pages were developed by the architectural firms named, in collaboration with the Consulting Hospital Facilities Section of the U. S. Public Health Service

THE influx of workers to new war-industry communities made the production of hospital facilities necessary with the greatest speed and the least possible use of critical materials. The Marysville Community Hospital, Marysville, California, is one such just designed by Douglas Dacre Stone and Lou B. Mulloy, Architects. This is a complete general hospital, with the exception of isolation and psychiatry, and the wings house administration and service, maternity and obstetrics, men's nursing, women's nursing, and surgery. It is designed on a 4-ft. module system.

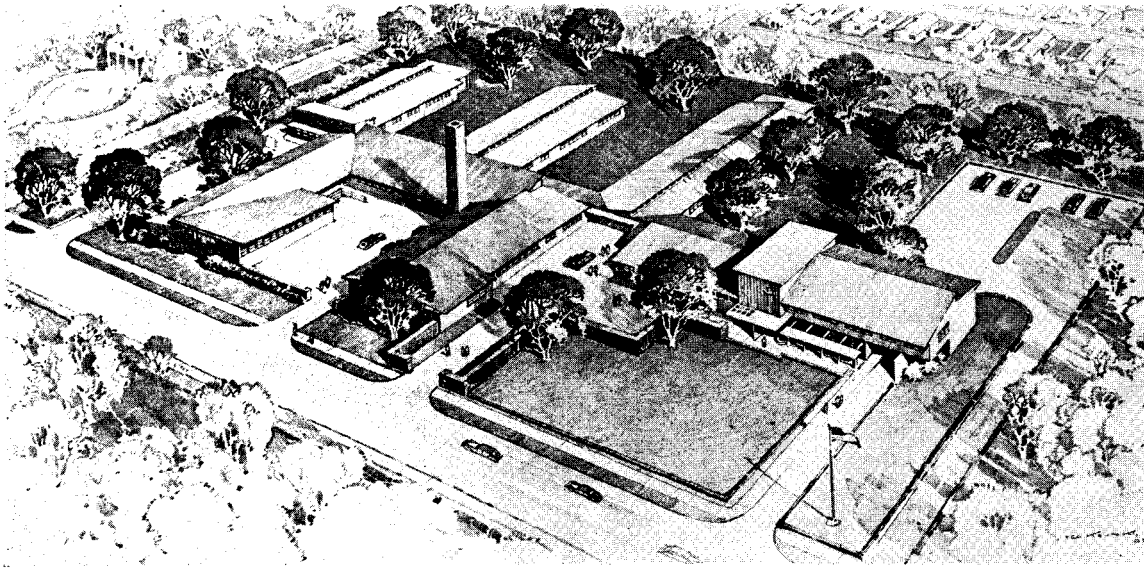


MARYSVILLE  
COMMUNITY HOSPITAL  
GRANDVILLE, CALIFORNIA  
DOUGLAS DACRE STONE  
AND  
LOU B. MULLOY  
ARCHITECTS  
SAN FRANCISCO, CALIF.

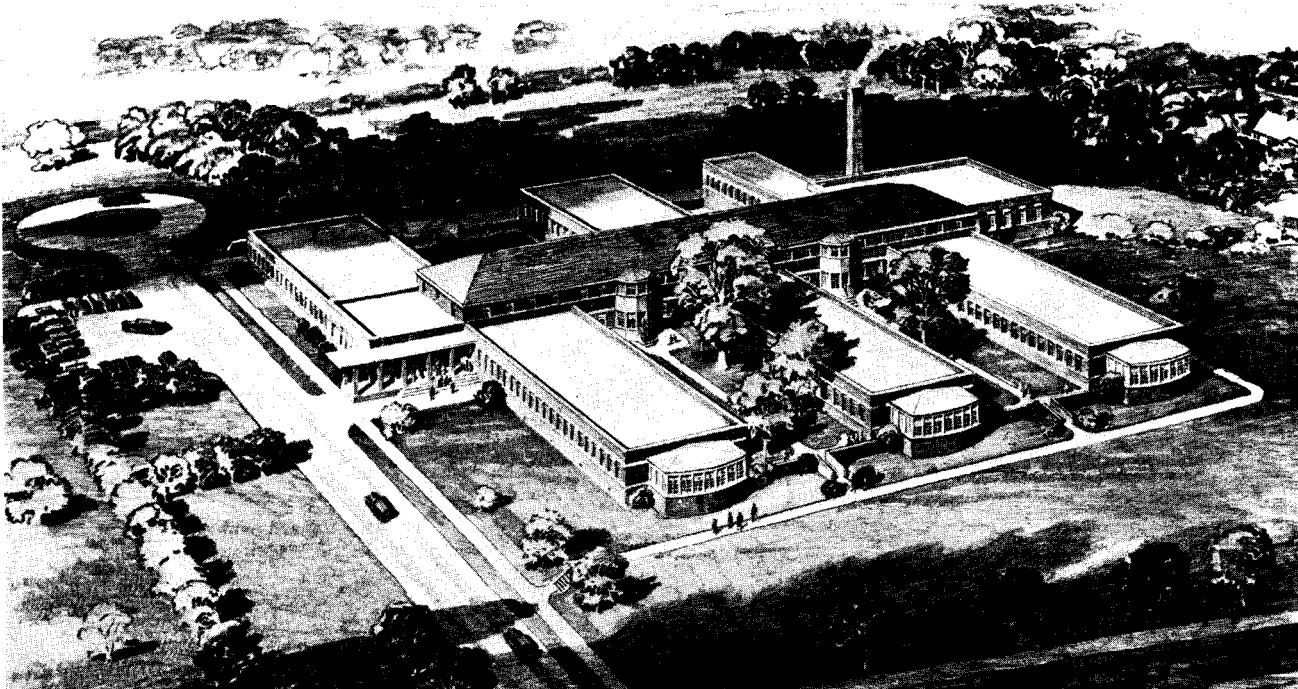


**VALLEJO COMMUNITY HOSPITAL**  
 VALLEJO, CALIFORNIA  
 ARCHITECTS: DOUGLAS DACRE STONE AND LOU B. MULLOY

Above, Vallejo Community Hospital, California, Douglas Dacre Stone, and Lou B. Mulloy, Architects, is a 150-bed, completely integrated general hospital. It is designed on a module system of 4-foot squares, for economy, with fire walls dividing the wings

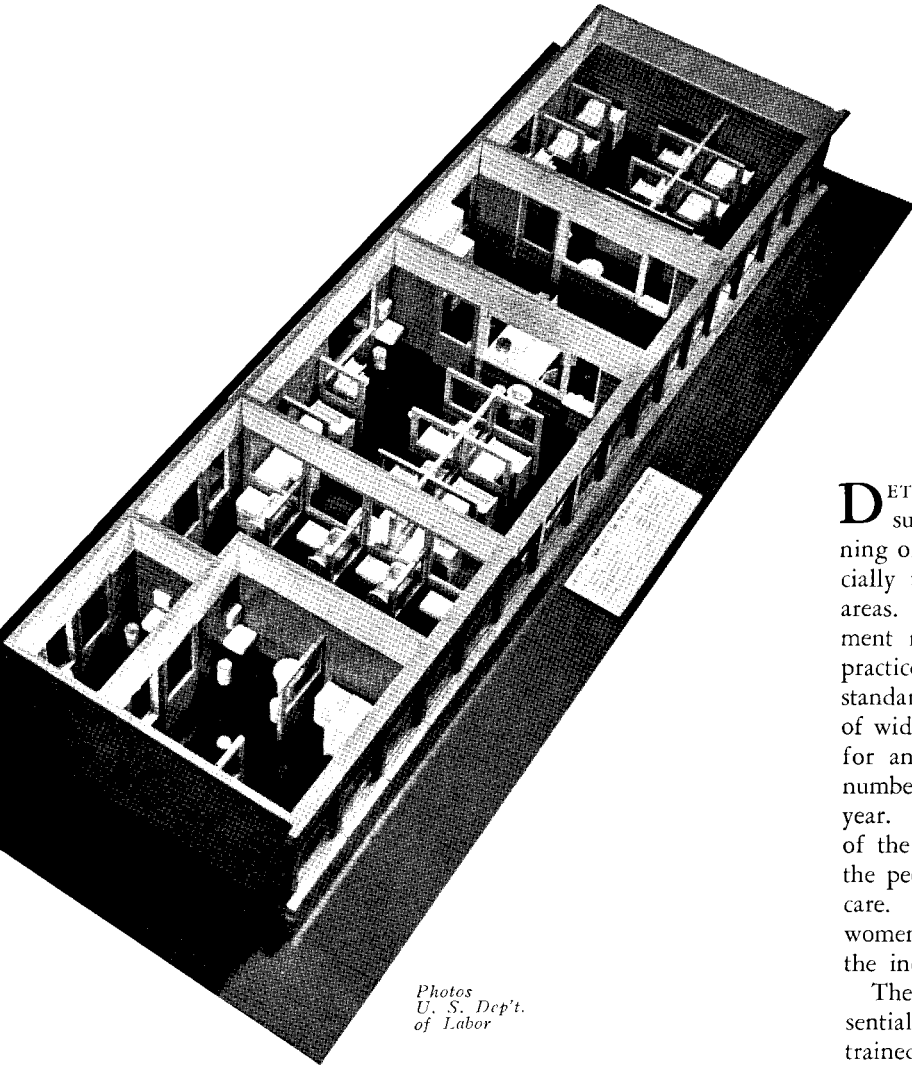


Left, Humboldt, Tennessee Hospital, Dent & Aydelott, Architects, financed by the Government and leased to the Catholic Sisters as the operating agency. Ventilation is provided by clerestory louvres and eave openings; the ceilings are insulated



Below, the Arlington Hospital, Arlington, Virginia, Buckler & Fenhagen, Architects, Charles Neergaard, Consultant, is a 100-bed hospital serving that fast growing suburb of Washington

# NEW PLAN STANDARDS



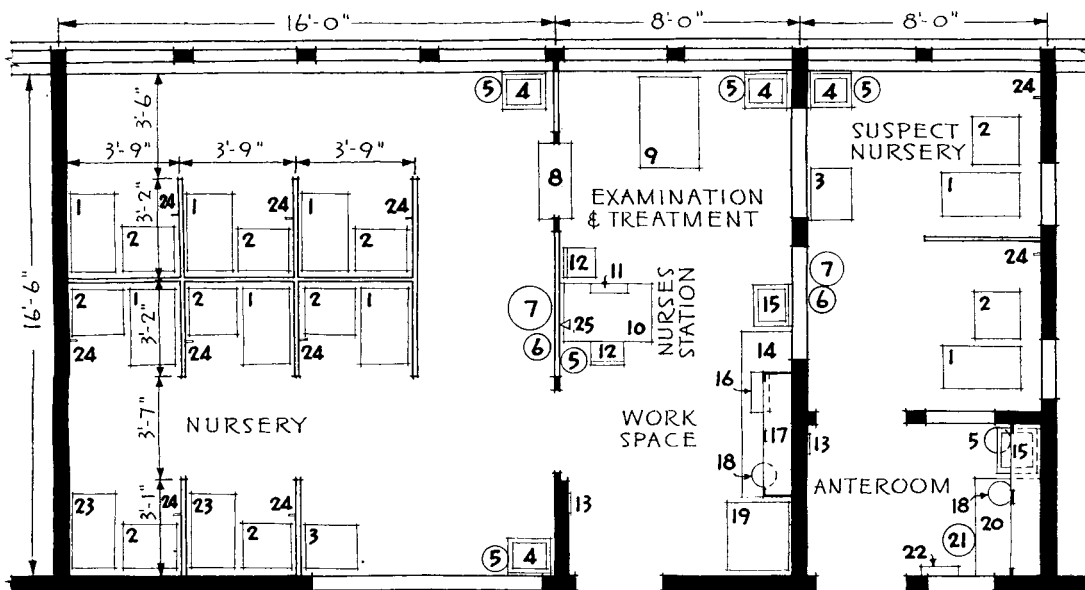
Photos  
U. S. Dep't.  
of Labor

Scale model of a typical nursery layout

Nursery layouts developed by the Hospital Facilities Section, U. S. Public Health Service, in cooperation with Children's Bureau, U. S. Department of Labor

DETAILED study of the care of newborn infants has resulted in the development of standards for the planning of nurseries suitable for small general hospitals, especially those which will be built in small cities or rural areas. Their aim is to show the minimum space and equipment requirements for infant care according to modern practice. The plans here reproduced show how the same standards can be adapted and rearranged to serve hospitals of widely varying sizes. The determination of exact layouts for any hospital should be based on calculations of the number of live births expected to occur in the hospital per year. This quantity may not have any relation to the size of the hospital itself. It will vary with local customs of the people in regard to the use of hospitals for maternity care. Planners should realize however that the number of women who enter hospitals for childbirth is constantly on the increase.

The plans incorporate all facilities now considered essential for infant care. They assume that there will be trained personnel in sufficient numbers, that the atmospheric conditions can be made conducive to the infant's welfare



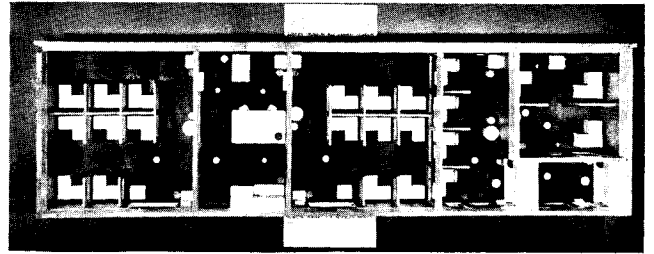
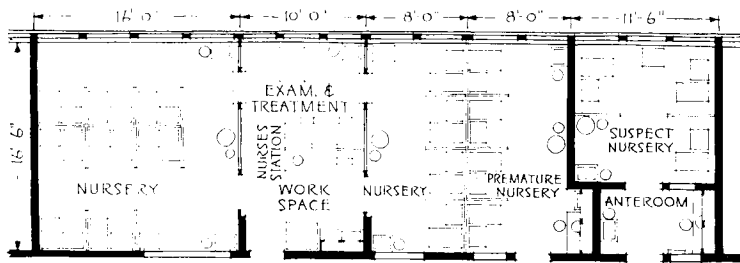
## EQUIPMENT LEGEND

1. Bassinet
2. Table
3. Scale Table
4. Lavatory
5. Waste Receptable
6. Sanitary Receptable
7. Linen Hamper
8. Pass Window with Shelf
9. Treatment Table
10. Nurse's Charting Desk
11. Chart Rack for 10 Charts
12. Chair
13. Hook Strip
14. Counter—Cabinets Below
15. Sink
16. Instrument Sterilizer
17. Cabinet Above Counter
18. Single Hot Plate
19. Refrigerator—6 Cu. Ft.
20. Counter & Desk—Open Below
21. Charting Stool
22. Rack for Two Charts
23. Incubator
24. Gown Hook
25. Telephone Outlet

## NOTE:

The formula room should be located near the hospital diet kitchen and should be under supervision of the dietitian.

# FOR HOSPITAL NURSERIES



Dimensioned plan and a top view of the model shown on the opposite page

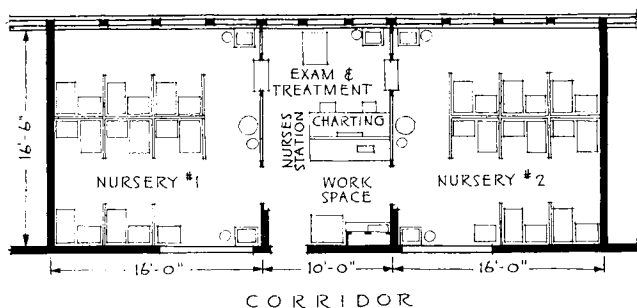
and that aseptic individualized technique of care will be followed. They place relatively few infants in each nursery unit, provide for special care of premature infants, and for isolation of infants exposed to infections. They assume the existence of a formula room near the diet kitchen, where feedings may be prepared, a nurses' locker room, and a doctors' locker room, where he may leave his hat and overcoat. There is a hook in the nursery work space where he may leave his suit coat when he comes in to scrub and gown. Many hospitals also have demonstration rooms in which nurses may teach mothers, who are about to leave the hospital, how to bathe and feed their infants.

Each nursery room accommodates eight infants, the maximum number to which one nurse can give satisfactory care. If there is, in addition, a separate nursery for the specialized care of premature infants, it should not contain over four bassinets.

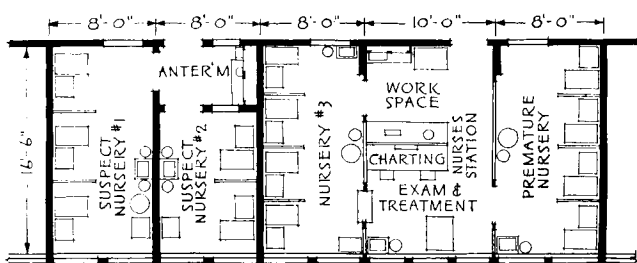
Nurseries should be near the maternity ward, but away from the main lines of hospital traffic. They should have windows to admit sunlight. The standard nursery rooms

are divided by means of partitions into individual cubicles for each child. Part of the partitions is made of glass, so that the nurse, without leaving her station, can see all the infants in her care. The equipment for each child consists of a removable bassinet on a metal stand and a table with a 16 x 20 in. top, a drawer, and a compartment for 24 hours' supply of diapers, bed clothes, and clothing. Combination table and bassinet units are available. Each nursery should contain a wash basin arranged for knee or foot operation, a sanitary can for disposal of diapers, and a hamper for soiled linen. There should be a viewing window in the partition separating the nursery from the corridor through which relatives may see the infants without coming in contact with them.

Certain accessory rooms are essential. They should be situated in relation to the nursery, so that traffic is reduced to a minimum. The nurse's station should occupy a strategic location permitting control over all activities. It should guard the entrances from the corridor, be near the entrance to the nursery, be within view of both well infants and suspects, and be in or near the work space, so that the nurse can work without losing sight of the infants. The examining room, which may also be used for treatments, may be part of the nurse's station. In the partition which separates it from the nursery, there should be a sliding window with a shelf for a sill, on which the infants may rest while being examined. A table nearby is for use in giving treatments. It is recommended that even small hospitals have a suspect nursery containing two bassinets. Such nurseries should never provide for more than three infants. Occupancy of them is intermittent, since the infants should be moved to some other part of the hospital when positive diagnosis of their case has been made.



CORRIDOR



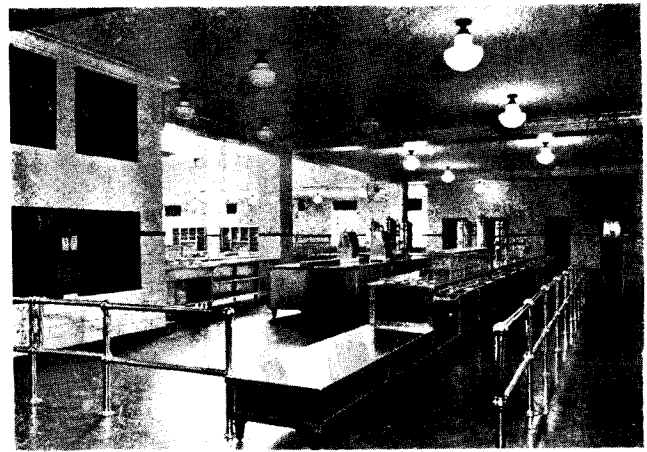
Plans at left show layout for 700 expected live births per year; 20 full-term bassinets, 4 premature, and 5 suspect bassinets are provided

Reference: Standard Plans for Nurseries for Newborn in Hospitals of 50 to 200 Beds. Ethel C. Dunham, M.D., Marshall Shaffer, Neil F. Mac Donald, "Hospitals," The Journal of the American Hospital Association, April, 1943, pp. 16-21

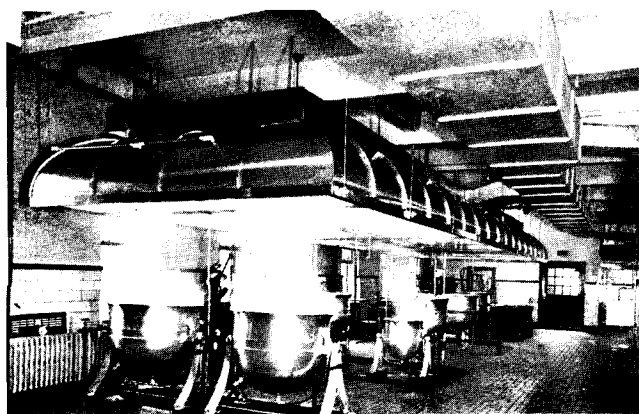
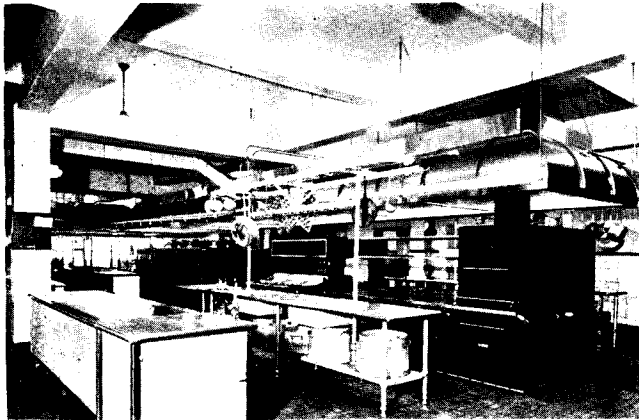
# MASS METHODS FOR HOSPITAL MEALS

THE PREPARATION OF FOOD for the patients, employees, and staffs of large hospitals has become a scientific study in high-speed, volume production. The choice in the menu for each meal must be limited, but is always adequate, for dietitians can create a great variety of basic menus. The preparation of the food is then planned as an assembly line operation. The food is cooked by highly specialized machines, each designed for its particular type of cooking, as boiling, roasting, frying or baking. This modern kitchen equipment bears but slight resemblance to the domestic range or the equipment of the usual a la carte restaurant. The specialized efficient equipment, arranged in proper sequence, saves time, space, labor, and food, to say nothing of conservation of critical materials in their manufacture.

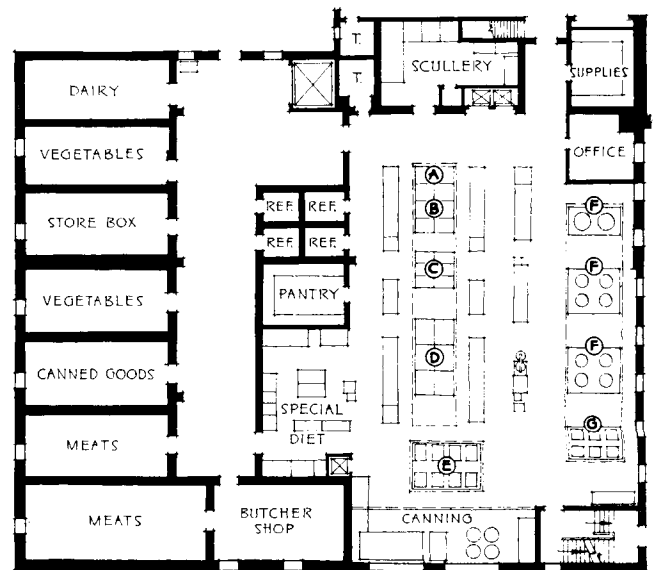
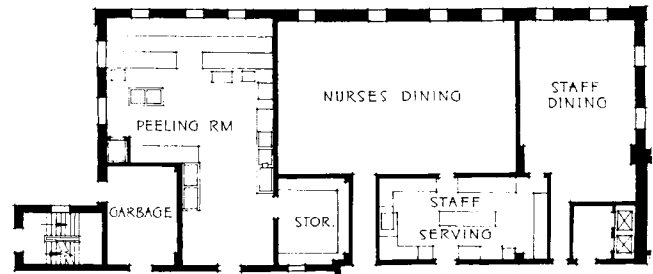
The kitchen illustrated below (Warren State Hospital, Penn.; G. W. Stickle, Architect) serves over 1600 people per meal. Dumb-waiters carry the food to the cafeterias for patients and for employees on the floor above.



The two-aisle cafeteria serving counters of the patients' dining room serves 1200. A single counter serves the employees' cafeteria. Two sets of dumb-waiters connect with kitchen



The assembly line for the mass production of food, shown above, consists of (A) 2 broilers (B) 6 ranges (C) 6 fryers



(D) 6 ovens (E) 8 meat steamers (F) 10 kettles (G) 6 steamers. Such equipment saves space, time, food and critical materials

# BASEMENT WATERPROOFING

from data supplied by R. W. Sexton

ARCHITECTURAL RECORD  
**TIME-SAVER  
STANDARDS**

MAY 1943

Editor's Note: In presenting the following data on waterproofing, we wish to call attention to the fact that, as soon as the war is won, the plastics industry, which is now pioneering in many fields, may well offer new materials and techniques for solving this age-old problem. The purpose of these pages is to present practical data for quick reference on correct current practice.

## Protection of Underground Construction

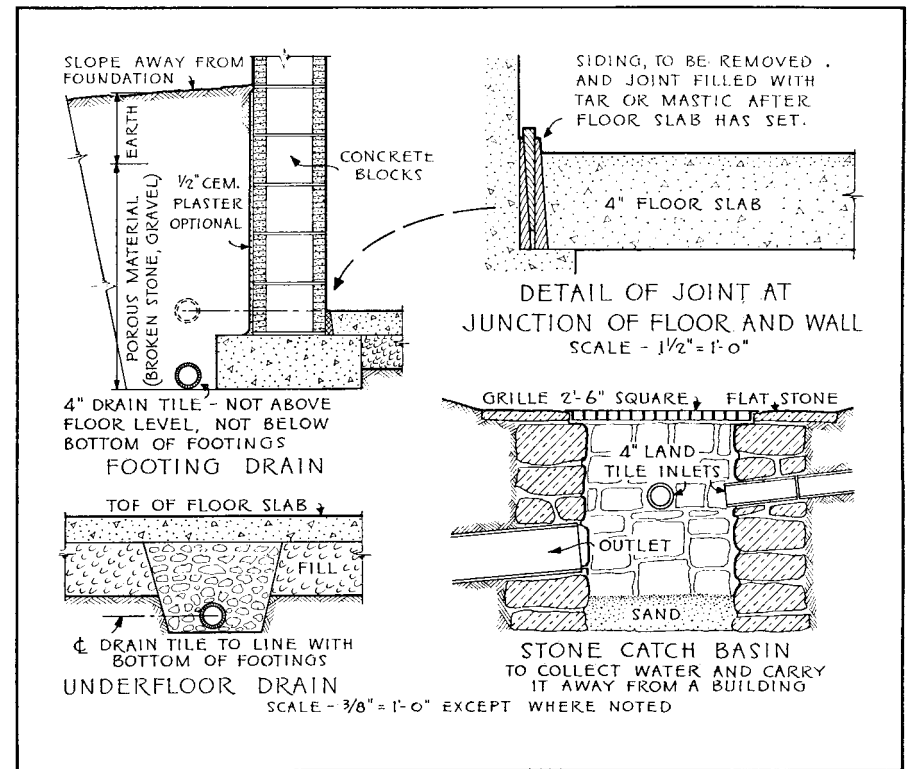
The problem should be considered from three angles, 1. The causes and conditions, 2. Preventive measures, and 3. Cures.

In times past little effort was made to waterproof buildings. Most of the important public or private buildings were built on high ground for natural drainage, if possible. The cellars of houses were expected to leak after exceptionally heavy rainstorms. Waterproofing first became vitally important when the tall building, with deep basement containing mechanical equipment, entered the field of construction. Today, the economy of the times makes it imperative to plan buildings in which all available space is put to practical use. Basements of houses, which in times past would have been used only for storage, are now planned to contain livable rooms. It is not feasible to put permanent interior finishes into such rooms unless the surrounding walls and the floors are built to exclude water, moisture, and dampness.

## Causes and Conditions. Location, Soil, Water table, etc.

The foundations of the simplest building go below frost line, and water conditions of some kind are almost sure to be encountered. A large portion of the earth's surface consists of bedrock and soil underlaid with water. The water flows through the materials themselves, if they are porous, and through the open spaces between the different geological substances. The water table is the name given to the surface of this ground water. The height of the water table varies somewhat with the amount of rainfall, and with the type of substance of which the ground is made, but it generally follows the contour of the ground, coming nearer the surface in the valleys than on the ridges. Irregularities of distribution of soft and hard materials often cause the level of the water to rise and drop perceptively within a comparatively small area.

Above the level of the water table the soil contains surface water. This is sometimes called capillary water because it lies in minute pores so close to one another that capillary action takes place. The rate at which this water is transmitted through the ground depends upon the size of the



pores of the various substances of which the ground is made. The pores of clay are usually filled with water even though the underground water level is many feet below. As oil will rise in a lampwick, surface water will come to the surface by capillary action from a considerable depth. Capillary water cannot be drained out of the soil by any system of drainage.

Occasionally a building site will prove to have definite upward water pressure, similar to a true artesian well. On sites which are near rivers subject to floods, or on low marshy land, steady or intermittent heads of water will often be encountered. Because of marked variation in the properties of soil and rock within short distances and at different depths, it is always well to investigate underground conditions by means of test pits or borings. The porosity of the soil, besides being related to the possibility of infiltration of water, also has a bearing on the amount of weight foundations will support. It is not unusual to find soil with high bearing power underlaid with material with less resistance to weight.

## Keeping Water Away From Foundations

Since prevention may be cheaper than cure, every effort should be made to keep water away from foundations where it can be harmful. In large buildings with deep foundations this

may not be possible. In rare cases, where a plentiful source of power is near at hand, it may be more economical to pump water out of basements than to build walls strong enough to resist its entry. In a majority of cases, however, it is possible to drain water away from basements, especially when buildings are placed on land higher than their immediate surroundings. When it is known that the site of a building is going to be wet, every effort should be made, at the very outset of the job, to correct the condition. Catch basins, with or without drainage lines, may be installed around the perimeter of the proposed location to collect the water and carry it away to lower ground. Basements in which water 2 or 3 ft. deep has collected during the excavation period, are sometimes made entirely dry by installation of such drains. When drains cannot be installed, sump pumps placed in pits below the basement floor, operated electrically or hydraulically, may serve the same purpose. They are useful on rocky ground where blasting out trenches would be difficult and expensive.

Footing drains are the best means of attracting and collecting water that is present in the immediate vicinity of foundations. They consist of lines of drain tile placed around the outside or the inside of foundation walls, connected to some suitable outlet.

# BASEMENT WATERPROOFING

Concrete • Masonry • Hydrostatic Pressure

## Impermeability of Concrete

Poured concrete, if well made, can be practically watertight. The impermeability will depend largely upon the care with which it is mixed and placed. All the aggregates should be of low absorption value, and the cement should adhere to each particle. The materials should be carefully selected, the proportions accurately calculated, and the workmanship rigorously supervised. To produce the dense, yet plastic and workable mix that is desirable, there should not be over 6 gals. of water per bag of cement. The mixture should be tamped with rods or agitated by electric vibrators to secure proper density. The hydration of the cement—that is, combining the cement and the water—takes time. Strength is gained and porosity is reduced during the period of hardening or curing. These changes take place rapidly during the first few days, more slowly thereafter. Most concrete should be kept wet for at least 7 days. Fabric coverings, straw, or other coatings are used to retain the water. The tendency of concrete to dry rapidly is usually noticeable in the hot, dry days of summer. The accompanying chart shows, for three different mixes of concrete, the relation of curing time to permeability.

Though concrete may not permit the passage of water through it, moisture may creep in. Even if the pores are very minute and compacted they may connect with one another. They may act as capillary tubes, drawing in and filling themselves with water. This action may cause the wall to be damp.

## Cracks and Joints in Masonry

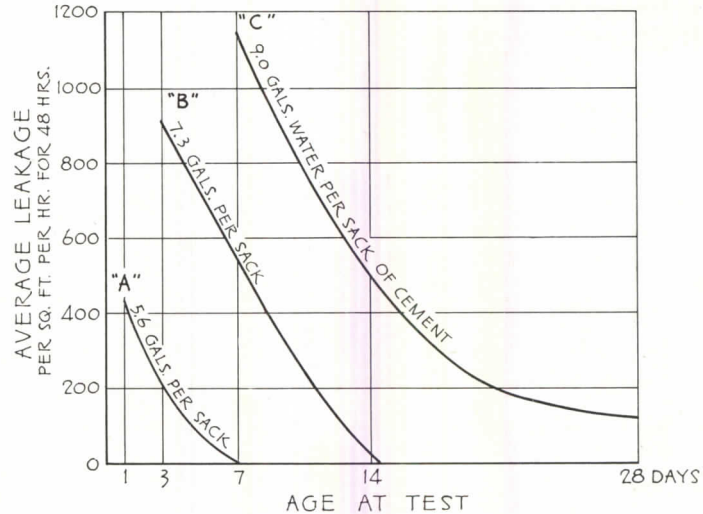
All types of masonry walls are subject to cracking due to settlement or to shrinkage caused by temperature changes. Even the well-proportioned concrete wall will crack unless there are a sufficient number of expansion joints. Brick, stone, and concrete block walls, besides being made of porous materials, have a large number of joints. Particularly when such walls are built in water-logged soil, great care should be exercised to keep the joints, which are the weakest link in the barrier against the entry of water, as tight as possible. All forms of construction seams are critical spots from the standpoint of waterproofing. The junction between the floor slab and the walls, generally known as the "floor line," is particularly vulnerable. A concrete slab may shrink as it sets, pull away from the surrounding walls and leave an opening for water. It is sometimes advisable to purposely make an open joint and later fill it

## RECOMMENDED CONCRETE MIXTURES FOR FOUNDATION WALLS AND BASEMENTS

KIND OF WORK	STRENGTH IN LBS./SQ. IN. AT 28 DAYS	GALLONS OF WATER FOR EACH ONE-SACK BATCH IF SAND IS:			TRIAL MIXTURE FOR FIRST BATCH			MAX. SIZE OF AGGREGATE, INCHES
		DAMP	WET	VERY WET	CEMENT	SAND	PEBBLES	
ORDINARY RESIDENTIAL FOUNDATIONS	2000	6 1/4	5 1/2	4 3/4	1	2 3/4	4	1 1/2
WATERTIGHT FOUNDATIONS FOR POORLY DRAINED SOIL	3000	5 1/2	5	4 1/4	1	2 1/4	3	1 1/2

## EFFECT OF CURING TIME ON PERMEABILITY

FOR CONCRETES MADE WITH VARYING AMOUNTS OF WATER.



MIX "A" BECAME WATERTIGHT IN 7 DAYS.  
MIX "B" BECAME WATERTIGHT IN 14 DAYS (BUT WAS FAR FROM IT IN 7 DAYS).  
MIX "C" WAS NOT WATERTIGHT AFTER 4 WEEK CURE.

THESE DATA FROM PORTLAND CEMENT ASSOCIATION.

with impervious material. Pieces of bevelled siding, greased so that they will come out easily, may be set in place before the slab is poured. When the slab has set, the boards are removed, and a rich mixture of concrete, or bituminous waterproofing placed in the crack.

## Hydrostatic Pressure

When measurable water pressure is encountered, precautions to keep it out of basements become engineering problems. A permanent 1 ft. head of water above the bottom of a slab will exert an upward pressure of 62 1/2 lb. per sq. ft. on the slab. When the head is 10 ft. the pressure will become 625 lb. per sq. ft. The slab must be designed and reinforced to resist the pressure to which it is subjected. Sometimes thickening and reinforcing the floor slab will hold the water out.

Water pressure around the foundations of many large buildings is severe, and there is frequently no way to relieve it either by drainage or by pumping. When a concrete wall or slab is made thicker, the impermeability of the material is not proportionally increased, but the additional weight offers greater resistance to the pressure of the water.

Sometimes the pressure of the water will be greater than the normal dead load on the floor. In such cases buildings may be designed to carry the upward force of the water to the points of load concentration above. There are cases where it may be more economical to thicken the upper floors to obtain weight rather than thickening the lowest slab which is subjected to the direct force of the water. This is because every foot of depth added to the lowest slab (if the floor heights



# BASEMENT WATERPROOFING

## Integral and Membrane Methods

are kept constant) will increase the hydrostatic head, and the only gain would be the difference between the weight of the concrete and the weight of the water. The construction of some basements under high pressure is similar to the construction of tanks, except that they are built to resist pressure from without rather than from within. Study of the soil conditions and distribution of horizontal and vertical reactions must be studied.

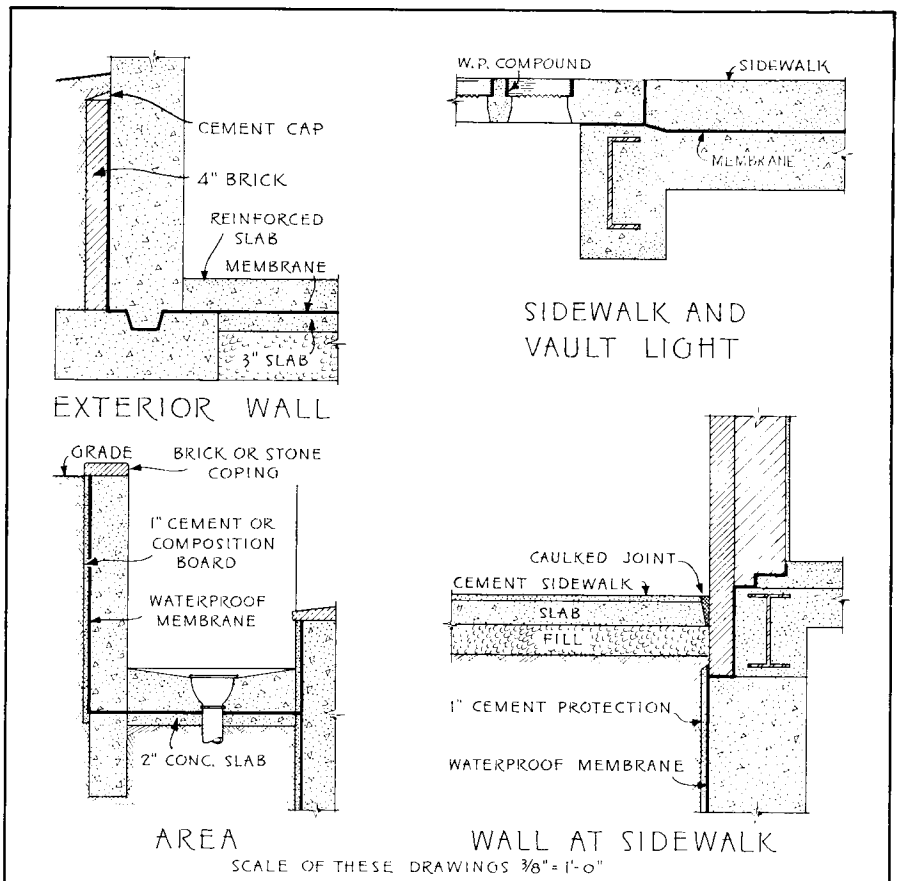
### Integral Waterproofing

The method consists of putting a compound, designed to increase impermeability, into the concrete mix. Experience has shown that few, if any, compounds are able to give the concrete a degree of perfection greater than would be obtainable if it were possible perfectly to grade, proportion and place the ingredients of the concrete itself. One kind of compound, which comes in powdered form, is designed to improve the workability of the concrete, thus reducing the number of interstices which might be formed if the mixture was not rich enough or of the proper consistency. Another type contains water-repellent admixtures which reduce absorption and retard penetration of water by capillary attraction. Tests have shown that some compounds have an injurious effect on the strength of the concrete. More desirable results have been obtained by the use of compounds made of inert materials such as clay, sand, and lime, which help to fill the voids, than by use of compounds in which chemical changes create water-repellent action.

### Membrane Waterproofing

The membrane method is the oldest form of waterproofing and until recently was the one in most common use. It consists of the application of alternate layers of bituminous material such as asphalt, coal tar, or pitch—and fabric, like felt, burlap or canvas. The bituminous substance is heated and mopped on to the surface to be protected and on to the alternate layers of fabric. The materials used should be elastic and cohesive as well as waterproof, because they are subjected to strains which will tend to make them crack, and to dryness which will decrease their flexibility. A well applied membrane seals the pores of a wall against penetration of moisture, and obstructs the flow of any water.

Membranes should never be put on the inside of a foundation wall if it is possible to put them on the outside. Effective installations provide for continuous barrier of protection. Where a wall meets a floor, the membrane is



NUMBER OF PLYS OF WATERPROOFING MATERIAL REQUIRED FOR VARYING HEADS OF WATER.

HEAD OF WATER	COAL TAR AND FELT	COMMERCIAL ASPHALT AND FELT	SPECIAL FELT AND COMPOUNDS	THICKNESS OF ASPHALT MASTIC
0 FEET	2	2	1	1/4 INCH
1	3	3	2	5/8
2	4	4	3	5/8
5	5	5	4	3/4
8	6	6	5	3/4
10	7	7	6	3/4
15	8	8	7	3/4
20	9	9	8	3/4

THESE DATA FROM "MODERN METHODS OF WATERPROOFING" BY M. H. LEWIS

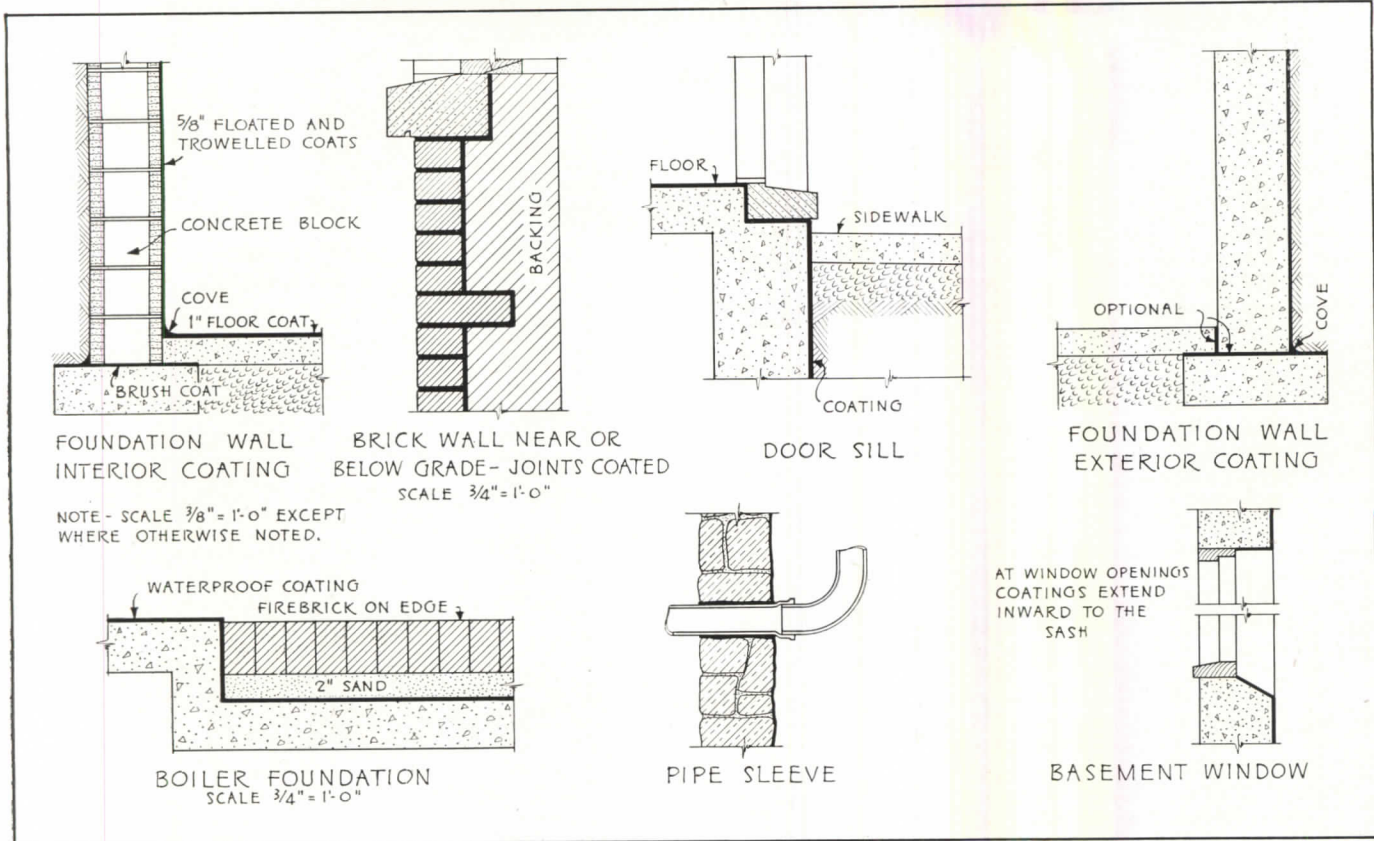
usually run through a keyed footing. A similar key is used at the intersection of an interior partition with an exterior wall.

The protection of the membrane is very important. On the outside, if it is in direct contact with earth, it is subject to upheaval by frost, puncture by roots of trees, deterioration by acids in the soil. Several methods of protection are employed, all of which consist of placing another material between the membrane and the earth. A thin wall of brick or concrete is often built. Composition board may also be

used. Some boards available are manufactured to resist termites, dry rot, fungus, and other cellulose destroying agencies. They are also insoluble, and have insulating value. Their low conductivity will protect the bitumen in the membrane from the heat of the sun during the period of application. Such boards are embedded in the outer layer of fabric when it is given its final mopping. Blows with a wooden mallet insure overall contact of the board and the underlying surface. Bitumen is then mopped on the outside, to protect the board and the joints.

# BASEMENT WATERPROOFING

## Plastic and Iron Coatings



### Cement-Base Waterproof Coatings

There are several compounds available today, which, when applied to either the interior or the exterior surface of any type of basement wall, or to the upper surface of a floor slab, will render the wall or floor waterproof by sealing the pores. Most of these materials achieve and retain their hold on the surface by the bonding of Portland Cement. The basic ingredient of most of the compounds is cement, but some are sold in paste, powder, or liquid form to be mixed with cement by the consumer. These materials should not be confused with cement-base paints. The coatings have a hard wearing surface, and have been known to resist a hydrostatic head of 190 ft.

One type of coating contains ingredients of an organic nature, another type has a mineral base, being composed principally of iron.

A mineral type of compound which is commonly known as iron coating, takes advantage of the fact that iron, when it oxidizes, will expand to several times its original volume. Properly prepared iron will retain its ability to expand even when mixed with sand, cement, and water. In so doing, it fills the voids left by the water when it evaporates, leaving the surface to which it has been applied sheathed

with dense iron-cement that will withstand considerable pressure.

Before application of either type of coating is made, any hydrostatic pressure which exists should be relieved, either by pumping or by drainage. Holes made for this purpose may later be filled and finished. Sometimes a steel drum is placed below the level of the floor and the water is pumped out of it. When the waterproofing of the space has been completed, the drum itself is left in place and given a coating, and the floor is built over it.

Smooth surfaces which are to receive plaster coatings must first be roughened with cold chisels, bush hammers, or sandblasting so that a satisfactory bond will be secured. They should then be cleaned with scrubbing brushes, and rinsed until all traces of alien matter have disappeared. While the surface is wet, plaster coatings should then be floated on with a trowel. If two coats are to be applied, the second coat should go on while the initial set of the first coat is taking place. Coatings on inside walls are usually 1/2 or 5/8 in. thick, on floors 1 in. thick. Walls and floors should be done, insofar as possible, in one operation. The coatings will not absorb water, after the water with which they are made has evaporated.

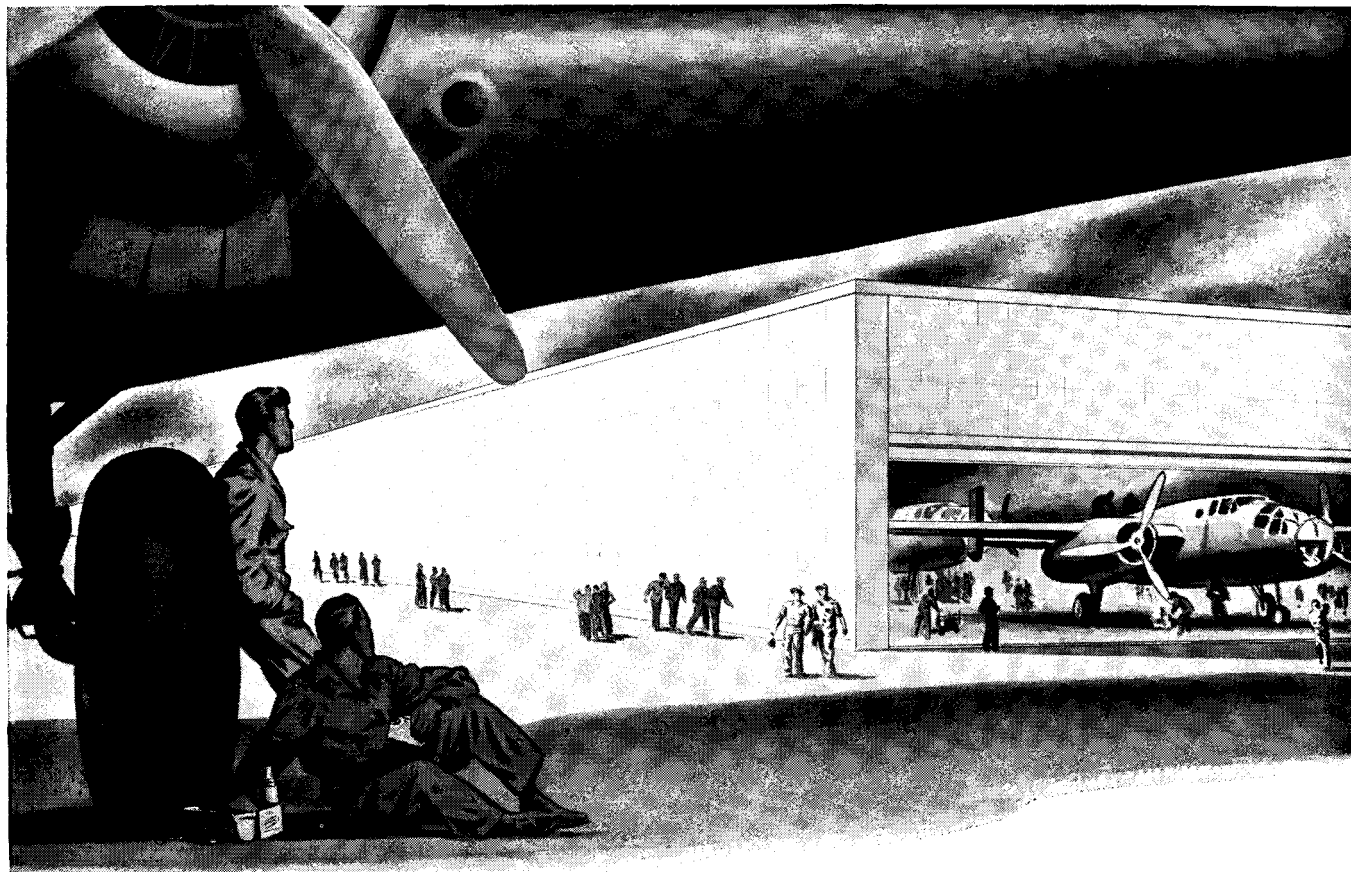
Iron undercoats are put on with a brush. Enough time should elapse between two coats to allow for complete oxidation of the iron. The first coats are made of iron compound mixed with water, the final coat is iron mixed with water, cement, and sand, and it may be put on either with a brush or with a trowel. Since iron coatings are not suitable wearing surfaces, when they are used on floors they must be covered with 1 in. topping of cement.

It is generally preferable to use cement-base coating on the inside of buildings. If walls are subject to freezing temperatures, they may be furred and the coating put on the furring. Being rigid, plaster coats are subject to cracking. They should never cover expansion joints. Coatings on the inside are accessible for easy and economical repair, and they may be applied to various parts of the building as it goes up without interfering with the normal progress of the work.

### Necessity for Supervision

Too much emphasis cannot be placed on the necessity of consulting men who have made a special study of waterproofing. The success of any job will depend on the skill and experience of the men who supervise and do the work.

*Looking ahead with Asbestos*



**"BOY, NOTHING HERE BUT A VACANT LOT  
98 DAYS AGO!"**

"Yes, sir," says Joe Wingworker, "Three months ago she was just a vacant lot, full of weeds and old tin cans. And now look at her! That asbestos lumber made a plane plant spring up mighty quick. And they tell me the stuff won't rot or rust or ever need paint."

Righto, Joe! That "Stuff" is Keasbey & Mattison's "Century" Apac Board, and if you have anything to do with construction or maintenance after this war, you'd better make a note of it. Why, it's not only maintenance-free, it actually gets tougher with age and it's fire-resistant and weather-resistant.

Also remember, Joe, that Apac is an all purpose board . . . it is designed for roofing or siding and for interior walls, ceilings and partitions. No wonder more than 50,000,000 square feet have been used in essential war construc-

tion to date. "Century" Apac Board goes up fast . . . is trouble-free thereafter.

Total war has shown manufacturers in all fields how to produce faster and better. This, coupled with the fact that wartime building needs have lessened considerably, means that this material is now available again for widespread use.

If industry has its way, this new production efficiency will be kept at work after the war, making all the things a peacetime world will want and need—new things resulting from vision and research today.

\* \* \*

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

**KEASBEY & MATTISON**  
COMPANY, AMBLER, PENNSYLVANIA

*Makers of*

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



# HARDWARE DESIGN AND ENGINEERING

. . . in a noteworthy installation at Washington's Hotel Statler

IN the past decade relatively few architects have been engaged in planning a large office building, or a huge hotel. Precious few of them have been built. And there has been little opportunity for recording advances in design and equipment. One does not expect sweeping changes in a period of little activity, but in a decade one does expect new refinements in designs, new answers to vexing installation problems, new wrinkles to improve the appearance and functioning of buildings.

In the realm of big-building hardware there has been progress of this sort that is worth reporting. No-

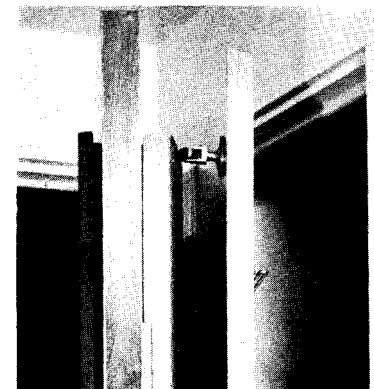
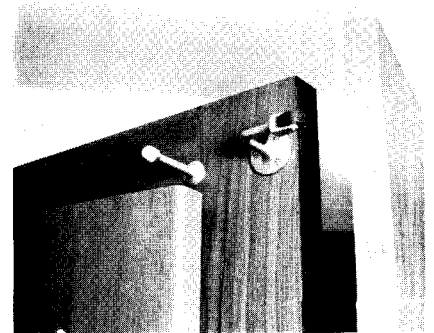
where is it better illustrated than in the new Statler Hotel, in Washington, D. C.

Every large hotel raises the intricate and fascinating problem of locks and keying systems. This is probably the one matter of most interest to the management, and one that invariably involves the designer in the complications of keying objectives and the infinite combinations possible with lock systems, with their master keys, grand master keys and great-grand master keys. The Statler system happens to be an excellent illustration of a well-studied keying system.

Another concern of the designer is door hardware that presents smooth surfaces to the eye and hand of the guest—smooth to the eye to blend with enlightened architectural styling, smooth to the hand to eliminate the real danger of injury from loose escutcheon plates and screws. The Statler hardware represents an advance in a truly smooth plate, with no fasteners exposed. Other refinements found in this installation involve improved door swing controls and new finishes.

The new type of escutcheon plate grew out of a desire to reflect in the hardware the simplicity of line and form that is characteristic of the building, the hardware styling being done by the architects, Holabird and Root. As the designs developed the hardware manufacturers made their contribution in escutcheon plates mounted by a unique method that leaves no screws showing. In the design that solves the problem the escutcheon plate is really two plates. First there is a plate (Figure 1-A) which is fastened to the door with screws. Then the escutcheon plate itself (Figure 1-B) is placed over it and fastened by means of a locking threaded thimble (Figure 1-C). This thimble is locked in place, by a special wrench, in slots which are later concealed by the door knob.

In the case of the longer escutchcons, a tapered piece is fastened to the door under the end of the plate. On the top of the plate, at the back,



Walter Van Duraud

Offset roller guide (top photograph) and straight roller guide (lower) prevent the marring of doors that are close together

there is a V-shaped groove that wedges the escutcheon plate firmly against the door. Thus is it possible to make a completely smooth escutcheon plate, with no exposed fasteners.

One of the nuisances to a hotel's management, the marring of doors which bang against each other in close quarters, has been eliminated by the hardware installation of the Statler.

(continued on page 86)

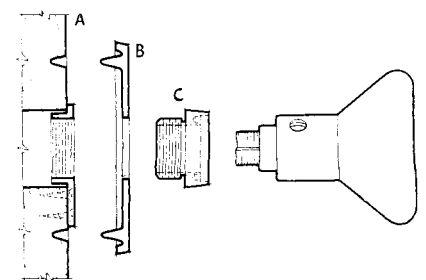
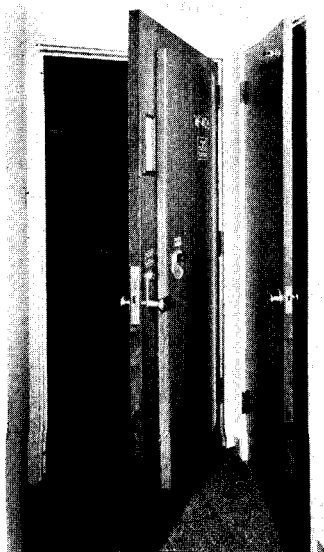


Figure 1: An inner plate A is screwed to door. Escutcheon plate B is locked on by thimble C. Thus no screws are exposed



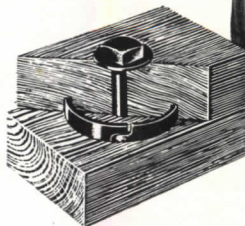
Escutcheon plates without exposed fasteners and roller guides to prevent doors banging are improvements at the Statler

# SELECTED FOR SERVICE

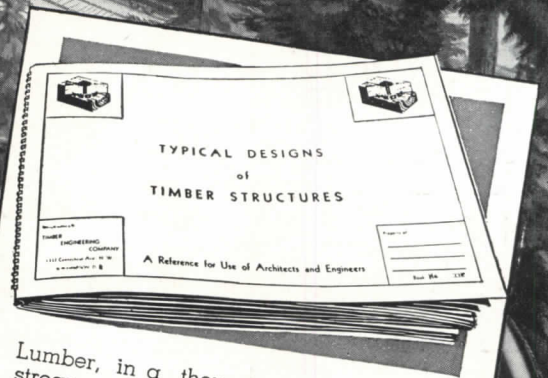


Topping the "spar tree" preparatory to forestry operations. Selective harvesting of fully matured trees in the surrounding forest will assure continued forest growth.

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**  
NATIONAL MANUFACTURERS OF **TECO** TIMBER CONNECTORS AND TOOLS  
WASHINGTON, D. C. PORTLAND, OREGON



Lumber, in a thousand different forms, streams to the fighting fronts of the world. At home, wood replaces metal in thousands of heavy duty war structures—made possible by the **TECO** Connector System of Timber Engineering. This **FREE** Reference Book shows details of 45 typical timber designs for roof trusses, bridges, towers, tanks, hangars, and other structures for the war today and the peace tomorrow. Available to practicing engineers and architects. Write for it today—using your firm letterhead.

WOOD GOES TO WAR — An MGM Technicolor short by James A. Fitzpatrick. Ask your theater when you can see it.

# HARDWARE DESIGN AND ENGINEERING

(continued from page 84)

In certain rooms there are three doors close together, doors to corridor, closet and bath. And the problem was made more difficult by the bulge of the service compartment on the inside of the corridor door.

The solution was found in a combination of different types of door stops. One is a simple straight door stop, used in varying lengths to limit

the swing of certain doors. Another is a roller guide, such as shown in Figure 2 and Figure 3, and in the accompanying photographs. Used in combination they effectively prevent one door from rubbing against another and thus obviate the necessity for continual refinishing and repairing.

In the selection of the keying system

the hotel management usually states the objectives to be met. The designer's function is to specify the system that will give maximum security for masterkeying to meet those specifications. Though it might seem to the layman that the more complicated is the masterkeying system, the greater is the security, actually it is just the other way 'round. Each different master key to open any given lock means more slots on the tumblers, and the more slots there are the easier the lock to open. Frequently it is possible to provide greater security in a large building by using different keyway openings on various floors.

(continued on page 88)

## BARBER-COLMAN

ENGINEERED

GRILLES & REGISTERS

AIR DIFFUSERS



uni-flo

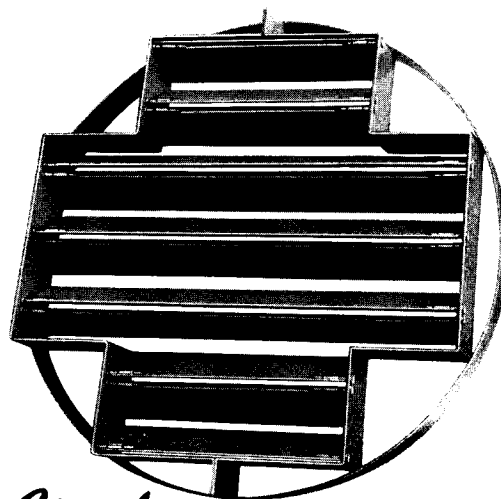
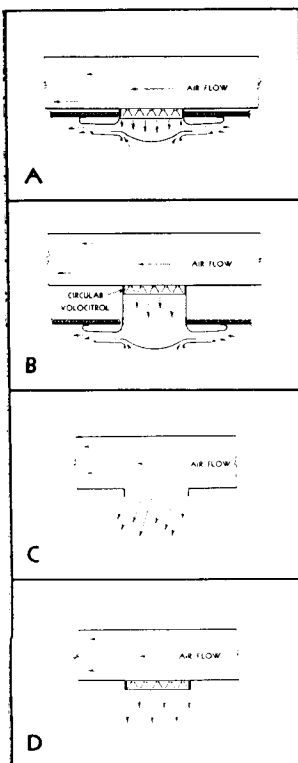
GRILLES AND REGISTERS

AIR DISTRIBUTION

AUTOMATIC

CONTROLS

**AN INEXPENSIVE, TIME-SAVING DEVICE FOR BALANCING CEILING OUTLET SYSTEMS OF AIR DISTRIBUTION...**



## Circular VOLOCITROL

This VOLOCITROL affords an accurate and fully adjustable control of air flowing from a duct directly into a ceiling outlet, or through a branch duct to the ceiling outlet. The blades can be set as desired to direct the air flow, to control its distribution across a branch duct, and to govern the volume. Write for additional information.

- A. Installation with ceiling outlet on duct.
- B. Installation with ceiling outlet on branch duct.
- C. Unequal air flow without Circular Volocitrol.
- D. Equalized air flow with Circular Volocitrol.

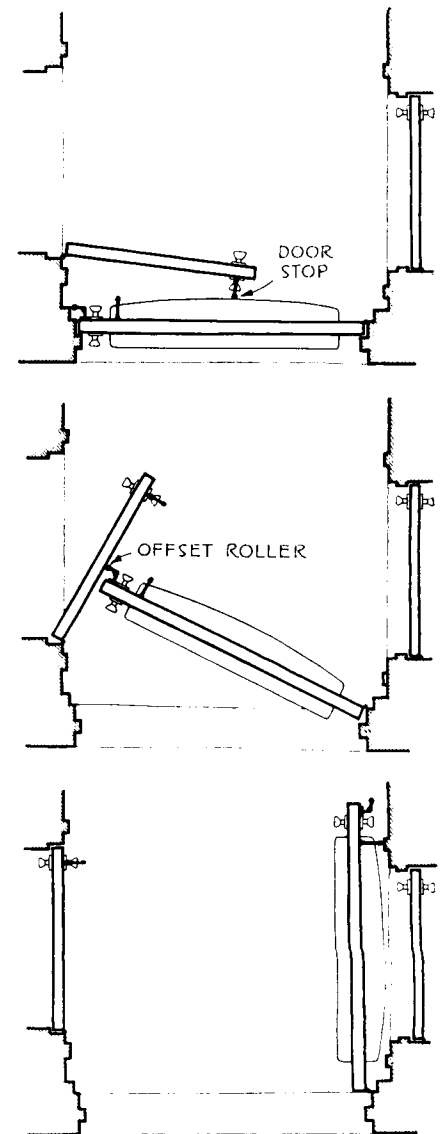
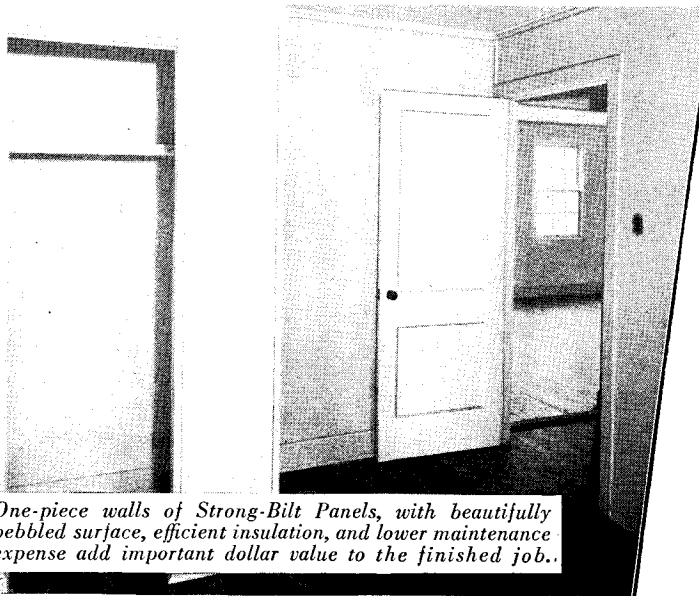


Figure 2: Showing the operation of roller guides and door stops to keep hall door from marring closet and bathroom doors

BARBER-COLMAN COMPANY

1232 ROCK STREET  
ROCKFORD, ILLINOIS

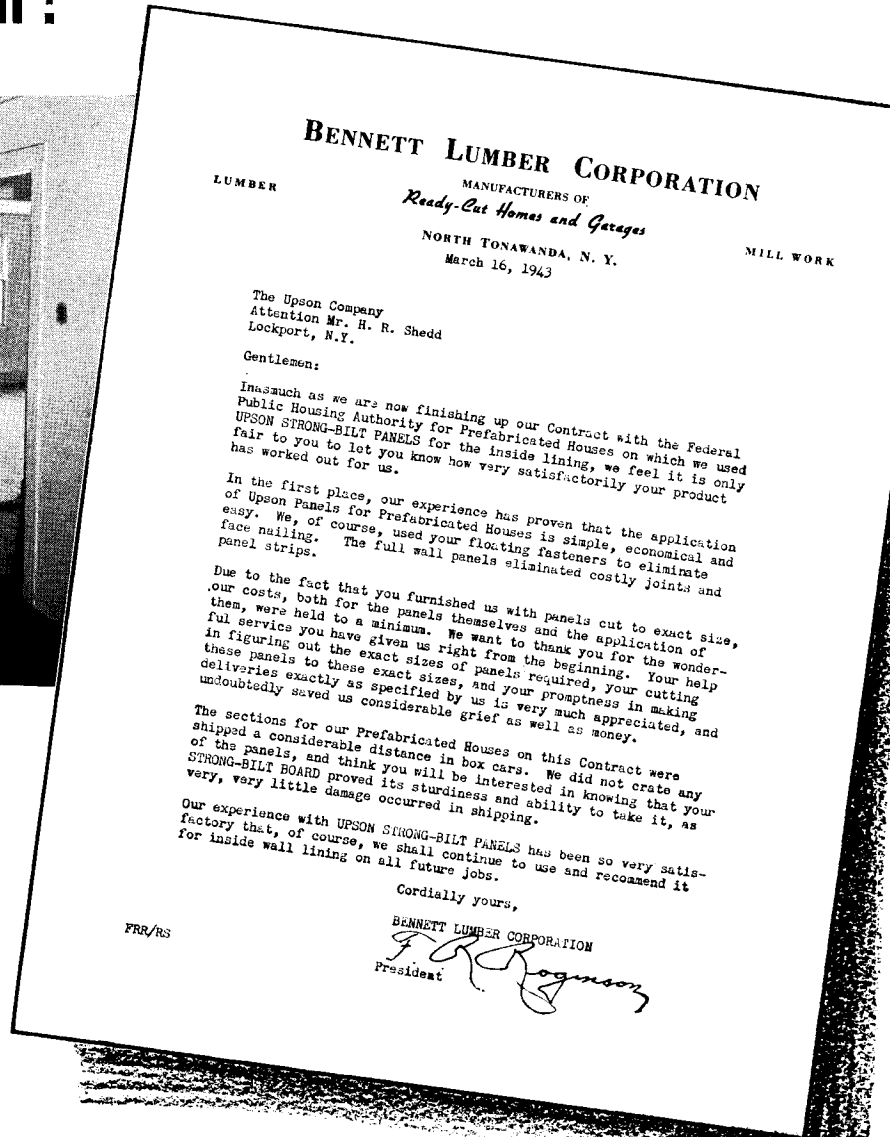
# Proof from Leading Project Builders is pouring in!



*One-piece walls of Strong-Bilt Panels, with beautifully pebbled surface, efficient insulation, and lower maintenance expense add important dollar value to the finished job.*

**R**EPORTS of performance *on-the-job!* The experience of Bennett Lumber Corporation is typical of many. Sections for 250 war housing units built in the company's plant were shipped over 400 miles by rail and assembled at the site near a great war industry center.

Gaining wide popularity before the war, quickly adopted for extensive wartime use, Strong-Bilt Panels already are being figured into plans for eagerly-awaited post-war homes. For informative booklets covering use in both conventional and prefabricated construction, write The Upson Co., Lockport, N. Y.



## BENNETT LUMBER CORPORATION

LUMBER

MANUFACTURERS OF  
*Ready-Cut Homes and Garages*

NORTH TONAWANDA, N. Y.  
March 16, 1943

MILL WORK

The Upson Company  
Attention Mr. H. R. Shedd  
Lockport, N.Y.

Gentlemen:

Inasmuch as we are now finishing up our Contract with the Federal Public Housing Authority for Prefabricated Houses on which we used UPSON STRONG-BILT PANELS for the inside lining, we feel it is only fair to you to let you know how very satisfactorily your product has worked out for us.

In the first place, our experience has proven that the application of Upson Panels for Prefabricated Houses is simple, economical and easy. We, of course, used your floating fasteners to eliminate face nailing. The full wall panels eliminated costly joints and panel strips.

Due to the fact that you furnished us with panels cut to exact size, our costs, both for the panels themselves and the application of them, were held to a minimum. We want to thank you for the wonderful service you have given us right from the beginning. Your help in figuring out the exact sizes of panels required, your cutting these panels to these exact sizes, and your promptness in making deliveries exactly as specified by us is very much appreciated, and undoubtedly saved us considerable grief as well as money.

The sections for our Prefabricated Houses on this Contract were shipped a considerable distance in box cars. We did not crate any of the panels, and think you will be interested in knowing that your STRONG-BILT BOARD proved its sturdiness and ability to take it, as very, very little damage occurred in shipping.

Our experience with UPSON STRONG-BILT PANELS has been so very satisfactory that, of course, we shall continue to use and recommend it for inside wall lining on all future jobs.

Cordially yours,

BENNETT LUMBER CORPORATION

President

FRR/rs

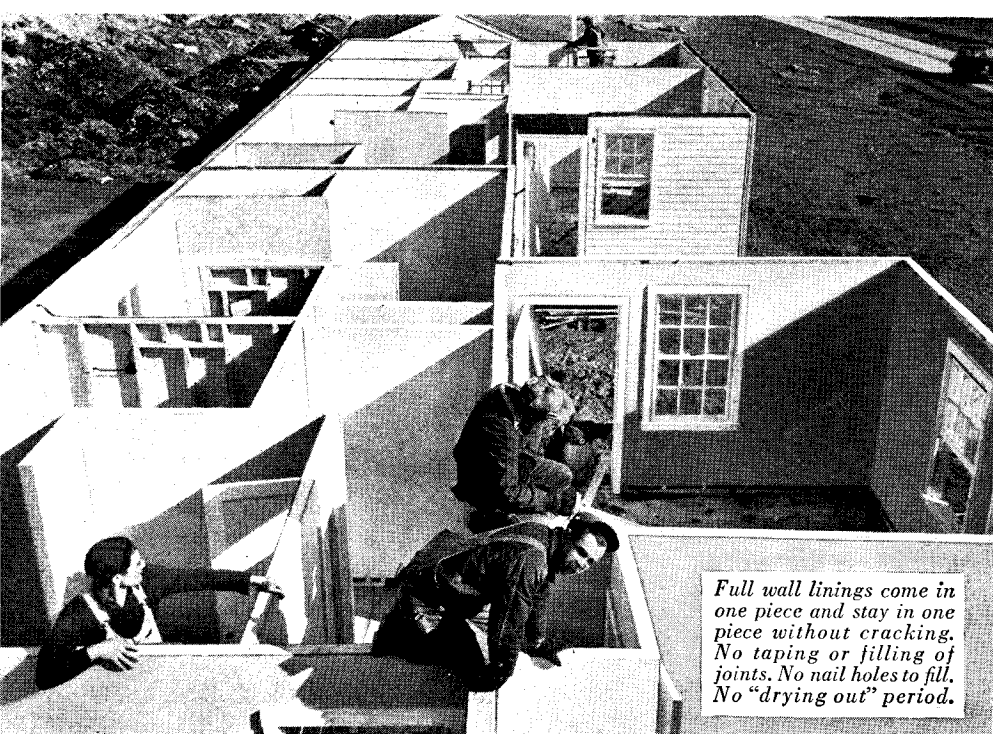
Upson Quality Products Are Easily  
Identified By the Famous Blue-Center



**UPSON  
STRONG-BILT  
PANELS**

THE CRACKPROOF BEAUTY SURFACE  
FOR WALLS AND CEILINGS

*Full wall linings come in one piece and stay in one piece without cracking. No taping or filling of joints. No nail holes to fill. No "drying out" period.*



## HARDWARE DESIGN AND ENGINEERING

(continued from page 86)

This device was used at the Statler. Each typical guest room floor uses a different keyway where the key enters the cylinder. In case a guest in Room 925, for example, accidentally gets off the elevator at the 8th or 10th floor, proceeds to Room 825 or 1025, his key will not even enter the cylinder.

The master keying system is arranged thus:

Each maid's key opens only such rooms as are under her care. If she has twenty rooms to care for, she cannot enter any of the other 900-odd rooms in the hotel. And she cannot enter any of her own if the door is locked from the inside; she can tell if it is locked without disturbing the guest, for there is an indicator button on the outside.

Then the maids' supervisor must

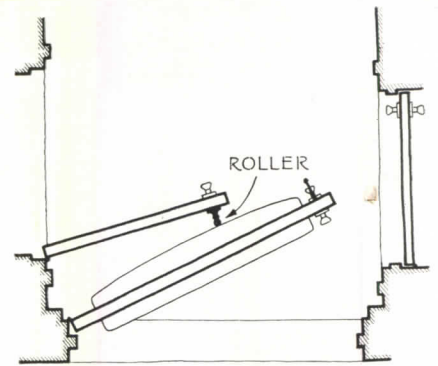


Figure 3: Where the corridor door swings the same way as the closet door, a straight roller guide is sufficient protection

For Quality, Speed, Economy In Hospital Food Production

## SPECIFY BLODGETT Baking & Roasting EQUIPMENT



St. Mary's Hospital in Hoboken, New Jersey, a 400-bed general hospital with a staff of 225, serves 1,875 meals a day. The No. 959 Blodgett Ovens shown above are used in preparing fish, meats, roasts, vegetables and puddings. Each oven has one 12" deck and two 7" decks.

**DESIGN FOR HOSPITAL DIET** demands food-producing equipment capable of assuring and maintaining high nutritional standards, coupled with speed, efficiency, and economy of operation.

**OVEN-COOKING** preserves nutritional values, prevents shrinkage and spoilage. Left-overs are palatable and varied. And **BLODGETT OVENS** provide economy of floor space, of labor and of fuel. That is why so many hospital dieticians prefer Blodgett Equipment.

See your Equipment Dealer—or Write for Literature

**The G. S. BLODGETT CO., Inc.**

53 Maple Street, Burlington, Vermont

have a different master key, to permit her to enter all of the rooms cared for by, say, five maids under her supervision. At the same time her key should not open any other rooms. Then there is the housekeeper, who oversees the work of all matrons and maids. Her master key, then, opens any guest room in the hotel. But none of these different types of master keys will open a door locked from inside.

But there will be occasions when a room locked from inside must be opened from outside. A guest might become ill during the night, and call for help on the telephone. A suicide provides another instance. To meet such a situation all of the guest room locks are subject to an emergency key which has this one extra function beyond that of any other master key. This key is kept by the manager.

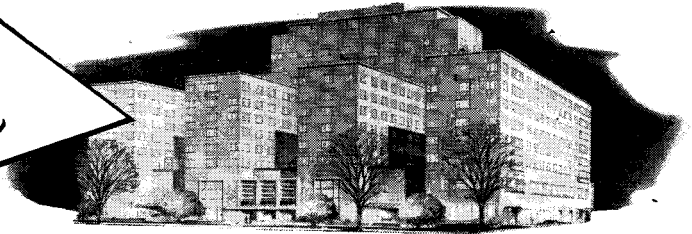
This same emergency key has one additional function, this one for the benefit of the management, not the guest. It will lock the door so that even the regular guest's key will not open it. When locked by this key, no other master key will open the lock. The purpose of this lock is obvious, at least to the non-paying guest.

While some hotel managements ask for spring locks, the Statler prefers locks that require locking from the outside.

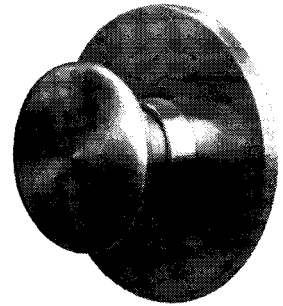
The hardware for the Statler, fortunately designed and manufactured prior to Pearl Harbor, is of solid bronze, finished in natural dull bronze, wet scoured. It is protected with a dull lacquer which is baked on by a newly developed technique, first used for this installation.



# LOCKWOOD HARDWARE at Washington's Hotel Statler



For the hardware at Washington's Hotel Statler, Holabird & Root conceived a basic design of Spartan simplicity with a rich natural bronze surface *unmarred by screw heads*. . . . Guest room plans required that corridor, bath and closet doors *step aside* automatically, in order to avoid unsightly damage. . . . How Lockwood Engineers accomplished each objective is shown below.



## ESCUTCHEONS *without Screws*

The need for screws in escutcheon plates has always been taken for granted. How else could a plate be fastened securely? Lockwood Engineers designed a set of hidden attachments, screwed into the door beneath the plate. One of these is shown in Fig. 1: a tapered plate with undercut sides that engage V-shaped grooves in the underside of the escutcheon. This serves to hold the upper end of the escutcheon firmly against the door surface.

Knob spindle and Thumb Turn holes are employed to secure the escutcheon as shown in Fig. 2. Plate (A) is screwed onto the surface of the door, and escutcheon (B) is fastened securely by means of threaded locking thimble (C) which surrounds the knob spindle and acts as a collar for the knob shank.

This method also serves as sole and adequate support of round plates.



Fig. 1

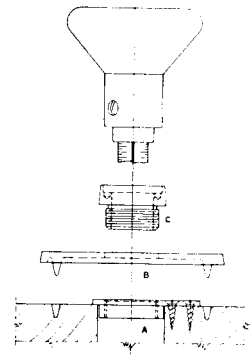
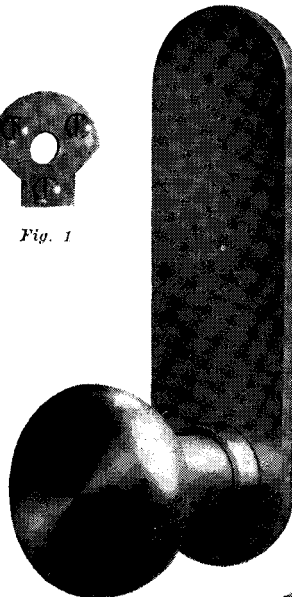
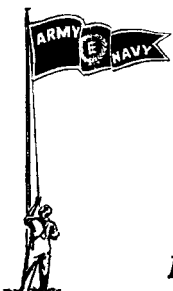
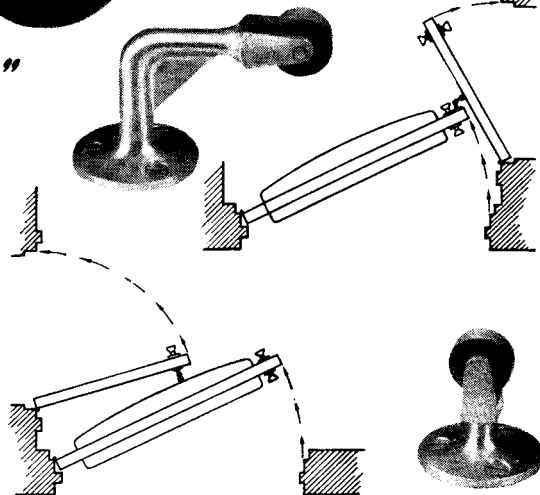


Fig. 2



## DOORS *that "Step Aside"*

Structural considerations made it necessary—in certain guest rooms—to place the corridor, bath and closet doors in close proximity. To avoid damage caused by one door striking another, Lockwood Engineers designed a set of roller bumpers which serves to move one door quietly out of the way as another door is opened. This feature removes one of the common causes of expensive maintenance in hotels.



Lockwood is prepared to work with you: for today's war permissible construction; for tomorrow's commitments; and in those plans for that richer, fuller life when peace is *assured*.

# Lockwood Hardware Mfg. Co.

Division of Independent Lock Co.

Fitchburg, Massachusetts



Figure 1

## GLASS BLOCK GATEHOUSE

THE ENTRANCE to one midwestern manufacturing plant is now guarded by a sentinel house of glass block. Non-transparent, light-diffusing Insulux glass blocks form the lower halves and corners of the walls of the gatehouse, while inserted panels of clear blocks in the upper portions give the watchman clear vision in every direction. The roof is covered with fire-resistant asphalt shingles. (See Figure 1.)

## FIBROUS BLOCK FLOOR CONSTRUCTION

A NEW FIBROUS block used in the construction of reinforced concrete floors and roofs is reported to save at least 20 per cent in steel consumption and to greatly deaden transmission of noise. This is the Fibercrete Floor System, developed by John J. Widmayer, Consulting Engineer of the Widmayer Steel Co., Washington, D. C. Already widely used in Washington and other metropolitan areas, the system is at present being installed in the Naval Communications Annex Buildings in Washington.

The fibrous material is composed of long strands of wood shavings loosely assembled into block form and retained by a cementitious substance. Construction provides surface interstices that receive the concrete, thereby keying the block and concrete together. The blocks can be nailed and sawed on the job to suit conditions.

Used in the same manner as other void-producing agents, they can be arranged in parallel rows spaced for desired joist width or they can be cut in pieces of 20 by 20 in. and used in a two-way system with joists running at right angles to each other. End blocks are usually made narrow in order to increase the joist width to resist end shear.

## PLATE GLASS BATHTUB

A COMBINATION shower and bath just announced is composed of four sheets of Carrara plate glass fabricated into a single unit. Using almost no critical materials, it was developed primarily for use in war housing. New construction, faced with a lack of tubs, has in general incorporated only a shower stall, but has left an offset or alcove for a tub when they reappear on the market. Into this space goes the new combination—a flat bottom drilled for drain fitting, and foot-high side walls—in a choice of color. Pittsburgh Plate Glass Co., 632 Duquesne Way, Pittsburgh, Pa.

## ALL-PLASTIC SEATS

THE RECENTLY introduced line of San Duro All-Plastic Toilet Seats offers several advantages for new and replacement application in buildings of all kinds. Made in solid, one-piece, moulded plastic in a new design, they are said to be easily kept clean and to permanently retain their original lustrous finish. They are non-inflammable and unaffected by acids and moisture, and require no refinishing or repairing. A special feature is a new type of plastic hinge by means of which no metal is left exposed to rust or tarnish.

San Duro seats are made in standard designs in two colors, brown and ebony black. Eclipse Plastic Industries, Inc., 5150 N. 32 St., Milwaukee, Wis.

## ROLLING WOOD GRILLE

A ROLLING wood grille or barrier developed to conserve critical material uses wood bars strung on light steel tapes operating up and down in wood guides. Coiling overhead on a horizontal counterbalancing shaft, the new

grille takes up no wall or floor space. It can be fabricated for opening widths up to 19 ft. and opening heights unlimited. Operation is either push up or, for larger sizes, by hand and chain or electric motor. Cornell Iron Works, Inc., 36th Ave. & 13th St., Long Island City, N. Y.

## PLASTIC TUBING

TO MEET the expanding demands of war industry, Extruded Plastics, Inc., Norwalk, Conn., announce that "Tulox" TT seamless plastic tubing is now available in all diameters up to 2 in. O.D. (See Figure 2). Within the next few weeks the range will be increased to 2½ in. O.D.

Extruded from Tennessee Eastman cellulose acetate butyrate, this tubing is available from warehouse stocks throughout the country through Crane Co., Chicago, and Julius Blum & Co., Inc., New York City.

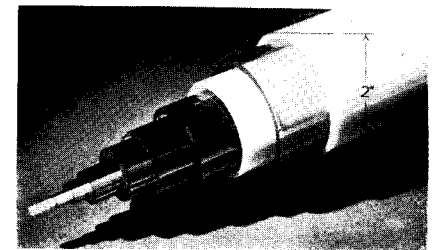
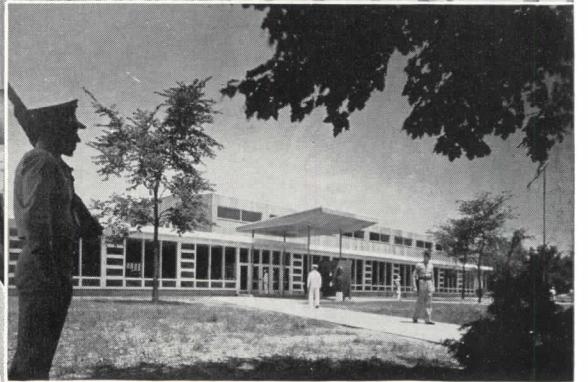


Figure 2

## COLD CATHODE LIGHTING TRANSFORMER

ANNOUNCED this month is a new style Cold Cathode Lighting transformer especially designed for industrial applications. Cold cathode lighting, using a minimum of critical materials, has been successfully tested in many war production plants throughout the country. Similar in basic manufacturing process to the luminous tubes used in "Neon Signs," cold cathode tubes of 20 to 25 mm. diameter can be used in multiple parallel strips, and curved to follow the contour of a building or production line. The brilliant bright light can be color-mixed to make inspection work stand out in relief. The new transformer has a capacity of 120 milliamperes in 3,000, 4,000, 6,000, 12,000 or 15,000 volt secondaries. It is a heavy duty, vibration proof unit,

(continued on page 92)



Above: Interior and exterior views of recreation building for a U. S. Naval Training Station. Skidmore, Owings, and Merrill, architects.

Below: Naval drill hall of 120 ft. span, Navy's Camp Bainbridge, Md. Eggers & Higgins, architect-engineers.

*On their  
pre-war record*  
(SINCE 1934)

.. you can depend on

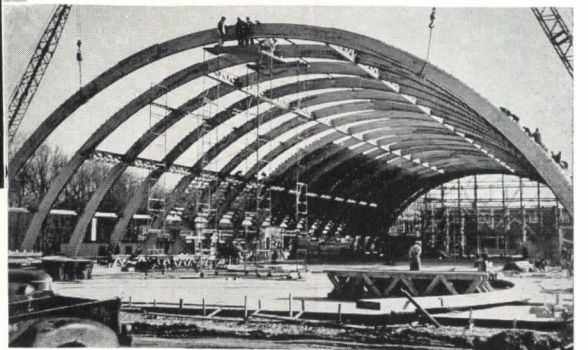
**UNIT** ALL-GLUED  
LAMINATED

arches & beams

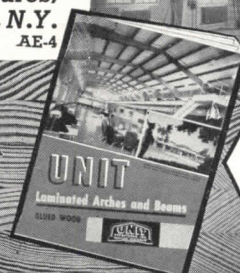
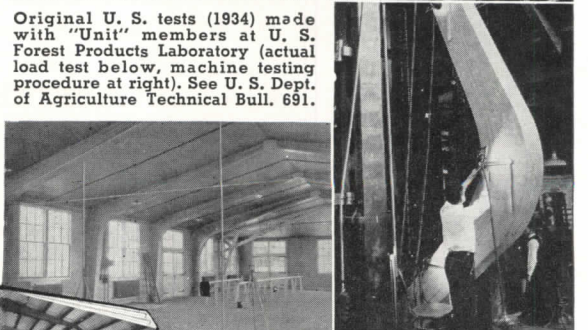
.. fabricated under rigid shop control

If you want to know whether your war-time "Unit" roof structures will be a credit to your reputation a few years hence, you have only to inspect job after job until you are satisfied. In pre-war gymnasiums, churches, recreation halls, parish houses, ballrooms — in hangars, bridges, laboratory buildings, bus terminals, food markets, warehouses, industrial plants — you can find all the evidence you need. Safety factors, fire resistance, beauty of functional design are amazing to those accustomed to conventional materials . . . Please do not confuse "Unit" scientific methods with haphazard gluing. "Unit" members are *glue-welded* with special equipment, trained personnel, exclusive techniques (U. S. Pats. Nos. 2177395 and 2172093) developed over a period of nearly ten years . . . Quick deliveries, simple detailing, faster erection. Now serving leading war construction firms. Engineering service available... Write, phone, or wire Unit Structures, Inc., Peshtigo, Wis. Plants at Peshtigo, also Sayville (L.I.), N.Y.

AE-4



Original U. S. tests (1934) made with "Unit" members at U. S. Forest Products Laboratory (actual load test below, machine testing procedure at right). See U. S. Dept. of Agriculture Technical Bull. 691.



*Send* for the new 12-page 2-color catalog (also included in 1943 Sweets) illustrating every conceivable application. Write on your letterhead.

(continued from page 90)

with standard conduit box for primary connection and built-in parallel electrode housings for direct connection of cold cathode tubes. The manufacturer particularly emphasizes the fact that in addition to the savings in critical materials, the "lamp life" of cold cathode tubes makes for inexpensive maintenance. Installations under test have shown continuous operation of

20,000 hours and more without appreciable loss in light output or replacements of tubes. Acme Electric & Mfg. Co., Cuba, N. Y.

## NEW FLUORESCENT EQUIPMENT

DEVELOPED to meet governmental requirements, the new Mitchelite line of fluorescent fixtures meets all WPB and

U. S. Bureau of Standards regulations and uses a minimum of steel per fixture (3 lb. in 40-watt units, 4 lb. in 100-watt). A wide range of accessories and fittings, designed to save time installing and servicing, makes Mitchelite adaptable for every method of mounting or hanging. Each model can be used either for individual or for continuous row lighting, for surface or suspension mounting. The exclusive new-type wire-way channel is said to simplify the problem of wiring and mounting for continuous rows, and permit locating ballast on the outside, making for cooler operation. Reflectors are non-metal "Lumenite" with a high-gloss baked enamel finish. Four models are available: 2-light and 3-light units using 40-watt lamps; 2-light unit using 100-watt lamps; and a 2-section unit for four 100-watt lamps, which operates with only one ballast. Mitchell Mfg. Co., 2525 N. Clybourn Ave., Chicago, Ill.

TWO NEW "VICTORY" reflectors made of Silv-A-Tex, a specially developed heat and moisture resisting composition, are now offered by the makers of Silv-A-King lighting and equipment. The reflecting surface in the Silv-A-King units is finished with high-gloss, chip-proof baked white enamel, said to be comparable in lighting efficiency and reflectivity to porcelain enamel. The reflectors may be purchased separately if desired. Bright Light Reflector Co., Inc., Metropolitan and Morgan Aves., Brooklyn, N. Y.

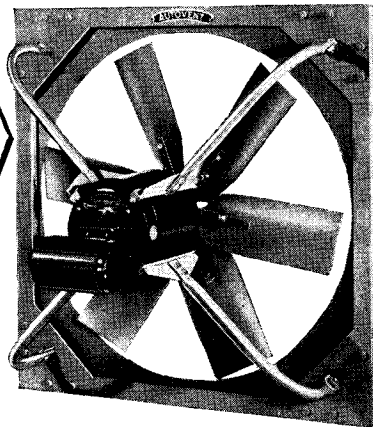
A NEW LINE of portable units for fluorescent lamps includes a wide range of sizes (6-watt to 40-watt). This equipment is designed for use in all types of industrial plants, ordnance depots and service centers where production, maintenance and servicing operations are performed. Day-Brite Lighting, Inc., 5411 Bulwer Ave., St. Louis, Mo.

## RADIATOR TRAPS AND VALVES

DEVELOPED to save brass, and conforming to WPB's simplification program, are two new radiator fittings with cast iron bodies and covers us-

(continued on page 94)

# ☆ Summer Heat Ahead ☆ Good Ventilation Promotes Efficiency...Reduces Absenteeism



DRIVE out summer's sluggish air with powerful Herman Nelson Autovent Propeller Fans. . . .

Exhaustive tests in plants, factories and commercial establishments proved that the better working conditions made possible by an efficient ventilating system speed up production, lower the number of accidents, and reduce mistakes and time lost because of illness. Subsequently, absenteeism too is reduced. . . . Herman Nelson Autovent Propeller Fans operate efficiently and economically, even under severe conditions. They are ruggedly constructed to give many years of trouble-free service. Direct or belt drive designs. Available in wheel diameters 10 to 54 inches, capacities 670 to 22,690 cubic feet per minute.

Send for **FREE Booklet** featuring Herman Nelson Autovent Propeller Fans for Ventilating Public, Industrial and Commercial Buildings.



Sales and Service Offices in Principal Cities



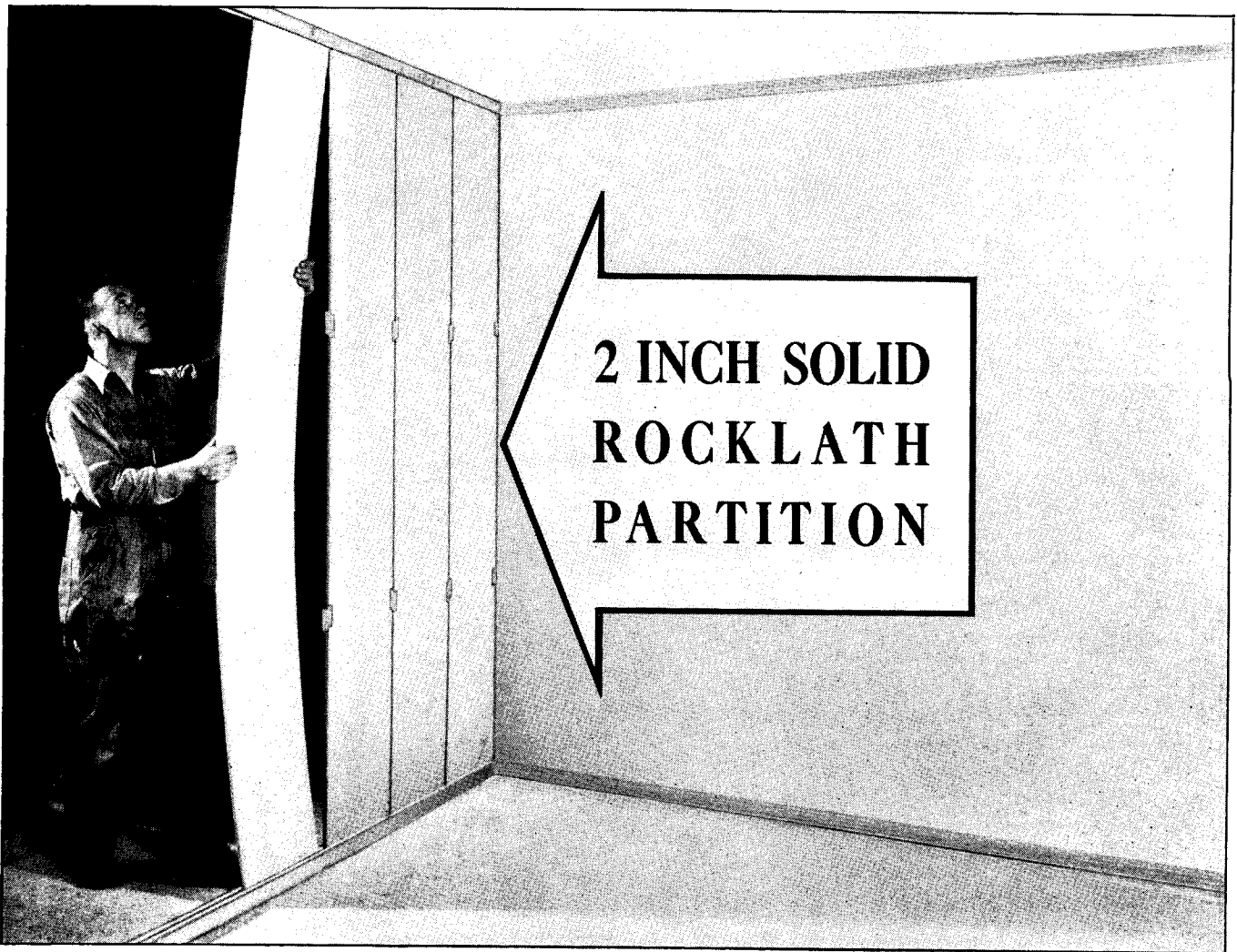
## The Herman Nelson Corporation

MOLINE ILLINOIS

Autovent Fan & Blower Division, Chicago, Illinois

Manufacturers of **QUALITY HEATING, VENTILATING AND AIR CONDITIONING PRODUCTS**

# NEW AVAILABLE PARTITION CONSTRUCTION



## Uses 90% Less Lumber\*

A practical way to build with widely available materials and craftsmen—to reduce lumber for partitions 90%\*—to cut steel requirements to a fraction of the quantities required for standard partitions—has been developed by U·S·G.

A light wood runner at bottom and top of partition—a few clips—a minimum of nails—a few tie wires, plus Rocklath and plaster—these are all the materials necessary.

\*Than standard wood frame studs, spaced 16" on centers.

Here is a quick, practical, low-cost way to build wartime partitions, and help the war effort by using non-critical materials while doing it.

This is just another instance of the way in which U·S·G engineers are continually developing new, timely building products and methods to lead the way in plaster progress. For further information, write the United States Gypsum Co., Chicago, Illinois.



### UNITED STATES GYPSUM

300 W. ADAMS ST., CHICAGO, ILL.

*This famous trademark identifies products of United States Gypsum Company  
—where for 40 years research has developed better, safer building materials*

PLASTER • LATH • WALLBOARD • INSULATION • ROOFING • PAINT

(continued from page 92)

ing a minimum of critical materials. These are the Marsh "Victory" Thermostatic Steam Trap and Packless Radiator Valve. The motive element or heart of the trap is a Phosphor Bronze Diaphragm. Construction features include renewable brass needle and seat. The diaphragm is self equalizing for use at sub-atmospheric pressures up to 15 lb. P.S.I. gauge pressure. The trap

is made in three sizes: 1/2 in. for 200 sq. ft.; 3/4 in. for 400 sq. ft.; 3/4 in. for 700 sq. ft.

Construction features of the valve include all-metal packless seal consisting of two spring steel wafers which form a perfect seal against the annular collar on the valve stem. This metal-to-metal seal is permanently leak-proof on pressure and vacuum. Molded

non-heat-conducting composition handle. Two sizes are offered, 3/4 in. and 1 in. Jas. P. Marsh Corp., 2073 Southport Ave., Chicago, Ill.

## LEAD FLOOR FLANGE STANDARD SPECIFICATION

THE LEAD INDUSTRIES Association has adopted a standard specification for the manufacture of the new hard lead closet floor flanges recently announced. Manufacturers are being licensed to use the Lead Industries' Seal of Approval on their flanges meeting this specification. Important provisions of the specification are that the thickness of the outer rim of the flange must be 3/8 in. and the total weight of the flange must not be less than 1 lb. 9 oz. The composition of the metal is also closely controlled.

## RESURFACING COMPOUND

RECENTLY DEVELOPED is a repair and resurfacing compound said to have high compressive strength and to stand up under the heaviest floor loads. It is claimed that because of extreme resiliency the product will not crack up and break out. Recommended for: filling cracked or broken surfaces of concrete, stone, wood, magnesite, marble, etc.; resurfacing wooden floors; waterproofing kitchen floors, shower stalls, etc.; dampproofing cellar floors. Ready mixed. Central Paint & Varnish Works, Brooklyn, N. Y.

## CONCRETE CLEANER

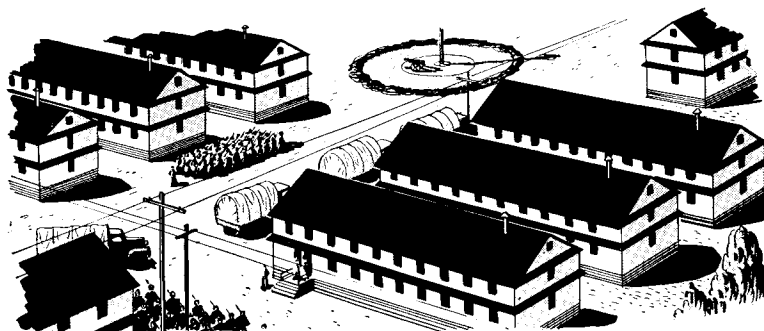
A CONCRETE CLEANER called Kleencrete, recently developed, is said not to soften the concrete in order to remove the inner dirt, yet is unconditionally guaranteed to clean both externally and internally; to get beneath the surface and remove oil, grease, fats and other foreign matter so destructive to concrete; and then to cure and harden the surface pores, stopping the formation of holes, ruts and pitted surfaces. The Evercrete Corp., 19 W. 44 St., New York City.

## GREASE INTERCEPTOR

AVAILABLE for immediate delivery is a vitreous glazed earthenware grease interceptor designed to replace the cast iron interceptors no longer procurable because of war shortages. Suit-

(continued on page 96)

## Tile-Tex is widely used in Military Construction

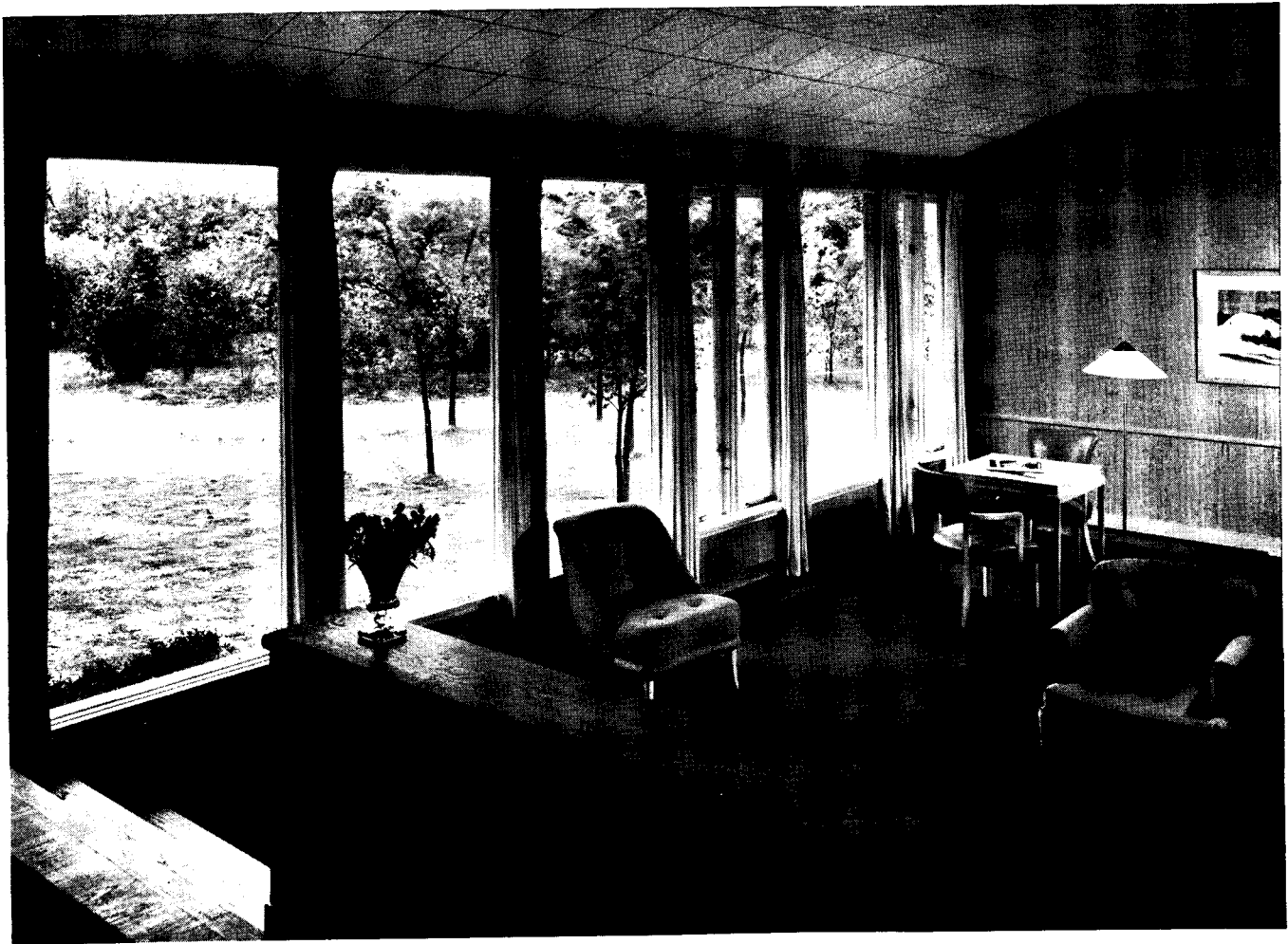


*Tramp—tramp—tramp—go* thousands of feet over Tile-Tex floors installed in military establishments. Only a super-rugged, tough, durable flooring can take the punishment of army and navy traffic in barracks, storerooms, laboratories, dining halls, kitchens, offices, and other areas in training centers.

Tile-Tex is that kind of flooring—it's made from wear-resisting asphalt and asbestos by a company whose manufacturing experience is longer than any other in this industry. If you are writing specifications on army and navy construction of this type, specify Tile-Tex—it meets all requirements of Federal Specification SS-T-306 covering this type of flooring. Write us if we can help you in any way in solving your floor problem.

## ★ The Tile-Tex Company

101 Park Avenue, New York City • Chicago Heights, Illinois



## DAYLIGHT ENGINEERING IN THE *PW* HOME

Daylight engineering is bound to play an important part in the planning of the postwar house. Through the proper use of larger window areas, decorative glass partitions in walls between rooms, and proper location of polished plate glass mirrors, an entirely new and desirable atmosphere can be created within the home. Gone will be the darkened corners, hallways, stairways and closets. Eyestrain conditions will be removed. Even the smallest rooms can be given a feeling of spaciousness never before enjoyed.

In addition to brightening the home, large window areas with southern exposure can be designed in a

way that the radiant heat of the winter sun is utilized to help heat the home. Double and triple glazing of these windows is most desirable. A remarkable new Libbey-Owens-Ford product, Thermopane, will make this type of glazing practical and easy to maintain.

Libbey-Owens-Ford quality glass for windows, partitions, mirrors, wainscoting and work surfaces is available in a wide variety of types, designs and colors. Be sure your records of L·O·F Glass are complete. Libbey-Owens-Ford Glass Company, 2353 Nicholas Building, Toledo, Ohio.





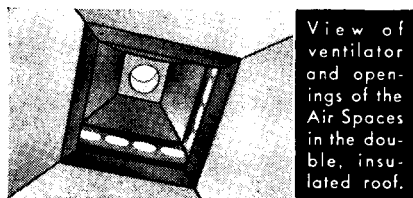
## HOUSING THAT *FIGHTS* THE SUMMER HEAT ENEMY

In summer as in winter, from the South Pacific Islands to North Africa, Victory Huts and Homes contribute vitally to victorious war—housing our fighting forces and war workers *well, efficiently and economically.*

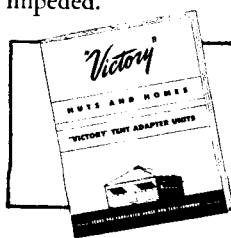
Consider Air-Space insulation, so important in the hot months ahead—*uniquely* designed and built into all Victory Huts and Homes. In summer, cooling air circulates freely; in winter, the same space provides insulation against cold, but ventilation is not impeded.

This is but one feature of Victory Huts and Homes, *now* available to the armed forces and war-working industries.\* Fully pre-fabricated, demountable and portable, quickly erected at low cost, they answer *your* housing problem.

*\* Subject to government regulations.*



View of ventilator and openings of the Air Spaces in the double, insulated roof.



**OFFICERS:** If your duties involve housing of personnel, ask us for a complete descriptive booklet giving details of Victory Huts. They are fully transportable and easily shipped—five to a truck and ten to a freight car. A letter or wire will bring you "Victory Huts and Homes."

**TEXAS PRE-FABRICATED HOUSE AND TENT CO.**

*Dallas, Texas*

MAKERS OF "VICTORY" HUTS AND "VICTORY" HOMES

REG. U. S. PAT. OFF.

REG. U. S. PAT. OFF.

## FOR BETTER BUILDING

(continued from page 94)

able for use in hospitals, restaurants, homes or wherever food is prepared and served, the interceptor not only will prevent grease from clogging drainage lines, but also will make possible the conservation of fats for vital war uses. Josam Mfg. Co., Empire Bldg., Cleveland, Ohio.

### FUME EXHAUSTER

A FUME EXHAUSTER now on the market features the protection of the motor from contact with the fumes, dust, filings, etc. The newly developed centrifugal type blower wheel is made of  $\frac{1}{8}$  in thickness of steel. The frame work is welded into a heavy unit with handles for carrying. The adapters are interchangeable and can be used for suction or blowing as desired. Chelsea Fan & Blower Co., Inc., 1206 Grove St., Irvington, N. J.

### READY-PASTED WALLPAPER

A NEW WALLPAPER, coated with a patented adhesive base, eliminates the use of brushes, paste and all the unwieldy tools of paperhanging. Application consists simply of immersing a rolled-up strip of the paper in water to wet thoroughly the pre-applied paste coating and unrolling it right on the wall. Twenty-four patterns are available, with matching border and ceiling papers. All papers are guaranteed washable and fade-proof. The Trimz Co., Inc., 1012 Spaulding Ave., Chicago, Ill.

### LOW-COST WALL PANEL

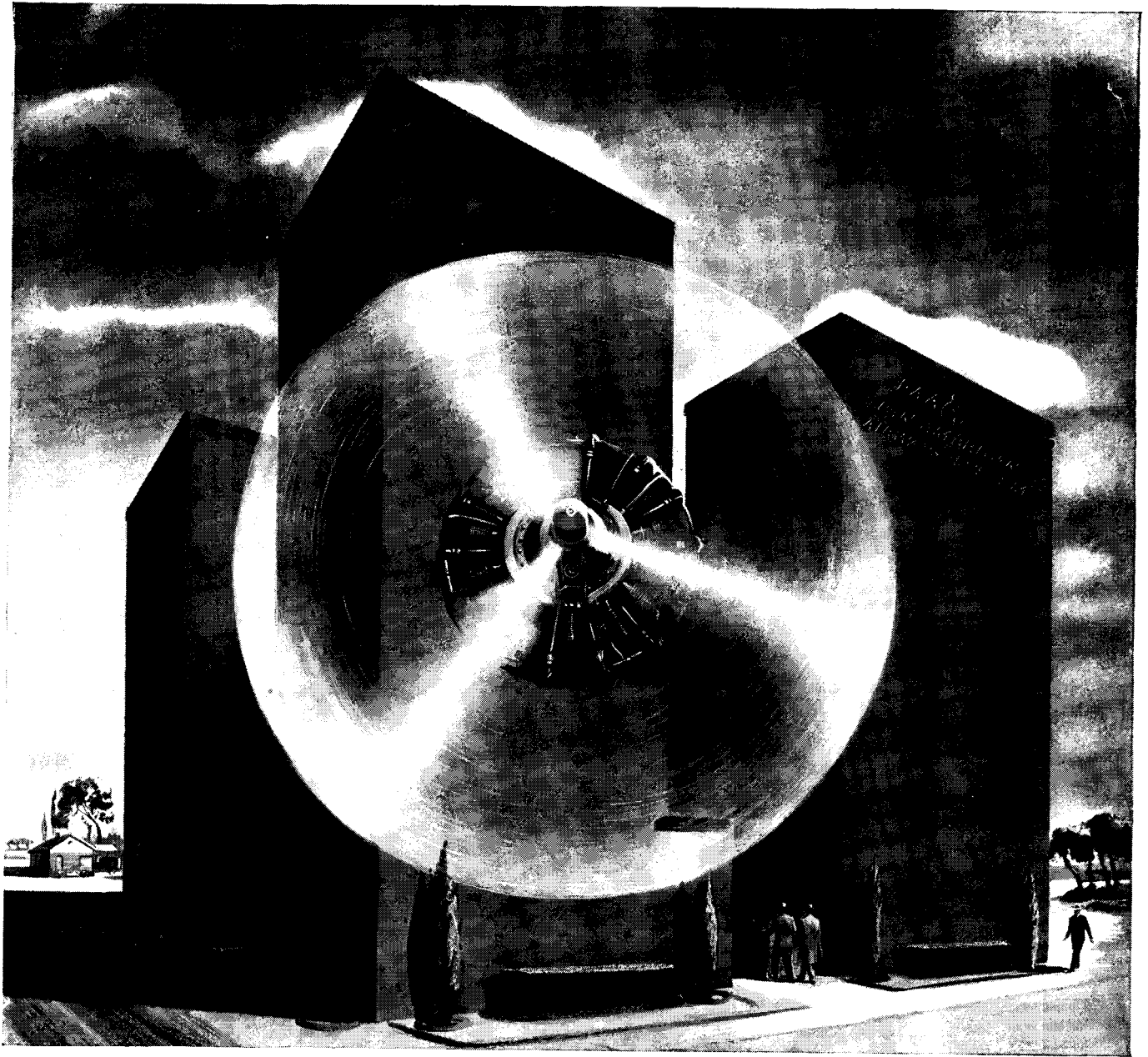
SAID to be practical, because of low installed cost, for all types of war construction, a new series of plastic-finished wall panels has been developed. Immediately available, the panels come in a range of colors and sizes. Extreme durability and resistance are claimed and the product is recommended by the manufacturer for wall and ceiling areas where extreme cleanliness and sanitation are important. Marsh Wall Products, Inc., Dover, Ohio.

### ASBESTOS CEMENT CONDUIT

A NEW ASBESTOS cement conduit, intended principally for cable installation, features an exclusive "Flexcaulk"

(continued on page 98)





## Cave-of-the-Winds in Miami

**Y**OU'LL never see a building more purely functional in design than this four-towered test house, where the engines of Pan American Clippers are put through their paces.

Inside, propellers roar with the thunder of 4000 horsepower—creating super-hurricanes of wind as air is pulled down one set of stacks and pushed out through the other set. Yet outside, there's hardly a sound—for in each stack a honeycombed

unit of cells soaks up the resonance, bit by bit, until it is finally dissipated.

Naturally, this completely windowless structure had to be air conditioned—to remove heat generated by the engines, to provide controlled testing temperatures, to make working conditions bearable for the engineers. As in so many other wartime applications of air conditioning and industrial refrigeration, the equipment selected was G-E.

Today, the talents of G-E Air Conditioning, Heating and Refrigeration engineers—always available to architects and engineers—are helping to win the war. God speed the day when those talents can work *with* and *for* you in the pursuits of peace!

*General Electric Company, Air Conditioning and Commercial Refrigeration Department, Division 3445 Bloomfield, New Jersey.*

*Air Conditioning by* **GENERAL**  **ELECTRIC**

# LIGHT FROM FLOORS

brings 20%  
more light



A light-colored concrete floor made with Atlas White portland cement reflects more light than a floor made with gray portland cement and very much more than a floor made with still darker materials. Installations in aircraft plants for Boeing, Consolidated, Douglas and North American prove this. Extensive lighting tests show that a white-cement floor, compared with a gray-cement floor in the same plant —

- ▶ Provides 20% more light on vertical work surfaces (see illustration);
- ▶ Reflects 61% more light to underside work surfaces.

These increases in illumination sharpen vision, reduce accidents, decrease spoilage, increase production.

Concrete floors made with Atlas White portland cement have the same characteristics, including durability, as concrete floors made with gray portland cement. In addition, they are light in color.

Maintenance is simple—frequent sweeping, occasional damp mopping, periodic scrubbing.

Send for new book, "Light from Floors." Write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York City.

AR-P-15

**ATLAS**  
**WHITE CEMENT**  
For Light-Reflecting Floors

## FOR BETTER BUILDING

(continued from page 96)

coupling, made expressly for and supplied with the conduit. "Flexcaulk" coupling consists of a tubular housing of asbestos cement, to which is bonded a liner of mineralized asphalt compound, formed into a barrier-type, tapered liner. Because of its special construction, it is claimed, this coupling adds a new flexibility without sacrificing any of the desirable characteristics of a conventional type coupling. The Philip Carey Mfg. Co., Lockland, Cincinnati, Ohio.

### BIBLIOGRAPHY

"Lighting for Easy Seeing"  
by Matthew Luckiesh  
(see article pages 54-59)

READING AS A VISUAL  
TASK, Matthew Luckiesh and  
Frank K. Moss. D. Van Nos-  
trand Co., 1942.

THE SCIENCE OF SEEING,  
Matthew Luckiesh and Frank  
K. Moss. D. Van Nostrand  
Co., 1937.

Brightness-Contrasts in Seeing,  
Matthew Luckiesh and Frank  
K. Moss. *Transactions of the  
Illuminating Engineering Soci-  
ety*, 34, 1939, p. 571.

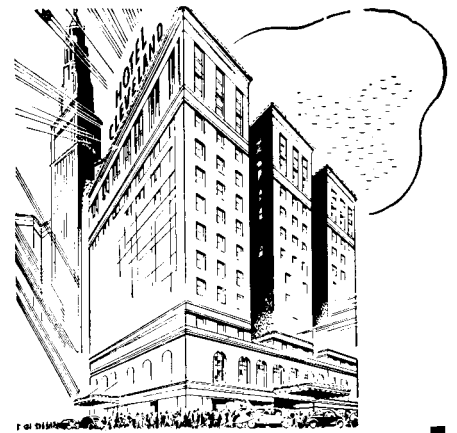
Muscular Tension Resulting  
from Glare, Matthew Luck-  
iesh and Frank K. Moss.  
*Journal of General Psychol-  
ogy*, 8, 1933, p. 455.

Work - World Environments,  
Matthew Luckiesh. *Mechani-  
cal Engineering*, July 1931, p.  
514.

COLOR AND COLORS, Mat-  
thew Luckiesh. D. Van Nos-  
trand Co., 1938.

### DESIGNER WANTED

Wanted: Show Case Designer and Detailer, experienced in design and layout of Moderne Show Cases, and Display Cases for spot selling. Prefer a man with an Architectural Engineering education, but not absolutely necessary. State age, experience and salary desired. Middle west location. Excellent opportunity for right man. Box 150, ARCHITECTURAL RECORD.



What is Cleveland's  
Most Convenient Hotel?

**HOTEL CLEVELAND  
OF COURSE**

And where is

*Hotel Cleveland?*

On the Public Square, and connected by covered passage to the Union Terminal and Terminal Garage . . . close to stores, theatres, office buildings, Federal buildings, piers, Public Auditorium, Stadium, sporting events.

Is Hotel Cleveland  
Modern?

Yes, indeed! Most of its rooms have been recently modernized . . . its restaurants are air-conditioned, and one of them, the Bronze Room, has become famous—it always has a "big name" band playing for dancing.

*Hotel Cleveland is comfortable, too, and has a cheerful welcome for all who come within its friendly doors. Let us prove our hospitality on your next trip here. We'll enjoy it and we think you will, too.*

**HOTEL CLEVELAND**  
Cleveland, Ohio



# 4 Houses like this →

*built to find the truth about insulation*



*Checking wind velocity by timing period between flashes of lamp activated by electric cup anemometer.*

What will insulation do? How much fuel will it save? What thickness is required? These are questions that cannot be answered completely by laboratory tests and slide rule calculations.

The real truth can be obtained only by accurate tests in actual houses—on the job.

To get this exact proof, the Wood Conversion Company built four identical houses, each completely equipped with the most elaborate of testing devices and conducted the most complete testing program on insulation ever attempted.

No factor was overlooked by trained engineers who compiled test data night and day making up to 1,200 readings each twenty-four hours during certain periods throughout the entire heating season. No effort was spared in making these tests authentic and as exact as humanly possible.

Today the results of these tests are available to architects without cost or obligation. Here are new findings—exact findings—new data on insulation efficiency—facts that will help you to judge insulation values better. Mail the coupon today for your copy of the study as presented to the American Society of Heating and Ventilating Engineers.

***Balsam-Wool***  
SEALED INSULATION

WOOD CONVERSION COMPANY  
Dept. 115-5, First National Bank Bldg.  
St. Paul, Minnesota

Please send me complete scientific data on the Wood Conversion Company insulation tests.

Name.....

Address.....

City..... State.....

(continued from page 16)

to the date of the order are not restricted. No restrictions are placed on partly fabricated fixtures, or on fixtures now in inventories held by dealers and jobbers.

The most drastic cut in the use of ferrous metal is the limiting of residential fixture manufacturers to the use of only six ounces of metal per fixture. Unlike industrial and utility

lighting fixtures, the residential fixtures will not require a priority rating to be purchased.

## CONSTRUCTION LUMBER REQUIREMENTS

The total lumber requirements for construction and all other uses will total approximately 31,500,000,000 board feet in 1943, WPB has an-

nounced. This estimate, including possible lumber requirements of this country for use overseas, was prepared by WPB and the U. S. Department of Agriculture Forest Service. It includes lumber to be used in boxing, crating, factory, and construction, as well as for military uses.

Lumber requirements for new construction in the United States in 1943 will total 11,000,000,000 board feet, according to the estimate.

## PRIVATE WAR HOUSING LAGS

A dangerous lag in the private war housing program, calling for 250,000 privately constructed housing units this year, is disclosed by first quarter figures of new starts and applications, according to a statement by Frank W. Cortright, Executive Vice President of the National Association of Home Builders of the United States.

"New construction started during the first quarter is less than half that scheduled by NHA for the period," Mr. Cortright said. "Even more alarming is the fact that applications under FHA Title VI during this period were only about one-fourth the number filed last March.

"While it is true that the curtailment of general construction for the duration has forced a considerable number of builders out of business, there still remain thousands of builders who have complete building organizations and are ready and anxious to do the job assigned to them if some of the obstacles impeding the program can be removed. Chief among these are: (1) The frequent and confusing changes by the government in standards, policies and procedures; (2) The imperfect planning by NHA in the assignment of priorities in metropolitan areas to FPMA where the private builders could have done the job, and conversely, the assignment to private builders of priorities in isolated war production areas where only publicly financed construction is feasible; (3) The failure on the part of FHA to interpret Title VI as an emergency measure and to relax their requirements in line with wartime construction necessities.

"If this situation is to be corrected in time to permit private builders to

(continued on page 102)

*Was YOUR Plant Heated Comfortably last Winter?*



One of a number of large defense plants whose workers were comfortable and therefore more efficient all last winter. Were yours?

**THE** well-being and health of factory workers will be more important this coming winter than at any time since the beginning of the war. You may remember the complaints you had about cold working quarters last winter. Don't take chances again. Investigate Wing Revolving Unit Heaters, used by many of the country's leading manufacturers who recognize the importance of employee comfort and satisfaction. The gentle air motion created by the constantly changing direction of a WING Revolving Unit Heater brings a sensation of fresh, live, invigorating warmth to workmen, increasing their sense of comfort and promoting health and efficiency. Write today for a copy of Bulletin HR-2.

**L. J. Wing Mfg. Co.**  
14th St. & 7th Avenue New York City  
Factories: Newark, N. J.

**WING TIPS:**  
The wise executive will order Revolving Unit Heaters NOW. September may be too late.

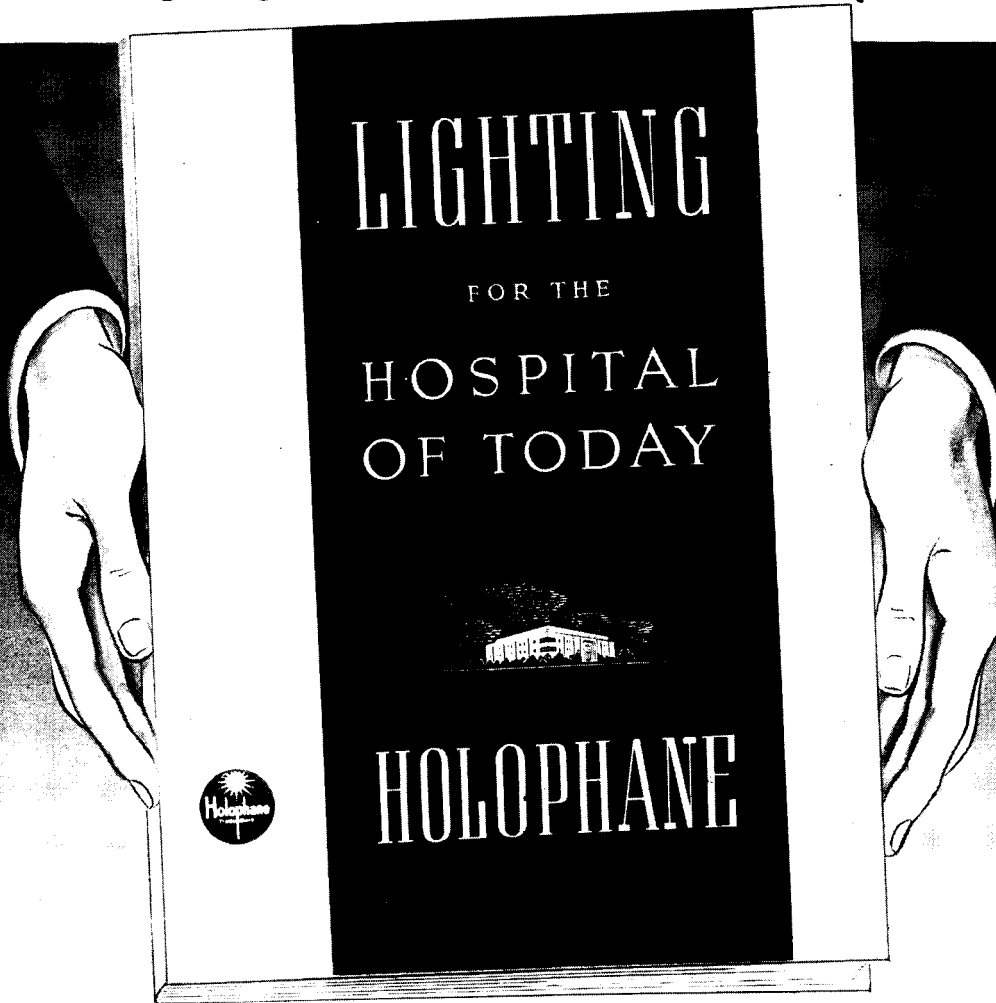


- 1 Start. Smoke from bomb at top of heater is drawn through heating element and is discharged in slowly moving streams to the working level.
- 2 Note how the streams of heated air flow gently even to remote corners of the room and around obstructions.
- 3 The discharge outlets have slowly revolved through 180°, building up a blanket of uniformly warmed air.
- 4 Still turning through 270° the streams of heated air are covering every part of the working level.
- 5 The discharge outlets have completed one revolution, demonstrating conclusively the thorough coverage of the WING Revolving Heater.

**WING** *Revolving* **UNIT HEATERS**

# **HOLOPHANE ENGINEERS offer this NEW BOOK**

**Based on the Trend in Wartime Hospital Construction  
with Lighting Recommendations for Each Department**



**ALTHOUGH** your plans for building expansion may be postponed for the duration, one immediate way to make your present plant provide greater efficiency is to improve your lighting equipment. Better lighting assuredly brings better sanitary conditions throughout the hospital. Moreover it speeds individual effort so that today's reduced staffs are more capable in their expanded duties. Other important advantages resulting from improved lighting are: marked reduction in accidents to personnel; less danger of damage to irreplaceable equipment; less errors and slip-ups; increased safety and care of patients.

★ In the preparation of this book every effort has been made to assure its complete authenticity as well as to make it current as long as possible

★ EVERY HOSPITAL EXECUTIVE SHOULD OWN THIS BOOK . . . SEND THE COUPON

# **HOLOPHANE**

**342 MADISON AVE., NEW YORK**  
**HOLOPHANE CO., LTD., 385 Yonge Street, Toronto, Canada**

HOLOPHANE CO., INC., 342 Madison Avenue, New York  
Please send, without charge, your new book on hospital lighting.  
NAME .....  
INSTITUTION .....  
ADDRESS .....

(continued from page 100)

accomplish the goal set for them this year, immediate action will have to be taken. The National Association of Home Builders therefore, urges the prompt study and revision by NHA of all outstanding and unused priorities; the relaxation of administrative procedures by FHA to accelerate to war tempo the evaluation of costs, modified land planning requirements, and general administrative procedure."

## ALBERT KAHN, INC. RECEIVES SPECIAL AWARD

An unusual honor has been paid the firm of Albert Kahn Associated Architects and Engineers, Inc., Detroit, for its work in designing buildings and facilities for numerous Naval bases: a special, hand-engraved certificate of commendation from Read Admiral B. Moreel, Chief of the Bureau of Yards and Docks of the Navy De-

partment. The commendation reads: "The Bureau of Yards and Docks, Navy Department, commends Albert Kahn, Incorporated, for outstanding services rendered—Their devotion and unswerving fidelity to the tasks in hand when designing buildings and facilities for Naval Air Stations and for other Naval Stations on numerous Pacific Islands, Alaska and Continental United States in furtherance of The Navy War Construction Program."

The tasks referred to were begun in 1939, following passage of a special act of Congress which authorized the Bureau of Yards and Docks to select an architect-engineer to design, and contractors to build, several Naval bases during the emergency without advertising for competitive bids. Albert Kahn, Inc., was chosen to prepare the drawings for warehouses, repair shops, hangars, hospitals, administration buildings, barracks, mess halls, officers' quarters and clubs for several bases, requiring some 1,650 large sheets, together with the necessary specifications. For a good many months, until the job was finished, the firm produced complete plans and specifications for an average of 1.9 buildings per day.

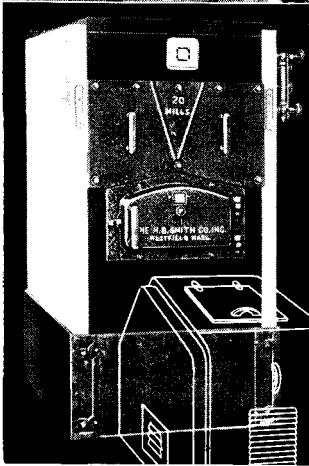
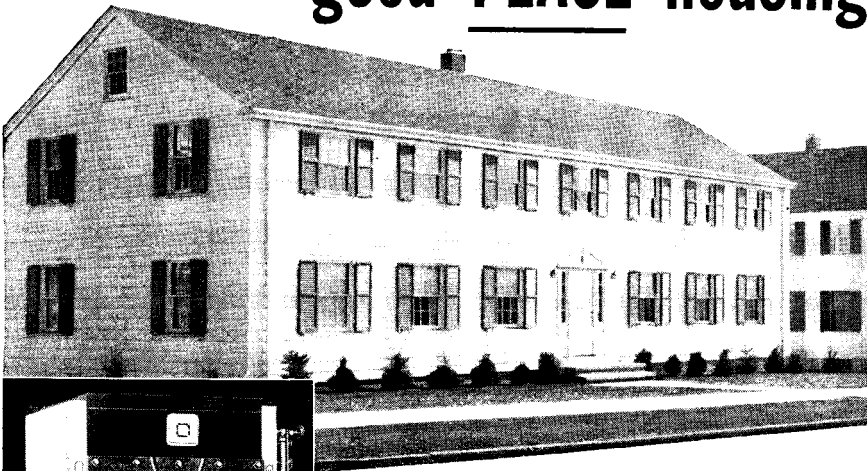
## POSTHUMOUS AWARD TO ALBERT KAHN

The Frank P. Brown Medal, awarded annually to an outstanding figure in the building and allied industries by the Franklin Institute of Philadelphia, center for the furtherance of scientific progress, was bestowed posthumously on April 21 to the late Albert Kahn in recognition of his remarkable record of achievement in industrial building construction.

## SHIP NAMED FOR ARCHITECT

Launched on April 5 by the California Shipbuilding Corp., the S.S. Stanford White, a 10,500 ton Liberty Ship, was named for the late well-known architect, partner in the firm of McKim, Mead and White of New York. In spite of a fire which blistered her paint and damaged the scaffolding the day before she was scheduled to go down the ways, the new ship was launched only 27 days after her keel was laid.

# WAR housing can be good PEACE housing



No. 20 SMITH "MILLS" stoker-fired boiler installed in each building

Attractive . . . Well Built New  
Haven, Conn. Project is Assured  
Many Years of Dependable Eco-  
nomical Heat by Selection of

H.B.  
*Smith*

**BOILERS**

**T**HE Boulevard Housing Project, located in view of Yale Bowl, is an outstanding example of War Housing built with an eye to the future. These trim Colonial four family dwellings were built for rental by private capital as a permanent investment as well as to alleviate New Haven's acute housing shortage. Nine units have already been completed with fifteen more under construction. The heating systems are forced circulation hot water and equipment was selected not only to provide comfort for the tenants but to assure lowest fuel and maintenance costs for the owner over a period of years.

**THE H. B. SMITH COMPANY, INC., WESTFIELD, MASS.**  
BOSTON NEW YORK PHILADELPHIA



## WARSPPEED WITH 'INCOR' POINTS WAY TO EARLIER USE AT LESS COST



SPECIFY  
'INCOR' 24-HOUR CEMENT  
FOR

EARLIER OCCUPANCY IN  
BUILDINGS OF ALL TYPES

WATERTIGHT CONCRETE—  
BASEMENTS, TANKS, STUCCO, ETC.

CONCRETE FLOORS—HEAVY-DUTY,  
NON-DUSTING—READY FOR  
SERVICE IN 24 HOURS

DESIGNERS and builders are setting new time and cost records with 'Incor' 24-Hour Cement. To produce invasion barges used at Guadalcanal, in Africa and elsewhere, Higgins Industries, Inc., built the largest plant of its kind at all-out speed.

In column and beam construction, 'Incor' provided dependable service strengths in one day, saving 4 to 6 days on each pour, and advancing completion by many weeks. 'Incor' was also used for heavy-duty concrete floors. As plant erection progressed, keels were laid on the freshly-placed concrete 24 hours after the finishers left it. With line-production precision, barge building followed right behind floor construction. Over 1000 barges were turned out while the plant was being built. Typical 'Incor' warspeed performance.

'Incor' opens up many new possibilities for the architect. Consider what it means to pour 'Incor' concrete one day, strip clear the next . . . no repositing to interfere with mechanical trades . . . faster construction schedules with 50% to 60% less forms. Weeks saved—earlier occupancy at less cost.

Take these advantages into account in planning your next project—housing, hospitals, schools, industrial buildings. Specify 'Incor',\* America's FIRST high early strength Portland cement. Get quality concrete—save your client money as well as time.

\*Reg. U. S. Pat. Off.

# LONE STAR CEMENT CORPORATION

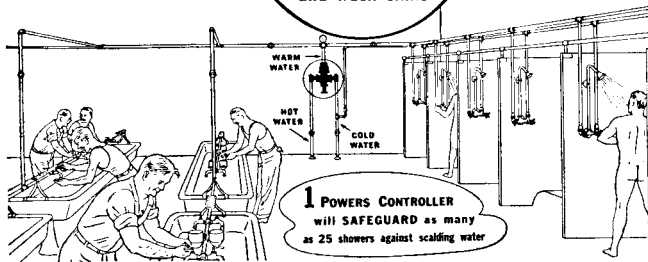
Offices: ALBANY • BIRMINGHAM • BOSTON • CHICAGO • DALLAS • HOUSTON • INDIANAPOLIS • JACKSON, MISS.  
KANSAS CITY • NEW ORLEANS • NEW YORK • NORFOLK • PHILADELPHIA • ST. LOUIS • WASHINGTON, D. C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 15 MODERN MILLS, 25-MILLION BARRELS ANNUAL CAPACITY

## For LOW COST INSURANCE



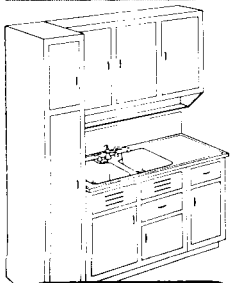
--against  
the danger  
of scalding water  
in shower baths  
and wash sinks



Use Powers thermostatic water mixing valves for Group Showers, Wash Sinks, Hot Water Line Control and Industrial Processes. Capacities up to 2,650 g.p.m. Write for Circular 3017. THE POWERS REGULATOR COMPANY, 2752 Greenview Avenue, CHICAGO—Offices in 47 Cities. 52

## POWERS WATER TEMPERATURE CONTROL

## 33,000 KITCHENS MUST BE RIGHT!



★ As its contribution to war and defense housing, Kitchen Maid has already sold more than 33,000 kitchens for projects of all types! Such a record is further evidence that this famous factory-built cabinetry of composite construction is right for practically every application—proof that it meets the most rigid present-day requirements for adaptability, ease of installation, price, and delivery. But more than that! Kitchen Maid's wide experience in this advanced cabinetry design can be of great value to you on any war housing job. Write for facts now.

Kitchen Maid Corp., 635 Snowden St., Andrews, Ind.

AMERICA'S LEADING  
BUILDER OF  
WAR-TIME CABINETS

## KITCHEN MAID

CABINETS OF COMPOSITE CONSTRUCTION

## POSTWAR NOTES AND PLANS

(continued from page 18)

per cent of the cost of preparing plans and specifications on approved postwar public works projects. For that purpose the Commission recommended an appropriation by the state and enactment of a law permitting the localities to issue budget notes to raise their share of the cost of preparing such plans.

During the coming year the Commission expects to authorize plans by private architects for approximately \$35,000,000 of state buildings and other structures, the cost of which plans, it is estimated, will be \$1,400,000. The Commission asked a total appropriation of \$3,750,000 to finance the program.

### HUGE HOUSING PROJECT FOR NEW YORK

Details of the largest low-cost housing development ever undertaken in Manhattan have been announced by Mayor F. H. LaGuardia. To be built at the end of the war by the Metropolitan Life Insurance Co., the development as now planned will cover 72 acres and 18 city blocks, taking in the entire area between 14th and 20th Streets, First Avenue and Avenue C. Costing between 40 and 50 million dollars, the project will house 30,000 persons at an average rent of \$14 a room. Only 30 per cent of the total area will be taken up with buildings, the remainder being devoted to landscaping, paths, drives and recreational facilities.

### V-DAY PLANNING

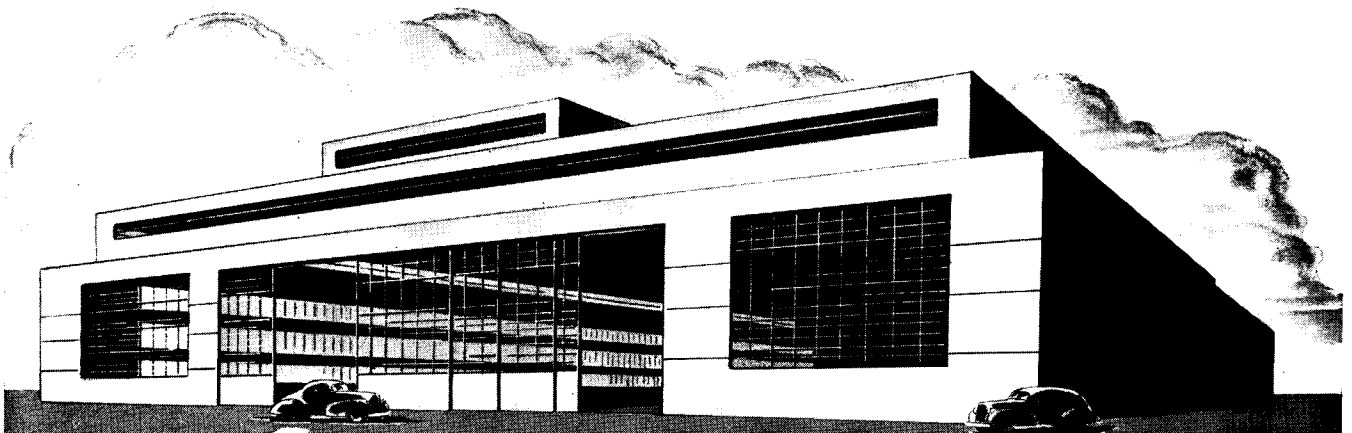
Of no less significance than current construction activity is the growing volume of V-Day building planning. Architects and engineers throughout the country are at work today on designs for buildings to be constructed immediately following the war. Under the sponsorship of public agencies, plans are being drawn for hospitals, schools, post offices and other municipal, state and federal buildings. Large industrial and commercial organizations have commissioned architects and engineers to design factories, stores, transportation terminals and other structures that will be needed after the war and cannot be built today. Hundreds of postwar church projects are being planned, along with houses and apartments.

As of March 31, 1943, Dodge Statistical Research Service reporters had uncovered 15,662 building projects totaling more than a billion and a quarter dollars, on which construction can begin when restrictions are lifted. Over 9,000 of these jobs, amounting to \$838,461,000, were in the designing stage at that time. (These figures are exclusive of heavy engineering work.)

Complete plans and specifications are being prepared on the basis of building products that manufacturers presumably will be equipped to make immediately following the war. Certain new and improved products undoubtedly will be available. Specifications can be changed to incorporate them.

Federal Works Administrator Fleming has underlined the importance of this V-Day building planning by calling not only for finished drawings and specifications but for site acquisition as well. "We must be ready to put the contractor to work the very day the war ends," he said, "for if we wait until the last shot is fired before we attempt to translate our proposals into action the depression might be well upon us before we could get started."



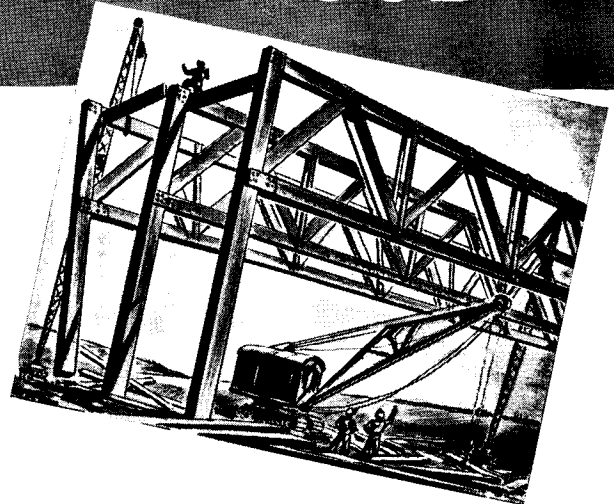


# 6 Reasons for Using "CZC"-TREATED WOOD

VITAL wartime construction of factories, plants and service buildings is being speeded through the use of millions of feet of Chromated Zinc Chloride-treated lumber. "CZC" treatment does not affect wood's natural property of easy fabrication. And it offers these six important features:

1. "CZC"-treated lumber is resistant to decay-producing fungi. "CZC" also improves surface hardness, providing greater resistance to abrasion.
2. Termites, long vicious enemies of wood, are repelled by "CZC" treatment—the wood cellulose becomes unfit as a source of insect food.
3. "CZC"-treated wood has measurable fire resistant qualities. (Watch for results of new fire tests to be released soon.)
4. Lumber impregnated with "CZC" is clean to handle—does not irritate the skin.
5. No odor is given off by wood treated with "CZC."
6. "CZC"-treated wood is readily paintable for both interior or exterior exposures.

There is ample "CZC" preservative and treating capacity to meet both military and essential industrial requirements. "CZC"-treated lumber adds little to initial construction costs. The reason is simple:



"CZC" treatment permits the use of less expensive woods—which become more lasting than better grades untreated. Additional savings accrue as the need for maintenance due to decay is eliminated.

As a helpful wartime aid and postwar planning guide, write for the free book: "Facts About Lumber Treated With Du Pont 'CZC.'" E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Dept., Wilmington, Del.



## CZC

CHROMATED ZINC CHLORIDE  
WOOD PRESERVATIVE

BETTER THINGS for BETTER LIVING . . . THROUGH CHEMISTRY



# CITATION

## To The Office Workers Of America . . .

As contributors to the war effort, they merit your praise and recognition.

Consider what our country has gained through the spirit and ability of these men and women.

No other country has produced office workers of such alertness, ambition and progressiveness.

Nowhere else have such workers been so willing to improve their methods, so consistently eager to replace the old and slow with the new and quick.

This has resulted in the creation of a

huge office machinery industry of which Underwood Elliott Fisher is proud to be a part.

Because this industry exists, our Army and Navy possess a supply of typewriters and other office machines unmatched by any of the enemy.

Because this industry exists, our country possesses a group of manufacturing plants—*built* to supply the world's greatest needs for office machines—*now turning out* large quantities of important war materials.

Day after day we read of deserved awards to *factory* workers . . . here

is our tribute to America's *office* workers.

And here is our promise to those workers, several million of them our valued customers.

No matter what the difficulties, our maintenance service will continue undiminished from coast to coast.

We shall continue to provide spare parts . . . as well as a complete line of carbon paper and ribbons unsurpassed in quality, for every make of office machine.

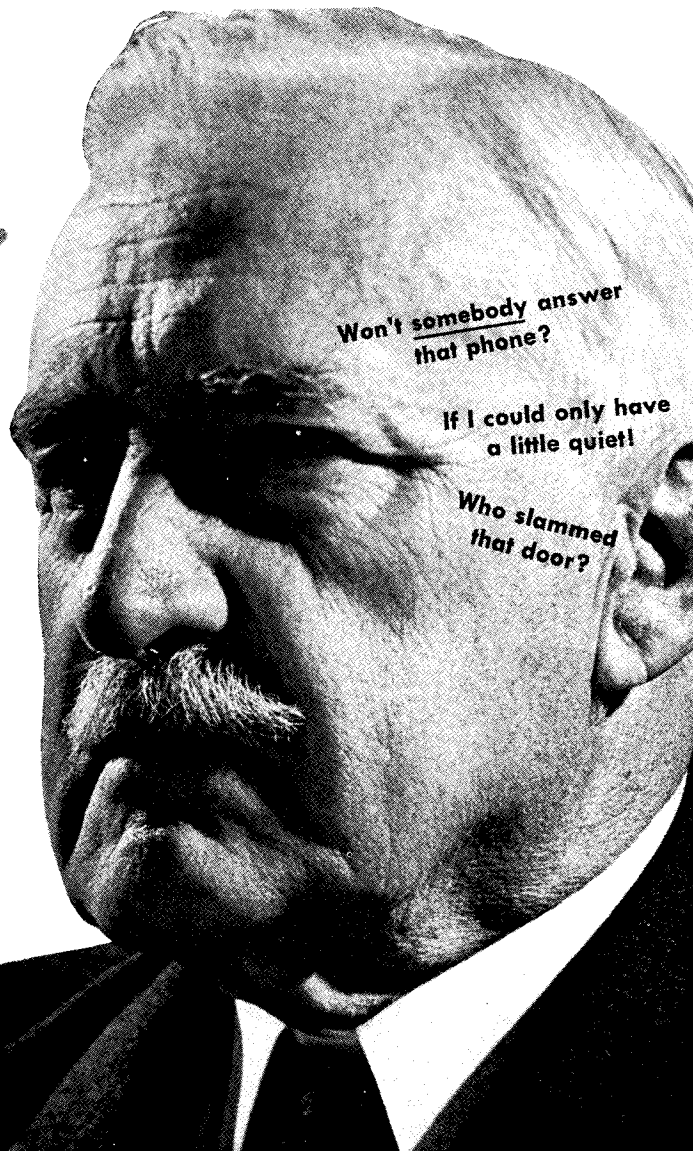
And we shall continue to devise and suggest methods for *conserving* their typewriters, adding and accounting machines and for *operating* these machines with greater efficiency.

## Underwood Elliott Fisher

HELPS SPEED THE NATION'S VICTORY

Underwood Elliott Fisher Company, One Park Ave., New York, N. Y.

# Needless NOISE Aids the Axis!



Won't somebody answer that phone?

If I could only have a little quiet!

Who slammed that door?

**STOP IT with  
JOHNS-MANVILLE  
ACOUSTICAL  
MATERIALS**

COMMON, EVERYDAY OFFICE NOISE! We don't have to tell you how it can reduce efficiency and slow down work. In many offices engaged in war work, it means poor concentration and costly errors our war effort can ill afford!

It's easy and surprisingly inexpensive to control this distracting influence. J-M Acoustical Materials scientifically hush noise to an undisturbing level, and they

can be installed with practically no interference to routine. They're more important than ever today for increasing efficiency, reducing mistakes and assuring continuous, uninterrupted work.

For complete details, write for J-M Sound Control Catalog AC-25A. Johns-Manville, 22 East 40th Street, New York, N. Y.



J-M Acoustical Materials—J-M Movable Transite Partitions and J-M Asphalt Tile Flooring are helping to speed up war-production work in busy offices all over the country.



**JOHNS-MANVILLE**

**PIONEERS IN  
SOUND-CONTROL**

## FEDDERS OFFERS THIS RESOLUTION

WHEREAS: heating is a Wartime necessity,  
and

WHEREAS: the Men of Fedders recognize  
their responsibility to those who  
sell, install and use heating equipment: we  
offer this Resolution summarizing policies put  
into effect at the beginning of this emergency:

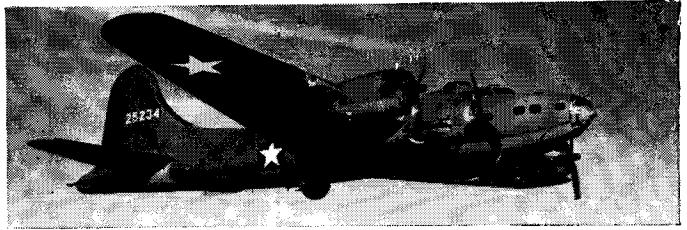
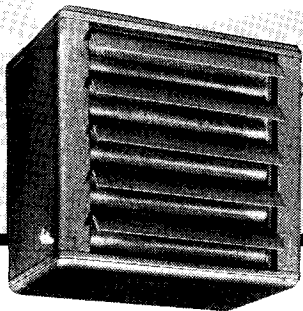
1. **RESOLVED:** that the Industrial Heating Division of the Fedders Manufacturing Company will endeavor to maintain an equitable balance between productive capacity and backlog of orders, so that common sense shipping promises can be given and sustained.
2. **RESOLVED:** that in the interests of conservation, Fedders engineers shall take full advantage of alternate materials; and that such redesign shall be carried out, not simply with a view-point of substitution, but with the exercise of sound metallurgical, engineering and manufacturing practices to assure efficient and reliable performance.

That, in brief, is a statement of the Wartime Policy of the Fedders Industrial Heating Division. It is not just a prediction; it is taken from the record. You will enjoy doing business with Fedders.

Manufacturers of unit heaters, blast heating coils, cooling coils, electric refrigeration equipment, heat exchanger equipment for military aircraft, automotive radiators, metallic machine gun belt links.

# fedders

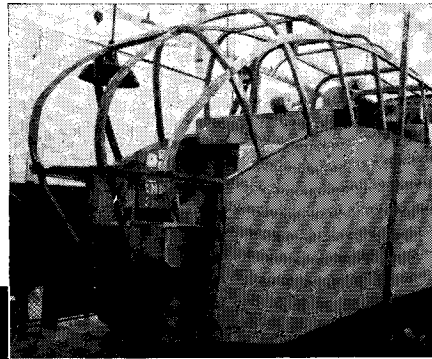
BUFFALO, N. Y.



## MIRACLE WOOD FOR A MIRACLE PLANE!

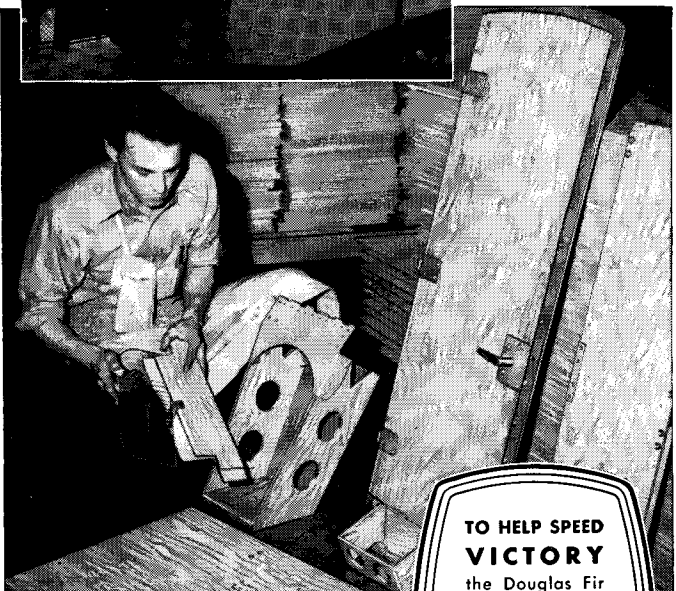
You'll find Douglas Fir Plywood doing important  
work in every Boeing B-17 Flying Fortress!

● Douglas Fir Plywood's light weight, great strength, large sizes and easy workability make it one of today's busiest war materials. In the field of transportation alone, this Miracle Wood is helping build planes, ships, amphibian tanks, railroad cars and busses. Many of its applications here are revolutionary . . . but because of them Douglas Fir Plywood will be far more useful to you after Victory than ever before.



(Left) "Mock-up" of a proposed Boeing plane. These full-size models constructed largely of Douglas Fir Plywood help engineers perfect designs.

(Below) Douglas Fir Plywood aids every Boeing Flying Fortress in its missions of destruction. Standard equipment includes Plywood compartment doors, flooring and step assemblies, radio equipment tables and oxygen bottle racks.



### DOUGLAS FIR PLYWOOD

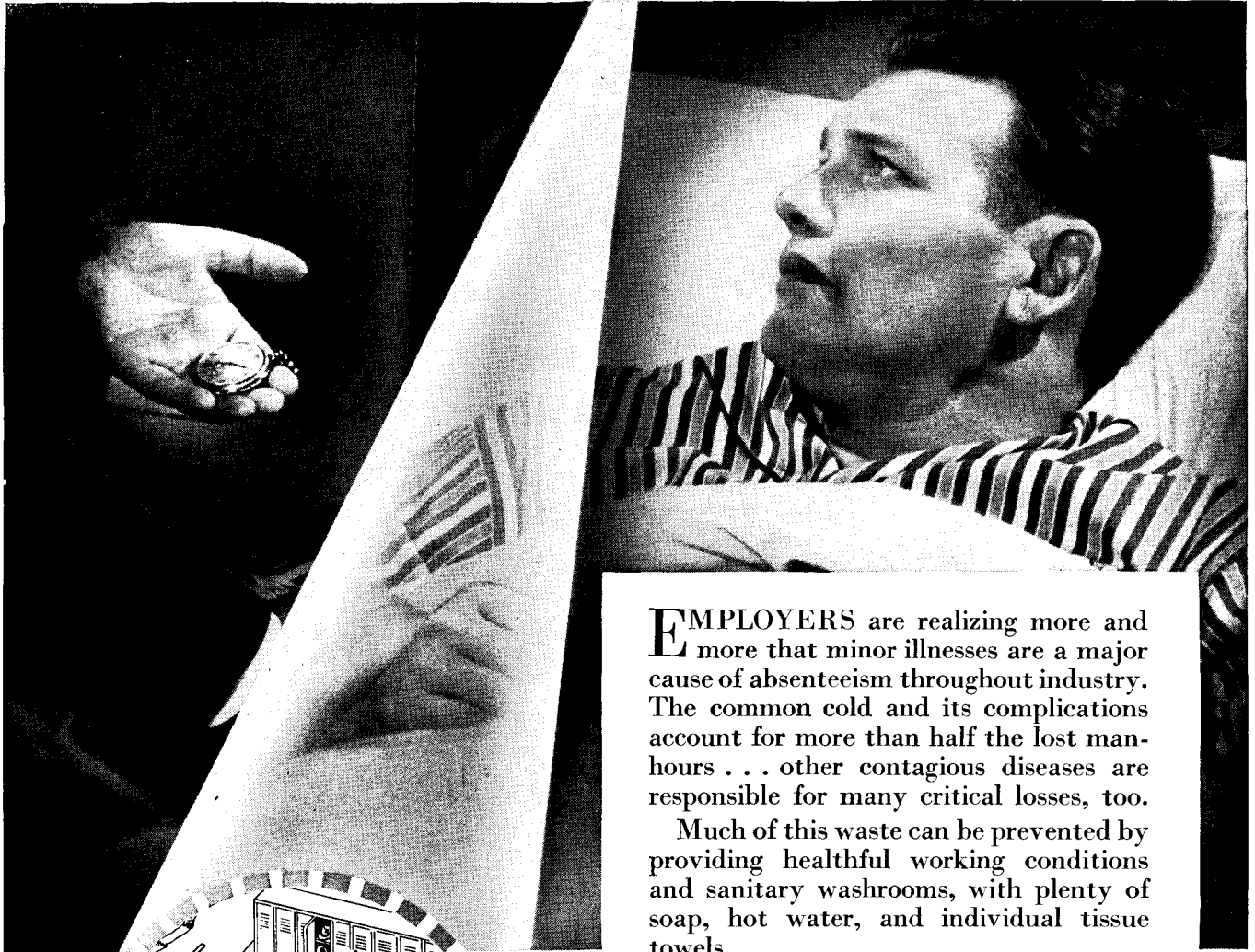
*Real Lumber*  
MADE LARGER, LIGHTER  
SPLIT-PROOF  
STRONGER

**TO HELP SPEED  
VICTORY**  
the Douglas Fir  
Plywood Industry  
is devoting its en-  
tire capacity to  
war production.  
We know this pro-  
gram has your  
approval.

**SEND FOR WAR USE FOLDER!**  
Dozens of actual photographs show you how Douglas Fir Plywood is aiding the war effort. Write Douglas Fir Plywood Association, Tacoma, Wash., today for your free copy!

*First Line of Defense  
Against Absenteeism...*

## The "HEALTH ZONE" of the plant

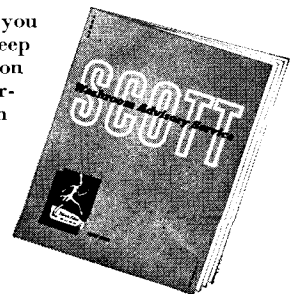


**E**MLOYERS are realizing more and more that minor illnesses are a major cause of absenteeism throughout industry. The common cold and its complications account for more than half the lost man-hours . . . other contagious diseases are responsible for many critical losses, too.

Much of this waste can be prevented by providing healthful working conditions and sanitary washrooms, with plenty of soap, hot water, and individual tissue towels.

Such washrooms are literally "health zones." They should be planned as an essential part of every industrial building you design. Ample facilities should be provided, in convenient locations, and all fixtures should be placed to insure most efficient use and smooth flow of traffic.

THE SCOTT PAPER COMPANY can aid you in designing washrooms that help keep workers on the job. The second edition of the Scott Washroom Advisory Service Manual gives basic washroom layouts and suggestions that have proved practical in all types of industrial buildings. For your copy, and a set of Don Graf Data Sheets on washroom planning, write Scott Paper Co., Chester, Pa.



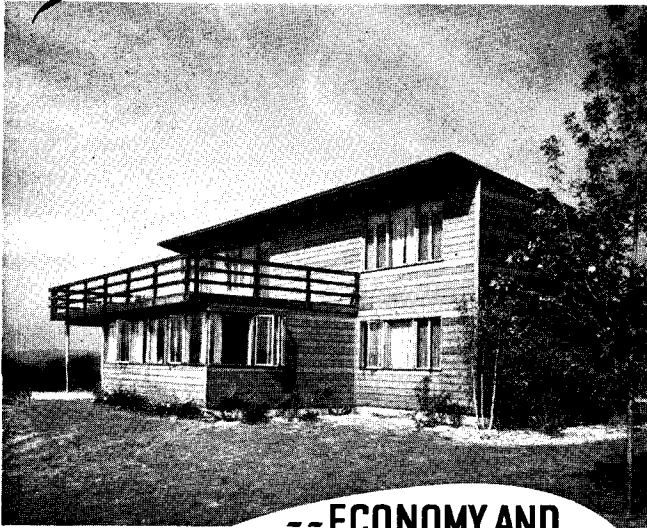
# SCOTT

**WASHROOM  
ADVISORY  
SERVICE**

THERE'S

# Beauty in Stains

Cabot Stained House, Briarcliff Manor, N. Y. Owner: Emmett G. Wood, Architect, Simon Breines, New York.



**--ECONOMY AND PROTECTION, TOO**

Time after time, year in and year out, architects have selected Cabot's Shingle Stains to accent the design that has been created to build a beautiful house. Their clear texture-revealing colors emphasize the wood's natural beauty—protect it better than any other wood preservative—and the cost is far less than that of most exterior house finishes.

When you use Cabot's Shingle Stains your choice of colors is not limited. You can have clear brilliant hues or the effective weathering grays and browns, which produce in a few months time the natural weathered effects seen on century-old New England homes. Today, Cabot's Stains are also the logical choice for hurried war-time construction.

*Free* BOOKLET — **"STAINED HOUSES"**



Write today for color samples and your copy of this attractive booklet, showing pictures of many prize-winning houses, and containing full information about Cabot's Creosote and Heavy-Bodied Shingle Stains. Samuel Cabot, Inc., 1281 Oliver Bldg., Boston, Mass.

**Cabot's**  
**SHINGLE STAINS**  
Creosote - - Heavy-Bodied

Consult  
**BURT**  
on  
**Ventilation Problems**



*Free-Flow Gravity*

Every problem involving roof ventilation is different. No set rule presents the best solution. With a background of 40 years experience, Burt engineers are equipped to advise on the best way to meet any situation. This service is free and available to architects and engineers. Burt makes roof ventilators of all types and sizes, scientifically designed, quality built and moderately priced.

**THE BURT MFG. CO.**

ROOF VENTILATORS • OIL FILTERS  
EXHAUST HEADS

177 Main St., Akron, Ohio

SEND FOR CATALOGS

Burt Engineers are glad to help on plans

## TIME-SAVER STANDARDS MANUAL

AND  
**ARCHITECTURAL RECORD**  
(one year)

**\$3.75**  
FOR BOTH

TIME-SAVER STANDARDS have appeared in every issue of ARCHITECTURAL RECORD since October 1940. Those published up to April, 1942 have been brought together in one volume for the convenience of architects, engineers and other building technicians whose need for quick reference planning data has increased under pressure of wartime conditions.

**OVER 600 DRAWINGS**

96 pages — 8½ x 11 inches — in sturdy Paradox cover. Pages are punched to fit 3-ring binder so that new TIME-SAVER STANDARDS as published in ARCHITECTURAL RECORD may be added from month to month. Conveniently arranged and completely indexed for quick reference. Three additional special articles offer information on building techniques that reduce the need of critical and strategic materials required for war production.

**COMMERCIAL**

**RESIDENTIAL**

**REMODELING**

**MUNICIPAL**

**HOSPITALS**

**FACTORIES**

**HOUSING**

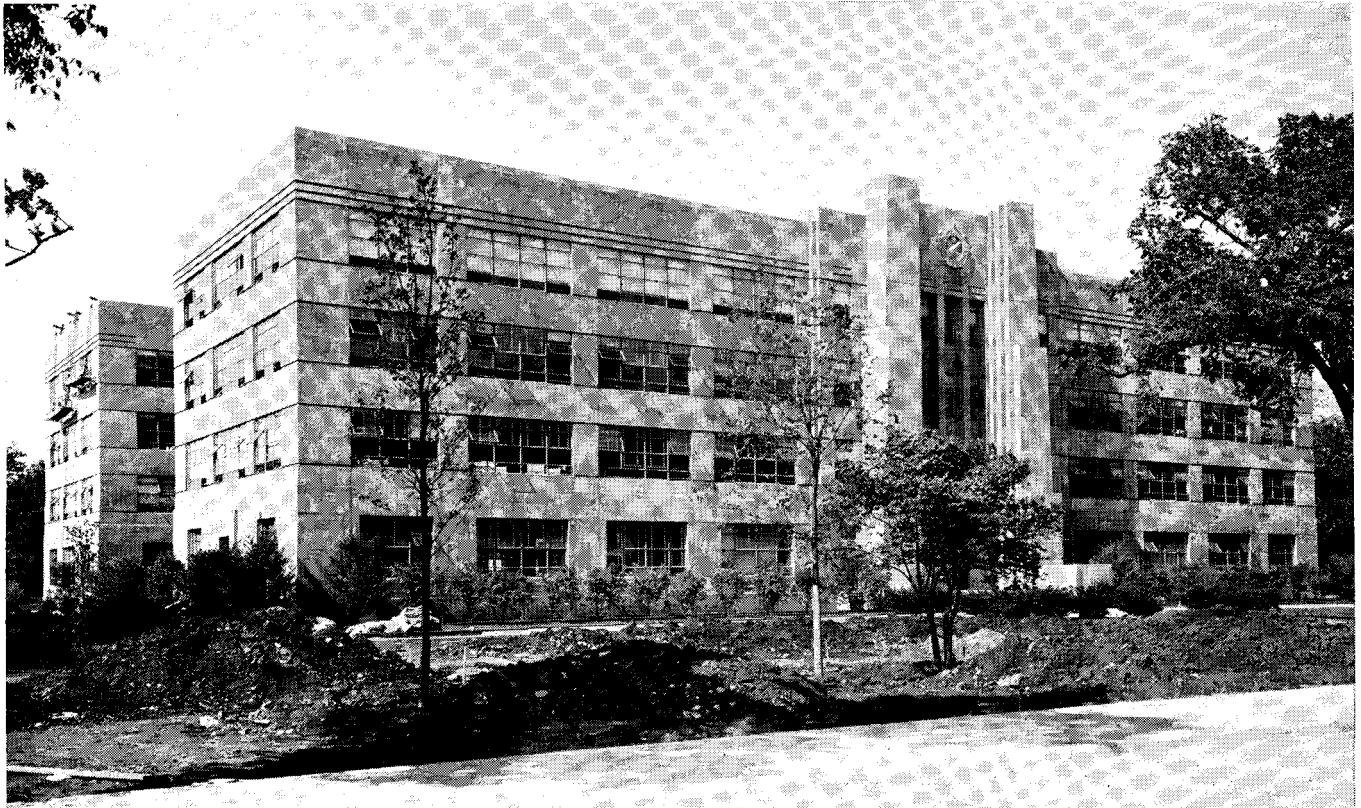
**SCHOOLS**

**STORES**

*This \$1.50 Manual is available only with a new or a renewal subscription to ARCHITECTURAL RECORD. Special combination price, \$3.75.*

**ORDER BOTH TODAY**

Architectural Record, 119 W. 40th Street, New York, N. Y.



# CONCRETE

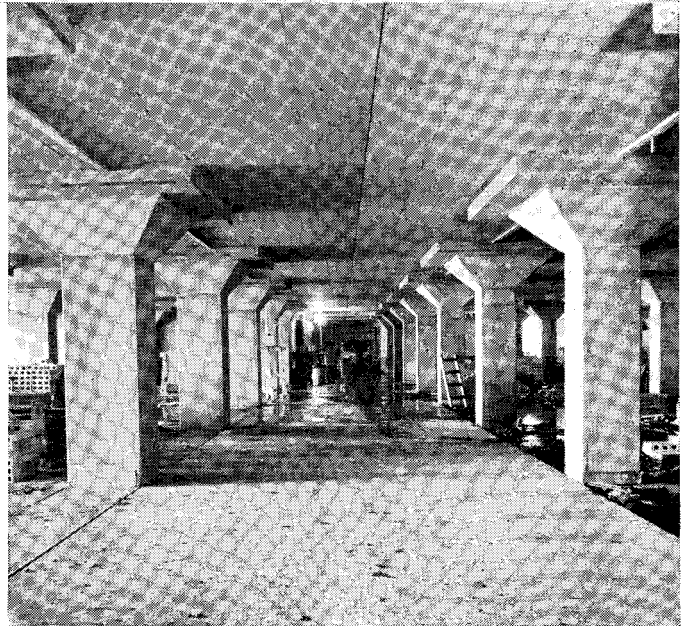
## HAS WHAT IT TAKES FOR WAR CONSTRUCTION

FOR EXAMPLE . . .

### *A Modern Arsenal*

Concrete construction in which walls are integral with framing, floors, and roofs has the rugged strength and fire resistance essential to war buildings.

1. Concrete saves steel.
2. Transportation facilities are conserved, since the bulk of concrete materials are usually found locally.
3. Construction is expedited by improved methods, easily accessible materials, local labor.
4. Architectural distinction is easily obtained by interesting textures and simple decorative effects produced economically in the forms.



All-concrete Administration Building of arsenal in middle west. Designed by U. S. Engineer Office. Priester Const. Co., Davenport, Iowa, contractor.

Basement area of heavy ordnance building. T. S. Willis, Janesville, Wis., and Priester Const. Co., contractors.

To help get the maximum service which Architectural Concrete can render, the Portland Cement Association's staff of skilled concrete technicians is available to assist designers and builders of war structures. Ask for this service.

**PORTLAND CEMENT ASSOCIATION, Dept. A5-8, 33 W. Grand Ave., Chicago, Ill.**

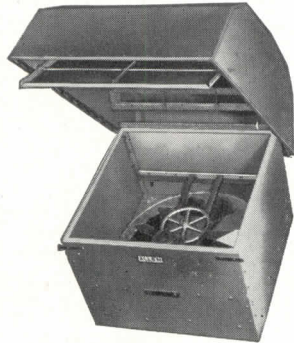
A national organization to improve and extend the uses of concrete . . . through scientific research and engineering field work

**BUY MORE WAR BONDS AND SUPPORT THE RED CROSS**

# ALLEN POWER ROOF VENTILATOR Meets War Requirements

Now available with housing built of non-critical materials; specially prepared plywood, masonite and others.

The ideal "Blackout" ventilator! No loss of valuable war production time during blackouts because of inoperative ventilation equipment.



TYPE "H"

**Low power consumption.** Exhausts large volume of air with comparatively small motors. Wide range of sizes; capacities 5600 c.f.m. to 45,000 c.f.m.

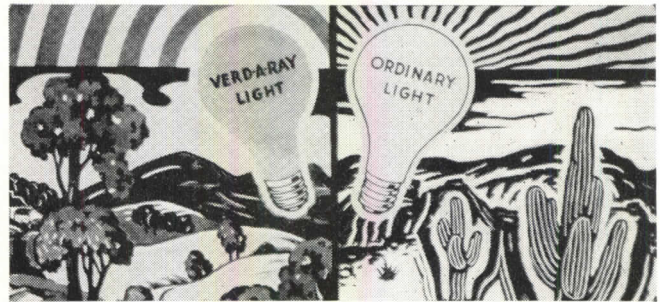
*Ford Willow Run plant completely equipped with Type "H" ventilators. Literature on request.*

## The ALLEN Corporation

9761 Erwin Ave.

Detroit, Mich.

# WHICH LIGHT DOES YOUR EYE PREFER



THE COOL, RESTFUL, REFRESHING  
GREEN of the COUNTRYSIDE

THE HOT, BRILLIANT, FIERY  
GLARE of the DESERT

SPECIFY FOR NEW CONSTRUCTION AND REPLACEMENTS

# VERD-A-RAY

MADE IN ALL INCANDESCENT TYPES and SIZES

A new scientific mixture of spectrum light which makes seeing easier for human eyes. Accepted nationally—reduces glare—improves employee morale—too new to catch "Sweets" this year

YOUR DATA WILL BE SENT ON REQUEST—WRITE  
SAVE ELECTRIC CORPORATION of TOLEDO, O.

## ENGINEERS, ARCHITECTS, DESIGNERS, STRESS ANALYSTS

GRUMMAN AIRCRAFT Engineering Corporation has openings immediately available to qualified graduate engineers and architects who wish to devote their full capacity to war work. Here is an unusual opportunity to go forward with a progressive, rapidly expanding company producing airplanes for the United States Navy. Working and living conditions on Long Island are exceptionally good.

In 1942 Grumman delivered to the Navy more airplanes than any other aircraft company. The Wildcat and the Avenger—both

carrier-based combat airplanes—have been making headlines and history since Pearl Harbor.

Men accepted for positions with Grumman will receive paid shop training and classroom work under plant engineers before assignment to the Engineering Department.

Send application, giving full details of business background and education and enclosing small photograph, to Wesley J. Hennessy, Training Division, Personnel Department.



GRUMMAN AIRCRAFT ENGINEERING CORPORATION  
BETHPAGE, LONG ISLAND, NEW YORK



# REFRIGERATION CONSERVATION Calls for EFFICIENCY in COLD STORAGE DOORS

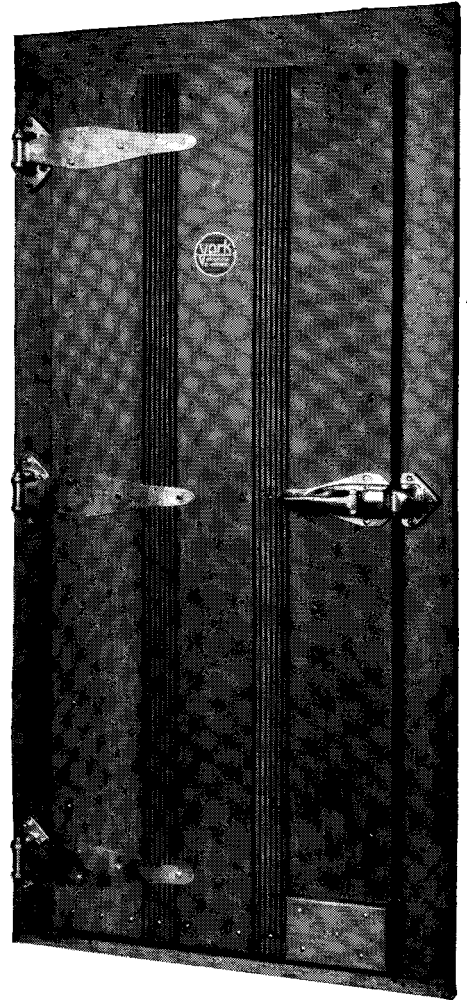
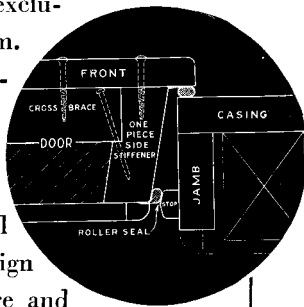
Streamlined in appearance and functional efficiency, specialized for every refrigeration service, York Cold Storage Doors meet all requirements *plus*.

York Cold Storage Doors are equipped with two water and grease-proof, wear resistant gaskets and the exclusive York Roller-Seal shown in the diagram. Hinges and latches are self-adjusting to maintain constant and even gasket pressure. These features insure a perfect and enduring seal.

Rugged construction includes cross bracing which prevents sagging or settling. Vertical panels not only harmonize with modern design but eliminate the accumulation of moisture and dirt common to horizontal panel construction and add further to structural strength.

Hardware, too, is streamlined and built for heavy duty service. Castings are malleable iron—other parts are steel. York's exclusive baked enamel finish uses no critical materials. It is attractive and durable. Other finishes are available on order for high priority jobs.

Special cold storage doors for unusual applications are available to your clients through a York factory branch or distributor nearby. York Ice Machinery Corporation, York, Penna.



## STANDARD COOLER AND FREEZER DOORS

*In addition to the standard cooler and freezer doors, York provides sharp freezer doors, metal clad doors, double doors, vestibule doors, track doors, super freezer doors, can, crate and ice passing doors, and refrigerator fronts of various types.*

SIZE IN CLEAR		WALL OPENING	
Width	Height	Width	Height
1'-6"	1'-6"	1'-10-3/4"	1'-9-1/8"
2'-0"	3'-0"	2'- 4-3/4"	2 3-1/8"
2'-0"	6'-0"	2'- 4-3/4"	6'-3-1/8"
2'-6"	2'-0"	2'-10-3/4"	2'-3-1/8"
2'-6"	3'-0"	2'-10-3/4"	3'-3-1/8"
2'-6"	3'-6"	2'-10-3/4"	3'-9-1/8"
2'-6"	6'-0"	2'-10-3/4"	6'-3-1/8"
2'-6"	6'-6"	2'-10-3/4"	6'-9-1/8"
3'-0"	6'-0"	3'- 4-3/4"	6'-3-1/8"
3'-0"	6'-6"	3'- 4-3/4"	6'-9-1/8"
3'-6"	6'-6"	3'-10-3/4"	6'-9-1/8"
4'-0"	6'-6"	4'- 4-3/4"	6'-9-1/8"
4'-6"	6'-6"	4'-10-3/4"	6'-9-1/8"
5'-0"	6'-6"	5'- 4-3/4"	6'-9-1/8"

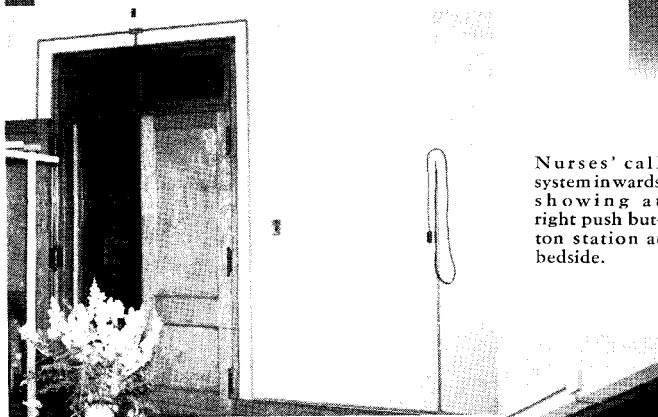
## YORK REFRIGERATION AND AIR CONDITIONING FOR WAR



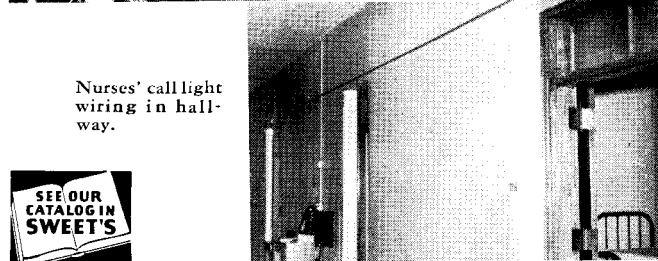
HEADQUARTERS FOR MECHANICAL COOLING  
SINCE 1885

# WIREMOLD

**SPECIALIZED LIGHTING  
AND WIRING APPLICATIONS  
IN MODERN HOSPITAL DESIGN . . .**



Nurses' call system in wards showing at right push button station at bedside.



Nurses' call light wiring in hallway.



**NURSES' CALL SYSTEM.** Wiremold Raceways and fittings provide the ideal method for convenient arrangement of light and buzzer systems with push buttons at bedside in rooms or wards. Extensions or relocations are easily taken care of as needs change.

**FLUORESCENT LIGHTING.** Wiremold Raceways and fittings simplify rewiring where fluorescent lighting is installed. Wiremold Deluxe Glass Enclosed Fluorescent Units, simple in construction, architecturally correct in design, meet modern hospital requirements for general lighting.

**PLUGMOLD . . .** the Wiremold "plug in anywhere" convenience outlet wiring system provides all the outlets needed . . . exactly where they are needed . . . in wards, diet kitchens, laboratories and service rooms. Outlets may be added or relocated as required.

Wiremold engineering service and literature are available on request. Check the coupon below and mail to The Wiremold Company, Dept. AR-5, Hartford, Conn.

**WIREMOLD** IS HELPING AMERICA PRODUCE FOR WAR AND PLAN FOR PEACE!

**"HELPING HAND" LITERATURE FOR PLANT OPERATORS**

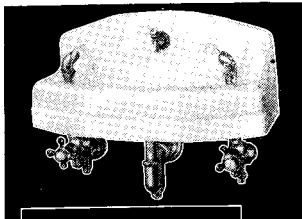
- |   |  |
|---|--|
| <input type="checkbox"/> Bulletin, "Wiremold Industrial System-Wiring Speeds War Production". | <input type="checkbox"/> Engineering Data Sheets No. "3000" System Wiring for Industrial plants. |
| <input type="checkbox"/> Engineering Data Sheets, Plugmold Multi-Outlet Wiring Systems.       | <input type="checkbox"/> "Pancake" Wiremold Overfloor Wiring System for Office and factory.      |
| <input type="checkbox"/> Wiremold Catalog and Wiring Guide                                    |  |

CHECK and return with your name and address

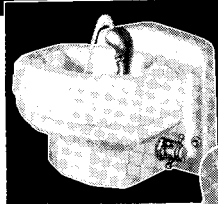


*Health Safety*

**at the front  
...or at home**

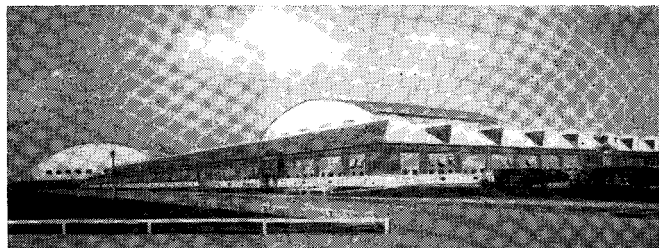


Drinking water free from contamination is a vital factor at the front, just as it is at home. But only here at home do you have the advantage of specifying Halsey Taylor Drinking Fountains, with their patented features to insure health-safety! For factories or schools they're the logical selection!

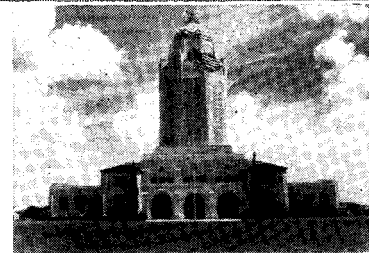


**The Halsey W. Taylor Co.**

WARREN, OHIO



**BUILDINGS  
TO BUILD AN  
AIR  
CORPS**



To shelter and school America's million and more fledglings, buildings have mushroomed at busy fields throughout the nation. Hangars, dormitories, dining halls, buildings for instruction and administration, hospitals . . . all need hardware for doors, windows, cabinets.

The amount of hardware required staggers the imagination. Stanley's production facilities are being devoted to this all-important task. The Stanley Works, New Britain, Conn.

1843 **STANLEY** 1943

**STANLEY HARDWARE**

# Why Use An Anemometer To Design A Post-War Window?

**Y**ES, you're right—an anemometer is an instrument for measuring *wind velocity*. And that's a mighty important factor in designing tomorrow's windows.

For the windows of the post-war period *MUST* be weather-tight . . . must reduce wind infiltration and heat loss. That's a No. 1 requirement for thousands of families who have learned the lesson of heat conservation in wartime.

But making a window weather-tight is a complicated process. You can't do the job overnight. It requires years of research and field experience . . . inventiveness of the highest order.

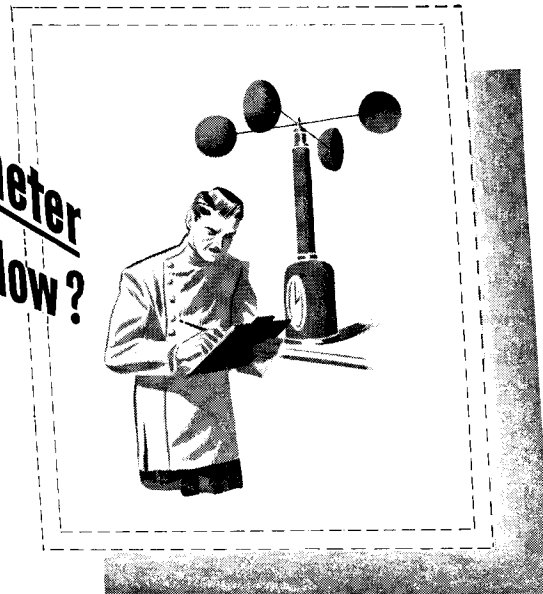
All these advantages Curtis has. That is why the Curtis Silentite is today's closest approach to a truly weather-tight window.

The Curtis Silentite Window is factory-machined and pre-fit for extreme weather-tightness and ease of operation. It is made of wood—a natural non-conductor of heat and cold. It requires no heat-leaking cuts in its jamb for weights and pulleys—because Silentite has none. It has the most efficient weather-stripping known today.

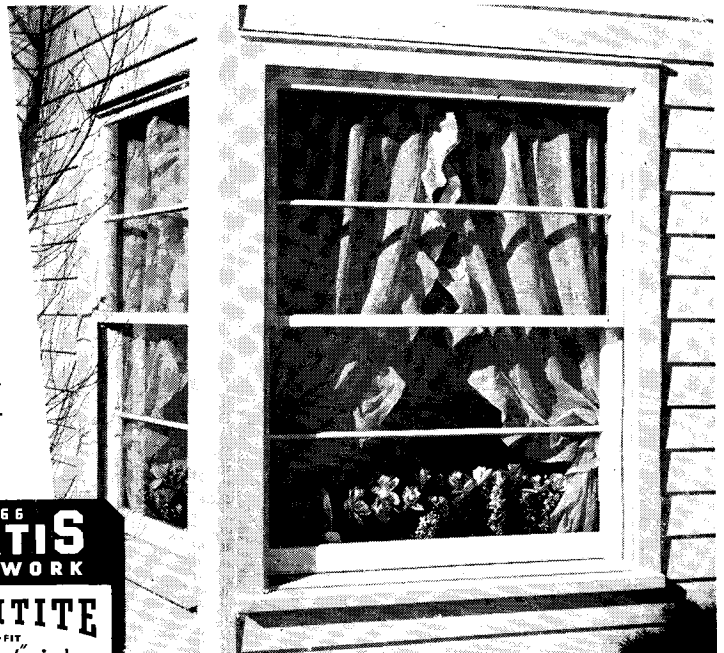
And note this: *the research which produced Silentite Windows, is still going on—without pause or hindrance.* That's the best possible assurance of Curtis leadership in producing the *weather-tight* windows of tomorrow.

If you are interested in knowing more about Silentite Windows, Mitertite Trim and other exclusive Curtis products for today's needs—or tomorrow's—write us.

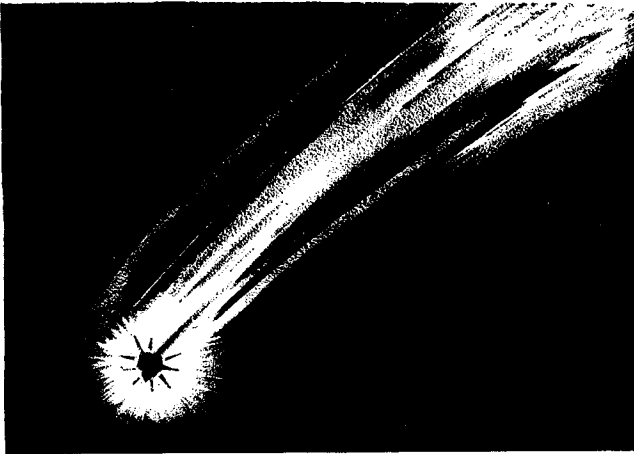
Curtis Companies Service Bureau  
Curtis Bldg., Clinton, Iowa



*Here is an example of the first basic window improvement in 300 years—the Curtis Silentite insulated window. It's a typical product of Curtis research—and an assurance of Curtis leadership in window and wood-work design for the post-war period.*



TOMORROW'S WINDOWS WILL HAVE GREATER WEATHER-TIGHTNESS



## BIRTH OF AN ENEMY

Today, even the smallest spark is your potential enemy. Once fire is born it may destroy machinery impossible to replace. It may destroy sorely needed defense materials.

All-important is to be prepared to put out fires that can and *do* start . . . immediately, automatically, *at the source!* Expert fire-fighters will tell you that no system will accomplish this more surely — more

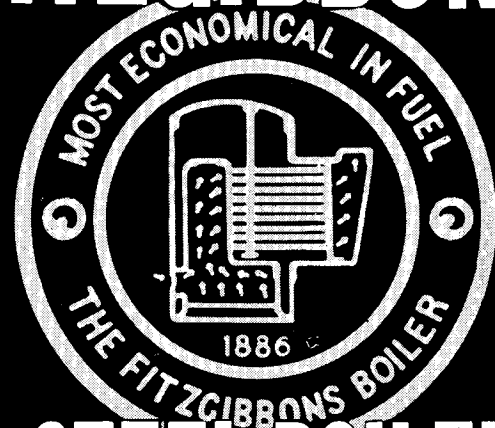
reliably — and with less water damage than a Grinnell Automatic Sprinkler System.

Owners of fifty billion dollars worth of property say it's the best guardian of production and storage. Call in a nearby Grinnell engineer for advice. Grinnell Company, Inc., Executive Offices, Providence, R. I. Branch offices in principal cities of the United States and Canada.

# GRINNELL

Automatic Sprinkler Fire Protection

# FITZGIBBONS

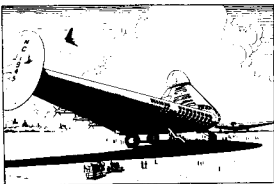


## for STEEL BOILERS

Steel heating boilers exclusively since 1886 — in short, almost sixty years of steel boiler experience, to insure heating success in post-war building. Fitzgibbons for Steel Boilers — and for Satisfied Buyers.

Fitzgibbons Boiler Company, Inc. 101 PARK AVE., NEW YORK

Are you an AERONAUTICAL, MECHANICAL, STRUCTURAL  
or ELECTRICAL ENGINEER or DRAFTSMAN?



"The Plane of the Future"

Are you an American citizen not employed to the best of advantage in the War Effort?

Are you between 25 and 50 years of age and deferrable if employed in a necessary position?

Are you interested in becoming associated in an engineering capacity with an independent, pioneer aircraft organization with the stability and record of achievement to insure its future?

Are you a man with at least two years technical college training and five years engineering or drafting experience?

Obviously, not many can answer "Yes" to these five questions. . . . If you can, it is very likely to prove to your advantage to write to us soon. We would like to have you give a brief outline of your background and we will send prepared forms for more detailed information.

PLEASE ADDRESS REPLY TO:

Engineering Personnel Department, THE GLENN L. MARTIN COMPANY, Baltimore, Maryland

# How steel-framed buildings stand up under bombings

THE bomb exploded right at the corner of this building. Two of the main steel columns were sheared off—but the structure did not collapse. Most of the damage was localized in the first floor. This shows how fully steel-framed buildings resist the wholly unpredictable stresses resulting from bomb blasts—even under direct hits.

The photographs shown here are only two of 47 similar ones received from England which show steel-framed buildings hit by bombs, but not demolished. Note also how the steel window sash has withstood the blast of the bomb, most of it remaining intact.

Here is a quotation from the report of the British Steelwork Assn., which collaborated with the British Government authorities in studying this modern structural problem:

"The fully steel-framed building has suffered only to a very minor extent and has shown remarkable resilience, which has tended to localize the damage. This local damage, in many cases, has been subject to rapid repair."

These results indicate that the American type of skyscraper is a very safe structure. London authorities wish they had more of them.

Attention is called to the value of soundly jointed structures which are able to resist both the inward pressure of the explosion and the outward pull of the suction. This is particularly recommended in the case of main beams in single-story factory construction where prevention of "spreading collapse" is desired.

Lessons learned from this war point to a greater use of steel for all types of structures in the future.



1. Steel-framed structures have the ability to withstand severe punishment from bombing without disintegrating as is the case with plain masonry structures.

2. Close-up view shows the foundation of this steel-framed apartment building. Two main columns were blasted away by the bomb, but the damage was localized in the first floor.

CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago*  
COLUMBIA STEEL COMPANY, *San Francisco*  
TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham*

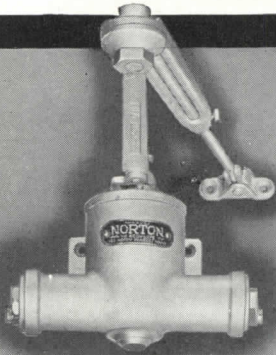
United States Steel Supply Company, Chicago, *Warehouse Distributors*

United States Steel Export Company, New York



# UNITED STATES STEEL

# NORTON DOOR CLOSERS



**Built For Long-Lasting Service**

Norton Door Closers, properly installed and adjusted, are built to provide years of dependable service. Careful maintenance with periodic check-ups will conserve units now in use, and also insure even longer working life for your Norton Door Closers.

## NORTON DOOR CLOSER COMPANY

*Division of The Yale & Towne Mfg. Company*

2910 NORTH WESTERN AVENUE

CHICAGO, ILLINOIS

## WACO

has gone to war with Gliders and  
Cargo Planes

WACO, a name of long standing in aircraft manufacture, is now making gliders and cargo planes for the Armed Forces.

Engineers are needed to develop these essential military planes. We have openings for experienced and competent detail and layout draftsmen.

It is not necessary that you be experienced in aeronautical engineering to qualify for a position with us. If you are not fully employed in your field and are interested in joining a progressive and growing aircraft concern—send us a description of your training and experience.

THE WACO AIRCRAFT COMPANY

434 South Market Street, Troy, Ohio



SYMBOL OF QUALITY  
IN WIRING DEVICES AND  
CONTROL APPARATUS  
*for 53 years*

Available now for dependable control of light, heat and power if ordered with proper priorities . . . Send for current Catalogs for war service installations.

HART & HEGEMAN DIVISION  
ARROW-HART & HEGEMAN ELECTRIC COMPANY, HARTFORD, CONN.

FOR THE PIPING  
YOU ARE  
PLANNING

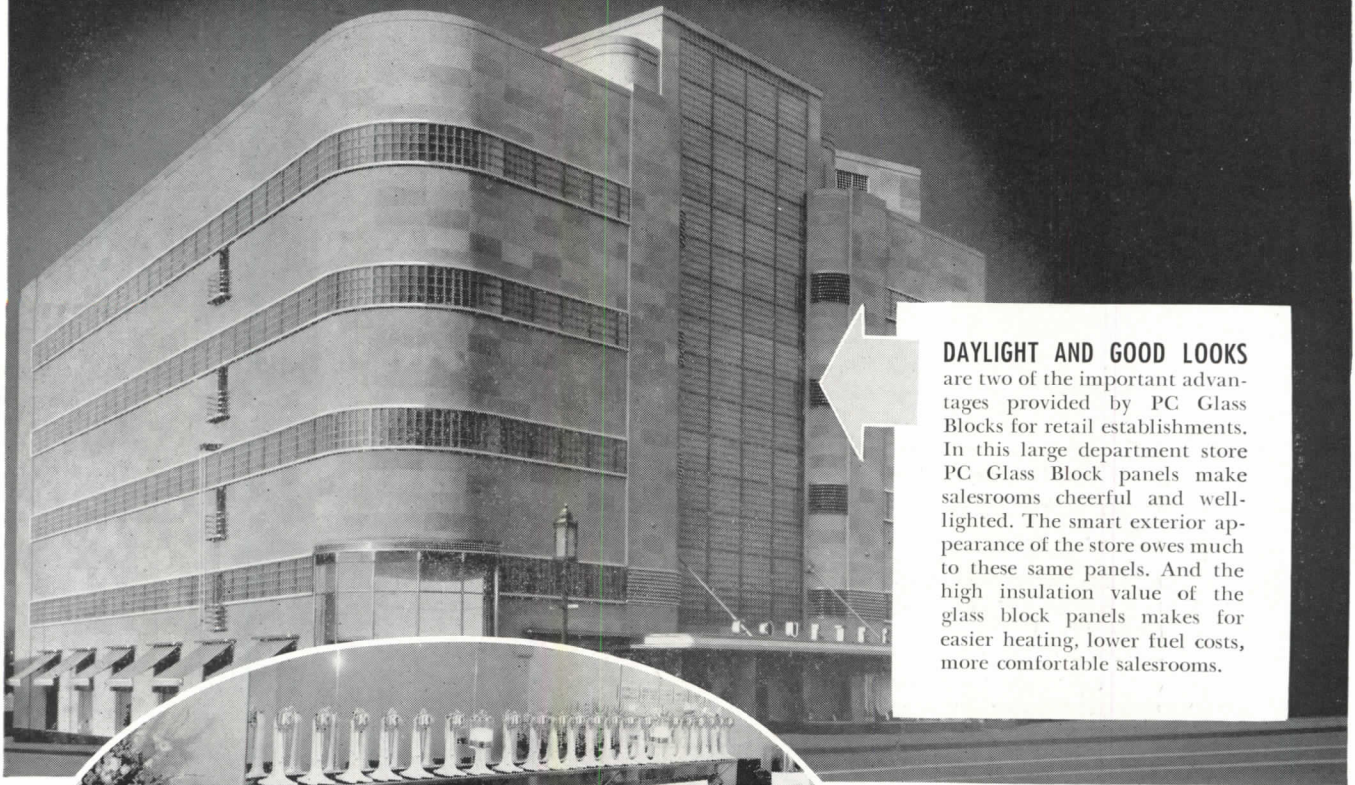
**SPECIFY**  
**CRANE VALVES**  
**AND**  
**FITTINGS**

**CRANE . . .**

CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVE., CHICAGO

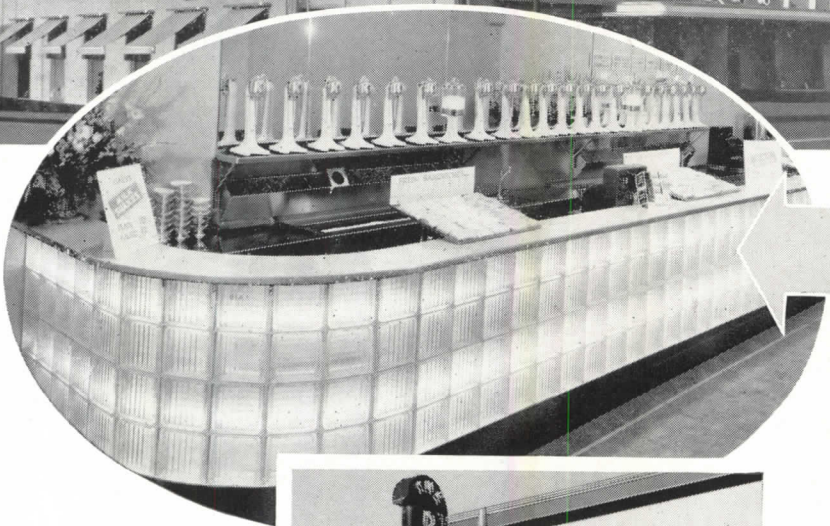
# PC Glass Blocks

## FOR STORES DESIGNED WITH AN EYE TO THE FUTURE



### DAYLIGHT AND GOOD LOOKS

are two of the important advantages provided by PC Glass Blocks for retail establishments. In this large department store PC Glass Block panels make salesrooms cheerful and well-lighted. The smart exterior appearance of the store owes much to these same panels. And the high insulation value of the glass block panels makes for easier heating, lower fuel costs, more comfortable salesrooms.



**A COUNTER LIKE THIS** is a strong temptation to any customer. It extends a warm and friendly invitation to buy, creates an impression of welcome. Interesting and sales-winning effects can be obtained by arranging colored lights to shine through the PC Glass Blocks—an idea worth incorporating into your store-interior designs of the future.

**A STORE FRONT** whose design includes a panel of PC Glass Blocks is a stand-out attraction in any business section. Besides transmitting generous floods of daylight into the store, these blocks form an ideal background for name-signs or decorative figures. And at night, light from within shines through them, giving added appeal.

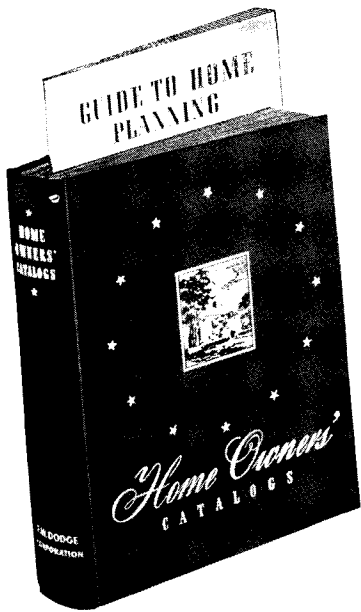


## GLASS BLOCKS

*Distributed by*  
PITTSBURGH PLATE GLASS COMPANY  
*and by W. P. Fuller & Co. on the Pacific Coast*

*"PITTSBURGH" stands for Quality Glass*

PITTSBURGH CORNING CORPORATION  
632 DUQUESNE WAY - PITTSBURGH, PA.



# HOME OWNERS

*Will have plenty to say about*  
**'HOMES-OF-THE-FUTURE!'**

**S**PECULATE if you will about new home building products and new methods of construction for post-war housing. American families, having outgrown their present quarters—and improved their financial status—will brook little delay when restrictions are lifted and private building is resumed. To prepare for quick action, many of them are gathering home building information now, and authorizing their architects to proceed with preliminary plans.

Keep a close contact with clients who are planning to build after the war.

Foster these prospects for future business. Ask us to send them free copies of Home Owners' Catalogs—that big, cloth-bound volume of information about home building products and services. It will help to impress them with the value of architectural services. And the section "Guide To Home Planning" will enable them to inventory their requirements and visualize the inside arrangements and outside aspects of the home they plan to build.

We are sending this valuable book now, by mail, prepaid—without obligation of any kind—to those who are planning to build homes for their own occupancy when war and priority conditions permit.

*Your clients who receive this comprehensive and beautifully illustrated free volume (same page size as Sweet's) will be better prepared for conferences with you. That will mean a lot when the rush of post-war activity begins.*



# Home Owners'

## CATALOGS

Distributed FREE by F. W. DODGE CORPORATION, 119 West 40th Street, New York, New York

Home Owner's Catalogs will be sent to owners who plan to build homes for their own occupancy, within 12 months, or as soon as war and priority conditions permit, in the 37 states east of the Rocky Mountains, costing \$4,000 or more for construction, exclusive of land—or to modernize at a cost of \$2,000 or more. The F. W. DODGE CORPORATION RESERVES THE RIGHT TO DETERMINE THE VALIDITY OF EACH APPLICATION.

F. W. DODGE CORPORATION, 119 West 40th Street, New York, N. Y.

Please send a copy of Home Owners' Catalogs to:

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

Send with compliments of .....





# BULL'S EYE!

... thanks to the weather in South Bend, U. S. A.

ANTI-AIRCRAFT bull's eyes are not luck. They are scored by accurate gunners operating accurate guns. And gun accuracy is a built-in feature—made possible by ideal production weather in an American gun factory back home.

Consider the case of the manufacturer of delicate bearings for anti-aircraft guns. Nothing short of perfection is acceptable in these bearings. Variation of a fraction of a hairline may mean the difference of a Zero down, or a Zero dealing out death and destruction.

But even the gauges used for checking bearings vary with varying weather conditions. So in this particular factory the problem of delivering perfect bearings was solved by using Trane air conditioning equipment to keep constant temperature in the gauge room.

In other wars, weather on the production front was a temperamental neutral—helping or hindering the manufacturing efforts of friend and foe alike.

In this war, weather—predetermined and rigidly controlled—is our ally. It helps our planes fly faster, farther, and higher . . . gives us more and better ammunition . . . helps assure the accuracy of our weapons . . .

So Trane “weather magic” plays here, as it does in many another war factory, an important role in the production effort. Skilled Trane field engineers, working with Government and industry, have applied this wide line of air handling and heat transfer equipment to maneuver neutral but unpredictable weather into an invaluable production ally.

And from what Trane is doing today will develop improved standards for the America of tomorrow . . . greater comfort, better health and living—thanks to Trane air conditioning—in the better days that are to come.



# TRANE

AIR<sup>2</sup>

THE TRANE COMPANY LA CROSSE, WISCONSIN  
 TRANE COMPANY OF CANADA, LTD., TORONTO  
 AIR CONDITIONING • HEAT TRANSFER • AIR HANDLING EQUIPMENT

LAST YEAR'S BONDS GOT US STARTED

THIS YEAR'S BONDS



★ Last year saw nearly 30,000,000 workers voluntarily buying War Bonds through some 175,000 Pay-Roll Savings Plans. And buying these War Bonds at an average rate of practically 10% of their gross pay!

This year we've got to top *all* these figures—and top them handsomely! For the swiftly accelerated purchase of War Bonds is one of the greatest services we can render to our country . . . and to our own sons . . . and our neighbors' sons. Through the mounting purchase of War Bonds we forge a more potent weapon of victory, and build stronger bulwarks for the preservation of the American way of life.

"But there's a Pay-Roll Savings

Plan already running in my plant."

*Sure, there is*—but how long is it since *you've* done anything about it? These plans won't run without winding, any more than your watch! Check up on it today. If it doesn't show substantially more than 10% of your plant's pay-roll going into War Bonds, it needs winding!

*And you're the man to wind it!* Organize a vigorous drive. In just 6 days, a large airplane manufacturer increased his plant's showing from 35% of employees and 21½% of pay-roll, to 98% of employees and 12% of pay-roll. A large West Coast shipyard keeps participation jacked up to 14% of pay-roll! You can do as well, or better.

By so doing, you help your na-

tion, you help your workers, and you also help yourself. In plant after plant, the successful working out of a Pay-Roll Savings Plan has given labor and management a common interest and a common goal. Company spirit soars. Minor misunderstandings and disputes head downward, and production swings up.

War Bonds will help us win the war, and help close the inflationary gap. And they won't stop working when victory comes! On the contrary—they will furnish a reservoir of purchasing power to help American business re-establish itself in the markets of peace. *Remember, the bond charts of today are the sales curves of tomorrow!*

You've done your bit  Now do your best!

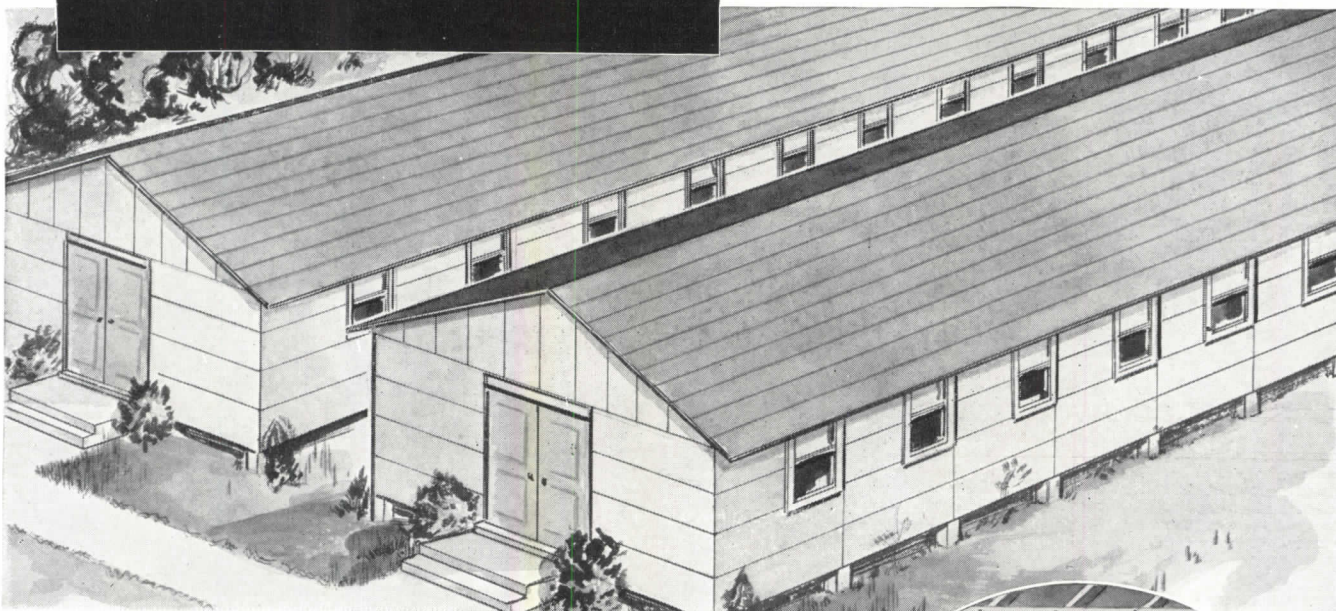
# How to Build Exterior Walls

WITH 1 MATERIAL  
DOING 3 JOBS!

Amazing New

## CELO-SIDING

- ① Builds
- ② Insulates
- ③ Provides Its Own Exterior Finish



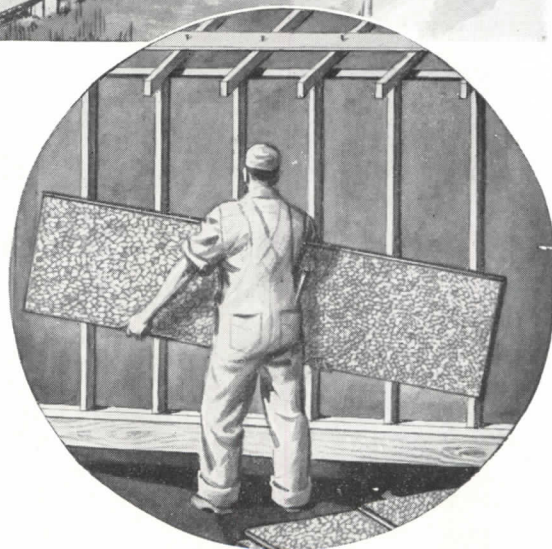
### New type exterior wall units speed completion of Rugged, Weathertight Dormitories and Barracks

**M**OST current building is being done against tight time limits, especially in the case of dormitories and barracks. That's why architects who have worked with Celotex Celotex appreciate the time-saving features of this new multi-function material. And it's equally practical for farm buildings, cabins, small factories, and similar structures!

Celotex Celotex builds, insulates, and provides its own exterior finish—all in one operation. Each unit

is composed of cane fibre board, coated on all sides with an asphalt compound, with an extra coating on the weather surface, into which are pressed crushed mineral granules in brown, buff, or green.

Units are 7/8" thick, and 2'x8' or 4'x8' in size. 2'x8' has T & G joints on long edges. 4'x8' has square edges all around. Each suitable for horizontal or vertical application. All joints are sealed with caulking compound. Mail the coupon for complete information.



# CELOTEX

REG. U. S. PAT. OFF.

ROOFING • INSULATING BOARD  
ROCK WOOL • GYPSUM WALLBOARD • LATH  
PLASTER • ACOUSTICAL PRODUCTS

THE CELOTEX CORPORATION • CHICAGO

THE CELOTEX CORPORATION,  
CHICAGO, ILLINOIS

AR 5-43

Please send complete information and samples on new Celotex Celotex.

Name .....

Address .....

City .....

County ..... State .....

# Where can I get it?

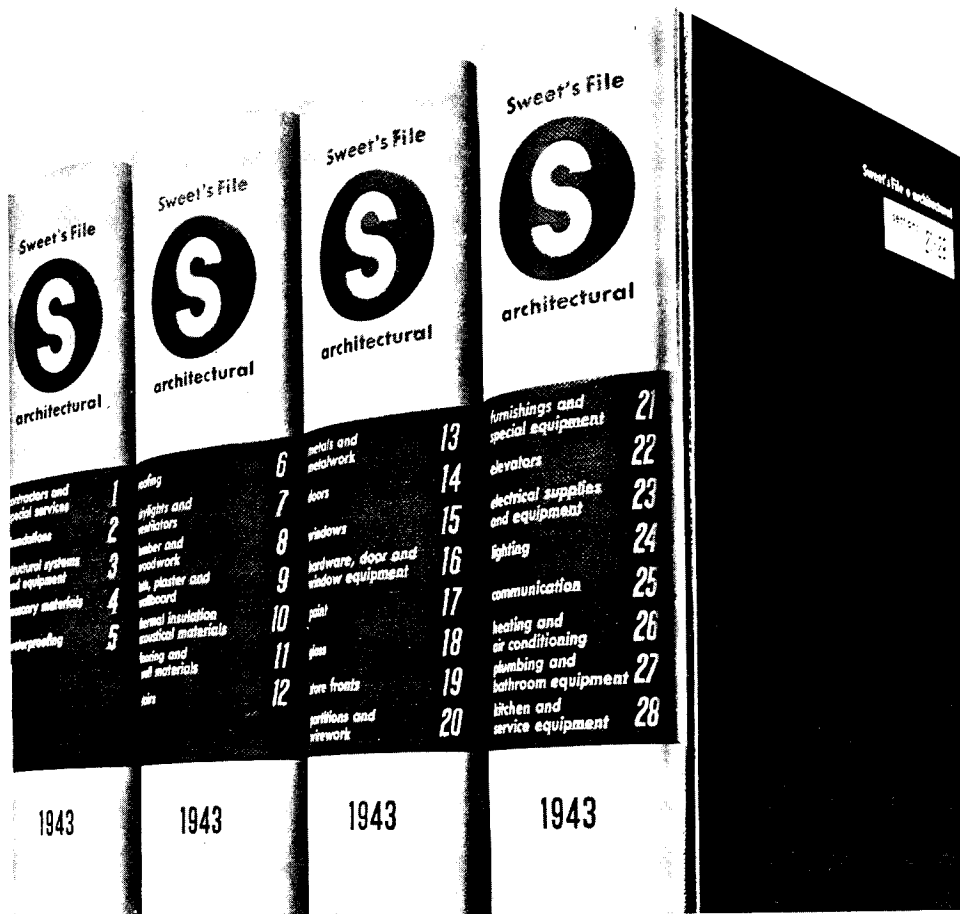
and

# When can I get it?

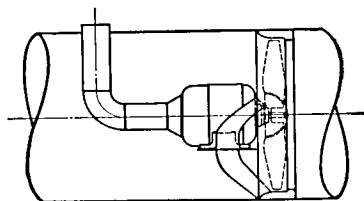
For the men with building jobs to finish *now*, the second question is all important. They will find in the 1943 Sweet's File hundreds of items of building material and equipment which can be had at once — some, of course, with the necessary priority assistance.

Also available now are the services of 172 firms of contractors and engineers whose work and experience are described in detail in the 400-page Section 1, "Contractors and Special Services." These qualifying data will be of tremendous and timely use to all contract awarding authorities.

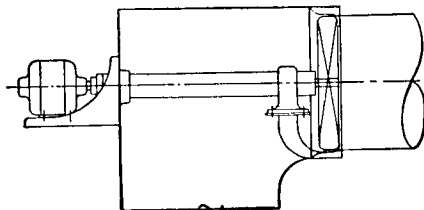
But one of the most valuable features of this war-time Sweet's File is the inclusion of basic information on the normal products of hundreds of manufacturers who have converted their plants, for the duration, to manufacture war goods. Planners of postwar building projects — projects which will offer immediate employment to thousands of returning service men — will appreciate the foresight of manufacturers who thus make it possible to advance this important work.



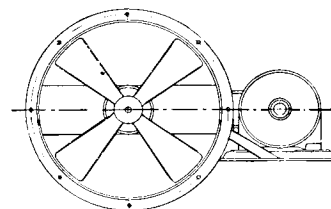
# HERE'S WHY PROPELLAIR Fans can help you solve any problem involving heat and fumes!



**DIRECT-CONNECTED TYPE**  
For temperatures up to 120° F.



**EXTENDED-SHAFT TYPE**  
For temperatures up to 450° F.



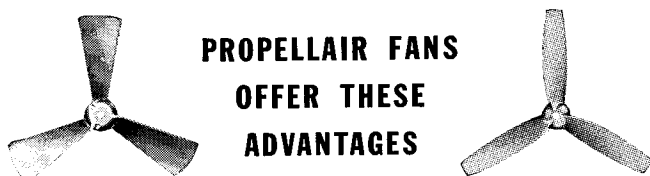
**BELT-DRIVE TYPE**  
For temperatures up to 450° F.

These three illustrations show how fumes or air—at practically any temperatures experienced in industrial plants—are successfully handled by Propellair Fans. Because hundreds of installations of each type are setting performance records for their particular applications, leading architects everywhere are specifying them for war-production ventilating jobs.

The direct-connected, or "CD," type is most frequently used for handling fumes and air at temperatures up to 120° F. It is shown here installed in a straight pipe. Because the motor is located within the air stream, the totally enclosed ball-bearing type is recommended. If the motor is equipped with a small auxiliary duct, temperatures up to 160° F. may be handled. This small duct should lead to the outside of the main duct so that it can pull cool air over the motor. Where heated *clear* air is involved, the open-type motor may be used, in which case cool air should pass *through* the motor from the auxiliary duct.

The extended-shaft, or "CE," type—shown here installed in an abrupt right-angle turn of a duct system—is recommended for handling fumes and air at temperatures up to 450° F., because under such conditions a motor should not be operated directly within the air stream. The open-type, ventilated motor is usually used, mounted rigidly to a cast steel base. The drive shaft is housed and sealed in steel tubing.

The belt-drive, or "CSV," type is a heavy-duty unit built to operate under temperature conditions up to 450° F. (With a stainless steel fan, not now available, it can handle temperatures considerably higher.) As in the "CE" type, the motor is placed outside the duct. The belt drive is used because it eliminates metal-to-metal transmission of heat to the motor. Fan bearings are of special air-cooled design and are protected, as is the belt, by welded steel tubes in which they operate.



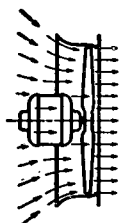
## PROPELLAIR FANS OFFER THESE ADVANTAGES

### AXIAL-FLOW, AIRFOIL PROPELLERS,

especially designed by Propellair engineers, deliver maximum air with minimum horsepower. Air flow is even over all parts of the blades—the *whole* fan works, not just the tips! These unique propellers are also non-overloading—from free air to complete block-off, horsepower remains virtually constant as long as motor speed is constant. The number of blades, and their angle and shape, depend on the job to be done.

### CURVED ENTRANCE RING,

in addition to serving as a sturdy support assembly, reduces tip loss and enables Propellair Fans to deliver *maximum air per horsepower*. Introduced in 1930, as a result of exhaustive experiments and tests by Propellair engineers, this design makes possible the utilization of the "Airfoil" air-movement principle in the *entrance ring* as well as in the *propeller*.



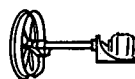
## A PROPELLAIR FAN FOR EVERY APPLICATION



**CD**—Direct connected to electric motors. For ducts, hoods, roof ventilators or panels.



**CSB**—Heavy-duty complete belt-driven unit for ducts or stacks to handle explosive vapors, dust, or high temperatures.



**CE**—Extended shaft fans for ducts, dryers, etc., where motor must be outside the air stream.



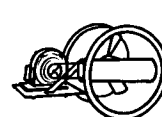
**CU**—Low-stand, tiltable, portable cradle fan for hardening-room service, product drying or cooling.



**CF**—For belt drive from separate motors, engines or line shafts. Also with extended shaft assembly.



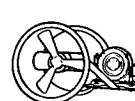
**CM**—Heavy-duty pedestal blast fan for cooling men and products in heavy industries.



**CS**—Heavy-duty complete belt-driven unit in duct section. For severe dust, corrosive or explosive vapors.



**C**—Industrial circulator fan for general air-circulating service of all types.



**CSV**—Heavy-duty complete belt-driven unit for high temperatures in ducts, pipes, and as stack boosters.

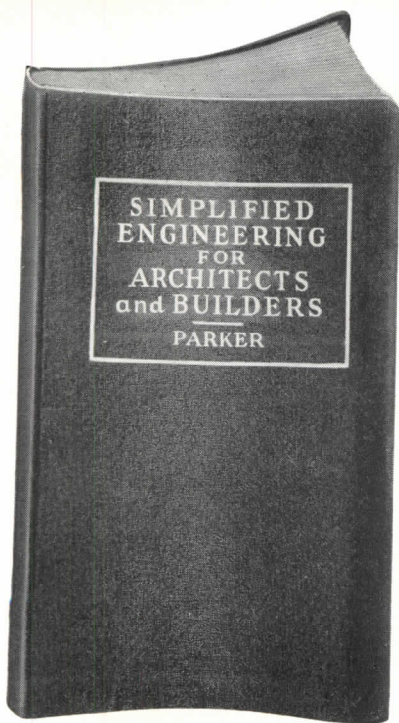


**CB**—Slow-speed, ultra-quiet complete belt-driven fan. For office or room ventilation.

If you have a pressing industrial ventilating problem, write us! We'll either mail you our complete Propellair catalog No. 10-F—or have the nearest Propellair ventilating specialist get in touch with you—whichever you prefer.

On the other hand, if you'd like more information for future reference, and not in connection with a specific war-production job, see our 20-page insert in Sweet's Catalog for 1942.





**GUIDE TO STANDARD SPECIFICATIONS**

by Harold Sleeper, AIA

Federal specifications in the construction field—with notes on their use. Arranged by trades in twenty-three divisions. A time and labor saver for specification writers. 28 pages—8½x11—75c.

**THE RESTORATION OF COLONIAL WILLIAMSBURG**

A pictorial survey including floor plans, elevations, details, maps and garden plans, samples of paint colors, etc. Textual story by the Restoration architects and designers. 104 pages, 9x12, blue cloth covers, \$1.50.

**SIMPLIFIED ENGINEERING FOR ARCHITECTS AND BUILDERS**

By HARRY PARKER, Professor of Architectural Construction, University of Pennsylvania

Presents the design of beams, columns, slabs, etc., so simply, so concisely, that you can readily follow the explanations without previous training in the subject. Brings to your fingertips the important terms and basic principles employed in the design of structural members in building construction—with a host of examples illustrating just the sort of problems that must be faced in practice. No preliminary knowledge of the subject required. Theory and derivation of formulas reduced to a minimum. All necessary tables are included, no other books required to supplement its use. 214 pages—96 illustrations—flexible binding—\$2.75.

Any of the above books will be mailed postpaid anywhere in the United States. Send your order and payment direct to

**ARCHITECTURAL RECORD BOOK DEPT. 119 WEST 40TH STREET NEW YORK, N. Y.**

**BOOKS**

**DESIGN OF MODERN INTERIORS**

by James Ford and Katherine Morrow Ford

The first comprehensive survey of recent American interior design, exclusively in terms of modern architecture and related arts. Analyzes the latest advance in modern custom design—shows how to apply to defense housing—discusses best placement for circulation, privacy, comfort, safety, storage, and general convenience. Explains choice of colors, materials, designs, etc. 324 illustrations. 132 pages. 124 architects and designers represented. 8½ x 10¾. Cloth bound. \$5.00.

**ARCHITECTS' AND BUILDERS' HANDBOOK**

by Frank Kidder and Harry Parker

18th Edition. 2,315 pages. 4½ x 7. \$8.00

**BETTER HOUSES FOR BUDGETEERS**

by Royal Barry Wills

104 pages. 9 x 12¼ in. 102 illustrations and plans. Price \$3.00.

**WORKING DETAILS, PART I: DOMESTIC**

(British Publication) Edited by Mildred W. White

Illustrates by photos and detail drawings handling by various internationally known architects of such details as windows, doors, staircases, kitchens, furniture, fireplaces, etc. 140 pages. 9 x 12½. Price \$4.00.

**The American Hospital of the 20th Century**  
by Ernest Stevens

A 550-page treatise on the development of medical institutions, both in Europe and America; third edition, revised 1928. Contains a wealth of background information especially useful in writing or speaking on the subject—22 chapters—over 600 illustrations. Much data unobtainable elsewhere. (was \$15) While they last—\$3.75.

Architectural Record Book Department  
119 W. 40th St., New York

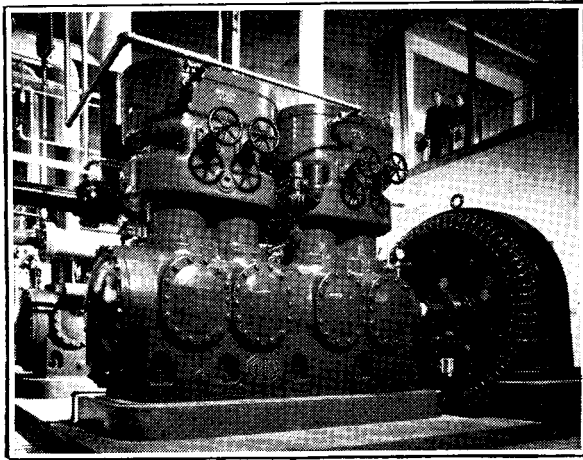
Please send books checked.  
Money order or check for \$..... enclosed.

Name .....

Address .....

City ..... State ..... AR 543

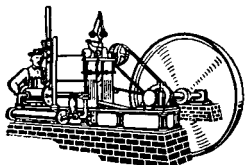
- Design of Modern Interiors . . . \$5.00
- Archts' and Bldrs' Handbook . . . 8.00
- Better Houses for Budgeteers . . . 3.00
- Working Details, Part 1: . . . . 4.00
- Guide to Standard Specifications . . . 75
- The Restoration of Colonial Williamsburg . . . . . 1.50
- Simplified Engineering for Architects and Builders . . . . . 2.75
- American Hospital . . . . . 3.75



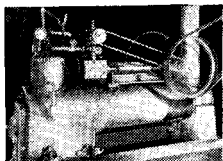
90 Years' Engineering Experience Stands Behind



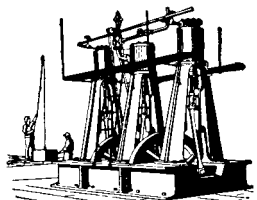
# Refrigeration



FRICK STEAM ENGINE, BUILT 1856  
NOW IN THE FORD MUSEUM



THIS FRICK ENGINE AND BOILER,  
BUILT IN 1877, ARE STILL IN  
SERVICE AT MADISON, V.A.



FRICK REFRIG. MACHINE OF 1883

To be within ten years of its One Hundredth Anniversary is a distinction enjoyed by very few companies in America.

Frick Company was established in 1853 for the building of steam engines. The success of these led to the construction, in 1882, of the first Frick Refrigerating machine.

Today, Frick cooling systems are put into war service as fast as they can be made. Tomorrow, you can get the advantages of up-to-date Frick Refrigerating, Ice-making, and Air Conditioning Equipment, backed by more than 90 years' experience.



"MODERNISTIC?—GR-R-R!"

Conventional, modern, *moderne*, modernistic—no one design can please everybody. But more draftsmen, architects and engineers like and use the Venus Drawing Pencil than any other make.

They know they can rely on the strength and smoothness of Venus Drawing. They know that each degree of hardness is exact and *unvarying*—whenever and wherever they buy.



Let the Venus Drawing Pencil speak for itself. Just mail us the coupon below—circling the two degrees you would like to try—and we will gladly send you *free* samples.

**V**ENUS  
Drawing  
**PENCILS**

**American Pencil Company**

Dept. 136, 500 Willow Ave., Hoboken, N. J.

In Canada: Venus Pencil Company, Ltd., Toronto

Please send **FREE** samples of the two grades circled:

9H - 8H - 7H - 6H - 5H - 4H - 3H - 2H - H - F - HB - B - 2B - 3B - 4B - 5B - 6B

NAME and title \_\_\_\_\_

FIRM NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

AMERICAN PENCIL CO. NEW YORK-VENUS-DRAWING-HB



## Would you turn your back on a wounded Soldier ?

*You think you wouldn't...you don't mean to...*

But unless you are giving every precious minute of your time...every ounce of strength that you can spare...towards helping win this war as a civilian, you are letting down those soldiers who are sacrificing lives to win it for you.

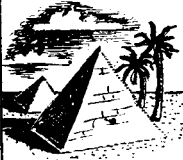
What you are asked to give up isn't much compared with what they're giving up. The extra work you undertake is small compared with the gigantic effort they are making. But to a wounded soldier, what you do can mean the difference between life and death.

*You make the choice.*

**LOOK AROUND YOU!** Pick your war activity—and get into it! In your local Citizens Service Corps or Defense Council there is something for every man, woman and child to do. If no such groups exist in your community, help to organize them. Write to this magazine for free booklet, "You and the War," telling what you can do to help defeat the Axis. Find your job—and give it all you've got!



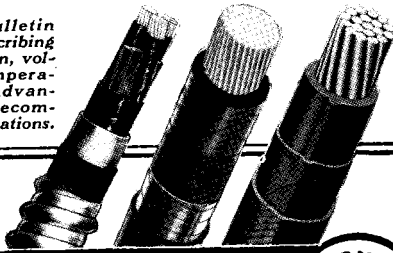
# For Long Life Specify OKONITE



**INSULATED WIRES AND CABLES**

• For long life in monumental and institutional buildings and for locations where electrical failures cannot be tolerated, specify Okonite custom-built cables with time-proved assurance that the insulation will not deteriorate.

Write for Bulletin OK-1011 describing range of design, voltage and temperature limits, advantages, and recommended applications.



3301

**THE OKONITE COMPANY**

PASSAIC, NEW JERSEY



Founded 1878

**MANUFACTURERS OF INSULATED WIRES AND CABLES**



## Swimming Pool Service

WAR production has very rightly set up priorities which make new W&T equipment for swimming pool chlorination unavailable for the duration, although priorities are obtainable for essential chlorine control apparatus where needed for water supplies, sewage plants and war industries. Meantime the Wallace & Tiernan organization is co-operating with architects and engineers in keeping present installations in top working condition.

Ask us about this service; also for W&T swimming pool technical publications.

**WALLACE & TIERNAN CO., INC.**

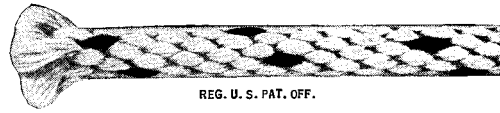
Manufacturers of Chlorine and Ammonia Control Apparatus  
Newark, New Jersey

Represented in Principal Cities



REG. U. S. PAT. OFF.

## Samson Spot Sash Cord



REG. U. S. PAT. OFF.

By specifying and using Samson Spot Cord for hanging windows, with suitable weights and pulleys, you obtain perfect balance by a time-tested method. You also guard against the use of inferior unidentified cord.

Samson Cordage Works, Boston, Mass.

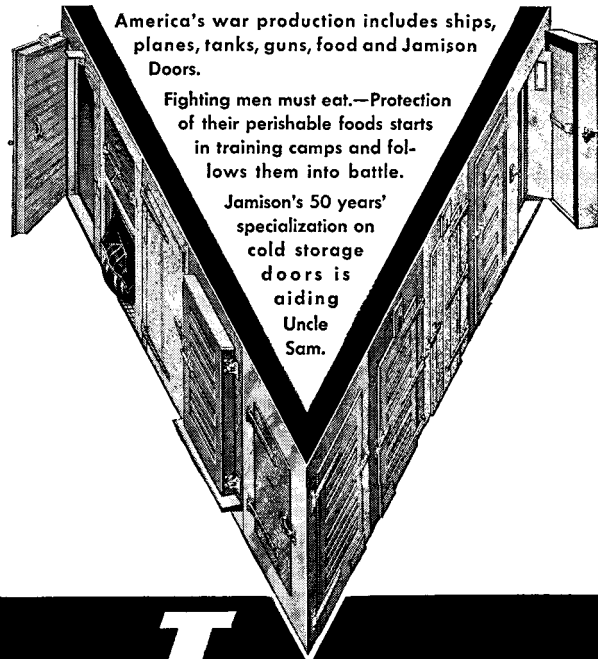


### FREEDOM

Freedom is a government of, for and by the people. As Americans, we inherit it. As a Nation, we have earned it. Let's preserve it.



## ON VICTORY'S PRODUCTION LINE



America's war production includes ships, planes, tanks, guns, food and Jamison Doors.

Fighting men must eat.—Protection of their perishable foods starts in training camps and follows them into battle.

Jamison's 50 years' specialization on cold storage doors is aiding Uncle Sam.

**JAMISON-**  
BUILT COLD STORAGE DOORS

Jamison, Stevenson and Victor Doors  
HAGERSTOWN MARYLAND

See our Catalog in Sweet's Catalog File.



Do you know that of 638 churches reported for post-war construction, 475 are already in the design stage? What about post-war planning in your community? The March AR gave readers valuable help in their cultivation of the religious field.

\* \* \* \*

Where else than to ARCHITECTURAL RECORD can you turn for a realistic appraisal and review of things as they are? Architecturally, that is. From what other source can you gain the same amount of professional information in so compact and understandable a form?

\* \* \* \*

With costs steadily rising, many architects are taking advantage of present rates to renew their subscriptions to the RECORD on the long-term basis of two years for \$5 or three years for \$6.

\* \* \* \*

Paper shortage is forcing some publishers to ration subscriptions, because of the reduced number of copies they can print in conformity with Government regulation. Many new subscribers are being entered on "waiting lists."

We do not know when rationing of subscriptions for ARCHITECTURAL RECORD will have to go into effect. It may come on short notice.

The only way to be sure of getting the RECORD regularly, with all its exclusive and valuable features, is to enter your name as a subscriber NOW.

Architectural Record  
119 West 40th Street, New York

Enter my subscription to ARCHITECTURAL RECORD for the term check below.  
( ) Remittance enclosed. ( ) Bill me.

( ) 3 years \$6.00  
( ) 2 years \$5.00  
( ) 1 year \$3.00

Name .....

Address .....

City ..... State .....

I am ( ) Architect ( ) Engineer

# INDEX TO ADVERTISEMENTS

Catalogs of concerns marked (s) are filed in Sweet's File (1943)

	Page		Page
AIR REDUCTION SALES.....	52	s LIBBEY-OWENS-FORD GLASS COMPANY....	95
Agency: G. M. Basford Co.		Agency: Fuller, Smith & Ross, Inc.	
ALLEN CORPORATION.....	112	LINTON PENCIL COMPANY.....	27
Agency: Whipple & Black		s LOCKWOOD HARDWARE MFG. CO.....	89
s ALLIED CHEMICAL & DYE CORPORATION .....	31	Agency: Wm. B. Remington, Inc.	
Agency: McCann Erickson, Inc.		LONE STAR CEMENT CORPORATION.....	103
s ALUMINUM COMPANY OF AMERICA.....	38	Agency: Cowan & Dangler	
Agency: Fuller & Smith & Ross, Inc.		s LOUISVILLE CEMENT COMPANY, INC.....	37
AMERICAN PENCIL COMPANY.....	127	Agency: Doe-Anderson Adv. Agency	
Agency: Jotemus & Company		s MAPLE FLOORING MANUFACTURERS ASSN. 18	
s ARROW HART & HEGEMAN ELECTRIC CO....	118	Agency: Aubrey Moore & Wallace	
Agency: Norris L. Bull		MARTIN, GLENN L. COMPANY.....	116
s BARBER-COLMAN COMPANY.....	86	s MESKER BROTHERS.....	2-3
Agency: Cummings, Brand & McPherson		s MILLER COMPANY.....	2nd Cover
s BARRETT DIVISION.....	38	Agency: J. M. Hoberson, Inc.	
Agency: McCann Erickson, Inc.		s MINNEAPOLIS-HONEYWELL REGULATOR CO. 40	
s BETHLEHEM STEEL COMPANY.....	131	Agency: Addison Lewis & Associates	
BLODGETT, G. S., CO., INC.....	88	MONSANTO CHEMICAL COMPANY.....	13
Agency: Townsend Adv. Service		Agency: Gardner Advertising Co.	
s BRIGHT LIGHT REFLECTOR COMPANY, INC. 28		s NELSON HERMAN CORPORATION.....	92
Agency: Tracy, Kent & Company, Inc.		Agency: L. W. Ramsey Co.	
s BURT MFG. CO.....	110	s NORTON DOOR CLOSER COMPANY.....	118
Agency: E. D. Wolaver		Agency: Advertising Corporation	
s BYERS, A. M., COMPANY.....	4	OKONITE COMPANY.....	129
Agency: Ketchum, MacLeod & Grove, Inc.		Agency: Doyle, Kitchin & McCormick	
s BYRNE DOORS, INC.....	3rd Cover	s PETROLEUM HEAT & POWER COMPANY....	3-9
Agency: Ralph L. Wolfe & Associates, Inc.		PITMAN, J. C., & SONS, INC.....	12
s CABOT, SAMUEL, INC.....	110	Agency: Cory Stow, Inc.	
Agency: Harold Cabot & Company, Inc.		s PITTSBURGH PLATE GLASS COMPANY.....	119
s CAREY, PHILIP, MFG. COMPANY.....	17	Agency: Batten, Barton, Durstine & Osborn	
Agency: S. C. Baer Company		s PORTLAND CEMENT ASSOCIATION.....	111
s CARNegie-ILLINOIS STEEL CORPORATION.. 117		Agency: Roche Williams & Chumyulam, Inc.	
Agency: Batten, Barton, Durstine & Osborn		s POWERS REGULATOR COMPANY.....	104
s CARRIER CORPORATION.....	25	Agency: Earle Laidlaw & Co.	
Agency: Chas. Dallas Reach Co.		s PROPELLAIR, INC.....	125
s CELOTEX CORPORATION.....	24-123	Agency: Erwin Wasey & Co.	
Agency: MacFarland, Aveyard & Company		s SAMSON CORDAGE WORKS.....	129
s CENTRAL REALTY & INVESTMENT COMPANY 23		Agency: Callaway Associates	
CRANE COMPANY.....	118	SAVE ELECTRIC CORPORATION.....	112
Agency: Buchen Company		Agency: Gere Burns, Adv.	
s CURTIS COMPANIES SERVICE BUREAU.....	115	s SCOTT PAPER CO.....	109
Agency: Buchen Company		Agency: J. Walter Thompson Co.	
s DIXONS TYPHONITE ELDORADO PENCILS.... 1		SLOAN VALVE COMPANY.....	4th Cover
Agency: Federal Advertising Agency		Agency: Reimcke, Ellis, Younggreen & Finn	
DODGE REPORTS.....	36	SMITH, H. B., CO., INC.....	102
s DOUGLAS FIR PLYWOOD ASSOCIATION.....	108	Agency: Bordeaux Company	
Agency: McCann, Erickson, Inc.		s STANLEY WORKS.....	114
s DUNHAM, C. A., CO.....	30	Agency: Horton-Noyes Co.	
Agency: Western Advertising Co.		s STRAN STEEL DIVISION.....	35
s DU PONT, E. I. de NEMOURS & CO.....	105	Agency: Campbell Ewald Company	
Agency: Batten, Barton, Durstine & Osborn		SWEETS CATALOG SERVICE.....	124
FABER, A. W., INC.....	21	SYLVANIA ELECTRIC PRODUCTS, INC.....	20
Agency: Advertising Associates		Agency: Arthur Kuddner, Inc.	
s FEDDERS MFG. CO.....	108	s TAYLOR, HALSEY W., CO.....	114
Agency: Horace A. Lane, Adv.		Agency: William Colton	
s FITZGIBBONS BOILER COMPANY, INC.....	116	TEXAS PRE-FABRICATED HOUSE & TENT CO. 96	
Agency: Peterson & Kempner, Inc.		Agency: Albert Frank Guenther Law Co.	
FRICK CO.....	127	s TILE-TEX COMPANY.....	94
Agency: Waynesboro Adv. Agency		Agency: L. W. Ramsey Co.	
s GENERAL ELECTRIC AIR CONDITIONING.... 97		s TIMBER ENGINEERING COMPANY.....	85
Agency: Newell-Emmett Co.		Agency: Campbell Ewald Company	
s GENERAL ELECTRIC HOME BUREAU.....	34	TODD COMBUSTION DIVISION.....	132
Agency: Maxon, Inc.		Agency: Wendell P. Colton Co.	
s GRASSLELL CHEMICALS DEPARTMENT.....	105	s TRANE COMPANY.....	121
Agency: Batten, Barton, Durstine & Osborn		Agency: Batten, Barton, Durstine & Osborn	
s GREAT LAKES STEEL CORPORATION.....	35	UNDERWOOD ELLIOTT FISHER COMPANY 106	
Agency: Campbell-Ewald Company		UNIT STRUCTURES, INC.....	91
s GRINNELL COMPANY, INC.....	116	Agency: At York	
Agency: Horton Noyes Company		UNITED STATES AIR CONDITIONING CORP. 22	
GRUMMAN AIRCRAFT ENGINEERING CORP. 112		Agency: Alfred Colle Co.	
s HART & HEGEMAN DIVISION.....	118	s UNITED STATES GYPSUM CO.....	93
Agency: Norris L. Bull		Agency: Fulton, Horne, Morrissey Co.	
HLOPHANE COMPANY, INC.....	101	s UNITED STATES STEEL CORPORATION	98-117
Agency: William G. Seidenbaum		Subsidiaries.....	
HOME OWNERS' CATALOGS.....	120	Agency: Batten, Barton, Durstine & Osborn	
HOME CLEVELAND.....	98	s UNIVERSAL ATLAS CEMENT CO.....	98
Agency: Griswold Eshleman Co.		Agency: Batten, Barton, Durstine & Osborn	
s IMPERIAL BRASS MFG. CO.....	6	s UPSON COMPANY.....	87
Agency: Kreicker & Melean, Inc.		Agency: McCann Erickson, Inc.	
s JAMISON COLD STORAGE DOOR CO.....	129	WACO AIRCRAFT COMPANY.....	118
Agency: Charles Blum Adv. Corp.		s WALLACE & TIERNAN COMPANY, INC.....	129
s JOHNS MANVILLE.....	107	Agency: G. M. Basford Company	
Agency: J. Walter Thompson Company		s WEBSTER WARREN & COMPANY.....	19
JOHNSON JOHN A. CONTRACTING CORP. 16		Agency: William Jenkins Advertising	
Agency: Ruttrauff & Ryan, Inc.		s WESTINGHOUSE ELECTRIC & MFG. CO. ... 15	
KEASBEY & MATTISON COMPANY.....	83	Agency: Fuller, Smith & Ross	
Agency: Geare-Marston, Inc.		s WING, L. J., MFG. CO.....	100
KINETIC CHEMICALS, INC.....	14	Agency: Willard G. Myers	
Agency: Batten, Barton, Durstine & Osborn		WIREMOLD COMPANY.....	114
s KITCHEN MAID CORPORATION.....	104	Agency: Edward W. Roberlorn & Co.	
Agency: Carter Jones & Taylor		s WOOD CONVERSION COMPANY.....	99
s KOPPERS COMPANY.....	33	Agency: Buchen Company	
Agency: Ketchum, MacLeod & Grove, Inc.		s WORTHINGTON PUMP & MACHINERY CORP. 11	
s LCN DOOR CLOSERS.....	29	Agency: Moser & Cotins	
Agency: J. R. Hamilton Adv. Agency		s YORK ICE MACHINERY CORP.....	113
		Agency: J. M. Mathes, Inc.	

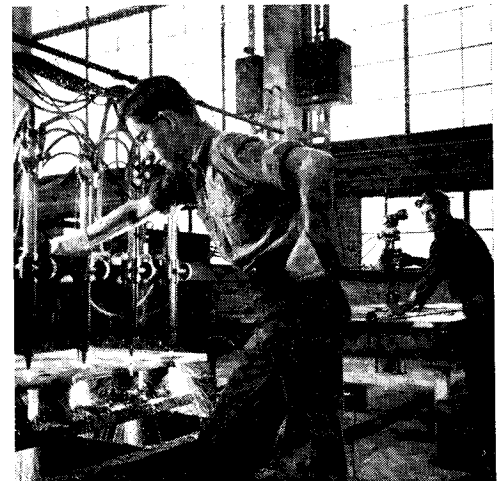
New York—General Manager: H. Judd Payne. Advertising Manager: Tom Tredwell. B. B. Orwig, 119 West 40th Street. Boston—Robert Marshall, 855 Park Square Bldg.; Chicago—C. B. Riemersma, F. H. Bowes, 700 Merchandise Mart; Cleveland—Homer Andrews, 321 Hanna Bldg.; Los Angeles—W. R. McIntyre, 400 East Third St.; Philadelphia—Tom Tredwell, 1321 Arch Street.

# Sunlight floods every part of submarine engine plant

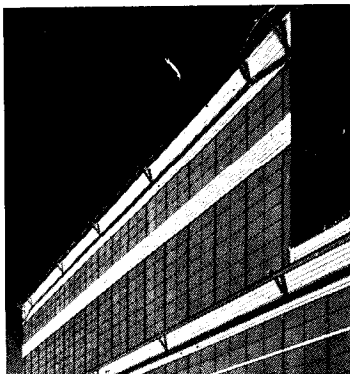


Far out of practical range of enemy bombers, a new Midwestern plant for the construction of submarine diesel engines is now in full operation. Noteworthy in this 300,720-sq. ft. plant is the provision made for daytime workers to work in clear, natural light. Over 60 per cent of the entire outer surface of the building, including the roof, is glass. Abundant sunlight floods the interior, making every department "clear as day," and thus stepping up production efficiency.

Clean, simple interior design heightens the effect of brightness. All piping and wiring are close to columns. All conduits run underground. Crane runways are painted Chinese red; pipes are red and blue. Remainder of interior is painted dead white. The illustration at right shows a multiple flame-cutting operation in the new plant.



Architect and Engineer: W. Fred Dolke  
Structural Engineers: Westcott Engineering Co.  
Mechanical and Electrical Engineer: Irving S. Brooke  
Contractors: Cunningham Bros.



Rails for outside window-washing equipment are provided on every side of the plant. Another feature is a special test-block for the submarine engines, consisting of a platform of steel and concrete, 4 ft. below the floor. The steel rails on top of this platform had to be set dead level in the concrete.

Bethlehem Steel Company supplied the structural shapes, and bolts, nuts and rivets used in constructing this plant. The 4330 tons of structural steel were fabricated and erected by Bethlehem's Fabricated Steel Construction Division.

## BETHLEHEM STEEL COMPANY





# BUZZARDS GET BRUSHED OFF LIKE FLIES

Far above the reach of man's eyes or ears, a flock of deadly eagles hovers over Naziland, laying eggs with uncanny accuracy. They are American-flown, American built long range bombers . . . and even the best of the German fighter planes that rise up to give battle are no match for these tough warbirds. They brush the buzzards off like so many flies . . . send them flaming back to the hell they came from.

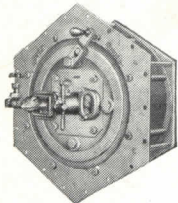
Every day new swarms of these unsurpassed four-motor bombers come off our aircraft production line . . . a production line as long and as wide as the United States itself, yet as accurate and as integrated as the workings of a fine watch. American skill, American sweat, American methods have made it so.

And what is true of our heavy bomber output is equally true of tanks, guns, ships, ammunition . . . our entire war production. American industry has its sleeves rolled up . . . is swinging from the heels . . . with all its tremendous might!

## TODD SHIPYARDS CORPORATION TODD COMBUSTION DIVISION

601 West 26th Street, New York City

NEW YORK      MOBILE      NEW ORLEANS      GALVESTON  
SEATTLE      BUENOS AIRES      LONDON



### IN PLANTS OF ALL TYPES TODD BURNERS ARE WORKING FOR VICTORY

Wherever trouble-free, dependable combustion of liquid and gaseous fuels is a necessity . . . in war plants, in countless merchant and fighting ships . . . Todd Burners are delivering an unsurpassed performance in the production of heat and power.



TODD BURNERS ★ ★ ON THE FIRING LINE OF AMERICA'S WAR PRODUCTION FRONT