94.2

### RUARY 1951

ppy

# ARCHITECTURAL FORUM THE MAGAZINE OF BUILDING

MINNEAPOLIS COLLEGE OF ART & DESIGN LIBRARY

Can we have better houses with 30 per cent less labor-material cost? —A Round Table Report (p. 115)

> Why the new war plants must be different (p. 83)

The new Levitt house (p. 140)

A great architect's hospital (p. 92) A great builder's hospital (p. 100)

Florida gets a new architecture (p. 131)

Are apartment buildings economically obsolete? (p. 107)

Suntile walls at work in the Hamm Brewery, St. Paul, Minn. Architect: C. H. Johnston. Contractor: Wm. Baumeister Const. Co. Authorized Suntile Dealer: Drake Marble Co., all of St. Paul.

# It's easy-to-clean, hard-wearing, real clay Suntil

C AT

You won't actually see the sign-but where you see Suntile in an industrial interior, you'll know the walls (and floors) are hard at work.

Day-in, day-out, these tough, trouble-resistant surfaces keep busy cutting down plant overhead. Routine maintenance costs next to nothing-and long run expenses, refinishing, redecorating and repairs, cost even less! An occasional plain water washing is all the attention Suntile ever needs. This means real savings for your client.

Product processing gets valuable help from Suntile, too. That's because of Suntile's impervious surface. It washes clean, really clean. Dirt, grease, moisture, many acids or bacteria cannot penetrate

Suntile's hard, fired-in finish. They stay on the surface where they can be thoroughly washed away.

And what a beautiful job Suntile does brightening up a working place! The colors stay lustrous and unfaded. Suntile's Color-Balance gives you practically unlimited color combinations to choose from, makes it easy to provide a cheerful, moralebuilding setting for any kind of production.

Put this versatile, real clay tile to work in the next interior you plan. Your Authorized Suntile Dealer can give you valuable help in this. He knows tile and he knows how to give you the finest installation. Every job carries his guarantee. See your classified telephone directory for his name, or write us.

#### NEW COLOR FOLDER AVAILABLE

Created under the direction of Faber Birren, leading color authority. 22 at-tractive wall colors, 27 beautiful shades of unglazed ceramic mosaic tile, 10 unique Suntile Camargo colors. All selected to give you a wide range of effective color treatments for walls and floors. Write today for your FREE copy, or see our Sweet's Catalog. Dept. MB-2, The Cambridge Tile Mfg. Co., Cincinnati 15, Ohio.

WAREHOUSES The Cambridge Tile Mfg. Co. 470 Alabama Street 941 N. Citrus Avenue San Francisco 10, California

941 N. Citrus Avenue Los Angeles 38, California

**Ideal for: schools** hospitals • stores public buildings industrial plants residences



BETTER INSTALLATIO



Suntile

# What this unconditional quarantee means to you!

UNCONDITIONALLY GUARANTEED A G A I N S T D E F E C T S I N MATERIALS AND WORKMANSHIP

WIKSPL

Every Kwikset box carries the statement "Unconditionally Guaranteed Against Defects in Materials and Workmanship." What does this unconditional guarantee mean to you?

#### FIRST, IT GUARANTEES QUALITY MATERIALS

No manufacturer can afford to make an unconditional guarantee unless highest quality materials are used in his products. Kwikset adheres strictly to this policy of using only the highest quality materials scientifically selected for the particular service to which they are put.

#### SECOND, IT GUARANTEES FINE WORKMANSHIP

The finest of materials are useless unless they are processed into the final product with care and precision. Kwikset's simple design and advanced facilities make possible cost-saving precision manufacture. Tolerances are held to .001-inch... equivalent to % the thickness of a human hair! Kwikset's gleaming finishes are permanently protected by a specially compounded plastic.

#### THIRD, IT GUARANTEES CUSTOMER SATISFACTION

Every one of the millions of Kwikset locks now in use is its own best testimonial. When you specify Kwikset, you are backed by Kwikset's unconditional guarantee. Kwikset challenges comparison on beauty, quality, ease of installation and low price...no other lock combines all of these desirable qualities so well!

Kwikset Sales and Service Company

DEPT. A-2 . ANAHEIM, CALIFORNIA

BRUCE Blendwood BLOCK FLOORS

The beauty of parquet, the durability

### of solid hardwood ... at minimum cost

### New, lower priced block is for installation over concrete

This new, economical Bruce Block has been produced specifically for installation over concrete in areas calling for a handsome, longwearing floor at minimum cost. Blendwood Blocks are most suitable for apartment buildings, housing developments, offices, stores and schools — as well as for individually built homes with concrete slab construction.

They offer all the well-known qualities of regular Bruce Blocks, which have been used in many of the nation's leading building projects. Blendwood Blocks have natural beauty, modern style, matchless durability... and provide a floor that is quiet, resilient and comfortable underfoot.

#### Grade and sizes

This new block is made from selected mixed heavy hardwoods, prefinished for beauty and durability. Manufactured in one grade only: No. 1 Common & Better. Block sizes: 9x9 in., 7½x7½ in., 6¾x6¾ in. Thickness: 25/32 in. Prefinished—no sanding or finishing!



Install in mastic over concrete Installation of Blendwood Blocks is simple. They are laid in mastic over concrete. No wood subfloor, screeds or cinder fill are required. Millions of feet of Bruce Blocks have been installed by this method.

Write for complete information and free sample of Bruce Blendwood Block





PRODUCT OF E. L. BRUCE CO., MEMPHIS 1, TENN. . WORLD'S LARGEST MAKER OF HARDWOOD FLOORS

### ARCHITECTURAL FORUM THE MAGAZINE OF BUILDING

FEBRUARY 1951

<form>Import I for the sourceSourceImport I for</form>		<b>NEWS</b> Building in the war economy House Design Competition winners NAHB Convention report.	9
<form>THY E Interpretation </form>		BEHIND THE BLUEPRINTS	36
<text></text>	TIME Incorporated	LETTERS	39
<ul> <li>MOUSTRIAL BUILDING</li> <li>A round-up of the latest developments in the design and construction of industrial plants-developments which make World War II plants baready obsolection.</li> <li>A round-up of the latest developments in the design and construction of industrial plants-developments which make World War II plants baready obsolection.</li> <li>A round-up of the latest developments in the design and construction of industrial plants-developments which make World War II plants baready obsolection.</li> <li>A round-up of the latest developments in the design and construction of industrial plants-developments which make World War II plants baready obsolection.</li> <li>A round-up of the latest developments in the design and construction of industrial plants-developments which make World War II plants baready obsolection.</li> <li>A round-up of the latest developments in the design and construction of the developments which make World War II plants baready obsolection.</li> <li>A round-up of the latest developments in the design and construction of the developments which make World War II plants baready obsolection.</li> <li>A round-up of the latest developments in the design and construction of the developments which make World War II plants baready obsolection.</li> <li>A round-up of the latest developments in the design and construction of the developments.</li> <li>A round-up of the building service and maintenance roles and a close-up of the building service and maintenance roles and a close-up of the development of the</li></ul>	Henry R. Luce		
<text></text>	Roy E. Larsen John Shaw Billings	INDUSTRIAL BUILDING A round-up of the latest developments in the design and con- struction of industrial plants—developments which make World War II plants already obsolescent.	83
ARCHITECT INSTITUT       92         ARCHITECT INSTITUT       92         ARCHITECT IN HOSTITUT       93         ARCHITECT IN HOSTITUT       94         ARCHITECT IN HORT IN	etural Forum INE OF BUILDING		
City Fuer protociesControl for the service of the servic	AND PUBLISHER	ARCHITECT'S HOSPITAL Eric Mendelsohn's beautiful 11-story Maimonides Hospital in	92
<text></text>	UTIVE EDITOR sh C. Hazen, Jr.	downtown San Francisco provides luxurious amenities for its chronic diseases patients.	
<text></text>	ECTURAL EDITOR	BUILDER'S HOSPITAL	100
<text></text>	T DIRECTOR Paul Grotz	Andrew Eken helps build a host of economies into the Memorial Hospital at Morristown, N. J., achieves a construction cost low of \$9,136 per bed. Architect: John H. & Wilson C. Ely.	
ARE APARTMENTS OSOLITE:     [07]       DIRECTOR: Arbur 5. Gata     The high cost of building service and minitenance raises an economic question whose anawer is explored by James 6. Down.     [08]       Cost Mark 100 codes.     ARE APARTMENTS OSOLITE:     [08]       This DIRECTOR: Where 5.     ARE APARTMENTS OSOLITE:     [08]       Wire 5.     ARE APARTMENTS OSOLITE:     [08]       This DIRECTOR: Where 5.     ARE APARTMENTS OSOLITE:     [08]       Wire 5.     ARE APARTMENTS OSOLITE:     [08]       ARE APARTMENTS OSOLITE:     [08]       Mark 100 codes.     [08]       ARE APARTMENTS OSOLITE:     [08]       Mark 100 codes.     [08]       ARE APARTMENTS OSOLITE:     [08]       ARE APARTMENTS OSOLITE:     [08]       Mark 100 codes.     [08]       Area Apartment definition conception of the Statistical regulation regulat	or Bittermann (Research), Peter Wilson Dizard, Sighle Kennedy, ry J. Middleton, Carl Norcross, on Rubinstein, Richard Saunders ne Thatcher. nd Klein Berlin, Linn Ericson, Jane Lightbown, Alice O'Connor, oethiel Woodard Smith (South	<b>CONTEMPORARY SCHOOL ARCHITECTURE</b> After a three year campaign in New Orleans, the architects come out on top and the city gets five new schools a study of the tactics and a close-up of one of the buildings.	104
DUBLOTOR: Arthur 5. Coldman, s.       The high cost of building service and maintenance raises an economic question whose answer is explored by James C. Downs.         St. K. Vaker, Y. C. Kasten, T.       The high cost of building service and maintenance raises an economic question whose answer is explored by James C. Downs.         St. K. Vaker, Y. C. Kasten, T.       The high cost of building service and maintenance raises an economic question whose answer is explored by James C. Downs.         St. K. Vaker, Y. C. Kasten, T.       The high cost of building service and maintenance raises an economic question whose answer is explored by James C. Downs.         St. K. Vaker, Y. C. Kasten, T.       The high cost of building service and maintenance raises an economic question whose answer is explored by James C. Downs.         St. K. Vaker, Y. C. Kasten, T.       The high cost of building service and maintenance raises an economic question whose answer is explored by James C. Downs.         St. K. Vaker, Y. C. Kasten, T.       The high cost of building service and maintenance raises an economic question whose answer is explored by James C. Downs.         St. K. Vaker, Y. K. Kasten, T.       The high cost of building service and pointenance of a four-car revolving elevator. Architects: Petrof & Clarkson.       110         St. K. Vaker, K. Kasten, T.       The para working their way the para of the moving stair's increasing appularity.       110         St. K. Vaker, S. Stat, S. Sta	Courte Courte	ARE APARTMENTS OBSOLETE?	107
Arrow Law Fuel Weight Construction     ROTOGARGE     [08]       A new invention by Rotogarage Parking Units Co. parks 600     A new invention by Rotogarage Parking Units Co. parks 600       Witz Park, Statt     A new invention by Rotogarage Parking Units Co. parks 600       Witz Park, Statt     Inter Achitects: Petroff & Clarkson.       Witz Park, Statt     Inter Achitects: Petroff & Clarkson.       Witz Park, Witz Park, Statt     Inter Achitects: Petroff & Clarkson.       Witz Park, Witz Park, Statt     Inter Achitects: Petroff & Clarkson.       Witz Park, Witz Park, Statt     Inter Achitects: Petroff & Clarkson.       Witz Park, Witz Park, Statt     Inter Achitects: Petroff & Clarkson.       Witz Park, Witz Park, Statt     Inter Achitects: Petroff & Clarkson.       Witz Park, Witz Park, Statt     Inter Achitects: Petroff & Clarkson.       Witz Park, Witz Park, Statt     Inter Achitects: Petroff & Clarkson.       Witz Park, Witz Park, Statt     Inter Achitects: Petroff & Clarkson.       Mater Jaky, 1964 at head     As presented in a new book by statt bit. Internet achitects: Petroff & Clarkson.       Y Witz Park, Statt     Anew King theore Heikking Construction Petroff Internet achitects: Petroff Achitect Petroff Internet achies at on the Network achies at a statt park facing the challenge of whice and parks at a statt park facing the challenge of whice and parks at a statt park facing the challenge of whice at a statt park facing the challenge of whice at a statt park facing the challenge of whice at a statt park facing the challenge of whice at a s	DIRECTOR: Arthur S. Goldman. * L. Colean, Ruth Goodhue. : Robert W. Chasteney, Jr. ER. Walter E. Courseiners	The high cost of building service and maintenance raises an economic question whose answer is explored by James C. Downs.	
TATING DIRECTOR       A new invention by Rotegarage Parking Units Co. parks 400 cars on a 100 x 125 ft. 10 by means of a four-car revolving elevator. Architects: Petroff & Clarkson.       110         HE MAZZINE OF BUILDING into the Life Bailing or or a parking on the correspondence to poly the state of the origonate parking on the origonate parking on the poly means of a four-car revolving elevator. Architects: Petroff & Clarkson.       110         HE MAZZINE OF BUILDING into the state of the origonate parking on the poly into the building to relieve the elevators' peak loads—An analysis of the moving stair's increasing popularity.       110         Foodefiele Physics on an origonate parking on the building to relieve the elevators' peak loads—An analysis of the moving stair's increasing popularity.       112         Construction birthe correspondence to poly in distribution on the building to relieve the elevators' peak loads—An analysis of the moving stair's increasing popularity.       112         School DESIGN IN EUROPE       112         An eve main and the recentres (trachers and publicks)       An eve moving the industry of the moving stair's increasing popularity.         All copies main of the covertion birts.       An eve moving the covertion birts.       115         All copies main of the covertion birts.       A new moving the covertion birts.       131         An eve main and four copies for the covertion birts.       140       140         School L DESIGN IN EUROPE       140         All copies main of the covere and publicks.       140 </td <td>GER: Lawrence W. Mester.</td> <td>ROTOGARAGE</td> <td>108</td>	GER: Lawrence W. Mester.	ROTOGARAGE	108
It MACAZINE OF BUILDING if the Activity of the Solid Ministry is the Solid Ministry is marker in a direction is organised in advances is problement accivity is marker in advances in publicles is constrained and industry is marker in advances in publicles is constrained and industry is marker in advances in the Solid Ministry is marker in advances in the Solid Ministry is marker in the Solid Ministry	TSING DIRECTOR forge P. Shutt	cars on a 100 x 125 ft, lot by means of a four-car revolving ele- vator. Architects: Petroff & Clarkson.	
Title E.e., Time & Life Building, work 20, Xr, Address all sub- a o S40 North Michigan Avenue, se all editorial correspondes to a parable in a dramer. To indication of marker in a dramer. To indication of marker indication       Indication of the indication of the indication of the indication indication       Indication of the indication of the indication of the indication indication       Indication of the indication of the indication       Indication of the indication of the indication       Indication of the indication indication       Indication of the indication       Indication of the indication       Indication         A spresented in a new book by school Architect Alfred Roth, Europe's recent schools hold many a lesson for U. S. designers- a review.       Indication of the indication's to the book by school Architect Alfred Roth, Europe's recent schools hold many a lesson for U. S. designers- a review.       Indication of the indication's to the schools hold many a lesson for U. S. designers- a review.       Indication       Indication          A point Cur WASTE IN HOUSEBUILDING       Indication       Indication       Indication          Provide Cavenation       A new Architecture For Flocation       Indication       Indication	HE MAGAZINE OF BUILDING is	ESCALATORS IN THE OFFICE BUILDING	110
cir employes) engaged in Building       SCHOOL DESIGN IN EUROPE       [12]         maneerial and industrial organiza- gram and their executives: teachers       As presented in a new book by school Architect Alfred Roth, Europe's recent schools hold many a lesson for U. S. designers- a review.       [12]         a spinserial faile industrial organiza- gram and their executives: teachers       [13]         As presented lin a new book by school Architect Alfred Roth, Europe's recent schools hold many a lesson for U. S. designers- a review.       [15]         As posterial schools hold many a lesson for U. S. designers- a review.       [16]         All copies mailed fat. Copy- (Opyright Convention. All rights Ameter July 1, 1944 at the Post Y. under the act of March S.       [16]         Tirke, Lirr and Forrexe. Chair- President, Roy E. Larcen; Exec- Tresauer. Charles L. Stillman; for Publishing, Howard Black; Grover, Andrew Heiskell, C. D.       [17]         A       Forture of Tisk, Roy E. Larcen; Exec- Tresauer. Charles L. Stillman; for Publishing, Howard Black; Grover, Andrew Heiskell, C. D.       [18]         31       A forted Levitt's new \$13,000 house with its three bedrooms, two baths and two-car garage spotlights the trend in medium-price merchant building. And, although shelved for the duration, the new community planned by the Nation's No. 1 home builders sets a noteworthy pattern for housing planners.       [19]         32       IPODUCT NEWS       [19]         33       IEVITYS LINELL       [19]	TME Inc., Time & Life Building, w York 20, N. Y. Address all sub- e to 540 North Michigan Avenue, ss all editorial correspondence to 9 Rockefeller Plaza, New York 20, ion payable in advance. To indi-	They are working their way higher up into the building to relieve the elevators' peak loads—An analysis of the moving stair's in- creasing popularity.	110
and more provided and hods trial organizations are and the free contrivers; profession for the scalable sca	eir employes) engaged in Building finance, realty: material distribu-	SCHOOL DESIGN IN EUROPE	112
ry, advertisers and publichers;       Canada, 85.30; Pan American       [15]         new, 59.00; Elewhere, 812.00. To       The Building Endwatry; USA, 85.00; Pan American       [15]         All copies mailed fat. Copy- (All copies)       A Round Table of the industry's top technical men estimates possible savings up to 40 per cent, details how they can be achieved.       [31]         A NEW ARCHITECTURE FOR FLORIDA       [31]         A NEW ARCHITECTURE FOR FLORIDA       [40]         A NEW ARCHITECTURE FOR FLORIDA       [40]         A result exclusion Director, F. (Corent and basis); Correct Andrew Heiskell, C. D. (All copies ta noteworthy pattern for housing planners).       [40]         Alfred Levitt's new \$13,000 house with its three bedrooms, two bashas and two-car garage spotlights the trend in medium-price merchant building. And, although shelved for the duration, the new community planned by the Nation's No. 1 home builders sets a noteworthy pattern for housing planners.         2       IPODUCT NEWS       [98]         TEC	nfacture; government agencies and ommercial and industrial organiza- gram and their executives; teachers ecture and Engineering; profes- and trade associations connected	As presented in a new book by school Architect Alfred Roth, Europe's recent schools hold many a lesson for U.S. designers— a review.	
All copies mailed fat. Copy- if Copyright Convention. All rights American Copyright Convention. Matter July 17, 1944 at the Post Y, under the act of March 3. y TIME Inc. TIME, LIFE and FORTEXER. Chair- President, Roy E. Larsen; Execu- Treasurer, Charles L. Stillman; for Publishing, Howard Black; Grover, Andrew Heiskell, C. D. 1. Frentice; Vice President and abaugh; Comptroller and Assis- Carlson; Circulation Director, F. TIME March or TIME, Richard de 2 2 4 2 4 4 4 4 4 4 4 4 4 4 4 4 4	stry; advertisers and publishers; Canada \$5.50; Pro Amains;	HOW TO CUT WASTE IN HOUSEBUILDING	115
A MEW ARCHITECTURE FOR FLORIDA S Matter July 17, 1944 at the Post Y, under the aet of March 3, Y TIME Inc. A NEW ARCHITECTURE FOR FLORIDA A portfolio of house designs shows how contemporary architects' are at last facing the challenge of wind, sun, glare, rain, rot and bugs. Architects: Marion Manley, Alfred Parker and Igor Polevitzky. LEVITTS' LANDIA LEVITTS' LANDIA LEVITTS' LANDIA LEVITTS' LANDIA Alfred Levitt's new \$13,000 house with its three bedrooms, two baths and two-car garage spotlights the trend in medium-price merchant building. And, although shelved for the duration, the new community planned by the Nation's No. 1 home builders sets a noteworthy pattern for housing planners. REVIEWS I70 REVIEWS I70 PRODUCT NEWS I98 TECHNICAL LITERATURE	<ul> <li>Iness \$9.00; elsewhere \$12.00. To ith the Building Industry; USA, \$11.00; elsewhere, \$17.50. Single All copies mailed flat. Copy- 1 Copyright Convention. All rights</li> </ul>	A Round Table of the industry's top technical men estimates possible savings up to 40 per cent, details how they can be achieved.	113
Y. under the act of March 3,       A portfolio of house designs shows how contemporary architects' are at last facing the challenge of wind, sun, glare, rain, rot and bugs. Architects: Marion Manley, Alfred Parker and Igor Polevitzky.         Treasurer. Charles L. Stillman;       Itelevitt's new \$13,000 house with its three bedrooms, two baths and two-car garage spotlights the trend in medium-price merchant building. And, although shelved for the duration, the mew community planned by the Nation's No. 1 home builders sets a noteworthy pattern for housing planners.       140         2       Itelevitties new \$13,000 house with its three bedrooms, two baths and two-car garage spotlights the trend in medium-price merchant building. And, although shelved for the duration, the mew community planned by the Nation's No. 1 home builders sets a noteworthy pattern for housing planners.       170         2       Itelevitties       Itelevitties       198         2       Itelevitties       198         3       Itelevitties       240	American Copyright Convention. Matter July 17, 1944 at the Post	A NEW ARCHITECTURE FOR FLORIDA	131
I Treasurer, Charles L. Stillman;       Iteristic for Publishing, Howard Black;       Iteristic for President and         1. Prentice; Vice President and mbaugh; Comptroller and Assis-Carlson; Circulation Director, F.       Alfred Levitt's new \$13,000 house with its three bedrooms, two baths and two-car garage spotlights the trend in medium-price merchant building. And, although shelved for the duration, the new community planned by the Nation's No. 1 home builders sets a noteworthy pattern for housing planners.       Ifo         2       REVIEWS       Ifo         PRODUCT NEWS       I98         TECHNICAL LITERATURE       240	Y., under the act of March 3, y TIME Inc. TIME, LIFE and FORTUNE. Chair- President, Roy E. Larsen; Execu-	A portfolio of house designs shows how contemporary architects' are at last facing the challenge of wind, sun, glare, rain, rot and bugs. Architects: Marion Manley, Alfred Parker and Igor Polevitzky,	
Grover. Andrew Heiskell, C. D.       I 40         J. Prentice; Vice President and mbaugh: Comptroller and Assis-Carlson; Circulation Director, F.       Alfred Levitt's new \$13,000 house with its three bedrooms, two baths and two-car garage spotlights the trend in medium-price merchant building. And, although shelved for the duration, the new community planned by the Nation's No. 1 home builders sets a noteworthy pattern for housing planners.         2       REVIEWS       170         PRODUCT NEWS       198         TECHNICAL LITERATURE       240	for Publishing, Howard Black;		
REVIEWS 170 PRODUCT NEWS 198 TECHNICAL LITERATURE 240	Grover, Andrew Heiskell, C. D. . I. Prentice; Vice President and mbaugh; Comptroller and Assis- Carlson; Circulation Director, F. THE MARCH OF TIME, Richard de	<b>LEVITTS' LANDIA</b> Alfred Levitt's new \$13,000 house with its three bedrooms, two baths and two-car garage spotlights the trend in medium-price merchant building. And, although shelved for the duration, the new community planned by the Nation's No. 1 home builders sets a noteworthy pattern for housing planners.	140
PRODUCT NEWS 198 TECHNICAL LITERATURE 240	HDP	REVIEW5	170
TECHNICAL LITERATURE 240		PRODUCT NEWS	198
		TECHNICAL LITERATURE	240

Published by

EDITOR-IN-CHIEF ... PRESIDENT ..... EDITORIAL DIRECTOR

Archit THE MAGAZ

EDITO

EXE Jos

ARCHI

A

ASSOCIATES: Elean Blake, Louise Cooper, Walter McQuade, Hai Boyce P. Price, Ann (Washington), Madelai ASSISTANTS: Rosali Marilyn Grayboff, Mary Nina Rabinowitz, Chl America).

MARKET RESEARCH CONSULTANTS: Mil GENERAL MANAGE CIRCULTION MANA PRODUCTION MANA

ADVER

Architectural Forum, T published monthly by ' 9 Rockefeller Plaza, Ne scription correspondence Chicago 11, III. Addrr Time & Life Building. N. Y. Yearly subscript viduals or firms (and th --design, construction, tion, production or man supervisory employes; c tions with a building pro-tions with a building pro-tions with a building indu USA. Possessions and Union and the Philipp those not connected w Union and the Philipp those not connected w Possessions and Canada copies, if available, \$ right under Internation, reserved under the Pa Entered as Second Cla Office at New York, N 1879. Copyright 1951

TIME INC. also publish man, Maurice T. Moore tive Vice President an Executive Vice Presidents. Allen Jackson, J. A. Linen, Secretary, D. W. Brit tant Secretary, A. W. Dew, DeW. Pratt; Producer, Rochemont.

VOLUME 94, NUMBER

Cover: Maimonides Hospital, photo by Thomas D. Church





In these days of critical shortages—when men and money and material must be used to the very fullest, there is one method of building that truly meets the need on every count—it's Ceco's Meyer steelform construction. For here is a building way that saves as it serves:

Saves men because less time and labor are required in providing open wood centering and form work.

<u>Saves</u> money because less concrete is used ... the dead load is kept at a minimum ... less lumber is needed ... and since removable steel-forms can be re-used, a nominal rental fee is charged.



In construction products CECO ENGINEERING



HOSPITALS—Ceco Concrete Floor Joist Construction is ideally suited to hospitals since it provides fire-safe, sound-proof buildings at economical cost. Widely used in Veterans Hospitals.



**COMMERCIAL BUILDINGS**—Ceco's Meyer steelform method speeds construction: the simple skeleton centering goes up fast; the forms are quickly placed and removed by unskilled labor.



### **Concrete Joist Construction**

<u>Saves</u> material because only a minimum of critically short steel is needed—and even here less concrete is necessary than required by other concrete floor constructions.

Ceco originated the removable steelform method of concrete joist construction. The company is first in the field—providing more services than all competitors combined. So call on Ceco... the leader over all.

#### CECO STEEL PRODUCTS CORPORATION

General Offices: 5601 West 26th Street, Chicago 50, Illinois Offices, warehouses and fabricating plants in principal cities

makes the big difference



**SCHOOLS**—Safe, low-cost construction is assured: concrete is kept at the minimum required for the live load. Saving in dead load reduces costs throughout the structure.



**CONCRETE JOISTS** eliminate much of the concrete below the neutral axis, saving money, saving material. Suited to buildings with long spans: stores, offices, apartments, hotels.

### modern radiant heating with NATIONAL STEEL PIPE assures draft-free, year-round comfort in St. John's Church

**ST. JOHN'S CHURCH** in Delphos, Ohio, is a good example of a hard-to-heat building made comfortable with floor radiant heating.

NOW

The auditorium in this beautiful old stone church is  $135' \ge 65'$ . The vaulted ceiling is over 65' high. Here was a natural for radiant heating.

To keep installation costs down, the insulating paper was laid right over the old wood floor. Then came <sup>3</sup>/<sub>4</sub>" steel bars. Finally, 10,110 feet of 1<sup>1</sup>/<sub>4</sub>" National Steel Pipe was tied to the bars and over this a 2" layer of concrete was poured.

Now, at last, the floors are warm. The entire auditorium is comfortable. And the room is free from obstructions, hot spots and cold spots.

Why did they use National Steel Pipe? For one thing, it's economical in cost . . . it is readily welded, it is strong, yet sufficiently ductile to permit easy bending. But best of all is its record for long life and trouble-free service. It has been standard for conventional hot water heating for over 60 years.

OUR FREE 48-PAGE BOOK will help you design better radiant heating systems. It includes data for estimating heat losses, designing coil systems for floor and ceiling installations, typical coil patterns, testing procedures, fitting resistances, insulating techniques, pipe data and heat transmission tables. Send the coupon now.

NATIONAL TUBE COMPANY Frick Building Pittsburgh 19, Pa. Please send me your free Bulletin No. 19, "Radiant Heating." Name..... Company..... Address..... City & State.....

VIDENTIONAL TUBE COMPANY, PITTSBURGH, PA. COLUMBIA STEEL COMPANY, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS - UNITED STATES STEEL EXPORT COMPANY, NEW YORK NATIONAL STEEL COMPANY, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS - UNITED STATES STEEL EXPORT COMPANY, NEW YORK UNITED STATES STEEL EXPORT COMPANY, NEW YORK



# Now, 4 choices for the same floor space... with KELVINATOR "Space-Savers"



Model A5-7.6 cu. ft., Cold-Clear-To-The-Floor! 25 lbs. frozen foods! 2 ice trays! Big refrigerated Crisper across bottom! Width, 24"; Height, 53½".



Model AH - 7.1 cu. ft., Cold-Clear-To-The-Floor! Across-the-Top Freezer Chest for 26 lbs. frozen foods . . . 3 ice trays! Width, 24", Height, 53½".



Model AC-6.1 cu. ft.-in a cabinet only 24" wide, 55" high! 15 lbs. frozen foods! 2 ice trays! Shelf area of 11.9 sq. ft.! Kelvinator quality in every last detail!



Model AB-4.3 cu. ft.-a gem of compactness and dependability! 23-lb. High Speed Freezer! 2 ice trays! Cabinet 24" wide; 34<sup>1</sup>/<sub>2</sub>" high! Can be combined with 21" range and 39" sink and drain board to make a 60" complete electric kitchen package!

#### ALL ONLY 24" WIDE...YET YOU GET FOOD SPACE UP TO

**7.6 CU. FT.!** Almost twice the food space you used to get in the original Kelvinator "Space-Saver" 4 cu. ft. model ... which also took up a floor space only 24" wide!

Now you can take your choice-of four new Kelvinator "Space-Savers"! All four models identical in width . . . 24" . . . so that you can choose from four different food capacities . . . in refrigerators which all fit the same floor plan! And just imagine! New improvements that stem from Kelvinator's specializing in compactness, let you provide as much as 7.6 cu. ft. of food space in that same 24" floor space! Choose the conventionally-designed Kelvinators-or the Cold-Clear-To-The-Floor Kelvinators. In every model you get advanced styling . . . Kelvinator conveniences . . . maximum economy of operation assured by the dependable Polarsphere sealed cold-maker. Get the finest possible results in your next smallkitchen planning-choose from these four great new Kelvinator "Space-Savers"!

For full information, write to Dept. AF, Kelvinator, Division of Nash-Kelvinator Corp., Detroit 32, Michigan.



ELECTRIC AIR DRIER



Kelvinator featured exclusively, nation-wide, in the Good American Home Program.

DIVISION NASH-KELVINATOR CORPORATION, DETROIT 32, MICH.



### THE INDUSTRY'S ECONOMIC FUTURE, presaged in the President's Economic Report, includes more Government building, less luxury housing, credit controls for existing housing, tighter rent control

Significant passages in the President's Economic Report indicate that Government-built housing will be given a much larger part than housing officials have so far been willing to suggest, that the responsibility for building and managing defense housing will be given to local authorities, that housing production will be quite strictly programmed; that this may involve coordination at a higher level than HHFA; that this programming is likely to involve severe limitations on so-called "luxury" houses; that control over credit on existing houses will be sought; that a controlled-materials plan will be introduced as rapidly as preparations can be made; and that rent control will be reinstituted.

Following are pertinent excerpts from the President's report which point to such a future:

"In areas of defense expansion . . . the housing supply will need to be enlarged considerably. The emphasis should be upon rental housing serving the needs of middle and lower income families, along with necessary community facilities. While private industry should be encouraged to do as large a part of this job as it can, the experience in World War II makes it clear that publicly financed housing must serve a larger portion of this type of need than in ordinary times."

"Previous experience also demonstrates that, wherever possible, such housing should be built by local agencies, with Federal aid when needed, rather than by direct Federal construction."

"The scheduling of housing for defense workers needs to be integrated more closely with other aspects of the defense program. In addition, the general determination of what volume of total housing can be permitted in the near future, throughout the country, will be made most wisely in the framework of the complete resource programming operation which the Council has identified as a first need of the whole defense effort. Housing is so essential to our general strength, that decisions affecting housing should rest upon the general strategy of the relative emphasis being placed upon immediate military needs and longrange economic strength."

"In the case of housing, the adaptation of the program to a defense economy will require modification of the over-all approach

taken in Regulation X. Terms applicable to some housing construction may have to be further tightened. In general, a more selective approach will be required. Measures will be needed to adjust the character of this housing - as to prices, rents, and size - to the needs of defense workers. Still other measures may be needed with respect to the general housing program, so that throughout the country the limited supply of new houses may be made to serve first needs first. To encourage a larger volume of rental housing, legislation should provide the FHA with a special type of insurance authority, differing in terms from the current legislation and concentrating mainly upon defense needs. A substantial volume of public housing will also be needed, with reshaping to meet defense requirements."

"One serious defect of the Defense Production Act of 1950 is that it does not contain authority to prescribe credit terms on the sales of existing homes, except on mortgages insured or guaranteed by the Federal Government. Exemption of these homes from credit regulation may result in a large rise in the price of existing homes, thus adding credit-created capital gains to the spending stream. A rise in the price of existing homes would intensify inflation also, by affecting prices on new homes."

"[Holding the line on wages] requires much tighter rent control, 'reinforced by adequate legislation for that purpose, because rent is so large an item in the cost of living of middle income and low income families."

#### LAST MONTH'S WASHINGTON DIARY

- 1/3 Defense Minerals Administration prohibits hoarding of 50 critical minerals, including iron ore, copper, aluminum, zinc, magnesium, asbestos, mica
- 1/5 HHFA extends time limit six months (to June 30) for Title I (slum clearance) grants
- 1/11 Defense Housing Bill (\$.349) introduced in Congress
- 1/12 Federal Reserve Board extends housing credit curbs to multi-family structures
- 1/13 NPA bans commercial building until Feb. ruary 15, after which license is required (amendment to M-4)
- 1/13 James W. Follin resigns as chief of construction controls division, NPA
- 1/15 NPA removes loophole in earlier zinc order by 20 per cent reduction in use of finished zinc for various end-products: automobiles, appliances (re-defines "finished zinc").
- 1/22 NPA bans use of tungsten (except in small amounts) for coloring rubber, linoleum, wallpaper (i.e. pigments); (M-30)
- 1/22 NPA increases steel allocations for DO's; tightens steel inventory controls (amendment to M-1)
- 1/22 President names five-man commission headed by William S. Paley to study nation's long-range materials problems
- 1/23 NPA bans use of stainless steel, high-content nickel alloy and nickel silver in more than 400 items; e.g. no nickel for doors, downspouts, roofing, etc. (amendment to M-14). Also restricts nickel plate.
- 1/26 Prices and wages frozen by Economic Stabilization Agency
- 1/30 NPA promises extension of deadline on end-use copper ban 2-3 months past Apr. 30 (amended to M-12)

#### DEFENSE HOUSING BILL, packed with everything from government building to prefab aids, faces tough going

Congress had scarcely warmed the seats in its renovated legislative chambers (prissy members thought they bore too much resemblance to a night club) before the Administration dumped a whopping new defense housing bill on its doorstep. Masterminded by HHFA Administrator Foley and his bevy of experts, it was the omnibus type of legislation-as had been expected. A liberal new FHA program patterned after wartime Title VI was combined with straight government construction for the less stable type of defense area. Thrown in for good measure were new loans for prefabricators, an expansion of Wherry Act housing for military centers and a scheme for thwarting land speculators around spe-(Continued on page 12)

Reni Photos



**Construction Industry Advisory Committee** met with NPA officials early last month to discuss the impending commercial building ban (see page 13). Committee members, representing all branches of the building industry, included (1.) General Electric's A. W. Gilmour, Builder J. E. Merrion,

Hercules Cement's President D. S. MacBride and Builder Thomas P. Coogan; (c) Weyerhaeuser's T. L. O'Gara, Contractor H. C. Turner, AGC President W. L. Couse, and NPA's J. W. Follin; (r) St. Louis Building Commissioner A. H. Baum and Contractor J. N. Landis.

## **RESULTS GUARANTEED BY GOLD BOND!**



WHO wouldn't like to go to college, with a dormitory as handsome as this to live in? The Mabee Men's and Women's Halls have a lifetime of efficient service built into them, too. Gold Bond metal lath and plaster products, including famous Best Bros. Keene's Cement, were used throughout.

Whether a job is big or small, there's definitely'a big advantage when Gold Bond products are used *exclusively*. It means that the sole responsibility for material performance rests on *one reputable manufacturer*, National Gypsum Company. The over 150 better Gold Bond building products are fully described in Sweet's, and they're available at your local Gold Bond Lumber and Building Materials Dealer.

#### UNIVERSITY OF TULSA TULSA, OKLAHOMA

J. E. MABEE HALL (shown) and LOTTIE JANE MABEE HALL Architect .... Atkinson and Murray, Tulsa General Contractor .... Al Ward Construction Co., Tulsa Plastering Contractor .... True Plastering Co., Tulsa

You'll build or remodel better with Gold Bond

### NATIONAL GYPSUM COMPANY • BUFFALO 2, NEW YORK

Fireproof Wallboards, Decorative Insulation Boards, Lath, Plaster, Lime, Sheathing, Wall Paint, Rock Wool Insulation, Metal Lath and Sound Control Products.

## TODAY ALL YOUR CLIENTS CAN AFFORD PERMAGLAS!

# Now! A.O. Smith Permaglas costs no more than ordinary water heaters!

You benefit-your clients benefit-from the great and ever-growing popularity of Permuglas Automatic Water Heaters. Popularity means mass production-mass production means economy-and the savings are passed along to you. Result? Now there's no premium price on premium-quality Permaglas!

You're wise to recommend-to all clients-the water heater with the glass-surfaced steel tank that cannot rust because GLASS CAN'T RUST! You can assure them long, trouble-free water heater life with proved protection against tank rust and corrosion. And you can offer these benefits with no price penalty.

Why specify anything but the best ... now that Permaglas costs no more than ordinary water heaters?

#### SIZES AND TYPES TO FIT EVERY NEED

Whatever the hot water requirements of your clients, there's a Permaglas Automatic Water Heater to fit every need . . . every fuel preference . . . manufactured, natural, mixed or LP gases. Also a complete line of electric models. If you have a water heating problem, call in your local A. O. Smith distributor. He will

be happy to help in every way possible. A.I.A. File No. 29-D-2





Boston 16 • Chicago 4 • Dallas 2 • Denver 2 • Detroit 21 • Houston 2 • Los Angeles 12 Midland 5, Texas • Milwaukee 2 • New York 17 • Philadelphia 3 • Phoenix Pittsburgh 19 • Salt Lake City I • San Diego I • San Francisco 4 • Seattle I Tulsa 3 • Washington 6, D.C. • International Division: Milwaukee I Licensee in Canada: John Inglis Co., Ltd.







SMITH UTOMATIC GAS WATER HEATER



#### **Can't Rust Because**

Glass can't rust!

NEW! EXCLUSIVE CERAMITRON CONSTRUCTION (Patent No. 2267361) assures positive protection of glass-surfaced steel tanks against attack by all corrosive waters. Only A. O. Smith Permaglas has it! To get complete details-check coupon for free booklet.

A. O. Smith Corporation, Dept. AF-251 Water Heater Division, Kankakee, Illinois
Send me, free, complete specifications of A. O. Smith Permaglas Automatic Water Heaters.
Send me, free, booklet by Don Herold describing exclusion Construction.
Give me name and address of nearest A. O. Smith distrib
Name
Firm

Street

N

City

Zone

State

utor.

cial federal installations such as the H-Bomb plant site in South Carolina. This last proposal would involve HHFA purchase of suitable housing sites and their subsequent resale to private developers.

#### **Tough going in Washington**

Dutifully, the Senate and House Banking Committees started struggling with the bulky measure (53 pages) in a series of hearings. Oddly enough, Administrator Foley's mimeographed explanatory statement ran as long as the bill itself-one page more to be exact. By the end of last month, the legislative going was tough. Even the bill's friends admitted that the situation looked discouraging. Republican members, more cocky than ever because of their increased strength in the new Congress, were openly critical. There was also some criticism from the Democratic side. To add to the Administration's woes, jurisdictional squabbling broke out between rival executive agencies. The Federal Security Administration felt that the HHFA was encroaching on its territory in respect to federal aid for schools and hospitals in congested defense areas and made no bones about carrying its gripe to Capitol Hill. Actually the bill was silent on this score but the assumption was that Administrator Foley in his over all programming of community facilities would toss the ball to FSA when the proper occasion arose.

The criticism most frequently leveled against the legislation was that it delegates an excessive amount of authority to the Administration. The most controversial secton—Title II which calls for public housing in places where the executive agencies do not believe that private enterprise can meet the problem—is virtually wide open. There is no limitation on the volume of housing that the government can construct itself. Neither is there any ceiling on the amount that can be spent for community facilities.

#### SUMMARY OF DEFENSE HOUSING BILL

Purpose	Government Aid	Terms		
Private construction of single- family houses in defense areas under new Title IX of FHA.	Government-insured loans. Loan to value ratio: 90% but not to exceed \$8,100 per unit with an additional \$900 for the third and fourth bedroom. Appraisals to be on long-term value and not a current cost basis as under war- time Title VI.	Twenty-five-year maximum amor tization period. Maximum in- terest 4½% (actual rate will probably be set at 4¼ to con form to lower rate put into effect last spring for Title II).		
Private construction of multi- family rental developments.	Government-insured loans. Maxi- mum mortgage amount: \$5 mil- lion; may not exceed 90% of value or \$8,100 per unit of four rooms or more or \$7,200 per smaller unit.	Probably a lending period of 32 years and 7 months with interest at 4%.		
Private construction of multi- family housing at military posts (Wherry Act Housing). This por- tion of FHA program is ex- tended two years from expiration date of June 30, 1951; also ex- panded to include rental housing at atomic energy installations.	Government-insured loans. Maxi- mum mortgage amount: \$5 mil- lion; may not exceed 90% of value or \$8,100 per unit. Valua- tion limit may be increased to \$9,000 for projects where mili- tary officials advise single-family units.	Probably 32 years and 7 months with interest at 4%.		
Public construction of housing in designated defense areas where private industry cannot meet the need. One-to-four family struc- tures will be favored. Provision is made for mobile housing where need is obviously temporary.	Direct government construction and management shopped out by HHFA to local housing authori- ties. Cost limits: \$9,000 per unit for two-bedroom apartment with extra installments of \$1,000 al- lowed for a third and fourth bed- room.	Intention is to amortize cost in not more than 40 years. Rent: must be based on value of prop erty.		
Construction by public and non- profit agencies of schools, hos- pitals and other community fa- cilities in defense areas.	Government loans and grants. Grants may not exceed portion of cost HHFA decides is caused by defense impact.			
To prevention of undue land speculation in vicinity of remote federal installations. Land is to be resold to private developers.	Government purchase of land and resale to private developers. No buildings are to be erected by the government.	Land may be sold under such conditions and terms as Presi dent may determine.		
Prefabricated housing.	Loans (only to producers of pre- fabricated housing with demon- strated capacity for production) may cover production or distri-	Probably 4%.		

bution or both.

#### Tougher going in the field

While spokesmen for private enterprise groups in the building and home financing fields have not yet presented their testimony, it is an open secret that they take a dim view of the public housing section and most of its fellow travelers such as the proposed programs for helping out with community facilities and giving prefabricators a shot in the arm. Most industry men would settle for an expanded FHA program. As a matter of fact, there has already been talk of an amendment that would strike everything else from the bill except the FHA section.

Another objection is that the measure is somewhat premature; that there has been no appreciable flocking of workers to industrial centers. Administrator Foley has frankly conceded that the great defense migration has not started yet. But he believes it is none too soon to prepare standby legislation. He has advanced the not implausible argument that much of the fumbling which marked the previous war housing program was primarily due to the fact that the government did not start to move until the emergency was upon it. Other federal officials have carried this line of reasoning a step further; have warned that the private enterprise camp may well defeat its own purpose if it adopts obstructionist tactics. Their contention: If the program is delayed too long, time will become of the essence. Then the question of who builds the houses and the type of construction employed will become of secondary importance. The crying necessity will be to put roofs over the heads of workers converging on a defense hotspot through any kind of makeshift device. Under such conditions the government would have to intervene more vigorously with public housing.

Actually, the public housing section was not without redeeming features. In the first place, the policy proclaimed was to let private builders carry the ball to the greatest extent possible. Foley kept emphasizing this point in his testimony. Also it was clear that some lessons had been learned from the last fiasco. Where the government had to intrude, the bill placed stress on permanent construction. Trimmed down housing of the so-called temporary type was to be held to a minimum since experience has shown that it uses almost as much critical material as conventional building and imposes well nigh insuperable maintenance problems. Moreover structures of the twoto-four family type were to be favored to facilitate disposition. Theory is that such housing would be more readily salable later on; would be a natural for veterans banding together in a cooperative venture.

## NEWS

One thing that mystified Congressional critics as well as industry spokesmen was Foley's apparent lack of interest in using some of his present powers to ease the housing pinch in defense areas. By merely setting aside Regulation X in appropriate places he could obviously do a lot in providing immediate relief. In fact, Representative Clinton McKinnon (D) of San Diego had pressed him on this point during the House Committee hearings. McKinnon said that housing was already tight in his West Coast community and that airplane production was being impeded as a result. Other members called attention to the growing pains being felt elsewhere such as in the vicinity of the H-bomb project site in the Savannah river area of South Carolina and Georgia.

#### **Relaxation of Regulation X**

As a matter of fact, HHFA and FHA were already grappling with the problem and expected to have a plan whipped into shape in a few weeks for exempting certain places from the credit restriction imposed by the regulation. They were not too enthusiastic about this maneuver for several reasons. For one thing, they pointed out that the regular FHA program (Title II) was at best a clumsy device for meeting the needs of defense workers. Even with FHA's counterpart of the regulation removed, the most liberal financing deal that could be arranged would be a 90 per cent mortgage on a \$7,000 house and an 85 per cent loan on multifamily developments in the average cost brackets. These terms were nowhere near as attractive as those proposed for the new defense housing section of FHA-full 90 per cent loans on \$9,000; \$10,000; and \$11,000 houses (depending on the number of bedrooms) and the same high percentage financing for multifamily rental units.

But what worried the government's housing hiearchy the most was the fact that Title II is geared to the owner-occupant type of housing market. It is virtually impossible for builders under this section to stay on the mortgage and rent their houses for a spell to designated types of tenants such as defense workers. Building men tended to sniff at such qualms; asserted that anything that added to the store of housing in a community would ease the pressure even if defense workers were not the beneficiaries in the first instance.

Would the bill pass? Most observers were inclined to believe that something would eventually squeak through. But they were leary about predictions as to what it would look like or when it would pass. Best bet was that even a toned down version would not emerge before the end of March.

#### COMMERCIAL BUILDING BAN institutes permit system, hints at industrial building control, causes Follin's resignation from NPA

When it decided last month to do another amputation job on building and lop off commercial construction, National Production Authority was not pulling a real surprise. The move had long been expected. More disturbing than the order itself was what it might portend. There was anxious speculation in building circles concerning the imminence of further surgery.

There were hints, however, that within a few months some attempt might be made to trim down construction in the industrial field. True, most work of this sort is inseparably linked with rearmament. But top NPA officials strongly suspect that there is a sizable volume of plant construction under way or contemplated that could not qualify as to essentiality. Then there were rumors about a ban on luxury housing.

An amendment to the original M-4 order issued last fall, the ban on commercial construction halted in its tracks all work that was not under way at midnight of January 13. Building jobs covered by the amendment include banks, hotels, garages, service stations, stores, restaurants, office structures, and mortuary parlors. Multiple use buildings involving one of the prohibited types of construction also come under the edict. Example: An apartment house with shops or services would have to get clearance. (Continued on page 19)



NEW AIR FORCE BARRACKS provide more amenities, cost less

This trim new steel and glass barracks soon to be built for the Strategic Air Command (SAC) at Offutt Air Base, Neb., is an inviting departure from the dreary old open bay building so familiar to ex-GI's of World War II. Instead of row upon endless row of dingy cots, the new structure will offer enlisted men a semi-private room, roomwidth windows, study desks, reading lamps, twin beds and Venetian blinds. A lavatory for each room, and a shower and toilet between each pair of rooms are two more luxuries added at the insistence of SAC's Commander, able, hard-driving Lt. Gen. Curtis Le May. Mentor of this experiment, Le May's design philosophy reads thus: "There's no reason . . . why the men should have to stand in line in the mornings to shave, or why they should have to stack their belongings in foot lockers and sit on bunks. They should have closets, chairs and desks for reading and study. I believe we can provide for them and I believe we can do it for less than the old barracks cost."

And he did. Construction cost of the new quarters will be \$1,500 per man, or a cool \$500 less than the old-type structure. The new barracks will house 216 men in a 3story building 37 x 282 ft. Chief cost-cutting features: Three- instead of two-story construction, exterior wall sandwich panels of sheet metal and glass fiber interior walls of fireproof asbestos. Steel floor sections and window assemblies will be prefabri-



cated—one unit for each half floor. The building was designed by the air installations office of SAC to be built for October 1 occupancy by the Korshoj Construction Company of Blair, Neb.

Could the new crop of GI's expect more privacy, comfort and storage space than their elder brothers had in World War II? Not yet, except for the lucky 216 at Offutt. But Gen. Le May thought this design might indeed become a prototype for future cantonment construction.

### Aluminum Seal Company, Inc. subsidiary of Aluminum company of America

depends on

# **RICHMOND Automatic Fire Doors**

yrgard door



Aluminum Seal Company Building, Richmond, Ind. Architects: Giffels & Vallet, Detroit, Mich.



Single-slide Fyrgard Door

Twice thicker steel side sheets mean real fire door protection

### better fire protection more modern appearance

The Richmond Fyrgard Door is an outstanding example of how automatic fire doors can be made safer and better through intensive specialization. The Richmond organization is devoted to the improvement, manufacture and installation of fire doors and related products. Such concentration of effort results in surer fire protection, greater manufacturing economies and better architectural design.

Richmond Fyrgard Doors are made in four standard types: Single-slide, Double-slide, Single-swing and Double-swing. Richmond Fyrgard Doors are automatic . . . they close at once when a fire occurs . . . give extra protection from fire, smoke and fumes. Both sides of these doors are covered with 24-gauge galvanized metal which is twice the thickness of the 30-gauge metal used in standard tinclad doors. Many other exclusive patented features add to the protection afforded by Richmond Fire Doors.

Architects who have projects on the boards that require fire doors of any kind, are invited to write in for suggestions. For complete information and specifications of Richmond Fyrgard Doors, write for Service Sheet R5.

THE RICHMOND FIREPROOF DOOR COMPANY RICHMOND, INDIANA an affiliate of THE PEELLE COMPANY

"it's PEELLE-RICHMOND engineered



# Now You Can Build It





### ... THE NEW WAY

**For Less** 

Yes, for as much as ten per cent less! The New Way saves space usually required for drainage lines suspended from ceiling. The New Way eliminates the necessity of suspendedceiling constructions to seal off drainage lines. The New Way reduces time required for completing plumbing fixture installations. First step is to specify wall type plumbing fixtures. Second step is to specify their installation the Zurn Way-the simple, fast, safe way to install wall type closets, lavatories, sinks, and other fixtures. The Zurn Way reduces use of building materials-saves time and laborprotects rest rooms against premature obsolescence. Write for booklet entitled "You Can Build It (Cubic Foot of Building Space) For Less The New Way".

#### WHAT IS SO WONDERFUL ABOUT A FIXTURE-BARE FLOOR?

Mostly "the something wonderful" about a fixture-bare floor is immaculate cleanliness, the incentive to cleanliness and the ease with which it is kept clean. Cleanliness is no problem in rest rooms where plumbing fixtures are off the floor because there is nothing to interrupt the sweep of the broom and the swish of the mop. Those who use such toilet rooms are moved to respect cleanliness and to help maintain it. Insist on wall type plumbing fixtures—they reduce the cost of rest room maintenance and protect against premature obsolescence.



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

Sales Offices in All Principal Cities

Pre-eminent Manufacturer of Sanitary Products for the Protection of Human Health in Modern Structures. Write for this booklet. It tells how "You Can Build It (Cubic Foot of Building Space) For Less The New Way".

TOT LESS & NEW WAY

The Zurn Carrier Catalog and Handbook describes the complete line of Zurn Wall Closet Fittings and Carriers for all makes and types of plumbing fixtures. Use it with Zurn Carrier Indexes and fixture catalogs to save time in selecting and specifying wall type fixtures.

CARRIERS



#### A design study for The Mosaic Tile Company to illustrate uses for ceramic tile in a contemporary house

In the architects' search for materials which help to express the practical utility of functional design, Mosaic Ceramic Tile is finding wider and wider acceptance.

In this living-dining room study, the architects clearly illustrate how Mosaic 'Ceramic Tile may be used in several ways to provide an unusual combination of lasting utility and beauty—a warm and attractive background for pleasant, carefree living.

Several types of Mosaic Ceramic Tile are used in the study. Mosaic Granitex for the by Serge P. Petroff A. I. A. and Harvey P. Clarkson A. I. A. 132 E. 58TH STREET, NEW YORK 22, N. Y.

floor over a concrete slab in which heating pipes are placed; Mosaic Glazed Wall Tile for decorative surface on two walls; Mosaic Carlyle Quarry Tile in the construction of the fireplace, as the surface for a unique bench served by movable seats and as steps to reach the dining area on an upper level.

The complete Petroff-Clarkson Study is available at no cost. Three folders describe the study, provide tile specifications and radiant heating computations. Use the coupon on the opposite page.



# MOSAIC GRANITEX FLOOR TILE

Mosaic Granitex Tile is made from a blend of native clays. Its distinctive, pleasing texture is restful and easy to live with.

Granitex does not fade. It is not affected by acid or stains. It cannot burn, warp or curl.

Mosaic Granitex Tile is made in eight colors, as illustrated. Reminiscent of rich earth tones, Granitex colors have a natural charm to harmonize with decorator colors.

Mosaic's nation-wide organization is available to you for specification, design and installation assistance. Be sure your files contain every piece of up-to-date literature now available on Mosaic Tile. Use this handy check list to be sure.



Brown Granitex No. 1222



Red Granitex No. 1225



Black Granitex No. 1228





Blue-Gray Granitex No. 1226

Blue-Green Granitex No. 1227

Grecian spiral floor in red Granitex, as specified in the Petroff-Clarkson study. It is made up of units 1" x 1" and 2" x 2", Pattern No. 2251A.

### THE MOSAIC TILE COMPANY

Member Tile Council of America



GENERAL OFFICES: ZANESVILLE, OHIO • WAREHOUSES AND OFFICES IN PRINCIPAL CITIES • OVER 4000 TILE CONTRACTORS TO SERVE YOU Granitex is a Registered Trade Mark

CLIP THIS HANDY CHECK LIST TO YOUR LETTERHEAD. MAIL TO MOSAIC AT ZANESVILLE OR TO YOUR NEAREST MOSAIC OFFICE FOR THE LITERATURE YOU NEED.

#### Petroff-Clarkson Study

- Quarry Tile Booklet
- Ceramic Floor Tile Booklet

🔲 Trim Chart

Tile Bath Accessories Folder







#### ... the LEADER In Years of Know-How

Hauserman has pioneered, developed, perfected and patented movable steel interiors for nearly 40 years. No other company in this field has the solid background of uninterrupted advancement enjoyed by Hauserman. There are over 25,000 Hauserman



KAUSERMAN

25,000 Hauserman installations in all types of buildings throughout the world...more than the combined total of all other partition companies in America, either past or present.

# <u>Mobilize</u> Your Business for Efficiency

A few days ago this was an empty space in a new building. Today it is an executive's efficient office. And tomorrow it may be moved, quickly and completely, to meet unexpected new plant and personnel requirements.

This attractive office is a typical Hauserman *Movable* Steel Partition installation. It was pre-engineered and prefabricated in the Hauserman plant by long-experienced Hauserman experts. It was quickly erected by Hauserman men. And in a matter of a few hours, the entire room can be transformed into an entirely different layout, with no muss, fuss or delay.

Many styles and types of Hauserman *Movable* Steel Partitions are available to meet office and factory needs in every kind of business. Send the coupon below for the new Hauserman full-color pictorial book *The Inside Story* of *Building Economy*. For a prompt personal call from your nearby Hauserman office or representative, consult your classified Telephone Directory. See "Partitions."



<ul> <li>Please</li> <li>Please</li> </ul>	send free co	py The Insiderman repres	e Story of Bu entative call.	ilding Economy.	
Name					
Title					
Company					
Street					

This clearance loophole gives the amendment a more liberal hue than the original order. In clamping the lid down on construction of the frivolous variety last fall NPA adopted a hard-boiled policy toward exemptions. It would only grant dispensation in hardship cases. In the commercial building amendment, however, it shifted from the negative to the positive approach. Provision was made for granting relief on a broad basis under a new permit system. Generally speaking, a project will get the go ahead signal if it: 1) furthers the defense effort, 2) is essential to public health, welfare, or safety, or 3) alleviates or prevents a hardship to a particular community. Since it had to recruit an enforcement staff and set up the administrative procedure, NPA allowed an interval of a month between the time it issued the ban and the date for submitting applications for construction permits. The applications were not to be presented until February 15. The regional offices of the Commerce Department are designated as filing places.

Behind the decision to use a permit system was more than a sudden inspiration. Affable James Follin, whom General Harrison had borrowed from the General Services Administration to organize NPA's construction section, had been a constant plugger for the idea. He was convinced at the start that it was a mistake to crack down on all commercial construction and then only let projects proceed on an individual hardship basis. In a huddle with top NPA policy makers and an advisory committee representing the building industry and labor he hammered home the point that it would be utterly unrealistic to narrow down relief in this manner; that many necessary projects would be checked off.

As Follin put it, a broad permit system would reverse the roles; make the government go on the defensive and find reasons for ruling out a proposed undertaking. Moreover, he pointed out that the waiting period before building promoters started the qualifying process would result in an accumulation of applications and thus give the administrative staff a wider basis of judgment in formulating policy. Members of the advisory committee were in substantial agreement with his proposals.

Unfortunately for the industry, Follin only scored a half-way victory. In the end, NPA accepted the permit system but rejected his proposal for a reasonably long waiting period. Since he did not believe he could do the right kind of a job under such conditions he reluctantly decided to wash his hands of the whole business. He relinquished his post, returned to GSA.

#### WAGE-PRICE FREEZE contains industry exemptions. Copper controls may be eased

There were several gaps in the interim price-wage freeze order of last month. One of them concerned rent levels and the administration was trying to plug it. Congress had put its foot down in this respect when it passed the Defense Production Act; prohibited any tinkering with rents or real estate prices. Also exempted from controls were professional services, commissions and fees in general. This meant that, initially at least, large segments of the building industry were not affected by the order. Architects, engineers and contractors were obviously out from under. And so were builders. However, material and equipment prices were definitely covered as were the wages of building workers.

Actually the President wanted to go further than getting a toe hold on rents. In his economic message he had come out flatly for an expansion of the credit control mechanism-Regulation X-to include the price of existing houses see page 9. While it is possible under the FHA and VA programs to keep the price of existing houses in line through regulating downpayments and amortization periods, the companion controls dealing with private mortgage financing only apply to new construction. It was this discrepancy that the President was trying to remove on the plea that it left too much of a chink in the dyke against inflation.

On the material control front, NPA was constantly tightening its squeeze on scarce metals. Known to be in the works was an amendment to the aluminum order that would rule out a long list of end use products such as windows frames and Venetian blinds. In its efforts to ease the impact of the controls, the Senate Small Business Committee has called the NPA regulators to task on several occasions.

Attempts of the committee to take some of the kinks out of the copper restriction program had to be abandoned temporarily. Reason: In its frenzied gyrations and shifting around of personnel, NPA could not muster a single official who could present a clear-cut statement on the copper order; much less make sense about it. Probably the worst mix-up was due to the clause prohibiting the use of copper pipes and a host of other items of a so-called nonfunctional nature after April 30, regardless of the supply on hand. By month's end this nonsensical gimmick had stirred up an angry chorus of protest. A relief measure in the form of an extension-perhaps through June-was promised.

#### APARTMENT BUILDING CONTROLS, milder than expected, favor duplexes

Just at the time it was trotting out the defense housing bill to stimulate rental construction, HHFA in tandem with the Federal Reserve Board put finishing touches on its long contemplated plan for putting multifamily structures under credit controls. It was an inconsistency that did not fail to draw caustic comment from the building industry. But a re-reading of the amendment calmed most ruffled nerves. It was not as tough as had been expected. Effective as of January 12, the regulation deals mainly with apartment construction defined as structures of more than four-family units. The maximum mortgage may not exceed 83 per cent where the value per family unit is higher than \$7,000; the top mortgage ratio is held to 53 per cent. Maximum mortgage per unit is \$8,100.

In addition, the order brought threeand four-family residences under controls similar to those imposed previously on oneand two-family structures. Unexpectedly it gave one- and two-family units a break by shifting the aproach from a structure to a unit basis. The effect is to liberalize the mortgage terms in respect to duplexes. This is because a duplex can be divided into two units in determining the amount of the maximum mortgage, whereas before the computation was on a structure basis. Thus a duplex costing say \$25,000 can be split into two units of \$12,500. Since the mortgage ratio is reduced as the price increases, this results in a substantially higher loan-\$18,400 as against \$12,500.

(News continued on page 23)



Gimbel's "gives FLLW to the people" Timed to coincide with BUILDING's Frank Lloyd Wright issue (Jan. '51), Gimbels in Philadelphia last month displayed the architect's work to the department store's public. In the first four days of bad weather 20,000 people attended. At the opening banquet (I. to r. above): BUILDING's Publisher-Editor P. I. Prentice; Frank Lloyd Wright; Gimbel's Publicity Director David Arons who suggested the show. 24" × 96" or 30" × 96" 30" × 60" or 48" × 96"

16 MICARTA

34 WATERPROOF WELDWOOD PLYWOOD

> BACKING SHEET FOR MAXIMUM STABILITY

The <u>new</u> Bonded-to-Plywood Panels add another advantage to



MICAR

Micarta is the *quality* high pressure plastic laminate made by Westinghouse. It is preferred by experts because it is *always* uniform in coloring and pattern—because its finishes are superior (a beautiful high gloss or a perfect satin) — because it is practically impossible to scratch, chip or dent it—because virtually nothing will stain it.

Now Micarta offers another exclusive advantage – Factory-bonded Panels in FOUR sizes. These panels are 1/16" Micarta permanently bonded with waterproof adhesives to waterproof mahogany Weldwood Plywood. They can be sawed, trimmed, planed, drilled – worked and installed – by anyone and no special equipment is needed.

Thus you can in many cases gain efficiency and economy by having your regular carpenters install the Micarta at the same time they make and install the rest of your interior.

And with these four sizes you can cut with an absolute minimum of waste. The four sizes provide exactly the right width for almost every common use and in the great majority of installations the lengths cut with virtually no waste. As examples:

#### 24" x 96"

for commercial counter tops and fronts, kitchen counters and bar tops.

#### 30" x 60" and 30" x 96"

standard kitchen counter and sink tops including back splash (30" x 60" for built-in breakfast tables); also commercial counter tops and fronts.

#### 48" x 96"

exactly right for walls and other large areas.

#### Micarta provides a size and type for every need

	24×96	30×60	30×72	30×84	30×96	36×72	36×84	36×96	48×84	48×96
1/16" installed by fabricators	*	V	٠	*	۵	$\checkmark$	V	\$	\$	V
7/8" installed by anyone	V	V	x	×	~	x	x	x	x	V
1-1/4" installed by anyone	x	x	x	x	x	x	x	x	x	V

 $\mathbf{V}$ ...available in stock from warehouses.

\*...not carried in stock; available from mill and in half size on crate lot orders (approx, 500 ft.)

X...not carried in stock; available from mill and in half size on minimum order of 1500 feet.

**Colors:** Micarta is made in a large variety of attractive plain colors and patterns including Linens, Foams, Mother of Pearls, Truwoods, and Decorator Colors (superb pastels selected by a jury of architects).

Send for your free sample and complete Data Book



micarta is the quality plastic surfacing material made by

### WESTINGHOUSE

and sold for decorative purposes by UNITED STATES PLYWOOD CORPORATION and

U. S.-MENGEL PLYWOODS, INC.

55 West 44th Street, New York 18, N. Y.	M.O.B. 2-51
Please send free Micarta testing sample and c	omplete data.
NAME	
COMPANY	
ADDRESS	
CITYSTATE	

# NERVE CENTER

### OF MATERIALS HANDLING SYSTEMS

.. WHERE THE HORIZONTAL

### MEETS THE VERTICAL

The "nerve center" of your materials handling system is the point where "horizontal push" converges with "vertical lift"... where hand and power trucks meet your freight elevators.

To keep all "nerves" functioning smoothly and efficiently, freight elevators must be an integrated part of your materials handling machinery. Only by combining your horizontal carriers with modern efficient freight elevators can you make maximum reductions in handling costs.

To help you plan your vertical transportation for peak efficiency, Westinghouse offers "The Buyers Guide for Freight Elevators," B-4402. This is the most complete source of vital information available on the proper selection and application of freight elevators. Write on your letterhead to Elevator Division, Westinghouse Electric Corp., Dept. F-1, Jersey City, N. J.

For years, Westinghouse engineering developments have stimulated the vertical transportation industry to strive for ever-higher standards of quality and efficiency. In every phase of vertical transportation—equipment, maintenance, and service—Westinghouse has been the vanguard for progress.

So, whatever your traffic problems may be—there's a Westinghouse Integrated Vertical Transportation System to solve them completely. Look ahead with the leader . . .

YOU CAN BE SURE ... IF IT'S Westing

W

.....

98601-(A)



CERTACOUSTIC INSTALLATION, CONESTOGA MILL, BRYN MAWR, PA.

# Certainly it's Certain-teed

#### CERTAIN-TEED'S CERTILE

the incombustible, acoustical tile that blends all the desirable features of famed Fiberglas\*—incombustibility, moisture-resistance, warp-andshrink-proofness.

In sizes  $12'' \ge 12''$  and  $12'' \ge 24''$ ; perforated and plain surfaced, with painted bevels; in two thicknesses—34'' and 1''; high degree of light reflection.



\*Trade-Mark Reg. U.S. Pat. Off. by Owens-Corning Fiberglas Corporation NOTE: Where decorative effects require the use of plaster, consider Kalite—the highly efficient sound-absorbing plaster, fireproof, vermin-proof, economical.





ARDMORE, PENNSYLVANIA

#### CERTAIN-TEED'S INCOM-BUSTIBLE CERTACOUSTIC

differs from Certile in a few minor refinements—unpainted bevels and 70 percent light reflection. It is ideal when lowcost, fire-safe acoustical tile is required.

In two thicknesses— $\frac{1}{2}$ " and  $\frac{3}{4}$ " in 12" x 12" units;  $\frac{3}{4}$ " in 12" x 24" units; perforated and plain surfaced.

Approved acoustical applicators are available for consultation and advice. Contact one of these district sales offices for the name of the applicator in your area:

ATLANTA, GA. • CHICAGO, ILL. • CLEVELAND, OHIO DALLAS, TEX. • DETROIT, MICH. • EAST ST. LOUIS, ILL. KANSAS CITY, MO. • NIAGARA FALLS, N.Y. ARDMORE (PHILADELPHIA), PA. • SALT LAKE CITY, UTAH RICHMOND, CALIF. • ST. PAUL, MINN.

# NEWS

#### PRIZE HOUSE DESIGN IN NAHB-FORUM COMPETITION wins \$8,250 for Harvard's Bruce Walker

During the last three months of 1950 more than 2,700 architects, designers and architectural students from coast to coast tackled the problem of designing an ideal small house for the average American family. They studied FHA and VA design and construction requirements; they learned about builder's problems straight from the builders; then they sharpened their pencils and worked out on paper their idea of the best possible solution to the building industry's knottiest problem—a handsome, livable, buildable three-bedroom house within the limits of 1,000 sq. ft. and a \$11,000 sales price.

They were working for the biggest pot of gold ever offered in a house design competition-\$57,000 in major awards, plus as yet uncounted thousands of local prize dollars. They were contestants in the NAHB-FORUM House Design Competition sponsored by the National Association of Home Builders and this magazine (which also conducted the competition) and co-sponsored by a half-dozen manufacturers and trade associations serving the building industry. (Associate sponsors: American Gas Association, General Electric Co., Kwikset Locks; Special Award sponsors: Douglas Fir Plywood Association, Libbey-Owens-Ford Glass Co., Youngstown Kitchens by Mullins Mfg. Co.)

After submitting their designs on December 15, these contestants had anxiously wondered 1) who would judge them and 2) who would win. On January 23 at the annual NAHB convention in Chicago the answers to both questions were announced before a packed ballroom session (p. 27).

The Jury who, along with its assistants, had worked 106 man days screening and evaluating the 2,730 entries, was chairmaned by Pietro Belluschi, noted Portland, Ore. architect and new dean of MIT's School of Architecture. His colleagues on the National-Regional Jury were Housebuilder Fritz Burns of Los Angeles, past president of NAHB and producer (with Industrialist Henry Kaiser) of several complete communities of small houses; Housebuilder Cy Williams of Port Washington, N. Y., producer of houses by the hundreds on Long Island; Architect Charles Goodman of Washington, D. C., designer of several groups of outstanding builder houses in that area; and Architect O'Neil Ford of San Antonio, most recently in the limelight for his perfection of the Youtz-Slick system of jacking up concrete slabs from grade to

roof. Their associates in the selection of special award winning designs were Architects Whitney Smith of Pasadena, Philip Will, Jr. of Chicago, and L. Morgan Yost of Kenilworth, Ill.

This Jury of recognized experts picked 63 winners for the competition's 84 awards. Top honors and \$8,250 in cash went to Bruce Walker, whose design (see cuts) placed first in the Northwest regional contest (\$750) and went on to win first prize in the National judgment (\$7,500). Unlike many of the other entries which were small, unworkable, unlivable condensations of big houses, Walker's is a big little house—the kind a builder can easily put together and easily sell.

A 27-year-old, married Navy veteran

with a 7 months' old daughter, winner Walker hails from Spokane, graduated from Washington University, is now working on his masters degree at Harvard. (He hopes to earn it next June.) His office experience includes work with The Architects Collaborative, whose houses and educational buildings have frequently been presented in this magazine. He plans to use his prize money to repay educational loans and "to buy baby clothes."

A complete list of prize winners appears on pages 54 and 60. Next month The Magazine of BUILDING will devote its entire issue to the 30 National and Regional prize houses and to the most interesting details of the 33 other special award winners. (News continued on page 26)



More conservative than many, Walker's design came to the top by virtue of its economical shape, creditable plan, good sized rooms, ease of construction, rearward living area, handy service entry, adaptability to various orientations and generally excellent exterior design which is completely free from today's overworked architectural cliches.

In these times of scarcities it is more than ever important to remember that two or more heads are better than one. Your suppliers, for example, know a great deal about the materials they handle, how to select, specify and install them.

No matter what you buy it will pay you to draw upon this knowledge. It may help you make scarce materials go further, reduce costs of installation, perhaps even suggest a substitute.

AND of course for close collaboration regarding permitted uses of such Revere Building Products as Revere Copper Water Tube, Revere Copper Pipe, Revere Red Brass Pipe, Revere Sheet Copper for Flashing, Revere-Keystone Interlocking Thru-Wall Flashing\* and Revere-Simplex Reglet Flashing\*, get in touch with the Revere Technical Advisory Service through the Revere Distributor nearest you.

SEE OUR CATALOG IN SWEET'S



Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y. -Sales Offices in Principal Cities, Distributors Everywhere SEE "MEET THE PRESS" ON NBC TELEVISION EVERY SUNDAY



**STABILIZED CORE** 

Mengel's hardwood Stabilized Solid Cores are deeply slotted both with and across the grain to absorb expansion and contraction internally without changing the dimensions of the door. The entire poplar core assembly is tongued-and-grooved into the dove-tailed wedge-locked hardwood frames, with enough tolerance to absorb stresses.

Designed and built to withstand severest conditions, Mengel Solid-Core Flush Doors are *better*. *Get all the facts*. Write today for new full-color A.I.A. descriptive catalog, including specifications,

Plywood Division, THE MENGEL COMPANY, Louisville 1, Kentucky



Photos: Arthur Shay

New NAHB president William P. Atkinson of Oklahoma City, Supporting slate: Alan E. Brockbank of Salt Lake City, First Vice President; Emanuel Spiegel of Passaic, New Jersey, Second Vice President; Nathan Manilow of Chicago, Treasurer and Richard Hughes of Pampa, Tex., Secretary.



Economist Miles Colean summed up the 1951 building prospect for the delegates in one sober sentence: "Costs will be high; volume will be low."



Earl Smith of Berkeley, Calif. stressed need for NAHB support of a national materials-conservation program.

Leonard Haegar of HHFA's research division chats with Architect James Lendrum, acting director of University of Illinois Small Homes Council. NAHB CONVENTION: Housebuilders meet to define role in mobilization crisis, fail to come up with a clear-cut answer. But, they agree on one thing: the free and easy boom is over

Last month, 7,000 builders crowded into NAHB's seventh annual convention at Chicago's Hotel Stevens to learn what mobilization meant for them.

The answers were somewhat confused, mainly because of indecision in Washington over building's defense role. But this much was clear: The industry will do well this year if it builds the 850,000 units which Washington says it can build. Most of 1951's production will be for "peacetime" use, with defense housing a minor factor at least for the first nine months. Material and labor prices will be higher despite the wage price freeze. Most materials will be in short supply and some simply won't be available.

Besides listening to these sobering facts, the delegates carried out the following business:

Elected as their new president W. P. (Bill) Atkinson of Oklahoma City (BUILDING, Jan. '50).

 Disapproved large sections of the Defense Housing Bill now before Congress.

Awarded \$55,000 to winners of NAHB-Forum small house competition (see pp. 23 and 54).

• Voted an intensive program for defeating public housing on the local level.

The biggest news was the convention's decision on the Defense Housing Bill. (For a description of the measure see p. 9). Despite the heavy dose of liberalized FHA mortgage insurance provided in the \$3 billion omnibus bill the builders balked at approving the proposals for government sponsored housing to be built in areas where builders allegedly can't build. In doing this, they put themselves on record that they could handle all defense housing needs



"if not hindered by unnecessary and unrealistic restrictions."

In its policy statement, NAHB suggested that this could be accomplished by amending existing legislation rather than writing new laws. Single and multi-family units for defense areas could be had by lifting Regulation X credit restrictions and by authorizing FHA to insure 90 per cent mortgages once again. For temporary housing projects, it proposed a separate FHA "defense insurance fund" to insure loans on rental projects of mobile or demountable houses.

Intra-mural differences. The convention's position on the defense bill was the end result of long and sometimes bitter discussions by top NAHB officials behind closed doors. There were two clearly defined sides. One, lead by outgoing president Tom Coogan, argued that there were enough safeguards within the bill (and in the attitude of HHFA officials who would administer it) to prevent any serious abuse by public housers. The other side, influenced by a small group of builders who are strongly allied with the National Association of Real Estate Boards, balked at approving any bill with public-housing features in it. After two days of discussion, it was clear that the opposition group was on top. One major factor was a table-thumping speech by Senator Everett Dirksen (R. Ill.) at the first general session of the convention. Said he: "The bill is nothing more than a blank check for the Administration. It would completely socialize the American housing industry and there would be no going back."

When HHFAdministrator Raymond Foley arrived in Chicago on the third day of the convention to defend the bill before



Baltimore's Bob Bready and Los Angeles' Fritz Burns compare notes at panel on low-cost economy rental housing. Both were active in pushing convention resolution to defeat public housing by forcing local referenda on the issue.

# NEWS



Large crowd attended design panel discussion in ball room, witnessed award of NAHB-FORUM competition prizes. National first prize winner Bruce Walker and wife are shown at lower right.

NAHB's board of directors, it was already too late. (The importance he attached to NAHB's endorsement of the bill was indicated, however, by the fact that he brought with him from Washington HHFA's chief legislative strategist, General Counsel B. T. Fitzpatrick.)

Fewer houses . . . . If the industry's role in defense housing was still undetermined, one thing was clear: there would be nothing approaching last year's 1.4 million unit production. In his speech to the builders, Ray Foley said that the 850,000 unit estimate for 1951 made last September when Regulation X was announced still stood, despite the military setbacks in Korea, but that he could not guarantee its not being revised downward.

Although the convention went piously on record approving the 850,000 goal, the average delegate had his doubts about his own particular share of the 1951 market. Very few of them had set a firm program for the coming year. "I don't know whether to build 5 houses or 50—or go back into the insurance business," cracked one. The higher down payments required by Regulation X were the biggest immediate drawback



At the panel on better design, Moderator Clarke Daniel of Washington, D. C. warned builders to save materials by eliminating wasteful design practises. "From now on it is going to be root hog or die; home builders are good rooters."

although material shortages loomed larger every day. Builders of higher-priced houses reported little difficulty in getting the big down payments required. But in the lower brackets—the bulk of the market—the problem was different. The only salvation for most builders in this category was the backlog of FHA commitments which they had filed before Regulation X took effect. Many builders reported they had enough of these to last them through the middle of the year.

.... And less materials. Getting enough materials to build these houses was another problem. The most crowded session at the convention was the panel discussion by industry leaders and government officials on materials. The general theme was the prospect of restrictions, priorities and shortages from here on in. J. L. Haynes, director of National Production Authority's building materials divisions, warned that NPA's limitation orders curtailing the use of metals will soon be felt in the building-materials field. The additional \$20 billions for defense requested by the Administration in the middle of January will mean a further tightening of material controls.

There was, moreover, no assurance by Haynes and other government officials that builders would have enough substitute materials to go around. HHFA Research director Richard Ratcliffe admitted, under questioning from the floor, that there might

(Continued on page 31)





The Walkers examine model of prizewinning house with NAHB'S Tom Coogan (left) and BUILDING'S Publisher-Editor P. I. Prentice who presented the awards.



Exhibit of winning designs attracted thousands of builders during convention's four days.

Three members of the NAHB-FORUM competition jury took part in the convention's design panel: Long Island Builder Cy Williams, Chicago Architects Philip Will and Morgan Yost.

### ACOUSTICAL MATERIALS

# How important is "efficiency"?

There is a common tendency to base the selection of an acoustical material almost entirely upon its noisequieting efficiency. This is not always justified. Actually, small differences in acoustical efficiencies cannot be detected by the human ear. Furthermore, tests which determine these efficiencies cannot be carried out to pin-point accuracy. Therefore, unless there is a special noise problem requiring very high absorption, more emphasis should be placed on the other features of the available materials. Here are some of the reasons why.

#### How accurate are "efficiency ratings"?

Most materials are tested regularly by the Acoustical Materials Association. The results, which show their performance at various sound frequencies, provide a valuable standard of comparison for the whole industry. But the AMA cautions that these tests may be as much as 7% inaccurate. In addition, the resulting figures are "rounded out" to the nearest .05 after tests are completed. They serve mainly as a general guide in classifying acoustical materials into groups and in showing their relative efficiencies at various frequencies.

#### "Noise-reduction coefficients"

Absorption values of materials are expressed in "coefficients" at each frequency. The "noise-reduction coefficient" is an average for the middle frequencies. While it is a good general guide, it doesn't tell us how well a material absorbs sound at the higher frequencies. These higher frequencies cover the highpitched, piercing noises. These are the sounds that are the most annoying, and therefore the most important ones to subdue.

#### How to specify efficiency

When only one coefficient is specified, the choice is limited and better materials may be ruled out. As an example, if a material with an approximate efficiency of .70 is desired, the specification might well read as follows:

Acoustical material shall have a noise-reduction coefficient in the range of .65 - .70 - .75. Tiles shall be  $12'' \times 12''$  and 34'' thick.

Thus, it's possible to take advantage of other product features. The Armstrong Line of materials, for example, offers not only a full range of efficiencies, but also such features as low cost, fire safety, repaintability, moisture resistance, and appearance.

#### What about costs?

In most jobs, cost is an important factor. However, efficiency needn't be sacrificed for cost, because the lowest cost materials can usually deliver a fairly high amount of noise reduction. From the standpoint of both initial and installation costs, the most economical materials are the perforated tiles made of wood fiber. Armstrong's Cushiontone is a good example. This material is particularly suitable for ceilings in corridors, general offices, and cafeterias, where vast areas must be treated. Its noise-reduction coefficients range from .55 to .75, depending on the thickness used and the method of application. Next, in order of initial cost, in the Armstrong Line, are Travertone, Corkoustic, and Arrestone.

#### Building codes and fire safety

If codes demand incombustibility, a mineral wool tile like Armstrong's Travertone is called for. At higher cost, a metal pan unit like Arrestone, which contains a fireproof mineral wool pad, can be used. If codes merely specify a slow-burning material, a cork tile such as Corkoustic is suitable. Cushiontone also meets this specification when finished with a special fire-resistant paint.

#### Maintenance

Ease of maintenance is an important consideration. All of the Armstrong materials have washable finishes. Repaintability is also important, particularly if repainting clogs perforations or fissures and reduces absorption efficiency. While materials with fissured surfaces can be repainted by using the proper methods, those materials which are mechanically perforated are best suited for repainting. Test units of Cushiontone, for example, have been repainted 22 times without noticeable loss of efficiency.

#### Beauty may be important

Although most of the popular materials are neat in appearance, some jobs may call for an extra measure of beauty on the ceiling. In foyers, executive offices, display rooms, and similar interiors, the textured finish of the fissured tiles is often preferred to the more symmetrical aspect of the perforated types.

#### What about moisture problems?

Excessive humidity in areas like kitchens and swimming pools can be destructive to most acoustical materials. Armstrong's Corkoustic, a solid cork tile, is made primarily for this type of use. In addition to being highly moisture resistant, it is flexible enough to be applied to curved surfaces.

#### Light reflection, weight, insulation

Acoustical ceilings should provide at least 70% light reflection. They should be relatively light in weight





It's important that acoustical materials be repaintable and washable. Materials with smooth, two-coat finishes are most easily cleaned. Most materials can be repainted without loss of acoustical efficiency if proper care is taken to apply the paint in thin, even coats which don't "seal up" the surface.



Resistance to fire is often required by building codes. Metal pan type materials and those of mineral wool composition are officially rated as incombustible. In areas subject to excessive moisture, a cork material is least apt to be damaged, since cork has exceptionally high natural resistance to moisture.

so that structural reinforcement won't be needed. Most materials provide some thermal insulation. Corkoustic is an excellent insulator.

#### **Complete details available free**

For a free copy of the booklet, "How to Select an Acoustical Material," just write directly to Armstrong Cork Company, 5402 Stevens Street, Lancaster, Pennsylvania.

















# WHAT IS YOUR COOLING PROBLEM?

**IS IT COST?** Cooling towers or DriCoolers can have a low first cost with higher operating cost and vice versa. Or, you can get an economical combination of both. Marley application engineers have a complete line of units to select from and the "know-how" to help you make the best selection for your purpose.

**IS IT SPACE?** Marley equipment may be installed indoors or outdoors. Units are available with large base area and low height to give light loading per square foot or with small base area and greater height to fit in small area.

**IS IT TEMPERATURE?** Usually, it is not economical to cool lower than a 5F approach to the wet bulb. However, in Marley cross-flow towers a quantity of water at wet bulb temperature may be obtained without added cost. For high level cooling, the DriCooler is applicable.

**IS IT LOCATION?** Extreme temperatures, cold or hot, dust, wet bulb, altitude, brackish water, wind, storm conditions, or lack of proper water supply are problems that must be considered. Marley has a unit to fit any geographical condition.

**IS IT APPEARANCE?** Marley has a wide range of designs that will blend with any building architecture. Or even become a part of the building itself. Marley engineers can help your architect give you a good looking as well as efficient installation.

These are only a few of the problems you may face in the selection of a cooling tower or DriCooler. No matter what the problem, Marley Application Engineers have the answer to help you invest your dollars wisely and profitably.











Write,	Wire	or	Phone	The	Marley	Company,	Inc.,	Kansas	City	15,	Kansas.
Name	-	-	1.11	-1-	1. 1. 1	T	itle_		1.20		in the second
Compan	y			132	is Alto	States.	141			in	時時とは
Address				1							
City		44				Zone	S	tate	19/37		P. Marine
Plea	se sei	nd	"Wha	t's Y	our C	ooling To	ower	IO"			
	Cool	ing	Prob	lem	is						

# NEWS

not be enough galvanized pipe available later this year to substitute for copper pipe.

Design for selling. One bright note at the convention was the serious attention more and more builders were giving to better house design. Now that Regulation X had brought an abrupt end to the seller's market, builders were thinking harder about "product design" than ever before. Three thousand of them crowded into the main ballroom of the Stevens Hotel to preview the winning drawings in the NAHB-Forum Small House Design Contest. For many a builder, the winning designs were an eye-opening example of how architectural imagination could be used to increase the livability and salability of a small house. Harvard student Bruce Walker's crisp, prize-winning design so impressed two builders - Albert Balch of Seattle and Charles R. Tips of Dallas-that they announced plans to build it as soon as possible.

At the convention's panel on better design, Architect Philip Will of Chicago pointed out that the greatest obstacle to better subdivision design was no longer the builders but government and financial agencies. "Homes built today are appraised by obsolete standards which indicate that bankers and government insuring agencies expect their mortgages to mature in 1931 instead of 1971," he said. BUILDING's reception for competition prizewinners at Hotel Blackstone was attended by many NAHB leaders and leading Chicago architects.



NAHB Executive Secretary Frank Cortright came to the reception with his wife and daughter Carol.



Second-prize winner Ralph Rapson (left) discusses his design at BUILDING's reception.



Builder Joseph Merrion of Chicago, NAHB past president, (right) congratulates new president Bill Atkinson.



New first vice-president Alan Brockbank and his wife with retiring president Coogan's daughter, Mrs. John Beatty (center).



Architect Konrad Wachsmann meets with group of young competition prize winners (l. to r.): Richard Wheeler, W. Danforth Compton, Wachsmann, Robert Mackintosh.





Carl Boester, Purdue research expert; VA's Bert King and At-

torney Douglas Whitlock with color consultant Beatrice West.

# Which COPING METHOD gives Lifetime Weather Protection?



Water permeable at age 60 days! Notice loose cap flashing, faulty masonry joints, loose roofing. Indiana limestone coping with through-wall and cap flashings of copper.

The answer to this question is not so much a matter of the quality of materials used as it is the method of construction.

TOP PHOTO shows expensive materials installed at high labor cost. Water can seep through masonry joints into the parapet wall, and also blow up under the loosely mounted flashing and built-up roofing. Freezing weather will break open the masonry joints, and the wall will start to crumble. An installation such as this, costly to begin with, is doomed to a lifetime of joint recaulking and other maintenance and repairs.

BOTTOM PHOTO shows an entirely different coping method . . . a method now in its fifth year of successful service . . . employing aluminum, copper, stainless steel, or monel metal as the coping material . . . defying leakage because of its patented, interlocking, mechanical joint construction. This is the Overly-Goodwin COPING method, which eliminates the use of through-wall flashing. Note in the photo how the built-up roofing is laid up under the coping, thereby eliminating the use of cap flashing.

An Overly-Goodwin aluminum coping job, recently installed, showed a saving of 25% of the erected cost, compared with the installed cost of precast concrete coping and copper through-wall flashing. Similar savings result by comparison with stone and other coping materials. Send for new booklet, "Overly-Goodwin Coping."

Advantages:

Weather protection for the lifetime of the building. Watertight joints. No caulking needed. Ample expansion. Maintenance free. No repairs needed. Prefabricated parts. Quickly assembled. Light in weight. Firmly anchored. **Eliminates** cap flashing. Eliminates through wall flashing. Provides a trim at roof line. Looks neat, modern. Many facia designs. Sizes to fit any wall thickness. Readily available.



Tight as a drum—Overly-Goodwin aluminum coping after more than a year of service. It will remain watertight and maintenance free for the life of the building.



OVERLY MANUFACTURING COMPANY, Dept. B GREENSBURG, PA. (Phone Greensburg 154) • Sales Representatives in All Principal Cities •

OVERLY QUALITY ARCHITECTURAL SHEET METAL PRODUCTS ARE DESCRIBED IN SWEET'S FILE



## "OUR SALES ARE UP IN SPITE OF CREDIT RESTRICTIONS WE FEATURE Westinghouse APPLIANCES THROUGHOUT"



#### ... says Jack Heslop, Noted Midwest Builder

"Give them top value for their money and you'll have no trouble selling houses," he states.

Jack Heslop, V. Pres. br Heslop Building & to Realty Co., Akron, O. 1

"We sold 180 homes in 10 days ... took commitments, and started building 221 more. Our formula is to feature recognized brand names, like Westinghouse, throughout.

Sure, we could cut costs by buying off-brand or mixed-brand appliances and materials but our houses wouldn't sell as well. Then, too, as '3 Generations



of Builders' we have a reputation to maintain.

"Now, with tightening credit, it makes sense to offer a *complete* package. Few of our prospects can afford to arrange separate financing of appliances."

Other builders, too, find that Westinghouse Appliances help sell their houses faster. Try it and see. For information, contact your Westinghouse Distributor or write us direct.

WESTINGHOUSE ELECTRIC CORPORATION Electric Appliance Division • Mansfield, Ohio

YOU CAN BE SURE .. IF IT'S Westinghouse



### Rooms when and where you want them!— That's what managements like about Johns-

**EXECUTIVES SAY** 

Manville Asbestos Movable Walls.

ASBESTOS

With these asbestos-cement partitions, you can have offices enlarged, subdivided, or relocated to meet everchanging space needs! And at the same time have rooms that are more attractive in appearance.

Today many of the most modern office buildings and schools have *miles* of Johns-Manville Movable Walls. Their unique appeal lies in the fact that they are made of *asbestos*: they have a pleasing texture and they're fire-safe, hard-tomar, highly resistant to shock and abuse.

J-M Asbestos Wall sections are light, easy to locate. They are erected as ceiling-high or free-standing partitions and railings, either solid or with glass. Ideal as interior finish for outside walls.

"Dry" construction insures little or no interruption to normal routine, Flush asbestos walls have no dust-catching projections, are easily maintained. The complete wall, including doors and hardware, is installed by Johns-Manville construction crews; you get *undivided responsibility*.

HESE FLEXIBLE INTERIORS

An estimate will convince you that the cost of J-M Movable Walls compares favorably with that of other types of wall construction. The J-M Movable Wall line includes:

Integrally-Colored Transitone Walls—J-M Asbestos Transitone Walls eliminate the cost of periodic decorative treatment. The panels are integrally colored by blending non-fading pigments with asbestos fibre—the color goes *all the way through each panel*.

**Transite® Walls**—J-M Transite Walls, *Imperial Type*, may be left in their natural gray finish or decorated as desired. J-M Transite Walls, *Universal Type*, are low in cost *and use no critical war materials*, giving you more freedom to plan future construction with confidence.

For details, consult your Sweet's Architectural File, or write Johns-Manville, Box 158, Dept. MB, N. Y. 16, N. Y.

Johns-Manu e Mou

INSTALLED NATIONALLY BY JOHNS-MANVILLE

10x1"


# 2 Beautiful Floors ... by Johns-Manville

#### Save work....No scrubbing....Easily kept spick-and-span!

Johns-Manville Terraflex is an entirely new and different luxury floor tile. Made of vinyl plastic and asbestos and completely proof against greases, oils, and alkalies, it is practically *indestructible*. Possesses a clarity and warmth of color hitherto obtainable only in rich carpetings. Unharmed by commonly used cleaning solutions, Terraflex cannot be "washed out" and will last a lifetime. *Ideal for kitchens and cafeterias*.

**J-M Asphalt Tile** is of course the modestly priced flooring that has been a standard of quality for decades. Comes in a wide range of marbleized colors.

See the J-M Approved Flooring Contractor in your area. He is listed in the classified phone book. Or write Johns-Manville, Box 158, New York 16, N. Y.



J-M ASPHALT TILE



Other J-M products include Acoustical Cellings—Movable Walls—Corrugated Transite®—Built-Up Roofs—Etc.



## in the WEBSTER HALL Hotel, Pittsburgh



In a ground-to-roof remodeling program begun in 1946, the Webster Hall has modernized all of its guest bathrooms as well as the public lounges. This view of the women's rest room shows smartly styled, shell pink Crane Marcia Lavatories in a counter of black tile. Of vitreous china, the Marcia comes in white and eight Crane colors. Features: roomy, semi-oval basin, exclusive Securo waste. Dial-ese controls on convenient beveled panel. Size: 24" x 21". Consult your Crane Branch or Crane Wholesaler.

DESIGN, INC., St. Louis Architect

WAHRHAUS & HARTNER, Pittsburgh Plumbing Contractor

CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVE., CHICAGO 5 PLUMBING AND HEATING • VALVES • FITTINGS • PIFE





TILE IS STAINPROOF TILE IS FIREPROOF



TILE DEFIES SCRATCHING



TILE CLEANS LIKE PORCELAIN



TILE LASTS A LIFETIME

TILE IS WATERPROOF



GENUINE CLAY

### FIGHTS ALL SIX!

What other wall or floor covering material can take a drenching with hot water so well? Or for that matter what other material can resist knocks and scratches so stubbornly . . . and stay fade-proof and fire-proof for a lifetime?

Genuine Clay Tile cleans as easily as a china dish and commands respect wherever it is used. Have you considered the use of tile in the kitchen, foyer, utility room or powder room? It is worth a fresh appraisal every time you design or build any type of building. And remember—tile is one of the most versatile materials you can use in designing distinctive color schemes.

Tile Council of America, Room 3401, 10 East 40th St., New York 16, N. Y. or Room 433, 727 W. Seventh St., Los Angeles, Calif.

#### PARTICIPATING COMPANIES:

American Encaustic Tiling Co. Architectural Tiling Company, Inc. Atlantic Tile Manufacturing Co. B. Mifflin Hood Co. Cambridge Tile Manufacturing Co. Carlyle Tile Company General Tile Corporation Gladding, McBean & Co. Mosaic Tile Company, Inc. National Tile & Manufacturing Co. Olean Tile Company Pacific Clay Products Pacific Tile and Porcelain Co. Pomona Tile Manufacturing Co. Robertson Manufacturing Co. Summitville Face Brick Co. United States Quarry Tile Co.





WATERFILM BOILERS, Inc. A Division of L. O. Koven & Bro., Inc. 154 Ogden Ave., Jersey City 7, N. J. Plants: Jersey City, N. J. Dover, N. J. Plants: Jersey City, N. J. Dover, N. J. FOR AUTOMATIC FIRING WITH

OIL, STOKER OR GAS

### BEHIND THE BLUEPRINTS



()







Architect **ERIC MENDELSOHN** has had one of modern architecture's longest and most influentia careers. One of the fewer than half dozen to pioneers of contemporary architecture since h started practice in his native Germany in 1914 Mendelsohn became famous in Europe for dynamic commercial buildings, industrial plant and housing projects. In the Thirties he wo acclaim for the monumental scope of his Pales tinian structures, and in the Forties for his hand some American buildings, among them Sat Francisco's new Maimonides Hospital (p. 92) He has lived in the U. S, since 1941.

Contractor **ANDREW J. EKEN** has been apth called the "dean of U. S. skyline builders." Fo 29 years under his dynamic direction, Starret Brothers & Eken have built the tallest office buildings and the biggest housing projects in the country, including the Empire State Building and Metropolitan Life's Parkchester and Stuyvesan Town. A resident of Madison, N. J., Eken is trustee, technical adviser and godfather to the new building of nearby Morristown Memoria Hospital (p. 100),

JAMES C. DOWNS, JR. has a thorough back ground in real estate marketing and managemen based on 25 years of experience as author, lecturer, editor and property manager. Chicagoborn and educated at the University of Illinois Downs runs a property management firm (Downs, Mohl & Co.) and a research group (Real Estate Research Corp.), can appraise, analyze or manage all types of residential and commercial realty. Featured in this issue is his provocative study of the obsolescence of apartment buildings (p. 107).

Swiss-born **ALFRED ROTH** is an architect and editor of international repute. A 1926 graduate of Zurich's Institute of Technology, he served his architectural apprenticeships in the offices of Professor Karl Moser and Le Corbusier, designed housing in Sweden for two years before establishing his own private practice in Zurich in 1932. A highly articulate exponent of contemporary architecture, he is author of several volumes on the subject (p. 112), editor of *Werk*, the trilingual Swiss magazine of art and architecture, and lecturer on modern design at Washington University in St. Louis.

**ALFRED LEVITT,** designer and co-owner (with brother William and father Abraham) of famed Levitt & Sons, can point to almost 20,000 houses built from his plans since 1929. Tall, affable and 39, Levitt was a liberal arts student at New York University, has had no formal architectural schooling, learned all about building right on the job. Of the Levitts' newest development (p. 140), he says: "The Landia house is the coming of age of mass production: its high professionalism blends simple and gracious living for the lower income levels with the most efficient techniques learned in the last decade."



Hospital Traffic Flows Quietly through doors equipped with Corbin Hardware

Mount St. Mary Hospital Nelsonville: Ohio Architect: Louis F. Karlsberger, Columbus Contractor: Knowlton Construction Co., Bellefontaine Hardware supplied by: Columbus Hardware Supplies, Inc., Columbus

**HOSPITAL ZONE**—**QUIET** is a warning that has been taken to heart in the manufacture of Corbin Hardware. In function, Corbin Hardware meets all of the specialized needs for the efficient flow of hospital traffic. In quality, Corbin Hardware is unsurpassed for its ability to provide year after year of noiseless, trouble-free service.

The fine, new Mount St. Mary Hospital in Nelsonville, Ohio is representative of hundreds of American hospitals that are equipped throughout with Corbin Hardware.





P. & F. CORBIN DIVISION THE AMERICAN HARDWARE CORPORATION



New Britain, Connecticut



## ETTERS

#### HE GREAT UN DEBATE

#### UILDING:

Regarding your presentation of the UN buildng (Nov. '50) the plan of a building is the workng mechanism and should be arranged as such. Not as a machine for living, but just simply a good working arrangement of space. To hell with all the esoteric terms of our forced modernists. The plan is the thing. As for appearance, why not echo the plan much like an airplane shows its component parts, or better still, the human form. Life is not made into perfectly uniform little shapes as our modernists force upon us. It is not he texture of her skin that makes a woman beauiful, it is her form, the irregularities rather than he regularities.

We shall see the texture of the skin of the UN Secretariat, yet the eye grows weary in the monotony of it. Call it dynamic, mutated continuity, ... to me, *monotony*.

> RALPH H. SYVERSON Berwyn, Ill.

#### BUILDING:

Turn the UN building inside out, and you will find a better engineering solution. The large expanse of outside glass, if used for luminous ceilings inside, would produce an ideal artificial lighting system. Too, the glass in the 12 in. wide, bright fluorescent fixtures could then be used as outside windows....

BERNARD F. GREENE, Consulting Engineer New York, N. Y.

#### BUILDING:

Monumentality in a building—whether the UN Secretariat or any other—seems a complete negation of the essence of architecture. If a building is to house properly the people who will use it, then this function should be the determining factor in its design and form. A monument, on the other hand, is a sculptural form designed primarily to inspire, or awe, or commemorate. Witness the great monuments of the past—the Sphinx, the Campanile, the Parthenon—these may have had functions but their primary purpose was monumentality.

It seems to me that "modern" architecture needs to overcome its perpetual search after a "new monumentality" which only leads to buildings which are neither proper architecture nor proper monuments. We need a realization that a monument has its own life and function and should be designed specifically as a monument (as was understood in Saarinen's arch for St. Louis); and that a building no matter how large is still only a building. Once we come to this realization we will be freed to design buildings which will fit the needs of their users, the problems of the site and at the same time evolve their own essential esthetic. We will then get back where we should be architecturally-not jockeying cardboard forms around like facade decorators but involving building solutions on their own merits. Then, only, will we be freed to design great monuments for their own sake, which are truly monuments and not hermaphrodites.

LAWRENCE HALPRIN, Landscape Architect San Francisco, Calif. (Continued on page 40) Page through this magazine, and others like it. You'll find America's most active architects using <u>strong steel sash</u>, like Mesker's, as never before. With hundreds of standard sizes, they facilitate dramatic design, and readily fit into any type of modern architecture. A <u>standard</u> product that speeds up drafting and specification work, they're the lowest in cost of any window available.

the architect..

HOSPITO





### LETTERS

#### BUILDING:

The key question was not asked.

No one gave the net answer.

Goodman and Schindler alone spoke deep an spoke true.

But lost was the shining basic fact that this i not a functional building.

It is straight atelier bozart; bozart in concep production, result, appraisal.

My prediction: within 12 years UN will abar don these buildings to commercial tenants an show business, because the buildings do not serv the exigent needs: no use; no give or take neither life nor drive; no hand nor hope; no peace and no people.

As Schindler says: "Not born of Mother Hu manity," to save us all in world anguish, but jus another fashion-pushed *Prix de Rome*.

WILLIAM G. PURCELL, Architec Pasadena, Calif.

#### **GROPIUS ON HARVARD**

BUILDING:

Your article on the Harvard Graduate Cente (Dec. '50) makes a very good impression, and I like particularly your way of grasping and explaining the difficult over-all design problem and its continuity of the space conception. The photos are first-class and the analysis of design is an exemplary piece of writing.

However, TAC's way of work, our collabora tion, does not come out clearly and devaluates my partners. This was a real teamwork, a truly joint effort. Not only my ideas, but many ideas of the whole group were combined and integrated into one consistent over-all approach of design John and Sarah Harkness and Jean Fletcher con tributed too during our joint design meetings and are entitled to be named also even if they did not take over a specially outlined task as the others did.

There are also some minor errors: The cos of \$3,662 per student includes furnishing and fees for the dormitories. Without these two items the figure should be \$3,100. Anni Albers has designed the fabrics of the dormitories. Most of the fabrics in the Harkness Commons, however, are by Marie Nichols. Edward Forbes of Brown, Lawford & Forbes was suggested by us for our team because the Harvard authorities wanted to be sure to have an experienced firm added as "Technical Advisers."

WALTER GROPIUS Harvard University Cambridge, Mass.

#### KUDOS

#### BUILDING:

For the past six months or so, I have anticipated my copy of your magazine with increasing interest.

I am particularly impressed at the amount of worthwhile information you get into each issue and by your illuminating analyses of problems affecting the building industry and its role in both our society and our economy.

Your recent editorial on the handling of the (Continued on page 41)

## ETTERS

ew Pittsburgh development set forth a point of iew which we have long advocated. The role of the architect as a focal point around which the nany elements of the building industry must ally cannot be overlooked; nor can it be overemphasized.

Having directed the construction of many Rockefeller Center buildings I was pleased with your citation of this development as an outstanding example of cooperative planning. I agree wholeheartedly and further believe that credit belongs largely to John D. Rockefeller Jr., who was able to bring together all the factors needed o contribute to advanced building planning.

> JOHN W. HARRIS, President John W. Harris Associates, Inc. New York, N. Y.

#### UILDING:

Your December issue was really something and we want to add our congratulations to the good job BUILDING is doing editorially. In fact he issue looks so "hot" that we would appreciate your sending two extra copies. ...

> R. C. OVERMYER, Advertising Manager South Wind Div., Stewart-Warner Corp. Indianapolis, Ind.

#### BIGGER MAIL BOXES

#### BUILDING:

What is the most obsolete feature of dwellng design today? It is at the point where the nail is delivered.

The other day I sat in with a group of magatine publishers who were complaining about the lamage done to their magazines when postmen ry to force them through the standard-sized letter slots.

The U. S. Post Office regulations respecting apartment houses call for receptacles capable of taking a magazine measuring, when rolled,  $14\frac{1}{4}$ in. in length by  $2\frac{1}{2}$  in. in diameter, but one cannot roll FORTUNE, and there are months of the year when other magazines cannot be reduced, even by tight rolling, to a diameter of  $2\frac{1}{2}$  in.

Perhaps the answer is a reform in the size and shape of letter slots as well as of the mail boxes in apartment houses. This is a job for architects to undertake. If they design and specify slots or receptacles capable of taking a standard magazine without folding, one may expect manufacturers of builders' hardware to produce them in quantity and builders to install them.

> FLOYD S. CHALMERS Executive Vice President MacLean-Hunter Publishing Co. Toronto, Canada

• Amen.—ED.

#### SHELTERS FOR PORTLAND

#### BUILDING:

Due to the international situation much interest has been expressed locally for the need of shelters for the public. To fill this need the mayor of Portland has asked that local buildings be analyzed to see which one would be the most (Continued on page 42)

contractor.. High material and labor costs, shortages, and completion time are cut to a minimum by thousands of contractors who regularly use steel sash. Many prefer Mesker Steel Sash, because they arrive intact, are easily stored, resist rough handling, go up fast, need no excessive bracing, eliminate costly come-backs, require no delicate "adjusting," and help wind up any job in a hurry.





.. the

ow



#### LETTERS

desirable to use as shelters and which areas in these buildings should be designated as the shelter areas.

President J. A. Corenbaum of the Professional Engineers of Oregon asked us to form a committee for this purpose. As a result of the committee's work a rating or check sheet was developed which is designed to provide a structural picture of a building in order that its desirability for use as a shelter may be evaluated, and a detailed analysis made of the area or areas which may be acceptable as shelter areas.

To carry out the very considerable program of looking at the structures in the city the local sections of the American Institute of Architects, the American Society of Civil Engineers, and this organization are cooperating to furnish the specialized manpower necessary. This program is being organized in cooperation with the city building department.

After the shelter areas have been selected by this method they will be further analyzed and steps outlined to be taken if and when funds are available to further improve their efficiency. To do this other engineering organizations may then be called upon, such as the mechanical engineers, the heating and ventilating engineers, and the electrical engineers, to advise on the program.

This work may be of interest to others. More information will be sent upon request.

> R. EVAN KENNEDY, President Structural Engineers Association of Oregon Portland, Ore.

#### ART IN ARCHITECTURE

#### BUILDING:

While you are covering the builder-architect situation admirably, you are neglecting two important adjuncts to the building and architectural professions.

Any building needs the enrichment and integrated beauty of fine three-dimensional detail and the color which comes from fine murals. . . . There has not been enough attention devoted to the sculptor and the muralist and the contribution of each to the progress of the mother art architecture.

Painting and sculpture are lost without a place to be; that is, to exist as a planned part of a general scheme. To plan a fine building and then to purchase random bits of sculpture or a painting to enrich it is to hang table silver on a Christmas tree. Therefore, when you show us the best of modern building we would also enjoy seeing the best of modern murals and architectural sculpture.

Did I hear you say that there isn't much to show? Well, then, maybe you might make the inclusion of painting and sculpture in the architectural scheme your next crusade!

> P. G. NEMSER Pittsburgh, Pa. (Continued on page 48)

# Here's why all

1/195/33

STEEL WINDOWS...KNOWN FOR THEIR

Stranth

look to ...

engineer

architect

ownei

contractor

# **33% MORE** STRENGTH!

Mesker's Intermediate Window members are up to 33% stronger because of their greater 134" depth. These are the deepest steel window sections made!

Any way you look at it ... through the eyes of the architect, engineer, contractor or owner . . . the extra strength of Mesker Steel Sash sets it apart from windows made of lighter weight sections. Up to 33% stronger, you'll find it a ready answer to a multitude of building problems, especially in times like these.

Call in your Mesker Sales Engineer!



Big, versatile plywood panels were also used to form smooth surfaces for basement and foundation concrete then re-used for sheathing and subflooring. Wall sheathing and subflooring is  $\frac{4}{5}$ " thickness. Roof sheathing is  $\frac{1}{2}$ ". Owner-designer is Charles T. Pearson of the architectural firm of Lea, Pearson and Richards, Tacoma.



## "Plywood Sheathing Specified For Extra Strength",



Interior cross walls have PlyScord nailed to studs. This lateral bracing, acting with plywood roof and outer wall sheathing and subflooring, imparts necessary rigidity. These plywood structural panels also serve as superior backing for interior finish in this fine home.



PLYSCORD® is the sheathing grade of Interior-type Douglas fir plywood, bonded with highly moisture-resistant (but NOT waterproof) glues which will withstand occasional wetting such as might be encountered during construction. An unsanded panel for wall and roof sheathing, subflooring, backing, bracing and one-use concrete forms.

PLYSCORD is a registered grade-trademark identifying plywood inspected by Douglas Fir Plywood Association (DFPA).



#### Says Architect-Owner

#### Charles T. Pearson, A. I. A.

STUATED on a picturesque view-bluff overlooking Puget Sound—and subject to the same strong prevailing winds which blew down the first Tacoma Narrows Bridge—this striking modern home relies on the rigidity and strength of plywood sheathing throughout. Even interior cross-walls have a membrane of PlyScord, to give added lateral bracing.

"The unusually windy location made the specification of plywood doubly important," says Mr. Pearson. "The strength and rigidity of the material definitely contributes to better construction."

Plywood sheathing *is* stronger—proved in government tests to be more than twice as strong and rigid as diagonal sheathing. Plywood has other advantages, too. The big panels cover quickly, require less sawing, fitting and nailing, eliminate material waste. Contractors report savings of more than 25% in applying wall and roof sheathing . . . up to 50% in laying subflooring.

For detailed information, see Sweet's File, Architectural, or write for 1951 Basic Plywood Catalog. Single copies free to architects, builders, dealers anywhere in the U.S. Douglas Fir Plywood Association, Tacoma 2, Wash. Field Offices: 848 Daily News Bldg., Chicago 6; 1232 Shoreham Bldg., Washington 5, D. C.; 500 Fifth Ave., New York City 18.



# "NON-CRITICAL"

...today's best reason for building with beautiful, permanent...

# BRICK AND TILE!

# You conserve vital raw materials







FOR INDUSTRY

FOR SCHOOLS

FOR HOSPITALS

This nation must supply the tools of defense ... the guns ... the tanks ... the planes ... that are so urgently needed here, and elsewhere in the free world.

You conserve the *vital* raw materials needed for these tools-when you build essential buildings with structural clay products.

Clay is not a critical raw material. Clay deposits are unlimited.

This is today's best reason for building with brick and tile...their "noncritical" status!

But there are other reasons—good ones! Buildings erected of brick and tile are durable, remain attractive, require little repair or maintenance. By quality construction, you protect any building investment.

Yes, you can help increase the nation's productive capacity, and avoid delays due to raw material shortages. Use brick and tile for industrial buildings, military and naval facilities, warehouses, power plants, schools, hospitals and other essential buildings.

For any problem you may have on design, types of products, scheduling and other details, please contact any of our offices. We welcome your inquiry on information or service.

#### MAIN OFFICE

STRUCTURAL CLAY PRODUCTS INSTITUTE 1520 18th Street, N. W., Washington 6, D. C.

## 14 regional offices to help you

Structural Clay Products Institute

New Haven 10, Conn. 341 State Street New York 17, N. Y.

1949 Grand Central Terminal Canton, Ohio

306 Market Avenue, North

Pittsburgh 22, Pa. 502 Benedum Trees Building

Chicago 1, Illinois 228 North LaSalle Street

> Ames, Iowa 120½ Welch Avenue

> Council Bluffs, Iowa 425 North 6th Street

STRUCTURAL

Minneapolis 4, Minnesota 206 Wesley Temple Building

Denver 4, Colorado 116 West Tenth Avenue

Phoenix, Arizona 1538 West McDowell Road

San Francisco 5, California 55 New Montgomery Street

Seattle 4, Washington Central Building

> Clay Products Association of the Southwest

Austin, Texas Littlefield Building

PRODUCTS · INSTITUTE ·

Oklahoma City, Oklahoma First National Building

# An Outstanding Product G-E TEXTOLITE\* PLASTIC TOPS



# Manufactured by an old firm, GENERAL BELECTRIC Distributed by an old friend, **Roddiscraft**

Architects have been specifying General Electric equipment and Roddiscraft products for many years. These two now team up to bring you General Electric Textolite—a quality plastics laminate surfacing material—a beauty with brawn.

Yes-General Electric Textolite wears like iron -cleans like glass. Colorful as a rainbow, too -you have a wide choice of solid colors and patterns to carry out decorative schemes, in homes, stores, restaurants, clubs, cocktail lounges – wherever a surfacing material is needed.

Call your nearest Roddiscraft warehouse for sample books-and color charts.

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

G-E Textolite bas been awarded the 1951 Fashion Academy Award for beauty in color, design and modern decorative styling. **Roddóściactaść** RODDIS PLYWOOD CORPORATION MARSHFIELD, WISCONSIN

NATIONWIDE Roddiscraft WAREHOUSE SERVICE

Cambridge 39, Mass. \* Charlotte 6, N. C. \* Chicago 32, Ill. Cincinnati 2, Ohio \* Detroit 14, Mich. \* Kansas City 3, Kan. Los Angeles 58, Calif. \* Louisville 10, Ky. \* Marshfield, Wis. Milwaukee 8, Wis. \* New York 55, N. Y. \* Port Newark 5, N. J. Philadelphia 34, Pa. \* St. Louis 16, Mo. \* San Francisco 24, Cal. New Hyde Park, L. I., N. Y.



of Mr. and Mrs. Arthur Mardiat, Castle Homes, Baby Residence

a model house . . .



# a model kitchen with **TEXTOLITE PLASTICS TOPS**

The selection of General Electric Textolite plastics tops for kitchen work surfaces in the Castle Homes developments Suffolk County, Long Island, offers two big advantages to owners. They enjoy colorful, attractive kitchens, with counter surfaces that match the overall décor. And they profit by the longwearing, stain- and heat-resistant qualities of these sturdy tops.

G-E Textolite tops are also being used for commercial installations as well as for private kitchens. Restaurants and soda fountains find these tops both beautiful and enduring.

For more information about G-E Textolite plastics tops, see our Catalog in Sweet's File, or mail the coupon below.





# PLASCOR

#### 







Plascor is a special vinyl plastic floor tile designed particularly for those areas where the floor must combine quietness, beauty, and durability with resistance to acids, alkalies, oil and greases.

Plascor comes in  $8\frac{1}{2}$ ", 11", 17" and 34" square sheets,  $\frac{1}{8}$ " thick and in a full color range, with matching cove base available. It is laid in the conventional manner, over wood and concrete.

**CHEMICAL RESISTANCE** — Plascor is made from Tygon, the vinyl plastic used to line acid tanks. It's dense, non-porous, non-absorbent. Shakes off attacks by acids, alkalies, oils or greases; chemicals that quickly destroy linoleum, rubber or asphalt have no effect on this built-totake-it vinyl floor tile.

QUIET AND COMFORTABLE — Plascor is unusually quiet, and comfortable to walk upon. Its resin-dipped cork content makes it truly resilient. Ideal for hospitals, libraries or

offices where quietness is a must. Plascor stills heel clackety-clack to a whisper . . .

absorbs noise, cushions shock . . . lessens foot and leg discomfort.

**BEAUTIFUL APPEARANCE** — Plascor is as good to look at as to walk upon. Plascor colors are clean colors . . . and Plascor's interesting mottle pattern keeps dirt and foot markings unnoticeable. It's as easy to clean as a china dish.

WEARS LIKE GRANITE — Independent laboratory tests prove Plascor's remarkable wear-resistance. And field installations confirm. Chemical laboratories and plants, hospitals, theatres, restaurants, schools, stores report a wear life far beyond expectations.

When it comes to picking a floor tile that will resist chemicals . . . be quiet and comfortable to walk on . . . looks good . . . is easy to maintain . . . and wears well . . . there's one proven answer - . PLASCOR, the Tygon Plastic Vinyl Floor Tile. Made by The U. S. Stoneware Co., Akron, Ohio.





SEND FOR FREE SAMPLES AND TECHNICAL DATA

WRITE TODAY TO: THE U. S. STONEWARE CO., AKRON, OHIO • SINCE 1865 • MANUFACTURERS OF CORROSION-RESISTANT MATERIALS AND EQUIPMENT

## LETTERS

#### DECORATOR VS ARCHITECT

BUILDING:

Whereas the architect's gripes against decorators are all too well known, the decorator's side of the story has received far too little publicity. The architect is as much in need of the specialized skill of the interior decorator in the planning of a home as he is of an acoustical engineer in the planning of a theater.

All too frequently in my work clients cry on my shoulder about bone-headed blunders made by leading architects in the planning of their homes. Blunders which any competent decorator could have spotted by merely glancing at the architect's preliminary drawings....

I quote a conversation which recently took place between one of the foremost architects on the Pacific Coast and one of our local decorators:

Architect, "I have never yet designed a house for a client that I, myself, wouldn't like to live in."

Decorator, "I have never yet planned a home for a client that I, myself, would like to live in, because I have never had a client who was just exactly like me."

> KLAUS PFEFFER Design & Color Consultant Berkeley, Calij.

#### GARAGE FRONT DOOR

BUILDING:

For many months I have studied the plans of suburban houses as they appear in the Sunday real estate sections....



The suburban housewife's car is not a luxury nor a "pleasure car." It is as much a necessity of her daily living as a telephone or front door bell. So the placing of the garage is of great importance to her convenience. . . .

Architects should consider not only a charming exterior when planning the garage. It should adjoin as nearly as possible the working unit of the house—either kitchen or utility room—and should have a direct entrance into the house proper....

> FRANCES E. BECK Orangeburg, N. Y.



Typical of the growing list of sound control installations using Simpson Accoustical Tile is the home office of St. Paul Fire and Marine Insurance Company. In this large modern building, 1300 employees work more efficiently . . . are less tired after a day's work . . . because of Simpson Acoustical Tile on the ceilings and walls. The management of this progressive fire and marine insurance company realizes, as do thousands of other company officials, that sound conditioning pays off in better work, fewer errors, less labor turn-over and less absenteeism.

#### **ONLY SIMPSON HAS ALL FIVE!**

- 1. WASHABLE FINISH
- 2. HIGHER SOUND ABSORPTION
- 3. HOLLOKORE DRILLED PERFORATIONS
- 4. FINISHED BEVELS
- 5. MORE BEAUTIFUL AND EFFICIENT





SIMPSON LOGGING COMPANY, Sales Division, 1065 Stuart Bldg., Seattle 1, Washington

#### THESE SIMPSON ACOUSTICAL CONTRACTORS OFFER YOU A COMPLETE ACOUSTICAL SERVICE -

ALABAMA Stokes Interiors, Inc., Mobile ARIZONA M. H. Baldwin, Tucson CALIFORNIA Coast Insulating Products, Los Angeles Cramer Company, San Francisco and Fresno

- CANADA Albion Lumber & Millwork Co., Ltd., Vancouver, B. C.
- COLORADO Construction Specialties Co., Denver
- GEORGIA Dumas and Searl, Inc., Atlanta
- ILLINOIS General Acoustics Company, Chicago Melvin R. Murdy, Moline
- INDIANA The Baldus Company, Inc., Fort Wayne KANSAS Kalley Asbestos Products Company, Wichita LOUISIANA Pioneer Contract & Supply Company, Baton Rouge MINNESOTA Date Tile Company, Minneapolis MISSISSIPPI Stokes Interiors, Inc., Jackson MISSOURI Kelley Asbestos Products Company, Kansas City Hamilton Company, Inc., St. Louis NEBRASKA Kelley Asbestos Products Company, Omaha NEW YORK Robert J. Harder, Lynbrook OKLAHOMA Harold C. Parker & Co., Inc., Oklahoma City and Tulsa KANSAS

- The Mid-West Acoustical & Supply Co., Cleveland, Akron, Columbus, Dayton, Springfield and Toledo OREGON
- Acoustics Northwest, Portland R. L. Elfstrom Co., Salem
- TENNESSEE D. E. Madden Co., Inc., Memphis
- TEXAS

OHIO

- Blue Diamond Company, Dallas Otis Massey Company, Ltd., Houston
- UTAH Utah Pioneer Corporation, Salt Lake City
- WASHINGTON Elliott Bay Lumber Company, Seattle
  - WISCONSIN Building Service, Inc., Milwaukee



# something about a beaver ...

Maybe it's because we're in this business of air conditioning that we just can't get away from our work. Everywhere we go there's air. Sometimes it's too cold, sometimes it's too warm, sometimes too dry, or too moist. Usually we find ourselves figuring out ways to warm it, cool it, clean it, humidify it, dry it—move it from one place to another in the thriftiest and most efficient way. For air is a material to be worked with just like wood, stone, steel, glass, cement. It can be conditioned exactly to your specifications and to the purposes and requirements of your clients.

For some 25 years now we've been sharpening our teeth on some of the toughest assignments in the business. From USAIRco designers and engineers has come a constant stream of new and improved equipment incorporating new ideas in theory, concept, design. And while we've been at it for a good while—we haven't lost any of our eagerness or enthusiasm. Feel free to call on us for any advice or cooperation we can provide.

The name that means everything in AIR CONDITIONING



Whether for new construction or remodeling, you can specify savings for your clients





DUCTLESS AIR CONDITIONING FOR MULTI-ROOM BUILDINGS





WEATHER TO MATCH ITS NAME is offered by the North Shore Villas, Miami Beach, Florida. Each room has its own conditioning unit operated from a central system. Guests simply dial the weather they want. NO DUCTWORK, partitions or wasted space! Slim copper tubes hidden inside the walls carry the cooling or heating medium. Modu-aire is quickly, easily installed. Note compactness, attractive design.

1		UN UN
1 and	PRACTICAL	-i
	Send for new, free booklet, "Practical Pointers on Air Conditioning."	5
		1

#### ITED STATES AIR CONDITIONING CORPORATION 3305 Como Avenue S. E., Minneapolis 14, Minnesota

Please send me your "Practical Pointers" Booklet.
 Please send complete information on Modu-aire.

Name

Firm\_\_\_\_

Zone\_\_\_\_State



WINDOWALLS of Andersen Casement and Picture Window Units

ANDERSEN WOOD WINDOW UNITS COMPLETE

**WARMING SUNSHINE ENTERS:** freezing winds stay *outside*. It's an easy trick for these expansive WINDOWALLS, which serve simultaneously both as windows and as wall for most of this fine home's southern exposure.

Much of the beauty, much of the famed efficiency of these Andersen Casement and Picture Window Units comes from their careful wood construction. Wood blends with the shingle exterior, and wood's insulating values improve the windows' performance.

See Detail Catalog in Sweet's Architectural and Builders' Files, or write us for further information. The complete WINDOWALLS Tracing Detail File will be sent on request to architects and designers at no charge. Andersen WINDOWALLS are sold by lumber and millwork dealers.

\*TRADEMARK OF ANDERSEN CORPORATION

Andersen Corporation BAYPORT · MINNESOTA



LOOK how effectively the new Insulite SHINGLE-BACKER achieves rich, new beauty for shingled exteriors! See how easily it solves the problem of uniform exterior shingle application! The long 48-inch panels cover a lot of space fast — and provide a firm, smooth undercourse that makes it easy to match the outside processed shingles with uniform deep-line shadow beauty.

with the New

Only a few seconds time and just 4 nails give you a strong, wind-resistant, uniform undercourse that ordinarily requires many miscellaneous shingles, many nails and much longer time to apply. It saves man-hours, eliminates waste . . . and in many cases the total applied cost is surprisingly less than the cost of standard doublecoursing procedure. Insulite SHINGLE-BACKER is made of genuine waterproofed Graylite—asphalt-impregnated throughout. It is equally effective for shingling on wood sheathing or Bildrite Sheathing. Ask your Insulite representative to give you all the facts.



RESISTS WINDS BEYOND 250 M. P. H.

Complete instructions show how to use the new Insulite application system for applying shingles over Bildrite Sheathing with the new SHINGLE-BACKER. Test panels, using this system with "Stronghold" grooved nails, have resisted air blasts of more than double hurricane velocity in laboratory wind tunnels—without the loss of a single shingle. Holding strength with plenty to spare! plus extra insulation, plus assurance of uniform, attractive, exterior beauty.

Write for Complete Information!

MINNESOTA AND ONTARIO PAPER COMPANY MINNEAPOLIS 2, MINNESOTA

> Refer to Sweet's File, Architectural Section — 10a/In \*Reg. T. M. U. S. Pat. Off.

INSULITE DIVISION





# Haddon Hall Pattern (Basketweave) Flooring Again Available in Choice of Fine Hardwoods

Unavailable since 1942 due to material shortages, this authentic reproduction of the classic English Haddon Hall Pattern is again returned to the Parkay line. Dance floors, show windows, salons, residences, apartments and hotels can now enjoy the beauty of this world-famous basketweave pattern flooring at only a fraction of its original cost.

## Pre-fabricated and Pre-finished to Save You Time and Money

Parkay Haddon Hall flooring is factory assembled in 12"x12" beveled edged units composed of 2"x4" and 2"x2" solid blocks ¼" thick. Each unit is then finished by proven factory methods to insure a uniform and lasting finish. Flooring is applied to any sound, smooth subsurface —solid wood, plywood, concrete, terrazzo—with Special Parkay Adhesive. Choice of five woods—light and medium finish Oak, Walnut, Avodire, Mahogany and Teak. Write for descriptive literature. Parkay, Inc., Louisville 9, Ky.



#### PRIZE WINNERS \_\_\_\_ NAHB-FORUM HOUSE DESIGN COMPETITION

#### NATIONAL PRIZES First (\$7,500): Bruce Walker Cambridge, Mass. Second (\$5,000): Ralph Rapson Cambridge, Mass. Third (\$2,500): Wallace S. Steele Minneapolis, Minn. Fourth (\$1,000): George Matsumoto Raleigh, N. C.

#### Honorable Mention (\$500):

Harold Blewett, Cambridge, Mass. • A. William Hajjar and Ronald Whiteley, State College, Pa. • Mark P. Lowrey, New Orleans, La. • Robert L. Mackintosh and Richard H. Wheeler, Cambridge, Mass. • J. David McVoy and Harold C. Rose, Gainesville, Fla. • Donald Olsen, Berkeley, Calif. • Ambrose M. Richardson, Chicago, Ill. • Sanford H. Wachtel, New York, N. Y. • Ernest Wright, Cambridge Mass.

#### **REGION A PRIZES**

First (\$750): Ernest Wright, Cambridge, Mass.
Second (\$500): Robert L. Mackintosh and Richard H. Wheeler, Cambridge, Mass.

Honorable Mention (\$250): Hugh Stubbins, Lexington, Mass.

#### REGION B PRIZES

First (\$750): George Matsumoto, Raleigh, N. C. Second (\$500): Sanford H. Wachtel

d (\$500): Sanford H. Wachtel New York, N. Y.

#### Honorable Mention (\$250):

Fred Loeffler, Jr., Pittsburgh, Pa. • Robert Sawyer, Raleigh, N. C. • Kenneth Sklar, Brooklyn, N. Y. • John R. Strang, Charlottesville, Va.

#### **REGION C PRIZES**

First (\$750): Ralph Rapson, Cambridge, Mass. Second (\$500): Mark P. Lowrey New Orleans, La.

#### Honorable Mention (\$250):

Jack O. Boyte, Atlanta, Ga. • Dick Smith, Cincinnati, Ohio.

#### REGION D PRIZES

First (\$750):

Second (\$500):

Wallace S. Steele Minneapolis, Minn. Harold Blewett Cambridge, Mass.

#### Honorable Mention (\$250):

Robert Diament and John Macsai, Chicago, Ill. • Vito A. Girone, South Bend, Ind. • Richard B. Pollman, Detroit, Mich. • Ambrose M. Richardson, Chicago, Ill. • Ray E. Roush, Jr., Cincinnati, Ohio.

#### **REGION E PRIZES**

First (\$750): Kazumi Adachi, Dike Nagano and Robert W. Blachnik, Los Angeles, Calif. Second (\$500): Alexis Dukelski Culver City, Calif. and Harry R. Kemm, Los Angeles, Calif.

Honorable Mention (\$250): Leland Evison, Pasadena, Calif.

#### **REGION F PRIZES**

First (\$750): A. William Hajjar and Ronald Whiteley, State College, Pa. Second (\$500): William W. Lyman, Jr., W. Danforth Compton and George A. Welch, Cambridge, Mass. (Continued on page 60)

Individual lighting fixtures in this PLEXIGLAS Installation measure 6 x 8 feet and consist of four corrugated-bottom diffusing panels with curved side panels all of white translucent acrylic plastic. Each fixture is lighted with ten 96" 300 MA Slimlins and two 40-watt fluorescent lamps. Room ceiling is 18 feet high. Fixtures installed by Bell Electric Company. Design Consultants: W. E. Conley, General Electric Company; John Liston, George S. Rider Co.; W. A. Mize, Cleveland Electric Illuminating Company.

# 15 Times the Illumination from Equivalent Wattage... thanks to **PLEXIGLAS**

Gir the

This is the banking room in Cleveland's Bank of Ohio—before and after PLEXIGLAS lighting was installed. Lighting-level averages have increased from 4 footcandles to 62 footcandles on the working surfaces with no increase in wattage. Under these improved conditions it's not surprising that bank personnel are more cheerful, alert and efficient.

For Quality Lighting, ease of installation and low-cost maintenance, architects and illuminating engineers are specifying PLEXIGLAS in banks, offices and public buildings. PLEXIGLAS lighting fixtures diffuse light without absorbing it—transmit full illumination without glare. Lightness and strength permit installation with fewer, lighter supports. And resistance to age, weather, breakage and discoloration reduces maintenance charges to a minimum.

Write today for our new bulletins on PLEXICLAS for Lighting. Full technical information; photographs of actual installations; descriptions of PLEXICLAS types, patterns and colors. Ask us about your specific problem or application. We'll be glad to discuss it with you.

SEND FOR FREE LITERATURE TODAY - No Obligation





Representatives in principal foreign countries

PLEXIGLAS is a trade-mark, Reg. U.S. Pat. Off. and in principal foreign countries, Canadian Distributor: Crystal Glass & Plastics, Ltd., 54 Duke Street, Toronto, Ont.

# Rack Heavy Runs of Conduit with UNISTRUT All-Purpose Metal Framing!



Cross section view of Unistrut-supported heavy conduit run in recent installation at American Sugar Refining Company's Chalmette, Louisiana plant. Note that Unistrut's flexibility makes possible later additions or changes.

Try completely adjustable Unistrut framing the next time you have a pipe or conduit racking job. It's easy to use, requires little detailing time, fast to erect, and is capable of supporting great weight. It's trim framework, neat in appearance.

Unistrut's flexible design permits extreme accuracy of installation-adjustability to a fraction of an inch. Additional framework, clamps, or hangers may be added at any time quickly and easily, without disturbing existing runs. No drilling, no welding, no special tools or equipment needed. Unistrut saves time and money in erection and maintenance.

> Representatives and Warehouse Stocks in Principal Cities consult your Telephone Directories.



 Parented

 Spring Nut

 Ompleted

 Fige Clamp

 Ond Channel

 Pipe Clamp

 Ond Channel

 Ord Channel

Zone

Company

Address

City

NO DRILLING • NO WELDING 100% ADJUSTABLE AND REUSABLE!

Unistrut

G

The World's Most Flexible All-Purpose Metal Framing UNISTRUT PRODUCTS COMPANY 1013 W. Washington Blvd. \* Chicago 7, Illinois

**FREE CONSTRUCTION** 

**CATALOG AND WALL** 

CHART Write today for

your copy of 24 page Construction Catalog No. 500 and

24" x 36" Wall Chart!

# "DUCT SOUP" to line and wrap ducts with

# **ULTRALITE**, the long glass fiber insulation, goes on faster, easier, and cheaper than any insulation you've ever used! For Ultralite Duct Insulation and Duct Liner have every characteristic that makes application easy and quick. They're light, flexible, resilient; you can cut them with a knife; run them quickly around curves and corners; adhere them to metal with adhesives ... screws and washers ... wires. Try Ultralite—soon!

#### ULTRALITE DUCT INSULATION - THERMAL

A soft, resilient, flexible insulation of long, fine glass fibers with a low K-Factor. Available plain or with your choice of 4 vapor barrier facings, already adhered to the insulation. Wrap-around method of application cuts applied costs way down. Nonirritating, pleasant to handle. Fire-resistant, non-corrosive to metals.



#### GUSTIN-BACON MFG. CO. 1412 WEST 12TH ST., KANSAS (ITY, MO. New York Chicago Philadelphia San Francisco Los Angeles Houston Tulsa Ft. Worth

#### ULTRALITE DUCT LINER - ACOUSTICAL

RALITE

This is the duct liner that **won't burn**—a flexible, resilient, semi-rigid glass fiber insulation designed specifically as acoustical duct liner. Won't break, flake or chip. Runs quickly around curves and corners. Friction loss is low. Won't delaminate under air movement; won't flake off in air stream.

Please send m No. 37-D-2.	e samples	of	ULTRALITE	ond	catalog	A.I.A. Dept.	File AF-2
							_
COMPANY							
ADDRESS				-		-	
CITY .				TATE			

# **Douglas Fir**

\*The quality group of door manufac-turers is comprised of mills inspected regularly by the Fir Door Institute inspection service. This service is a check on quality completely independent of individual mill supervision. The doors produced by these manu-facturers carry FDI grademarks:

Acme Door Co. Hoguiam, Wash.

Buffelen Manufacturing Co. Tacoma, Wash.

Cruver, Langhardt Door Co. Anacortes, Wash.

Klamath Door Company Klamath Falls, Ore.

M & M Wood Working Co. Portland, Ore.

E. A. Nord Co. Everett, Wash.

Puget Sound Manufacturing Co. Tacoma, Wash.

Robinson Plywood & Timber Co. Everett, Wash.

Simpson Logging Co. Seattle, Wash.

Vancouver Door Co. Montesano, Wash.

The Wheeler Osgood Co. Tacoma, Wash.

# **These Grademarks DOOTS** are the Buyers' Guides to Doors of Uniform Quality



**T**HE QUALITY group of door manufacturers\* distinguish their product with one of these registered grademarks. By specifying FDIstamped doors, buyers can be certain of receiving a dependable product . . . one preferred by six out of every ten door users.

The official FDI stamp on a Douglas Fir, Western Hemlock, or Sitka Spruce door is your assurance it meets the quality standards of the U. S. Department of Commerce. To be certain of door quality, specify FDI grade-marked doors and be sure.



Mills subject to Fir Door Mills subject to Fir Door Institute inspection are always glad to provide Notarized Cer-tificates to buyers upon request, showing that doors shipped have been found to be up to U.S. Department of Commerce Standards for the grade purchased. purchased.

**Fir Door Institute** Tacoma 2, Washington



erforated ceilings of U·S·S Stainless Steel

## improve appearance, acoustics and air-conditioning

OF HOUSE AND SENATE CHAMBERS



Perforated ceiling of U.S.S Stainless Steel adds beauty as well as functional utility to the historic Senate Chamber.

Here, viewed from above, you can see the high percentage of open area in the Stainless Steel ceiling in Congressional Chambers.

RECENT remodeling programs in the House and Senate Chambers of the nation's Capitol took advantage of the unique properties of Stainless Steel as a construction material. Installed beneath new and stronger roofs are perforated ceilings of U·S·S 18-8 Stainless Steel.

But an improved air-conditioning installation was a major reason for using Stainless Steel here. Air in the chambers is drawn out through the hundreds of perforations in the Stainless ceilings. Stainless Steel's exceptional corrosion resistance reduces the serious problem of condensation.

Acoustics, too, have been improved through this applica-

UNITED STATES STEEL COMPANY, PITTSBURGH

tion of Stainless Steel. The tiny perforations absorb and deaden sound in the chambers.

An installation of this type is only one of hundreds of architectural uses of Stainless Steel. Stainless is a versatile material-its corrosion resistance, light weight, strength, attractive appearance and durability fit it to many applications.

Our Stainless engineers are well qualified to give you expert assistance in the selection of proper U·S·S Stainless Steels. By specifying U·S·S Stainless, you are assured of a perfected, service-tested material that lends itself well to the most modern construction.

S





# Fiat Precast Receptors (Regular black & white or special colored terrazzo) ... for Built-up Tile Showers Save money and speed up the job by eliminating the difficult lead pan and tile floor

Details of suggested construction in building up a tile shower on a Fiat precast receptor. Metal lath and foundation plaster are brought down inside the rust-proofed metal flange. The tile setter starts directly with the wall construction without the delay involved in laying a tile floor and waiting for it to harden to a working surface.

Fiat precast terrazzo receptors are made of black and white marble chips and white cement, ground and polished. A rustproof galvanized reinforcing flange and a 2" brass drain fitting are cast integral with the receptor to form a strong, leakproof, slip-proof, non-absorbent floor for the shower.

The use of a precast receptor eliminates the easily damaged lead pan and the labor consuming job of laying a tile floor. It enables the contractor to complete the shower faster and produce a better job at a lower cost.

Fiat precast receptors reduce the danger of leaky cracks developing in the tile shower walls by providing a solid, rigid foundation that is not affected by shrinkage of supporting wood framing or settling of the building.

The attractive appearance of terrazzo makes a beautiful floor that is in perfect harmony with tile walls. Various colored terrazzo is available on special order, to blend with tile colors.

Your plumbing contractor can get quick delivery of a Fiat receptor as many plumbing wholesalers have Fiat receptors in stock. Standard square type sizes-32" x 32", 36" x 36", 40" x 40". Corner type-36" x 36", 40" x 40".





Section through pre-cast receptor showing brass drain and adaptation to 2" waste pipe and "P" trap. (Trap and pipe by others).

FIAT METAL MANUFACTURING COMPANY Three complete plants

9301 Belmont Ave., Franklin Park, III. Long Island City 1, N.Y. Los Angeles 33, Calif. In Canada: The Porcelain and Metal Products, Ltd. Orillia, Ontario

#### PRIZE WINNERS-NAHB-FORUM HOUSE DESIGN COMPETITION

Honorable Mention (\$250): W. Rowe Smith, Provo, Utah.

#### **REGION G PRIZES**

First (\$750): Bruce Walker, Cambridge, Mass. Second (\$500): Donald Olsen, Berkeley, Calif.

Honorable Mention (\$250): Warren B. Heid, San Jose, Calif.

#### **PLYWOOD BUILT-INS—Special Prizes**

First (\$2,500):	Edward W. Hanson Stillwater, Minn.	
Second (\$1,500):	Paul Edward Tay Long Beach, Calif.	
Third (\$1,000):	Seymour R. Joseph New York, N. Y.	
Fourth (\$500):	Nick Athens Albuquerque, N. M.	

#### Honorable Mention (\$250):

Grosvenor Chapman, Washington, D. C. • Alvard Dobles, Miami, Fla. • Robert A. Little, Cleveland, Ohio • William and Barbara Pfouts, Pittsburgh, Pa. • Stewart Pike, Audubon, N. J. • Project De-signers & Planners, New York, N. Y. • Joseph J. and Carolyn Roberto, New York, N. Y. • W. Rowe Smith, Provo, Utah • Richard G. Stein, Croton-on-Hudson, N. Y. • Warren Wilson Weaver, Thorn-wood, N. Y.

#### **GLASS USE—Special Prizes**

First (\$2,500):		Seymour R. Joseph New York, N. Y.
Second (\$1,500):		Kazumi Adachi,
	•	Dike Nagano and Robert W. Blachnik Los Angeles, Calif.
Third (\$1,000):		Hugh Stubbins, Jr. Lexington, Mass.
Fourth (\$500):		Mark Jaroszewicz Bloomfield Mich

#### Honorable Mention (\$250):

Atwood and Goldberg, Chicago, Ill. . Prentice Bradley, Pittsfield, Mass. . Jack Freidin, Bronx, N. Y. . Sol N. Gellman, Milwaukee, Wisc. • Sidney L. Katz and Taina Waisman, Brooklyn, N. Y. • Norman Kertzman, Washington, D. C. • Richard B. Pollman, Detroit, Mich. . Lambert James Soucek, Jr., Hinsdale, Ill. . Eldon C. Teschner, Smithville, Mo. . Warren Wilson Weaver, Thornwood, N. Y.

#### **KITCHEN PLANNING—Special Prizes**

	James M. Chase New York, N. Y.	
,	Fred C. Nagel Chicago, Ill.	
	Lawrence G. Evanoff Spokane, Wash.	?
* * * *	Guy G. Rothenstein Jamaica, N. Y. and Arthur Hinden New York, N. Y.	j
	· • • •	James M. Chase New York, N. Y. Fred C. Nagel Chicago, Ill. Lawrence G. Evanoff Spokane, Wash. Guy G. Rothenstein Jamaica, N. Y. and Arthur Hinden New York, N. Y.

#### Honorable Mention (\$250):

Kazumi Adachi, Dike Nagano and Robert W. Blachnik, Los Angeles, Calif. • Eric R. Bancroft, New York, N. Y. and Ching C. Cheng, Astoria, N. Y. · Edward D. Dart, Dundee, Ill. · Joseph N. LaBorde, Gainesville, Fla. . Roland H. Lane, Seattle, Wash. . J. P. Ligonnet, Stillwater, Okla. . Robert A. Little, Cleveland, Ohio • George Matsumoto, Raleigh, N. C. • Richard B. Pollman, Detroit, Mich. • Lucille B. Raport, North Hollywood, Calif.



Attractive residence in Caldwood, Texas, rooted with K&M Century No. 5 Aspestos-Cement Shingles. Contractor: Morrogh's Home Building Service Company, Beaumont, Texas.

# Three reasons why it pays to specify K&M "CENTURY" ASBESTOS-CEMENT SHINGLES

When the problem arises, "Which roof to use?", you can be sure of being on firm ground by specifying "Century" Asbestos-Cement Shingles. Consider these facts:

Smart, modern appearance pleases every home owner! K&M Asbestos Shingles are attractively textured, with built-in colors. The variety of colors—White, Black, Spanish Red, Surf Green, and Graytone means you can be sure of satisfying every owner's taste!

Amazing durability makes a better roofing job! K&M Asbestos Shingles resist fire, weather, rot, rust, and termites—the roof will last the lifetime of the house!

Owners appreciate the three-way economies! The moderate initial cost of K&M Shingles starts the savings. Then, they are specially designed for quick, easy application save on both time and labor. And finally, K&M Asbestos-Cement Shingles don't ever need painting to provide perfect, lasting protection!

These are but a few of the many reasons it pays to specify K&M "Century" Asbestos-Cement Shingles. We'll be glad to send complete information and application data on all styles of shingles for residential and commercial uses. Write us.

#### About the K&M Shingles on the above residence ...

K&M "Century" Asbestos No. 5 Shingles. American method appearance; random width, thatched but construction. Each unit covers over 1 sq. ft. of exposed area. Application cost is low only 90 shingles per square; 2 nails per shingle; self-aligning. Suitable for reroofing—in the application shown, K&M Shingles were applied directly over old wood shingles. No. 5 Shingles give complete weather protection on roof pitches as low as 4" rise per foot.



## **KEASBEY & MATTISON** COMPANY · AMBLER · PENNSYLVANIA

Original manufacturers of Asbestos-Cement Shingles in this country.



# HARRIS ARMSTRONG'S

## famous American Stove Company building



#### a masterpiece of simple design and practical foresight

Harris Armstrong is recognized as one of the nation's ranking architects. The American Stove Company's display-andheadquarters building in St. Louis is a testimonial to his skill as a designer.

But Mr. Armstrong is something else, too —a farsighted, practical specifier. Critical? Yes—of inferior materials and equipment that jeopardize the success of his project. Demanding? Yes—of *proof* of performance; of *proof* of quality. Conscious of initial cost? Yes — but on the basis of ability to decrease maintenance costs in years to come ... as an investment in economy.

Is it any wonder that we're proud that Day-Brite "BOXCO TYPE" Troffers\* furnish the artificial lighting in the offices throughout the magnificent American Stove Company building?

Is it any wonder that we're proud to be able to quote Mr. Armstrong, "Actually, the selection of lighting fixtures was a simple matter. Day-Brite was the natural choice."

Isn't there proof of the wisdom of Mr. Armstrong's selection in this remarkable fact: Only one man is required to maintain the air-conditioning, plumbing, AND LIGHTING systems. Only one man!

Your own projects deserve the advantages of Day-Brite lighting. You owe yourself the guarantee of superb lighting performance at reasonable cost. That guarantee is yours with a Day-Brite specification.

Day-Brite Lighting Inc., 5471 Bulwer Ave., St. Louis 7, Missouri. In Canada: Amalgamated Electric Corp., Ltd., Toronto 6, Ontario. Distributed nationally by leading electrical wholesalers.



The North exposure presents its breathtaking spectacle of light . . .

FORGE HARRIS



Up close, the Day-Brite "Boxco" troffers reveal smart, functional styling . . .

#### \*PRODUCT DATA, DAY-BRITE "BOXCO" TROFFERS

TYPE: Shallow, flange-type for plaster-frame installation. (Also available in snap-in type for Tee-Bar construction.) For two 48", 40-watt Fluorescent lamps. (Also available for 96", 75-watt Slimline lamps.) CONSTRUCTION: Rigid, die-formed, heavy gauge steel. FINISH: Hot-Bonded Super White baked enamel. WIRING: ETL Certified ballasts, no-blink starters. Safety fused.



And inside, offices are bathed in glareless, vision-saving illumination . . .



Performance and quality guaranteed by the most famous name in lighting . . .

# ONLY MESBET gives you Wind-o-line Radiation

The illustrations show Wind.o.line installed as a part of The Nesbitt Package at the Thomas Williams School, Wyncote, Pa. The enlarged section below shows the grilled Wind.o.line channel and finned-tube radiation which extend from both sides of the Syncretizer unit ventilator for the full length of the window area.

See The Nesbitt Package at the A.A. of S.A. Convention, Atlantic City, February 17-22, Booths G45-7-9.



# Answers the "WALL-OF-ICE" Problem

THE trend toward larger areas of fenestration in the modern schoolroom makes greater demands of the heating and ventilating unit. The "thermal blanket" provided by the Nesbitt Syncretizer adequately shields occupants against the window "wall-of-ice" in normal situations; but under conditions of extremely long glass exposure and very low outdoor temperatures, an "extra blanket" is called for. Nesbitt WIND•O•LINE meets such needs.

When specified as an auxiliary of the free-standing Nesbitt Syncretizer, WIND•O•LINE consists of finned-tube radiation in an attractive grilled casing. It is located just below the windows and extends from both ends of the Syncretizer unit ventilator, for the full length of the sill. It is controlled in cycle with the Syncretizer to give heat—when required—where heat is needed.

WIND•O•LINE is also available (as pictured below) as a component of The Nesbitt Package, recessed in a channel at the rear of the storage units. WIND•O•LINE is yet another Nesbitt innovation which permits more of America's schools to enjoy the *new standard of classroom comfort*.



In sub-freezing weather, window areas become like a "wall-of-ice".



The Nesbitt Thermal Blanket protects occupants from cold windows.

MADE AND SOLD BY JOHN J. NESBITT, INC. PHILADELPHIA 36, PA., SOLD ALSO BY AMERICAN BLOWER CORPORATION



# fishin' is fun . . . with care on the run

Here's a fellow that enjoys complete relaxation. He knows his plant is safeguarded from fire ... a short circuit, a stray spark, a forgotten cigarette or spontaneous combustion can't cut into production time, destroy valuable records or endanger the lives of employees.

You too, can have this same peace of mind about fire by fully protecting your investment in materials, equipment and buildings with modern, approved C-O-TWO Fire Protection Equipment.

No matter what your property ... factory, mill, warehouse, power station or research center ... or a particular fire hazard such as spray booth, dip tank, pump room, electrical equipment enclosure or record vault ... there is a type of C-O-TWO Fire Protection Equipment that gives you fast, positive action the instant fire strikes. Whether it's a C-O-TWO Squeez-Grip Carbon Dioxide Type Fire Extinguisher for an incipient fire, or a C-O-TWO Built-In High Pressure or Low Pressure Carbon Dioxide Type Fire Extinguishing System for total flooding an entire fire hazardous area ... C-O-TWO means experienced engineering that assures you of the best type equipment for the particular fire hazard concerned.

For example, at many locations a C-O-TWO Combination Smoke Detecting and Fire Extinguishing System is a "must". The first trace of smoke in a protected area sounds an alarm . . . then fast, clean, non-damaging, non-conducting carbon dioxide blankets the fire, putting it out in seconds, before it spreads and causes extensive damage.

So, let an expert C-O-TWO Fire Protection Engineer help you in planning complete and up-to-date fire protection facilities now. Write us today for complete free information . . . our experience is at your disposal.



#### C-O-TWO FIRE EQUIPMENT COMPANY

NEWARK 1 • NEW JERSEY Sales and Service in the Principal Cities of United States and Canada

Affiliated with Pyrene Manufacturing Company

MANUFACTURERS OF APPROVED FIRE PROTECTION EQUIPMENT

Squeez-Grip Carbon Dioxide Type Fire Extinguishers • Dry Chemical Type Fire Extinguishers • Built-In Smoke and Heat Fire Detecting Systems Built-In High Pressure and Low Pressure Carbon Dioxide Type Fire Extinguishing Systems Everything's going like clockwork...

for 5000 happy employees in the John Hancock Mutual Life Insurance Company's new 26-story, ultra-modern Boston office building



Automatic Program Control guides traffic movements throughout the building where 16 Westinghouse Electric moving stairways carry workers from floor to floor.

Starting time and quitting time are both happily uncongested thanks to the Edwards Automatic Program Control System, (One of the largest ever installed.)

Let Edwards help you solve your problems in electrical signaling, communication or protection. Whether you are interested in a musical sounding chime for your home...a complex hospital communication system...or fire alarm protection for a school, industry or business...tell it to Edwards. Write on your business letterhead to Dept. B-2, Edwards Company, Inc., Norwalk, Conn.

EDWARDS CO., INC., Norwalk, Conn.

EDWARD

World's most reliable time, communication and protection products.

In Canada: Edwards of Canada, Ltd

You know the importance of accurate clocks in keeping a household or office or a school well run. Just think how much more important accurate time and time-signaling are in a big business office or industrial plant where the movement and activities of large numbers of individuals must be controlled. No wonder, for example, in the new

John Hancock office building where the efficiency and morale of 5000 workers are at stake-they use an Edwards Automatic Program Control System.

Operating on 48 separate systems from one central control panel, this Automatic Program Control System handles the complex scheduling of time in this huge building smoothly and efficiently. Different floors and even different departments on the same floor are automatically signalled for staggered lunch and rest periods as well as different times for starting and stopping work. The system's gentle sounding time-reminders keep workers aware of key "time points" in their day without having them become "clock watchers" and traffic congestion which is so destructive to morale and smooth functioning.

This important Edwards System in the new John Hancock Mutual Life Insurance building is typical of the outstanding Edwards' communication and protection systems in use today all over the country in office buildings, schools, hospitals, industrial plants and government buildings.

#### A triumph of planning by architects and engineers

The Edwards Automatic Program Control System-like all the other marvelous modern features of this great new building-is the result of superb planning, specifying and follow-thru by the architects, Cram and Ferguson and the electrical contractor, Hixon Electric Company. Like so many other leading architects, contractors and electrical engineers throughout the nation they know there is nothing to equal Edwards equipment for dependable, adaptable and economical service.



# IT'S RUSTPROOF LUMITE SARAN SCREENING the ideal screen cloth for every exterior use!

**Stainproof!** Lumite Screening can't cause unsightly, costly stains on the screen frame, sill or side of house.

Long-Lasting! An independently conducted accelerated weathering test proves Lumite Screening superior to all other types of screening. Replacement and maintenance are held to a minimum with corrosion-proof Lumite Screening.

Never Needs Protective Painting! Lumite Screening can't rust, rot or mildew. And—it's non-inflammable ... easy to handle ... low in cost.



## **ARE APARTMENTS OBSOLETE?**

#### (Continued from page 107)

the issuance and sale of mortgage bonds. The rapid rise of rents in the postwar period seemed to prove that apartment buildings erected prior to 1920 were indeed extraordinarily profitable investments. Moreover, sanguine estimates of potential earnings from new buildings encouraged speculation in the field. Competition in the new type of mortgage underwriting soon produced financing terms of unprecedented attractiveness.

During the Twenties the erection of apartment buildings steadily accounted for a higher and higher percentage of total housing units started each year until, in 1927, this type of accommodation accounted for 37.7 per cent of all dwelling units started. It appeared that apartment living was to become the standard form of urban housing, for in the major cities well over half of all housing starts were in this kind of unit.

#### **Came the depression**

Before the boom in apartment buildings came along in the Twenties there had been no real experience in the operation of apartment houses as facilities for mass housing. While it was true that a small percentage of the urban population had been able to support the capital and service charges required for such living, there was no evidence that a substantial segment of the urban families could do likewise. However, it did not take long to find out. The depression of the early Thirties found an incredibly high percentage of all postwar apartment houses in bankruptcy. Instead of being able to cut their services when lower rentals and lower occupancies drastically reduced their revenues, apartment houses were forced by competition to increase such services. In consequence this type of building almost completely lost its ability to support capital charges. Within five years after the peak of the apartment building boom in 1927 first mortgage bonds on this type of property were selling at less than 25 per cent of their face value. By 1932 the construction of multi-family dwellings had dropped to 6.7 per cent of the total housing units built in that year.

The lessons of the depression and of the experience in the years between then and now seem to justify the premises of our syllogism, for in the intervening period apartment house construction has been confined to:

1. Public hoasing in which virtually all of the capital charges are borne by the Federal Government and a substantial portion of the public services is contributed by the local community. As a matter of fact, the rentals in public housing projects are based almost ex-(Continued on page 70)


Modern factory building of Renwal Manufacturing at Mineola, Long Island, N. Y. Architects, Engineers and Constructors: Brown and Matthews, Inc., New York, N. Y.

A city block of windows . . . In this modern toy factory, you can follow the production line from the receiving section to the shipping floor—almost a city block—and every inch of the way Lupton Metal Windows assure proper daylighting and controlled ventilation. There is a Lupton Window for every industrial need. For office sections, Lupton Architectural Projected Windows and Lupton "Master" aluminum windows assure long service with minimum maintenance. For production and warehouse sections, there's a choice of Commercial Projected, Pivoted or Security Windows. See what 40 years experience in modern window design can mean in luxury, economy and dependability. Write for our General Catalog or see it in Sweet's.

MICHAEL FLYNN MANUFACTURING CO. 700 East Godfrey Avenue, Philadelphia 24, Penna. Member of the Metal Window Institute and Aluminum Window Manufacturers Association



A complete year-around unit combining interior and exterior double hung windows and screen in an aluminum frame ! FLEETLITE windows are delivered assembled and glazed in corrugated cartons. It is the greatest advance ever in window design and construction . . . the ONLY COMPLETE all Aluminum window unit on the market today.

Thousands of FLEETLITE windows have been installed in new homes throughout the United States and Canada. Builders are boasting about the easy installation and the spectacular selling advantage of FLEETLITE equipped homes. Home owners are delighted with the beauty,

convenience and ever-lasting construction of FLEETLITE units. Eliminate storm sash. No storage problems, less dirt and dust, warmer winters and cooler summers. FLEETLITE features sell homes for you . . . spell comfort for your customers.



Made by FLEET OF AMERICA, INC., 116 PEARL STREET, BUFFALO, N. Y.

### ARE APARTMENTS OBSOLETE?

clusively upon purchased services which the houseowner cannot afford to buy and which he must provide for himself.

- 2. Institutional housing in which insurance companies, for a variety of reasons not purely investment in nature, have erected a compartively small number of housing developments. This number has declined in the post World War II period, especially when viewed in relation to insurance company assets.
- 3. Government insured apartments in which the bulk, if not all, of the risk has been assumed by the underwriting agency.

The reasons for this comparative lack of activity in a field of housing so obviously well suited for urban living and so demonstrably attractive to the consuming public are cogent.

To understand them fully we must compare apartment houses with alternate housing facilities from the point of view of the governing factor in our market society, i.e. cost of consumption.

The basic housing accommodation of the American people is the single-family house, either detached or joined. The cost of occupying such a house, either as an owner or as a tenant, is the yardstick against which competitive apartment housing must be measured. This comparison must include the costs of providing the facility orginally and those incident to its occupancy.

### Apartments vs house costs

In the first place a single-family house in most urban areas of the U. S. can be built for less money than an apartment unit of the same size. There are many reasons why this is so, most of which are familiar to the readers of this magazine. On a room-for-room basis the records of the Federal Housing Administration and of the Public Housing Administration prove that multi-unit buildings are more costly. Thus the prospective apartment house occupant is faced at the outset with higher capital charges.

Of greater importance is the fact that the costs of occupying an apartment are sharply higher than those in a single-family house.

The first of these costs is heat. In the singlefamily house all of the labor in connection with the operation of the heating plant is supplied by the occupant of the house; in an apartment this labor is purchased. In the single-family house the occupant pays only for the heat which he requires; in the apartment house the building is heated to the comfort level of the most demanding tenant.

The second element of occupancy cost is hot water. In the single-family home the occupant who is economical can conserve hot (Continued on page 72)

Write today

Complete Literature



To your clients

the name Gulistan Carpet

means the ultimate

in color and style

and unquestioned quality.

When you think of carpet

see your



A. & M. KARAGHEUSIAN, Inc., 295 Fifth Avenue, New York 16, N. Y. Carpets woven on bower looms in the U. S. A.



# \_\_\_\_\_ chooses Smith BOILERS

To assure trouble-free heating and hot water supply, The Port of New York Authority selected H. B. Smith cast iron boilers in the new Union Motor Truck Terminal at Newark, N. J.

For the 31,000 feet of steam radiation, three No. 60-S-17 Smith oil-fired cast iron boilers do an eminently competent job, as does the No. 340-W-11 Mills boiler in the adjacent maintenance building.

In winter, four No. 608 Smith Manifold Indirect Heaters provide a total hot water capacity of 1680 GPH at 100°F. temperature rise, while in summer, one No. 34-W-11 Smith oil-fired unit with capacity of 1596 GPH is adequate.



### **ARE APARTMENTS OBSOLETE?**

water and thus control his costs. In an apartment house the individual's pro-rata cost of hot water includes the waste of the most profligate tenant. It is common practice for such tenants to use hot water to steam-press their clothes; to use continuously running streams from mixing faucets rather than to close a sink stopper. There is an equally uneconomic waste of cold water.

Now about janitor service. The apartment tenant does not shovel the snow from his walks, sweep his front or back stairs, prune his shrubs, cut his grass, water his lawns, dispose of his garbage and trash, change his fuses, wash his windows or bother with storm windows and screens. This is all done with purchased labor. If the tenant pays an economic rent (as contrasted to a bankruptcy-established rent) this cost is borne by him and his fellow tenants. The homeowner or occupant does these chores himself in more than 90 per cent of all American homes.

### The homeowner mechanic

The past 20 years have seen a complete revolution in the maintenance of the nation's dwelling units. Years ago the homeowner acted as a general contractor for home maintenance. When he needed painting or decorating he called a neighborhood decorating contractor; when he wanted a faucet repaired he called a plumbing contractor; when he desired a shelf built he called a carpenter. Not so today. The homeowner today is a mechanic instead of a general contractor. Reason: He can't afford to engage decorators, plumbers and carpenters. As a result the whole distribution of maintenance materials has changed. Years ago the distributors of paints, wallpaper and decorating tools dealt almost exclusively with contractors who were engaged, in turn, by homeowners. In recent years, however, these distributors have established retail stores in residential neighborhoods from which their goods are sold directly to the consumer. Large operators in this field report that more than 75 per cent of all decorating materials used in home maintenance are thus purchased. This is not only true of paint and decorating supplies but other lines as well. The typical hardware store is more and more a supply depot for the home mechanic. Lumber yards and building material dealers are increasingly directing their merchandising efforts to the home craftsman. One large building materials distributor has successfully sponsored a television program featuring instruction by a skilled mechanic in the use of tools and materials in the home.

In contrast to this upsurge of self-help on the part of the homeowner, the apartment ten-(Continued on page 74)

# THIS TIME... there need be NO HOUSING SHORTAGE!

### AN OPEN LETTER TO HOUSING OFFICIALS

Ten years ago, as our country mobilized for defense, the building industry was faced with the tremendous problem of providing shelter for the army of workers and fighting men. Shelter was provided --but only after long periods of acute housing shortage in critical areas.

THIS NEED NOT HAPPEN AGAIN...Enlightened building leaders see the advantages of prefabrication and are urging full use of the production facilities of this industry. These leaders advise that housing needs be surveyed and housing orders rushed to keep pace with new and expanded industrial and military construction.

To prevent delays, to insure full use of the new and expanded plants and military installations, we recommend that all Government agencies and housing officials everywhere use the SPEED, ADAPTABILITY AND ECONOMY (in man-hours, in vital materials) which prefabrication provides.

fama RPine

家が出る ジー・・

James R. Price, President Prefabricated Home Manufacturers' Institute



### LOOK TO PREFABRICATION FOR COMFORTABLE, SUBSTANTIAL HOMES

Prefabricated housing can promise:

- Speedier manufacture and erection.
- Savings in vital materials through planned engineering and mass purchasing.
- Fewer man-hours, lower production and erection costs.
- Lower delivered price per square foot.
- Nation-wide dealer service organization for service and maintenance.
- Quality construction that meets all mortgage lender's standards for FHA-VA insured loans.

Institute members can offer qualified builders both single and multiple dwelling units in quantity for erection during 1951.

Institute members reserve the right to pass on eligibility of applicants.



# PREFABRICATED HOME MANUFACTURERS' INSTITUTE

908 20th STREET N. W.

WASHINGTON 6, D. C.

# THE ONLY FORM FOR STEEL JOIST CONCRETE FLOORS AND ROOFS Corruform







### SPECIFICATIONS

Standard weight Corruform with 2 3/16 inch wide, 1/2 inch deep corrugations. Weight .72 lbs. per sq. foot. Guaranteed average strength of 100,000 psi.— single test minimum strength 95,000 psi.

GRANCO STEEL PRODUCTS (Subsidiary of GRANITE CITY STEEL CO.) Granite City, Illinois

### CORRUFORM

sheets are easily placed. Fasteners are positive for all common joists and beams. Lapping is automatic. No sag or material waste.Concrete is placed and finished by common practice.

### CORRUFORM

is nearly twice as strong as ordinary steel of equal weight. Tough tempered to spring back under abuse. Provides a secure form for trades and concrete — no side pull on joists, beams, or walls.

### CORRUFORM

is true and level. No cleanup necessary on floors below, no unsightly leakage. Bright, decorative corrugated pattern for exposed ceilings. Corruform is available plain, galvanized or vinylprimed for painting.

SEND FOR FREE AIA FILE TODAY

### ARE APARTMENTS OBSOLETE?

ant expects such labor to be furnished as a part of his rent. Although rent control has definitely restricted certain types of maintenance service in certain areas, the bulk of apartment house repairs and maintenance continues to be provided by purchased labor. New buildings erected in the decontrolled market are expected to offer such service.

Now for those who like to make their comparisons on the basis of cold, hard figures, let's look at a specific instance which tends to support our original syllogism. Three years ago the author became president of the Chicago Dwellings Association, a nonprofit corporation set up jointly by the City of Chicago and the State of Illinois to operate in the City of Chicago. Its objective was and is to provide rental housing for the so-called "middle income groups."

At the outset we felt that rental housing meant apartments. We certainly knew that the veterans for whom we were to build were looking for this type of accommodation as a matter of preference. So our investigations began in that field. We acquired a site suitable for apartments and undertook computations of achievable rentals. The results were astonishing. We found that the rents on apartments which we could build would be substantially more than the monthly payments on which our prospective tenants could buy and pay for houses offering the same accommodation. Although it is true that our first attempt at apartment design was an elevator-type structure, further investigations into three-story walkup buildings failed to make the comparison much more favorable.

Advocates of apartment house construction will come to the fore with claims that on a *truly comparable* basis the factors of service and maintenance do not affect the monthly charges substantially and that construction costs on walk-up apartments are no greater than those for single-family houses. However, even we assume that walk-up apartments of five rooms can be built for the same price as single-family homes (insofar as monthly capital service charges are concerned) the comparative monthly costs to the occupants of a \$12,000 gross cost unit would be as follower.

Factor of cost	Apartment tenant	Home- owner
Capital charges	\$ 60.80	\$ 60.15
Property taxes	30.00	25.00
Fire insurance	1.25	1.25
Utility charges	15.60	15.00
Management	6.00	
Operating services	6.00	
Repairs, maintenance		
and replacement	14.50	4.50
Entrepreneurial profit	10.85	
Total rent	\$145.00 page 76)	\$105.95

all the advantages of a **CENTRAL HEATING SYSTEM** in one forced convection **OVERHEAD HEATER** 

NORMAN

THREE-SIXTY

EXTRA HEAT FLASHES

HEATING NEWS BIGGEST HEATING NEWS IN TWENTY-FIVE

**CIRCULAR DESIGN DISTRIBUTES HEAT** IN FULL 360° RADIUS

Never before has overhead heating offered so many outstanding advantages. This new and better Norman principle assures constant temperatures over the entire area of diffusion from a single forced convection heater. The revolutionary circular design Norman Three-Sixty forces heat distribution horizontally in a full 360° radius. No cold spots or hot blasts. Exclusive Norman features assure simplified installation and easier servicing. Get complete facts and specifications now. Mail coupon today.

Warm air is forced horizontally in a 360° radius toward

the walls . . . slowly flows down to blanket the entire . then moves back up to the center air floor area . intake in the bottom of the heater.

- \* NO BLAST of hot air with 360 degree heat distribution.
- **\*** SMART STYLING Adds Modern Beauty.

N

\* FORCED EXHAUST of Combustion Products Eliminates **Draft Divertor and Venting Problems.** 

\* SHALLOW DEPTH Allows Ample Head Room in Low **Ceiling Applications.** 

Norman Three-Sint

CE

\* LOW VELOCITY Impeller Assures Quiet, Comfortable Air Distribution.

nrman Products Co., Manufacturers of the NORMAN SOUTHERNER	NORMAN PRODUCTS CO. Dept. F-I 1154 Chesapeake Ave. Columbus 12, Ohio
The Original Com- pact Horizontally Designed Forced Air Gas Furnace for economical space-saving in- stallation in attic, under floor, base- ment close	Please send free literature giving complete information and specifications on:         Norman Three-Sixty       Norman Southerner         YOUR NAME         FIRM NAME         ADDRESS
	CITYZONESTATE

# No other doors offer all these advantages



- 2. All floor space around Kinnear Rolling Doors is fully usable at all times.
- No sacrifice of space on narrow loading platforms with Kinnear Rolling Doors. They need no room 3. inside or outside the building for opening and closing action.
- 4. Windows can be placed right next to Kinnear Rolling Doors . . . they are never blocked off when the doors are operated.
- 5. Supports or other superstructure can be placed close to sides, front and top of Kinnear Rolling Doors inside or outside the building.
- 6. Light from overhead fixtures is never blocked off by Kinnear Rolling Doors, they coil compactly above the opening.
- 7. Wind can't blow Kinnear Doors back and forth, or damage them. Edges are anchored in steel tracks from floor to ceiling!
- 8. Kinnear Rolling Doors open straight upward, coiling completely out of the way of traffic, safe from damage.
- 9. The opening is cleared from jamb to jamb and floor to lintel. No projecting edges or parts to obstruct opening.

10. A continuous curtain of strong interlocking steel slats gives you extra protection against fire, theft, intrusion, wind, weather and accidental damage.

3

- 11. Kinnear smooth, upward action is ideal for time-saving motor operation, with convenient remote control. Rugged Kinnear motor operators do the trick.
- Kinnear's interlocking steel slat cur-12. tain is not only more rugged and longer lasting, but permits any number of slats to be individually replaced if accidentally damaged. Lower maintenance costs!

You get many other advantages in addition to those highlighted above in Kinnear Rolling Doors. They are built any size, with motor or manual operation. Easily in-stalled in old or new buildings. Write for complete information or recommendations

#### THE KINNEAR MANUFACTURING CO. Factories: 1640-60 Fields Ave., Columbus 16, Ohio 1742 Yosemite Ave., San Francisco 24, California

Offices and Agents in All Principal Cities



### **ARE APARTMENTS OBSOLETE?**

These figures covering comparable cash outlay in apartment tenancy vs. homeowner ship do not by any means represent the ne comparisons in true cost. The homeowner' capital charges include amortization which over a period of 25 years, will result in his accumulating the sum of \$12,000, whereas a the end of the same period the tenant will have nothing. Moreover, if we assume that the homeowner and the tenant both have incomes of \$7,500 per year and each has one child the homeowner can save up to \$12.50 per month as the result of income tax deductions.

Historically, apartments have been brough within the economic reach of a sufficiently broad market of consumers to fill their space by one of two methods: by compromise of their capital structure and a writedown of capital service charges contained in the rental or by taking advantage of a sustained rise in the general price level. We have commented upon the fact that virtually all of the apartment buildings built in the Twenties followed the first method. The relatively few privately owned multi-family structures built in the period 1933-1942 were erected in a most fortunate economic climate. Not only did the housing shortage freeze their occupancy at 100 per cent, but steadily rising costs, rent controls and building restrictions discouraged the erection of competitive buildings.

Since 1942 the existence of rent controls in all major metropolitan areas has enabled people who really cannot afford to live in apartments-at economic rentals-to continue in occupancy. In cases where rent controls have been removed the ratio of singlefamily residences to total housing construction has increased as consumers of housing were forced to give up the purchased services of apartments and resort to the self-help opportunities of the single-family home.

We do not conclude that apartment buildings will disappear from the urban horizon, but it is obvious to even the casual student that they will not play a dominant role in the housing of urban families. Public housing is fast approaching the time when costs of construction and service in multi-family structures will either cause its discontinuance or will force it into the area of self-help by occupants. In private housing apartment buildings will return to the role which they played before World War I-that of providing for those in the higher income groups who can afford the joint luxuries of high level service and close-in living. They will also provide housing for such of those megalopolitan adults (the single, the childless married, the divorced and the aged) who can afford high density occupancy of such buildings-a declining portion of the population.





Barrington (III.) Consolidated High School, designed by Perkins & Will, Chicago, uses Thermopane for one end of the library.



Architect R. Edwin Wilson, Charlotte, N. C., designed this drafting room with Daylight Walls. Thermopane was used in entire building.



# Room becomes larger when you use this simple principle

Here you see an office building, a school library, and an architect's drafting room all designed with the same simple principle that clear glass walls make rooms seem larger. These Daylight Walls make interiors delightful places to work.

No matter how a room is to be used, if you are going to put people in it, you can put *more* people in more happily when the room "feels big".

Clear flat glass admits more light than glass in any other form. Clear glass does not block vision. Used all the way up, it creates unity between the ceiling and sky, an uninterrupted sweep from indoors to outdoors.

All the windows shown here are glazed with *Thermopane*<sup>\*</sup> insulating glass. This makes more of the expensive floor space actually usable, as well as making the room *seem* larger. The comfort-zone moves closer to the windows. In the case of the drafting room, for instance, the drawing boards can remain near the window, even in cold weather. This gives the men the advantage of top lighting and minimizes shadows. The office building and architect's offices pictured here are air conditioned. *Thermopane* has the economic advantage of reducing the cost of air conditioning as well as the cost of winter heating.

When a wall is conceived of glass from the initial stages, its ultimate cost compares very favorably with walls of conventional construction. Take into account all the factors of weight, installation, interior finishing and decoration and you find clear, flat glass or *Thermopane* are economical wall materials. And as a bonus you gain the benefits of maximum daylight and the psychological comfort of distant vision.

WHERE WINTERS ARE COLD Thermopane\* insulating glass is widely and successfully used. Thermopane with ½" dry air hermetically sealed between two panes has twice the insulating value of single glass. This minimizes chilliness, drafts and heat loss at windows. Write for Thermopane literature. Libbey\*Owens\*Ford Glass Company, 4321 Nicholas Building, Toledo 3, Ohio.







# all the plumbing fixtures and fittings you'll need for <u>any</u> job

### in the new, time-saving American-Standard catalogue

HERE, in a single, compact book are the complete facts on the most complete line of quality plumbing fixtures on the market . . . ready for quick and accurate specification.

The American-Standard Plumbing Fixtures Catalogue—the only one of its kind in the field is functionally arranged. The whole story on each product is given in the minimum of space, yet with exact specifications, complete information and illustrations. Variations of style and fitting are grouped together . . . you don't have to *bunt* for combinations. There are even color illustrations, and charts showing all the colors in which the various plumbing fixtures can be furnished.

It is good to know that our new plumbing fixtures catalogue has met with enthusiastic approval (witness the extracts of letters shown on this page). Accordingly, the same catalogue technique will be applied to the complete line of American-Standard Heating Equipment. This is just another example of the effort that goes on behind the scenes at American-Standard . . . making sure that architects have the latest information, in easy-to-use form, on all of the famous American-Standard products. American Radiator & Standard Sanitary Corporation, P. O. Box 1226, Pittsburgh 30, Pa.





### Modern Stanley Magic Doors add efficiency and smartness to every type of building!

If you want to give your business, industrial and institutional buildings the final touch of modern functionalism, specify Stanley Magic Doors.

Stanley "Magic Eye" (Photoelectric)—or "Magic Carpet" Controls open doors automatically, noiselessly as you approach, hold them open, then close them after you pass through. No hands touch the door! Clatter and batter are eliminated. Temperatures are better regulated . . . humidity control is improved. Materials and labor are speeded to their work . . . all 'round business efficiency is stepped up!

Fill in the coupon below and get all the facts about Stanley Magic Doors. Remember, there's an installation for *every* need.

STANLEY MAKES COMPLETELY AUTOMATIC DOOR CONTROLS

Prominent users of Stanley Magic Doors include — — Banks • Hospitals • Super Markets • Bus Terminals Industrial Plants • Textile Mills • Theaters • Stores • Warehouses • Munition Factories • Airports • Railroad Stations



### DOOR CONTROLS "The Magic Door"

HARDWARE . TOOLS . ELECTRIC TOOLS . STEEL STRAPPING . STEEL

amer	The Stanley Works, Magic Door Div. 229 Lake Street, New Britian, Conn.
Str Mulaces	<ul> <li>☐ Kindly send me full information on Stanley Magic Doors.</li> <li>☐ Have your representative call.</li> </ul>
Your Name.	
Firm's Name	
Street	
City	State

# WHY NEW DEFENSE PLANTS MUST BE DIFFERENT

;

A AVENUE A DESCRIPTION OF A DESCRIPTION

i he

ECIURAL FURUM

When Chrysler signed a contract last month for \$99 million worth of heavy tanks, its first move was to call up Albert Kahn Associates and put in an order for a new plant. Speed is vital in producing these tanks. Why does Chrysler have to wait to build a new plant?

The reason is a reason which U. S. industry will frequently stumble upon as it re-gears for defense production. There is simply no available plant with a structure heavy enough to bear the loads of the cranes needed to carry the parts of these giant tanks through assembly.

The greatly increased size and weight of many new war products is only one of the reasons why plant operators of all kinds plan to build some \$10.5 billion worth of new plants and equipment this year. Here are some other reasons:

1—Few existing plants have floor room or headroom enough to install the equipment for mechanized materials handling now so important in production efficiency.

2—Size and complexity of the machine tools with which almost every industry works has greatly increased. Few existing plants have spans wide enough to permit efficient installation of such massive machinery.

**3**—Precision operations and many new process requirements demand plant interiors equipped for complete temperature, humidity, lighting, sound and dust control.

4—Few plants provide enough flexibility in operations: when it is necessary for the manufacturer to shift from one product to another or even to make design changes in the same product, inadequate spans, inadequate load bearing capacity, inadequate wiring often handicap him in making the necessary changes in his machinery. (Lightning production changes of this kind were frequent during the last war, as armaments were tested on the field of battle or outmoded by new technological developments.)

5—Despite some \$25.6 billion worth of private and government plant building during the last war, the majority of plants now in use date back to the period when the factory "just grew"—plants where lack of space prevents an efficient production flow, where boiler room, shop, storeroom, administration offices have been attached one by one in a random pattern wherever lot space permitted. Most of these preWorld War II factories lack elbow room on which to expand their present buildings—even if salvage and rationalization of these proved to be possible.

**6**—While materials shortage is now in the spotlight, manpower shortage may soon exceed it as a handicap to U. S. defense production. Even among the modern plants built in World War II, few went so far as industrialists now think they must go in providing conditions to get maximum output out of available labor supply. War experience showed how closely the production curve is related to labor relations. Plant design to make the most of labor includes such considerations as parking space, how to get employees quickly into the plant,

better lighting, use of color, rest room and recreation facilities, temperature and sound controls, nearby shopping centers and nurseries for working mothers. With the return of older workers, of women and of green workers to the labor supply, these demands will become more urgent.

7—Many plants located in congested metropolitan areas are seeking new locations in smaller communities. There are two impelling reasons: high cost of operation in congested areas (trucking delays, higher utility rates, higher workers' cost of living, etc.) and the fact that these areas are prime targets in atomic war. Many owners seeking dispersed locations are also planning to split up a manufacturing process hitherto concentrated in a single big plant into several smaller plants which they believe will be more efficient. (This whole subject is so important that it is beyond the limits of this review. It will be covered in a future BUILDING story, *The Case for the Small Plant*.)

### The building is a production tool

Behind all these reasons for new building is perhaps the most influential factor of all: a new attitude on the part of plant owners toward building cost. As The Austin Co. puts it: "Industry itself has come to recognize that the building must be as much a tool of production as the equipment that is in it. How much good plant design contributes to cutting the cost of manufacture has been demonstrated over and over again in postwar building. Today we don't just keep structure out of the way, but handle it to make an important contribution to the owner's process."

The H. K. Ferguson Co. is encountering the same attitude among more and more of its clients. Ferguson planners say: "A new light is beginning to dawn on many a manufacturer: the cost of operating in an old building may be greater than the cost of a new one."

The government's offer of a five-year write off for tax purposes on needed plants is bringing many a delayed building plan off the shelf. There is a good chance that this accelerated amortization of the capital cost of a new plant may do a lot to change plant owners' thinking about the economic life of their plants. Under old amortization schedules (running up to 60 years or more), factory buildings never seemed to die. Because they were still carrying plant cost on the books, owners felt compelled to undertake endless reconditionings—without making a realistic analysis of the money they might save in production costs by scrapping the old plant and building anew.

There is a sensational example of this kind of saving in the revolution in building that has hit the textile industry since World War II. Dozens of new textile plants have been built incorporating completely mechanical methods of materials handling and precise temperature and humidity control; one of the astonished new owners discovered that he saved enough *in the first year of operation* to pay for the cost of his new plant. Thanks to the operating records of such new plant more and more manufacturers are recognizing that, com pared to other costs of production, building cost is relatively unimportant. This attitude extends beyond the decision on whether to build a new plant: it includes the decision on how much it is reasonable to spend for a nebuilding. Even in the face of rising building costs, own ers show a new awareness that trying to shave too much off the cost of new building may hamstring their whole production process.

While rapid technological developments in practicall all manufacturing processes and in the building industr itself push the owner toward new building, today then is an even stronger push. A manufacturer seeking to expand his production facilities or to start new arms production today finds it almost impossible to buy or leas existing space.

First-class industrial space is not on the market in an part of the country, according to Charles F. Noyes & Co a leading real estate broker. Leonard Yaseen of th Fantus Factory Locating Service, a firm which has helpe over 1,000 industries to find either existing space or site for new building, says, "We are now in a period of peak production, and all available modern plants an fully occupied. Unless civilian production is curtaile tremendously there will be no place for industry to expand in existing plants."

Fantus records back this up. "Of 73 plants located h our organization during 1950," Yassen says, "42 originally expressed the desire for existing facilities. Of the number only 6 suitable modern structures were foun after exhaustive surveys in each instance. The rest decided to build to their exact specifications."

This was not true, of course, a few years ago, whe surplus war plants hit the market. But even when many facturers found it possible to buy first-class space, the usually had to spend anywhere from \$1 to \$2 a sq. f on top of the purchase price to adapt it to their own need General Electric, which bought some small, modern plan right after the war, figures that there is roughly little of no difference between the cost of new, tailor-made space and the cost of second-hand space, after the used plan has been brought into condition to meet GE's exactin standards. Time—the need to get a product on the marked quickly—shoved GE toward purchase rather than ne building in many of these cases.

### Continuous movement shapes the new plant

Today industrial architects, engineers and builders hav an abundance of new techniques, materials and plannin skills to offer the plant owner who wants to rationalize h operation. On the following pages, BUILDING presents brief review of the high points in the rapid development in factory design which has taken place over the la few years. In the examples shown here and selected b



BUILDING after consultation with the leading firms in this field, a sharply new picture of today's factory emerges. In the first place, it is a building shaped, as Austin Co. planners say, by "respect for the movement of goods as opposed to a reverence for shapes stemming from the structure itself." It will, as a commonplace, have bays of 60 x 40 ft. (and in special cases of up to 140 ft.) as compared to the 30 x 20 ft. bays of prewar days. It will have some system of positive mechanical air handling as compared to hit-or-miss ventilation. If the manufacturing process benefits thereby, it will have a complete system of interior climate control, and, because of standardization of equipment, it will have this at remarkably little cost. It will provide for all possible changes in the machinery that can be foreseen plus an extra margin of flexibility for those that cannot be foreseen. In many cases, the roof will be seen to have become an extraordinary important artery: electrical services will be distributed through the trusses and overall crane systems and conveyors will be hung from them. A look into its spacious, quiet interior will show no clutter of raw materials waiting to be conveyed to processing, no stack of processed parts waiting for assembly, and no workers waiting for parts to reach their machines. It is a factory in which the building itself has been so developed that our American specialty-the continuous flow of mass production-has finally been completely realized.

**HEAVIER STRUCTURE** will be needed in many defense plants. Both presses to form, and cranes to carry the huge parts of today's planes and tanks have outgrown the spans of World War II plants. Shown here is an early example of such massive steel structure. These all-welded 65 ft. building columns, with crane columns on either side, are in a Diesel locomotive assembly shop built by the Austin Co. for the Electro-Motive Corp., a General Motors division.

## **OUR TOOLS ARE BIGGER**

The new giant size of most of the goods of war has outgrown even the giant spans of World War II plants. Chrysler's need for a new plant in which to build heavy tanks is one example. The plant Lockheed Aircraft is now building in Burbank, Calif. is another. In this plant, Lockheed first installed the giant presses it uses to stamp out jet aircraft parts on individual, giant-sized foundations—then started building the factory around them. While building goes on, this machinery is already operating, under a tarpaulin.

Lockheed calls this 33,000 sq. ft. plant "Hall of the Giants." Its welded truss structure provides two clear spans 65 ft. wide and running the 320 ft. length of the plant. This permits great freedom in placement of its enormous machines. Its 50 ft. average height will acommodate all these presses, including one 8,000 ton hydraulic press 36 ft. high, as well as overhead cranes. This steel frame is designed to bear the live loads of two 30-ton underslung cranes, and as such will be the heaviest skeleton of any plant in the aircraft industry.

A central row of steel towers (like vertical trusses) carry the weight of this building and take the weight of the giant crane loads. These towers are formed of two steel sections braced together. Towers are spaced 40 ft. on center, and each rests on a 16 ft. deep caisson. Beams carrying the crane rails span 65 ft., and are so attached that cranes can move the width of the building.

Each giant air-frame machine was installed as a separate unit, with individual foundations and shock-absorbing devices. The 12 in. concrete floor merely connects these individual installations, taking none of the machine load. Because of its extreme vibration, a 20 ton Ceco press is completely isolated from the rest of the structure. It is set on heavy steel springs mounted in a deep pit, walled by 5 ft. thick reinforced concrete. Above these shock mounts was poured an inertia block (the heavy aggregate included steel boiler punchings), on which the press is placed. The 8,000 ton press is mounted on a 12 ft. deep foundation. This heavy press forms tough aluminum alloy,  $\frac{1}{2}$  in. thick and up to 10 x 30 ft. in size, now essential in high-speed jet aircraft. (Note that this plant lacks the flexibility of the Chrysler press plant, p. 89.)

Lockheed was its own general contractor, and reports cost at less than \$9 per sq. ft.

While tanks and planes are the most spectacular examples, this greatly increased size factor is not limited to direct armament production. The size of the tools with which almost every industry works has greatly increased over the last decade. Massive presses equipped with the dies for combining several processes have replaced the lighter presses of prewar days. All kinds of series machines are now in use; a single machine with hundreds of spindles may now perform a complex operation formerly spread out among a half-dozen. Such massive and complex machine tools mean heavier foundations, wider spans and heavier frames for many kinds of plant buildings.

# MECHANIZED MATERIALS HANDLING

Ever since Henry Ford built the first one-story, straight line assembly plant in 1909, the magic of U. S. mass production has been understood to lie in a continuous mechanized flow of operations. Actually in the great majority of factories, flow of materials to and from machines has been neither continuous nor mechanized. A plant might, for example, have its assembly operations synchronized to the speed of an automatic roller conveyor, but still be handling incoming raw materials by laborious manual methods or using manual methods to warehouse finished goods. The biggest single step in factory design since World War II has been the extension of mechanical handling methods to every part of the manufacturing process—from receiving raw materials at one end to shipping finished goods at the other.

The new plant which The Austin Co. is building for the Lincoln Electric Co, in Cleveland is a good example. (See BUILDING, May '50) President J. F. Lincoln points out that because his present operations are scattered among three buildings (one of them a two-story building), it has been impossible for him to employ the comprehensive mechanical handling system which the rate of his production demands. "As efficiency of production goes up," Lincoln says, "handling of materials becomes a progressively higher proportion of cost. A carefully developed scheme for uninterrupted mechanical movement of raw materials, parts and finished goods, such as we have been able to install in our new plant, is the only way to lick the cost and to keep handling in pace with the efficiency of our machines." In this plant, less than onefourth of floor area is devoted to machines, three-fourths is allotted to movement and storage of materials and finished goods.

Another example is the continuous conveyor system being considered for the Heinz vinegar plant and warehouse designed by Skidmore, Owings & Merrill (see BUILDING, May '49). The architects designed this plant so that all receiving is on the ground level, manufacturing progresses upward through the various floors, and a conveyor system takes finished products off to the warehouse. According to the scheme now under study, six conveyors would bring packed cartons from the various manufacturing sections onto a master conveyor running across the ceiling of the vinegar building and dump them into an automatic pallet loader in the warehouse. Electric eyes would sort cartons into the proper pallet. A reciprocal lift would automatically carry the pallet down or up to the proper storage floor and come back to the loader. Pallets would be hoisted into storage by fork lifts. Not more than half the cubage of the warehouse building will be devoted to storage; the rest is allocated to wide aisles for an easy flow of mechanical handling equipment.

Mechanical handling systems have transformed the textile industry since the war. The rayon yarn plant designed and built for Enka by Ferguson (see p. 88 for layout) is one sample. In the old plant, hand trucks with racks carried yarn from one step to another. Now as the yarn is spun it is transferred from the machines to overhead racks carried by monorail. Yarn is carried by the monorail through all processes including the ovens and is finally stored hanging from the ceiling on the monorail. The steel frame (86 x 30 ft. truss bays) was designed for an additional 5,000 lb. live load at each panel point.

Both the Lincoln and the Enka plants show complete



**PNEUMATIC SYSTEM** for conveying grain through flour mill gave an entirely new profile to the steel elevators and four story concrete mill building of this General Mills plant, Los Angeles. Electronic controls regulate pneumatic system. This plant is a prime example of a "fixed" problem in materials handling. Designed, built by Bechtel Corp.

FEW MANUFACTURERS have such "fixed" problems in materials handling. For many, product changes mean that even such fixed equipment as overhead cranes and conveyor belts might have to be torn out. For them, flexible equipment like the fork lift and tractor trailer are indicated. Photo shows wide aisles in A. B. Dick warehouse, using fork lift and pallet system. Austin Co.





mechanical handling from one end of a single-story plant to another. There is a further extension of such mechanical handling systems in the auto industry. In the new Ford engine plant and foundry buildings now being built outside Cleveland and designed by Albert Kahn Associates, an outdoor crane conveyor system is being considered for transporting cast parts from the foundry building to the one million sq. ft. engine manufacturing plant about half-mile away.

Sidney Reibel, Kahn consultant on materials handling, points out that the unit load system, applicable both to parts and to finished goods small enough to be assembled in a pallet, has the additional advantage of providing an easy way to count items and keep inventory.

## MAKING THE MOST OF YOUR SPACE

lirect access of workers to manufacturing area is a prime ecessity which designers secure in a number of ways. erguson emphasizes that the proper parking treatment of pproaches to the plant can eliminate much wasted time. n the Ford engine plant at Cleveland, Kahn uses a T-shaped rezzanine carrying all locker rooms, dining rooms, restooms, etc. to save main floor space. Employee entry from arking lot is at one side of this mezzanine, entry from bus t the other. A series of stairways hung from the top of the provide direct access to the factory floor. In the Lincoln lant, Austin puts all locker rooms, restaurant etc. in an mderground strip linked by a corridor the length of the plant nd provides a series of stairways off this corridor giving irect access to manufacturing areas. The main plant entrance, ooth for administrative offices and plant proper, tunnels under o as not to interrupt the railroad spur and truck roads unning the length of the plant.

Perhaps the newest development in space use are a few experiments leading away from a straight-line production flow. Ferguson tells of one plant now considering changing from a straight line flow to group all similar types of operation together (see diagram, r.). Such departmental "spotting" Ferguson says, makes it possible to assemble similar operations under one supervision and, in some cases, to keep machines busy which would be idle in a straight step-by-step flow. This layout is especially useful in large job shops where a number of different items are produced in series runs and backtracking is usually necessary to keep all machines busy.

Ferguson, no doubt influenced by its pioneer design of a circular warehouse (see BUILDING, Nov. '46), thinks the circle may some day replace the rectangle as a basic factory form, with materials flow in radial directions from peripheral receiving to central shipping.







MANUFACTURING SPACE circles around interior warehouse in Ciba drug plant at Summit, N. J., providing plenty of storage room at each assembly point. Manufacturing space is completely air conditioned, with flush lighting and air diffusers integrated in acoustic paneled ceiling. High intensity lighting, constant temperature, elimination of dust were vital to process. Petroff & Clarkson were architects; Guy Panero and Strobel & Salzman were consulting engineers.

SIMPLIFIED FLOW DIAGRAMS illustrate experimental studies being made by Ferguson planners in "flow by operation type" layouts. Actually an old method used by many old-time jobbing plants, "flow by operation type" is now being examined by many plants for adaptation to high-speed production where it might replace the "straight line" production flow shown at top. Ferguson says it may provide for more intensive use of individual machines and may mean less duplication of machinery. But most production programs are more complex than indicated in these diagrams, and Ferguson reminds that only extensive study can determine feasibility of the method for a specific plant.





MAIN MANUFACTURING AREA is in center of this Western Electric Co. electronics plant at Allentown, Pa. High central section holds main working areas with air conditioning and ventilating equipment in trusses above. Specialized functions have been isolated in 25 ft. lean-to section around perimeter. Photo shows one of these special departments where use of volatile materials required explosionproof equipment and complete isolation of air conditioning. The Austin Co.

# FLEXIBILITY

Planning for flexibility means providing for 1) changes in production which require new machines or the realignment of existing machines and 2) future expansion of the building to take care of increased production. Says Austin: "We are continually at work on better basic standards for structure leading to flexibility in use. You must have a basic structural concept broad enough to satisfy the most critical conditions. You can, for example, always subdivide big space, but you can't reverse this." Austin's system for unit control of interior climate (illustrated p. 90) also provides for changes to handle increased heat load as a result of new installations in various parts of the factory.

As a major designer for the auto industry, where lightning retoolings are routine, Kahn has long been accustomed to designing for such changes. Kahn usually plans for heavy foundation strips at various points to take care of future shifts in big presses, for an overall power and lighting grid with multiple take-off points, for a steam grid looped around outside the plant floor and criss-crossed through the center.

The Daniels Construction Co., which has built many of the new textile plants, employs a system of concrete lined tunnels running in a grid pattern under the plant floor and housing air conditioning ducts and electric services. These tunnels, 4 ft. wide and 10 ft. high, permit easy access to these mechanical installations both for maintenance and for future changes.

Ferguson says: "Don't build those extra two bays for future expansion—wait until you see what kind of machines you need. It isn't necessary to enclose a rectangle—build any shape to accommodate the exact number of machines you have now. By the time you need more machines, the kind of machines will have changed, too, and your extra bays may be inadequate. What is important is designing a basic structure that will permit easy expansion of the building shell." For one of Ferguson's solutions for future expansion, see below.

L-SHAPED PLAN provides for easy future expansion in Enka rayon yarn plant. Laboratories, cafeterias, locker rooms, other service facilities are concentrated in strip on inside of L, with direct access to manufacturing space. Shop and shop storage units are held separate and arranged in disconnected line for future expansion. Note how all rail tracks connect with various parts of the plant on the inside of the L. Personnel come in on the outside of L, do not have to cross the tracks. Photo shows how aluminum walls are used on side of plant earmarked for future expansion. Huge plant already has over one million sq. ft. H. K. Ferguson Co.





ALL PRESSES are installed on a continuous foundation strip designed to take a uniform load of 1,000 lbs. in this automobile equipment plant. This makes it possible to move presses if necessary to keep pace with changing production requirements. Use of 60 ft. jack trusses eliminating two thirds of columns will also make it easy to move and re-align machinery Austin's standard welded H-section trusses are used for crane girders Marion Industries Division plant, Marion, Ohio. The Austin Co.





**OVERHEAD SYSTEM** of flexible wiring provides power for production machinery and also for building utilities (pumps, fans, unit heaters, etc.) in Clark Equipment Co. plant, Jackson, Mich. This bus-way grid system covers the entire factory area, with 40 ft. spacing between rows. To make additional machine connections or changes in layout of various departments, it is necessary only to disconnect the fused plug-in device at the bus exposed overhead. The main factory lighting is also taken from the bus-way system through small transformers mounted high on columns. Albert Kahn Associates.



UNDERFLOOR SYSTEM of bus duct, conduit and piping provides complete flexibility for future machine connections in Western Electric Co.'s electronics plant. A packed wood floor with maple surface gives easy access for direct connection to these distribution lines. Extensions to connect new machines to particular services are then made from below. Grid includes distribution lines for compressed air, illuminating gas, oxygen, hydregen, nitrogen, steam and water. Piping for each of these is identified by distinctive color and is supported by hangers attached directly to the steel floor beams. The Austin Co.



**EASY TRANSFER OF GIANT PRESSES** is provided in Chrysler press plant. Before the development of this new kind of plant, such metal forming presses were designed with most of their operational parts above floor level and were set in deep pit foundations, making any future moving difficult or impossible. In this plant, an open basement is provided underneath the press area. The machines themselves are designed so that most of their moving parts are below floor level, with only the actual metal forming sections above the floor. The basement provides a clear space where repairmen can quickly get at the machinery when necessary. To move a press or add a new one, it is necessary only to remove sections of the 4 in. laminated oak floor surrounding the presses on the first floor. The plant's 50-ton overhead cranes can then move the press in sections from its original anchorage to the new location. Albert Kahn Associates.

Photos: Gottscho-Schleisner, Al Salter

# INTERIOR CLIMATE CONTROL

Engineer Guy Panero says that mechanical equipment amounts to 40 per cent of plant cost as compared to 25 per cent before the war and that this percentage is still rising. Part of the rise is in the much wider use of mechanical systems for control of interior climate. Such systems range from low-cost plans utilizing wall louvers and roof fans for mechanical air movement to complete control installations which cool, clean and regulate the humidity of the air supply.

In the rapidly developing textile industry, new rayon and nylon fibers have been developed which require a completely air conditioned interior for finishing and weaving. The Daniel Construction Co. has built a number of such plants, all completely windowless to cut the cost of maintaining constant interior temperature. While many industrial architects feel that a windowless plant is a psychological mistake and insist on at least a vision strip, Daniel reports that these air conditioned plants have had great appeal for Southern workers and that absentee records are low. Windowless plants also provide a steady intensity of light and prevent glare.

Pharmaceutical manufacturing and many kinds of precision operations are examples of other manufacturing lines requiring complete control of interior climate. But even where the materials being processed do not require it, air cooling is often needed to counteract the increased heat load of higher-powered machines and of higher lighting intensities (General Electric researchers recommend 30 to 50 footcandles for general manufacturing areas, as compared with a typical 10 to 20 footcandles in preWorld War II plants).

Copycraft



**PARTIAL INTERIOR CLIMATE CONTROL** in Chrysler press plant. Albert Kahn Associates exploit daylighting by big window strip on four sides, use unit ventilators on roof for ten air changes per hour. Special glass cuts sun heat, glare. Curtain of unit heaters below windows counteracts wintertime heat loss.

NO NEED FOR INTERIOR GLIMATE GONTROL led to open-wall construction in Corn Products Refining Plant, Corpus Christi, Texas. Owner reports that only one of 12 buildings left open has had to be enclosed, and this because of need to maintain constant temperature in sugar curing equipment. The H. K. Ferguson Co.



ALUMINUM WALL with glass fiber insulation and steel backing encloses com pletely windowless Lincoln Electric plant. Offices are completely air conditioned manufacturing area is partly conditioned by duct system bringing cooled are directly to strips where workers stand, with "leakage" from this coolest zon relied on to lower temperature in rest of manufacturing area. The Austin Co



"UNIT AREA" SYSTEM of air conditioning has been designed by The Austin Co for maximum flexibility of interior climate control and for economy. System is to assemble standardized equipment for air intake, cooling, heating, filtering and supply (as shown in diagram above) on a platform, then raise platform into position between Austin's standard H-section welded trusses. Photo shows such a platform being raised to position in Ducharne Silk Co, plant, where three of these units were installed. Pre-assembly is figured to have saved \$3,000 per unit In A. B. Dick Co. plant, Austin provided platforms for 43 such integrated units, but only installed ventilating equipment which can be supplemented if required by future conditions.



AUSTIN uses figures like those in this chart to show owners how little partial and complete control of conditions actually costs. Chart estimates heat loss in a conventional monitor type building as against heat loss in a flat roofed plant with vision strip. Austin says its Norden bombsight plant, for example, requires only 1/10 the steam needed to heat a daylight building of the same size and figures that the heat saving is more than enough to cover the cost of controlled conditions. Austin also often sells owners on controlled climate by stages. Standardized control units sometimes provide only controlled ventilation, but are so arranged that cooling units can be added later on.

LIGHTING is probably the most important single factor in increasing labor productivity. Lighting experts remind that the return of green workers and older workers to the labor supply will mean even better seeing conditions. Typical lighting in older factory buildings seldom amounts to more than 20 footcandles. This compares with these recommendations by General Electric experts:



money saved elsewhere. In the Allis-Chalmers plant, Milwaukee, for example, a new lighting installation cut the accident rate by 43 per cent. Color is one of the most important means of supplementing lighting efficiency. At General Electric's Nela Park, researchers painted the power plant in such a manner: bright yellow ceiling prevents brightness contrast with high-wattage combined mercury and filament lamps; colors of wall grade from blue to brown to accustom eye to lower outdoor light level; machinery itself is painted light blue for high visibility. Researchers discovered that painting machinery had an added bonus: oil leaks indicating failures were immediately visible on the light surface.



# PRECAST CONCRETE CONSTRUCTION

Metal shortages mean that concrete construction systems will be more important than ever. Not even aluminum, which substituted for steel in many building uses including walls in World War II, will now be available for building use, since much more of this metal is needed for jet aircraft production. Precast concrete systems are proving themselves as economic and time-saving.





**TWO ROWS** of precast concrete slabs were installed around entire exterior of Continental Can's new 17-acre plant near Pittsburgh, saving construction time and an estimated 10 per cent in cost compared with poured concrete. Lower row is below grade and supports upper row on which strip windows rest. Reinforced slabs are 20 ft. long, are poured on the site, have steel inserts and bolt attachments for fast handling and installation. Wigton-Abbott were designers, builders.

Photos: Rotkin P.F.I., Copycraft, Life-Joe Scherschel, Rembrandt Studio, Lionel Freedman H. K. FERGUSON CO. has designed a precast system employing slabs up to 25 ft. in height. Slabs are cast on concrete floor and tilted up from the inside to form wall sections. Slab fits into a groove at bottom and is bolted to steel framing at top. No temporary bracing is needed. A glass strip slides into grooves between slabs. System makes it unnecessary to connect either slabs or glass sections to steel columns. Glass serves as a vertical window and is also a labor-saving joint between the panels.



### ERIC MENDELSOHN

It was just 27 years ago when the complacent downtown architects of New York City were shocked out of their seats by a German picture book. It showed only the backsides of the big city's most honored buildings; it declared that the fire escapes, water towers, and blank walls facing the elevated had more architecture in them than the splendid Gothic or Renaissance facades out front.

Eric Mendelsohn, the itinerant visitor, had earned the right to be critical. "Two decades younger than Wright and not as wise yet," he had been one of that small handful of pioneers who started the contemporary revolution against applied styles. In school he had refused to draw the required eclectic trim, bought the Greek and Medieval sheets needed for exams from "a student still poorer than I was"; his Renaissance thesis, said the professor, had nothing in it of the Renaissance, was "crazy but good."

An admirer of the intuitive Belgian pioneer Henry van de Velde, whose buildings had flow and dynamic quality rather than intellectual functionalism, Mendelsohn had begun practice in 1908 but really hit his stride during World War I, feverishly making sketches in barracks and, says he, in trenches, showing fantastic shell-like structures. The commission for his famous Einstein tower came to him there. Einstein called it "organic." Asked later whether he would build it that way again-all curves and incidentally special formwork-Mendelsohn replied, "God forbid-but whether I could do it that well again I do not know." After the war there followed a prolific output of factories (stock forms such as the repeated sawtooth bay receiving a new plastic dignity), department stores (many will recall their dramatic curved glass stairhalls), office buildings, everything a busy architect might produce, all uncompromisingly modern. Came March 1933 and Hitler, and Mendelsohn promptly left Germany, 45 years old, to start again. First in England (the Bexhall Pavilion, done with Chermayeff, was part of this) then Israel. In Palestine: brilliant large houses such as Professor Weizman's, banks, the University Hospital Center, the hospital at Haifa, town planning schemes extending vastly along the Mediterranean.

By now Mendelsohn had achieved world fame, but once again catastrophe struck: World War II cut off even the work in Palestine. So he circled around to America again, settling in a Howard house high on Telegraph Hill in San Francisco —the most urbane and freedom loving of America's cities.

During the succeeding ten years he painstakingly created yet another imposing group of works, no less ambitious but more mature than his earlier ones. Withheld from publication until they might make up a representative collection, they will be shown in this magazine during 1951.

# A TOP ARCHITECT'S HOSPITAL

Eric Mendelsohn's unique gift to the chronic sick is the tonic effect of his airy building design

LOCATION: San Francisco, California ERIC MENDELSOHN, Architect ISADORE THOMPSON, Consulting Engineer BARRETT & HILP, Contractors

In San Francisco the beautiful new building that they show to visitors is not a church or a bank but a hospital by Eric Mendelsohn.

One look at Maimonides Health Center is enough to prove that a hospital can be bracing and cheering. The building comes into view suddenly, around the corner from the new Mt. Zion General Hospital—a quick flight of long balconies, each with its fine-lined white iron balustrade, tier over tier seemingly suspended in the sky.

Good looks of the kind that architect Mendelsohn conferred on Maimonides are directly therapeutic. In every line the building was made to look light on its feet, to make the chronic sick who will be its patients feel that life can be bouyant. By dissolving his entire building front into balconies, Mendelsohn instantly subtracted four-fifths of the apparent weight. By the use of open balustrades instead of solid parapets he reduced his concrete to thin slabs. By "feathering" the slabs down to a thin leading edge (at the front edge of the corner bay it is only 2 in. thick) he obtained still further lightness and grace. By cantilevering the balconies he put the weight-supporting columns back into the shadows (although they still project from the wall reassuringly). By carrying forward the two blank end walls he not only supplied windshields for his balconies but made his whole front look as if it were carried lightly between thin

Photos: Dean Stone and Hugo Steccati











Through-passage from street to street is glazed where it passes the two patios (see opp. page) and has a cheerful entry door.

brackets. (Otherwise the balconies would have appeared to project from a heavy box.) When the two top floors are added later on, the building will end in another thin line up above—the sail-like canopy of Mendelsohn's "flying roof."

All this white, light, gaiety should take some of the lead out of a sick man's feet, give his spirit its badly needed lift. The very fact that the whole hospital front is the same balcony repeated makes the result seem effortless. And the little round turrets which punctuate the balconies, ending in the prominent round corner bay and giving the building its indelible stamp, were perhaps Mendelsohn's happiest idea. Without them, this kind of iron-railed balcony might easily have said "jail." With them there entered not only a new rhythm but also fantasy. Some people said the turrets reminded them of balustraded mountain lookouts; others recalled looking up at the pleasant white-turreted houses that flock up San Francisco's steep inclines such as Geary Street. By the cockeyed but evocative logic of art, Mendelsohn had made a series of simple iron balustrades a bright occasion.

#### Vertical development on a narrow lot

Maimonides will be remembered for an expressive economy of form, especially in its front, rather than an economy of building dollars. Yet on the practical side architect Mendelsohn set a good example in making the most of a narrow "impossible" lot, such as many a "special" hospital must deal with for similar reasons. The Maimonides board wished to save money by sharing the mechanical plant and certain hospital services with allied Mt. Zion General. But the only

Only a narrow lot was available close to Mt. Zion, so the Maimonides hospital had to be developed vertically (see plans). The central position of the main building left a charming recovery court (opp. page) landscaped by Thomas Church, and the service court toward Bush Street seen in the foreground in the photo of the model. This shows the low future treatment wings and the ultimate development with a "flying roof." The north facade is bracketed between the elevator tower left and the portholed fire stair tower to the right.



Photos (below and opp.) Dean Stone and Hugo Steccati



In the three views on these two pages may be seen how the striking exterior of Maimonides knits in with the pleasant living arrangements inside. The exciting pattern of the balconies as seen from the court below is perhaps less important than the fact that the spindle-railings offer minimum obstruction to the view of the city itself as seen from inside the patient rooms. Floor-to-ceiling glass is well shaded by balconies themselves against noontime summer sun, while it permits the balcony to seem a part of the room. The columns which project widely forward from the main wall screen the rooms from one another and simultaneously give an impression of needed structural strength.



	J 🛛		Ē
Iri			Ū

Wards and private floors both fit the strong rhythm of the structural system. The only rooms facing north are isolation rooms, utilities, and currently the special treatment rooms.



available near-by land was a mid-block sliver spanning 300 ft. from Sutter Street to Bush but fronting only 100 ft. on each.

On such a shape the usual economy of horizontal deployment, to get maximum reach for every nurse's station, was impossible. So Mendelsohn sought compensation in the extra amenity of vertical development. By building high, he could give every patient room a wind-sheltered, sunny, south exposure with light and air and a hilltop view across the city.

So the main ward building was run up (for an ultimate height of 11 stories) athwart the middle of the narrow lot; the one-story administration building was planted on Sutter Street as a buffer and entrance unit; the low treatment buildings were grouped around the service court on Bush Street. Between the central building and the administration unit there was still space for a charming recovery court, landscaped by San Francisco's ace "Tommy" Church, in which the many ambulatory patients could walk, on whose patterns others could look down from social rooms and balconies, into which staff could look from their offices. And a long glazed walk to one side connected everything from street to street, besides becoming a pleasant social area in itself for rainy weather.

### **Cheery living space**

Although Maimonides on its lot can put only 16 patients on a floor, so that nurses use elevators to serve two floors, this is not so serious in a chronic hospital where emergency situations are rare. Much more important is the long-term living quality of the patient rooms. So architect Mendelsohn made sure that all rooms (except a few isolation rooms) faced south, and brought the glass in bedrooms down to the floor, thus making the balcony an integral part of the room. He hung substantial figured drapes alongside that could be drawn for greater coziness when desired. And when he gave his balconies their spindle-rail, he was thinking not only about the hospital's exterior expression, but about the sightlines down to the city from beds on upper floors. Very few architects (and positively no bridge engineers) ever think just how a solid parapet or heavy balustrade may cut the view.

Colors were carefully modulated—mostly high key pinks and yellows on the walls. A special sanitary ceramic lighting fixture was designed by the architect to shine upward for indirect lighting or down for reading in bed.

Again, in a hospital which is perforce a long-term home, Mendelsohn made his social areas tall and airy (photo, page 99) and usable for movies, radio, television.

A good many visitors have asked why the social rooms are one short floor above the ground. It is partly, says Mendelsohn, because the high view of the court makes the view so much more pleasant. And this fitted in with the desire to avoid excavation (Maimonides gets its steam from Mt. Zion, needs no basement for boiler plant) so that storage areas could be kept directly behind the unloading platforms, at grade.

Maimonides is set in a very indifferent residential area verging into slums. Consequently even the landscaping is contrived to shield out what is undesirable, and provide a pleasant prospect. No matter how narrow was the lot, Church made room for a border of trees along both sides, to act as a buffer against unpleasant sights and noise. (See plan, page 95.)

### A special kitchen

The planning contortions by which Mendelsohn managed to squeeze into his culinary space two complete kitchens plus a diet kitchen has special interest only for those confronted with the same problem of the Jewish orthodox dietary laws demanding completely separate treatment of all that pertains to milk or meat. More generally interesting is his invention for odorless ventilation. By dropping a corrugated glass screen from the ceiling between cooking and service area he forces the fresh air to pass from the service to the cooking area where the ceiling exhausts create a vacuum behind the glass screen. A ventilating "snorkel" (seen in photo, right) is constantly drawing out the immediate cooking fumes from the ranges, so air in the kitchen and in the hospital stays fresh.

### Earthquakeproof structure results in an H

On an indifferent foundation soil of windblown sand, Mendelsohn's engineer, Isador Thompson, poured a semi-mat concrete foundation in which integrally cast deep beams distributed loads, not only from part to part but back and forth between high buildings and low, to equalize settlement. After studying eight floor systems, Thompson settled on shallow beams and long concrete slabs, taking care to retain full continuity between slabs, beams, walls. Thompson's shallow-beam slab system held his floor height down to 9 ft. 8 in. with a consequent reduction not only in stresses but in all costly vertical runs (pipes, ducts, elevator shafts, and stair).

For California's earthquakes, he made his center wall (running east-west) into a bearing wall, united it with the two end walls in an H-section, got added bracing from front and back rows of columns in between. (Drawing, right.)

Maimonides' 87 beds were housed at a cost of \$1,100,000.





Ventilating action of glass kitchen screen is described in text. Photo on opposite page shows the large dining and social hall with library mezzanine.



Shaded lines in plan and section show bearing walls arranged in H pattern for earthquake bracing. Structure is cantilevered out past the columns (also shaded). Photo at left shows knife-like thinness of cantilevered balcony slabs.



Photo (left and opp.) Dean Stone and Hugo Steccats





### A TOP BUILDER'S HOSPITAL

Teamwork, tight planning and Andrew Eken's building know-how produce a masterpiece of economy

LOCATION: Morristown, N. J. JOHN H. & WILSON C. ELY, Architects ANDREW EKEN, Technical Adviser WALTER KIDDE CONSTRUCTORS, INC., Contractors GERHARD HARTMAN, Ph.D., Hospital Consultant MEYER, STRONG & JONES, Mechanical Engineers J. DI STASIO & CO., Consulting Engineers CLARKE, RAPUANO & HOLLERAN, Landscape Architects

The factors that make Architect Mendelsohn's Maimonides Hospital so successful may be somewhat intangible and almost beyond definition, for beauty is an abstract concept. The factors that make Builder Andrew Eken's Morristown protege so impressive are solid and easily defined, for building economy is a concrete fact. The day when great builders like Andrew Eken get together with great architects like Eric Mendelsohn will be a great day for America. Just as Maimonides is a hospital for every builder to look at, so Morristown is something for every architect to study in order to bring that day closer.

"An extraordinary example of efficient planning and economical construction." This is the accolade given the new 236-bed general hospital in Morristown, N. J., by John G. Steinle, regional hospital program director for the U. S. Public Health Service. It may not take first prize in a hospital beauty contest, but as a yardstick of how much can be built for how little it is well worth the study of every hospital planner—be he architect, doctor, consultant, trustee or public official.

Direct construction cost (not counting fees, land or housekeeping accessories) will be only \$9,136 per bed—20 per cent less than the current national average. This is all the more remarkable since New Jersey is a high-cost area;

Planning is so tight that complete facilities have been packed into only 530 sq. ft. per bed without reducing bedroom sizes;

• More modern services, better equipment, and more privacy for patients have been combined with these dollar and space economies than can be found in most General Hospitals built at higher cost.

When the bids come in, all too many hospitals find it necessary either to make drastic cuts in their plans, or else to go out and raise more money. When the bids came in for Morristown, they were so far below expectations that the hospital could start thinking about building a \$415,000 nurses' home.

### A thousand savings, forty-five alternates, eight bidders

In the club car that carries Builder Andrew Eken between his New Jersey home and his Wall Street office each weekday morning, there are always a number of fellow-commuters from Morristown who know him well. One day early in 1948 a fellow commuter asked a favor: Would Eken act as an outside technical adviser to the trustees of the proposed Morristown Memorial Hospital? Eken, whose physician daughter Elizabeth had interned at Morristown, agreed to do the job, threw all his energies and enthusiasm behind the project. What started as a busman's holiday soon became for him a thoroughly absorbing and exciting contest to get the hospital more and more for its building dollars.

Today, when Eken is asked how Morristown managed to get one of

the best equipped hospitals in the country for one of the lowest price he will hesitate before he answers. What puzzles him is not so much why Morristown's bids were what they were, but why so few oth hospitals can match them. He will admit quickly that the savings di not come from any radical new methods. He will say there reall were no big individual economies—just a thousand little ones whice finally added up to one very large saving.

Eventually Eken will probably admit the building's economy wa more a matter of procedure and construction know-how than a matter of revoluntionary planning or techniques. For example:

1. From the very outset everyone knew that unless costs could held down there would be no new hospital. From the very outset the object of all planning was to make sure every added foot of space served a useful purpose. Almost every week the hospital admining trator, the chief of staff and several of the doctors met with Ekee the architect, and the Building Advisory Committee. The doctors explained what they needed and why and then cooperated in figuring out just how economically their needs could be met. Health Servic director Steinle's office was always ready and willing to advise.

2. Before any planning decision was made final, Eken presente comparative costs from his own estimating department.

3. The hospital wanted no money spent for fancy finishes, an spent none. For example, all the facades are common brick; all in terior partitions are painted plaster; all floors are asphalt tile laid o the bare floor slab. Instead of an expensive bumper to protect th walls, an economical beveled cement base was run along the floor  $\varepsilon$  the bedroom and corridor walls.

4. The hospital called in a top notch structural engineer and top notch mechanical engineer. Says the hospital consultant: "Thes engineers saved the hospital thousands and thousands of dollars. (But the mechanical engineer admits frankly that his firm would no have taken so small a job except as a favor to Eken.) The mechanic cal engineer's contribution included a very economical working-ou of the plumbing stack (see drawing) and of the oxygen distribution The structural engineer designed an unusually thin concrete slat floor, made it feasible by keeping his columns close together.

5. Wherever there was any question as to what satisfactory mate rial or method would prove most economical, an alternate was speci fied. All told, 45 such alternates were included in the bid forms.

6. Eken, at the request of the architect, loaned two men from hi own staff to the architect's office to help make sure that all detail were worked out for economical construction and to help write the specifications in builder's language so clearly that bidders could know exactly what they were bidding on. (As a result, bids varied by only about 15 per cent, with the three lowest only  $1\frac{1}{2}$  per cen apart.)

7. Not least of Eken's services was keeping the hospital planning on a fast timetable which enabled them to take bids just before the fighting in Korea began. As a result, the bids were taken when build ing costs were within a few points of the postwar low.

8. Only ten top flight builders were allowed to bid on the jobthree New Jersey firms plus seven of the biggest New York builders



-among them Fuller, Merritt-Chapman-Scott, Thompson-Starrett, Vermilyea Brown, Irons & Reynolds, and Walter Kidde. "You can't get the best builders to spend the time and money to make a serious cost-cutting bid in a free-for-all," says Eken. Kidde was the lowest pidder, got the job.

#### 'Full service hospital," fully equipped

Here are some of the things Morristown will get for its money: A hospital where every patient will have his own private or semiprivate room. The rooms are all the same size, permitting complete lexibility. (An incidental saving from this no-ward policy is that very little space had to be provided for visitors' waiting rooms.) Every room has its own toilet, wash basin, telephone jack and its

• Every room has its own toilet, wash basin, telephone jack and its own oxygen supply specially piped in;

There are three air-conditioned operating rooms, an air-conditioned fracture room, an air-conditioned cystoscopy room, three air-conditioned delivery rooms and two air-conditioned labor rooms.

Says U. S. Public Health Service Director Steinle: "Morristown Memorial Hospital also includes a comprehensive physical medicine unit, a contagious unit and a very complete outpatient department with facilities for the treatment of pay patients by the medical staff. In addition to the usual outpatient facilities there are special clinics for cancer, eye and dental. The laboratory, which includes a very well planned blood bank unit, was designed to meet the needs of much more than the 236 beds of the hospital as approximately onehalf the estimated laboratory load is anticipated as nonhospital patients being referred by private physicians. (Also, hospital was designed for future expansion—ED.) Each floor has a special room for disturbed patients. There is a well-equipped treatment room on each floor. Special consideration was given to patient comfort with the inclusion of such things as coffee and gift shops and a nondenominational chapel.

"The hospital was designed as a possible teaching resource with housing for eight resident physicians and a well-planned lecture room to accommodate 150 persons for pathology conferences. The radiology department includes a photo-roentgen unit and deep, intermediate and superficial therapy facilities."

Per bed figures are frequently misleading if they do not include costly hospital equipment, just as cubic foot costs are misleading if there is no compact planning (so costly equipment is simply spread thin over a larger cubage). What makes Morristown so remarkable is that it not only includes every conceivable piece of equipment



Concrete frame of hospital (above) shows flat slab construction. Series of of pictures (right) explains how slab is finished to produce perfect, unplastered ceiling. Top view shows slab after 4 x 8 ft. plastic-coated plywood forms are removed. Next picture shows thin concrete fins formed by plywood joints being ground down to smooth finish.

After grinding, men disk the slab to remove oil and dirt, next apply a coat of cement mixed with a bonding material

Underside of slab is now ready to be painted.

After coat of cold water paint, monolithic concrete slab ceiling looks exactly like traditional plastered job.

Close-up of concrete frame shows shorter end bay for solarium (left). Other bays are of standard width in bedroom wings, vary slightly in north wing.













to fill up airholes and pockmarks.



needed by its doctors, but that it is also so compact in plan. At 530 sq. ft. per bed it beats the regional average of 600 sq. ft. by more than 10 per cent. Even with all the fees, landscaping, equipment and accessories (down to spoons and pillowcases) included, Morristown's per bed cost will increase only from \$9,136 to \$11,607—as compared with a current *national* average for completely equipped hospitals of \$13,089.

When completed Morristown will serve five New Jersey counties and will be the largest hospital in the north-west part of the state, It will be air-conditioned in some special areas. An additional generator set for emergencies is included in the unit cost, will come in handy during storms and in case of bombing attack. Only serious criticism by U. S. Public Health Service: Nurses will have too far (about 120 ft.) to walk from their stations at the center of the Y-shaped plan.

The Y-shape, incidentally, was chosen by the trustees before Eken entered the picture. It assures good orientation for most bedrooms, leaves the leg of the Y for services and special treatment facilities. Morristown's trustees decided against the cross shape for fear that it produced too much traffic at the intersection, rejected the H-shape for similar reasons.

#### How to save 125,000 cu. ft.

Typical of the careful cost-paring that builder Eken and his associates did on this job is the saving of an estimated 7 ft. in overall height (or 125,000 cu. ft.) they achieved by their design of a minimum concrete slab floor, and by eliminating plastered ceilings. Eken feels that plastered ceilings under a flat slab may crack and fall, that plasterer labor is harder to get each day. The reason is that many plasterers' unions are tightly knit family affairs, frequently refuse to admit men not descended from (or otherwise related to) plasterers.

Morristown is the first hospital in the country to use so economical a slab. Designed by one of the country's top concrete engineers, Di Stasio, and perfected by concrete enthusiast Eken, the Morristown slab is only  $5\frac{1}{2}$  in. thick in most areas, needs to be increased to 7 in., for rooms with heavy live loads. With columns spaced 15 ft. 6 in., 9 ft. 7 in and 15 ft. 6 in. in depth, and arranged in 13 ft. 6 in. bays (a patients' room), the flat slab becomes a continuous member almost 40 ft. long, from spandrel beam to spandrel beam.

Although pipes, cables, etc. can be buried in the slab at certain points, Morristown's vertical ducts and pipe chases make most of this unnecessary, facilitate slab construction considerably. In other respects, too, the mechanical layout is a model of economical and compact planning. For every two bedrooms, Morristown has a slice 3 ft. 9 in. wide and 15 ft. 9 in. deep, containing two w.c.s, two lavatories, two prefabricated closets (with storage space for bed linen so that nurses don't need to go back to a storage room for it) and the plumbing stack. This amounts to a total of 59 sq. ft. for every four beds. By comparison the tightly planned University of Illinois hospital (BUILDING, Feb. '50) devotes 105 sq. ft. to inside toilets, wastes a similar area again in 5 ft. wide entrance passages to each room (but does get the lavatory inside its private bath, and a larger closet in the bedrooms). Although Morristown's lavatories are in the bedrooms, its bedrooms are 18 in. wider than those planned for Illinois, don't have the notched-out corner produced by Illinois' interior toilets.

When all the bills are in and Morristown is ready to admit its first patient, the hospital will have spent a total of \$2,739,259—\$816,000 of which it got from the U. S. Government under the Hill-Burton Act. The Health Service and the hospital trustees will know that they spent those dollars well. They will be able to look back upon a fine record teamwork in the production of an efficient and useful building. And they may be sure that architects and builders all over the country will study the records of this teamwork with care; for these records hold the key to a better integration of American building—and, consequently, the key to a better architecture.



Typical bedrooms (top) have separate toilets, washbasins, built-in closets, shelves for flowers. Section shows saving in height resulting from thin slab construction. Plan (below) shows tight plumbing layout.



## BATTLE FOR BETTER SCHOOLS is won by New Orleans' architect

Three-year campaign swings citizens to contemporary design, forces conservative bureaucrats to adopt progressive school building program

Last November New Orleans voters went to the polls and shifted the balance of power in their school board decisively in favor of completely contemporary new schools. Behind this victory is an inspiring story of how the architects of New Orleans climbed down from their professional pedestal and pitched into a hot civic fight against entrenched school officials and conservative school board members who proposed to meet the city's crying need for new schools with hopelessly out-dated buildings. Stirred up by an energetic woman on the school board and led by a young professor of architecture, the AIA Chapter joined in an intensive public relations program which brought the advantages of good contemporary schools home to the average citizen. For other communities with a similar problem, the story of the New Orleans campaign offers heartening evidence that people will fight for modern schools when they are taught the essential, practical values of contemporary architecture by its local practitioners.

The battle of the New Orleans schools started early in 1948 when school officials belatedly announced a \$40,000,000 school building program, then released a shockingly antiquated quadrangle plan for a new elementary school in the crowded suburb of Gentilly (top, right). Appalled at the thought of this plan becoming a prototype for the whole program, Charles Colbert, then assistant professor of architecture at Tulane, gave his second-year students the problem of designing a first-rate modern school for Gentilly. The university backed the project both as valuable practical experience for the students and as a public service. New Orleans newspapers gave the story a big play, and a utility company offered space and financing for a public exhibition of the best student designs (photo, below):

Delighted by this chance to tackle a practical problem, Colbert's class of mature ex-GI's thoroughly research the Gentilly school re-



quirements, talked to parents, teachers, school administrators, busi ness men and civic groups to get their ideas. At the exhibit o models based on this intensive study more than 30,000 people sav such basic elements of contemporary school design as: single-floo plans laid out for maximum economy, flexibility and best sun and wind control; home-like classrooms bilaterally lighted and properly equipped for sound control and ventilation; auditoriums, gyms cafeterias and playgrounds designed for community as well as schoo use; site selection based on the requirements of an increased num ber of outdoor activities, protection from heavy-duty streets and proximity to student's homes.

Photos: Clarence Laughli


Public enthusiasm for the student designs led school superintenent Lionel J. Bourgeois to announce that revised plans for the entilly school would incorporate many of the new ideas supplied y the Tulane project. But nearly a year later aging school architect L. A. Christy submitted plans for a two-story, central court strueare on an inadequate two-block site—a very distant cousin to a good ontemporary school—and the school board approved construction y a vote 4 to 1. The lone dissenting vote came from the board's only coman member—Mrs. Jacqueline McCullough. Convinced that the board's action blatantly defied public opinion, Mrs. McCullough eamed with Charles Colbert to build up a vigorous citizens' drive p reverse this decision.

# Architects join the fray

One of their first moves was to enlist the support of the New Drleans architects. Under the leadership of president Sol Rosenhal, the AIA chapter passed a resolution criticising the school board or proceeding with the Gentilly plans "without recognizing in any vay the local practicing architects" and offered its services in "deeloping a modern school program of outstanding accomplishment." 'aced with mounting public pressure, the board authorized a survey of school needs by an AIA committee consisting of Colbert as chair-



ntensive survey of the Gentilly area by architects Rosenthal and Colbert led to this breeze-catching plan for one of their two Negro elementary schools.

man, August Perez, Richard Koch, William F. Bergman and Dougas Freret.

Meanwhile Colbert and Mrs. McCullough went to work on all fronts to build public backing for this professional approach to the school problem. Within two months they held more than 60 meetings with civic organizations. The Classroom Teachers Federation, PTA groups, the Young Mens' Business Club and New Orleans newspapers bombarded the board with appeals for a modern school program. Radio stations donated time for panel discussions of the school issue. Colbert appeared before the board with 21 specific criticisms of the proposed plan for Gentilly, summed them up with a slogan which captured public imagination: *The child is the monument, not the school.* As a climax to the campaign Tulane architectural students prepared another exhibit of models and dramatic charts showing the advantages of contemporary design for a specific New Orleans school. Set up in a large department store in the heart of the downtown area, the exhibit drew 50,000 in two weeks.

### School board yields

This whirlwind campaign forced the school board to bow at last to the aroused public support for a progressive school building program. When the AIA committee submitted recommendations for the Gentilly area based on a study of top ranking state and city school codes, the board agreed to follow them and made a precedentshattering announcement: henceforth all New Orleans schools would be designed not by bureaucrats but by practicing AIA members.

Having won this whopping victory, the Committee was particularly anxious to prove to the sceptical board president that a good modern school could be built in Gentilly beneath the budget of \$750,000, or \$1,000 per child. They felt that a team of architects representing advanced, middle-ground and conservative approaches to design would be the safest bet for this first, pace-setting commission. Three firms chosen were Curtis & Davis; Goldstein, Parnum & Labouisse; and Freret & Wolf. The AIA committee checked their drawings. Any disagreements were ironed out in conference with the committee, without any sign of the unpleasantness produced when an architectural committee tries to redesign submitted work. Clinching proof of the success of this collaboration was a low bid of \$553,000 on the completed plans—about \$200,000 under the original estimate.

With the deadlock over design broken by the decision on the Gentilly school, the school board announced an emergency \$7,700,000 building program to satisfy the clamor from all quarters for desperately needed new schools. In appointing architects for the first units in this program the board decided to give priority to the hardworking members of the AIA committee. On two Negro elementary schools for the Gentilly area, involving about \$1,650,000, Sol Rosenthal, chapter president, formed an association with Colbert, who quit his job at Tulane to undertake this practical test of his design ideas. A \$700,000 elementary school in the suburb of Lakeview went to the firm of Favrot, Reed, Mathes & Bergman. The \$500,000 Union Park school was given to Ricciuti & Benson. Nowhere in this first apportionment of jobs was there a suggestion of the entry of the "ten per centers" who sometimes infiltrate programs of this sort on the basis of political contributions rather than quality of work. All plans for these schools were reviewed by the AIA committee for conformity to basic standards set by the committee's survey, but architects were given wide latitude within this framework.

### Voters back architects at the polls

A school board election last November clearly confirmed the extent of public support for modern schools aroused by the architects and Mrs. McCullough. Prior to the election school board votes had usually been either 4 to 1 against progress or at best 3 to 2 in favor of better schools. Of the two members whose terms expired last fall one was conservative, the other progressive; but only the conservative decided to run for re-election. The McCullough candidates were C. Paul Besse, an oil company engineer, and Dr. Clarence Scheps, comptroller of Tulane University. Besse based his campaign on the need for better buildings, while Scheps hammered for sound school financing. Both pointed up the fact that no new schools had been built since the war despite the pressure of the vast number of war and postwar babies. Scheps and Besse scored a clean-cut victory; the conservative candidate was defeated by a vote of 50,000 to 32,000.

One of the new board's first acts was to install a new president— Mrs. Jacqueline McCullough-Leonhard. Newly married herself, Mrs. Leonhard intends to cement the marriage of New Orleans citizens to contemporary school architecture. The board is now pushing through the first phase of the program and pressing the school superintendent for complete data on the city's overall school needs. (Though the former board had obtained a report on long-range requirements, from Harland Bartholomew Associates, city planners, no effort had been made to take the pupil census recommended by the planners as a means of determining specific needs in each area of the city.) Of the first five schools awarded to members of the AIA chapter, two are under construction and bids will be taken shortly on the remainder.

# Two-story finger plan trims high land costs, captures air and light for New Orleans grade-school

### LOCATION: New Orleans, La.

SOL ROSENTHAL and CHARLES R. COLBERT, Architects

Here is a sample of what New Orleans is getting as a result of its architect-led campaign for better schools. This proposed Negro elementary school has a two-story "finger" plan which may prove to be more effective than the classic single-floor version as an antidote to the city's worst school building headaches. Among these are a hot, wet climate; poor foundation conditions; densely populated, costly land.

By placing classrooms in three widely spaced parallel wings with single-loaded outdoor corridors (plan, right), architects Rosenthal and Colbert have 1) opened the whole school to the all-important prevailing winds, 2) secured two-sided natural lighting for all grades, 3) provided direct access to the outdoors for the youngest pupils. To insure good cross-ventilation in frequent rainy weather, the continuous windows on both sides of classroom wings will be composed entirely of awning-type sash (detail, right). Second-floor classrooms will catch additional breezes by being up in the air like the raised living quarters of many an old New Orleans plantation house.

Biggest advantage of the two-story plan is its economical use of high-priced land. For a comparable one-story school the space between wings could be reduced from the present 80 ft. to 50 ft. without shutting out light and air. But despite this saving, the same number of classrooms would occupy some 50,000 more sq. ft. of land than the two-story arrangement. With land at about \$2 per sq. ft. this would add better than \$100,000 to the school's cost. The single-floor scheme would save little on piling costs—an important factor in marshy New Orleans—and its doubled roofing area might nearly offset the cost of the fireproof construction that a 2-story plan requires in roof and floor slabs.

As far as younger pupils are concerned, this is still a one-story school, because kindergartens and lower grades occupy the ground floors and open directly on individual play areas through accordiontype doors. A library, a multi-purpose auditorium, administrative offices and upper grade classrooms are located on the top floors. Older students reach outdoor classroom areas via stairs at the end of each balcony-corridor.

Both school and community needs were considered in planning the spacious assembly-cafeteria building. Located near the street for easy public access, it provides a large clerestory-lighted room for meetings or meals, a partially roofed dining terrace, complete kitchen and a medical clinic. Estimated construction cost of the school is \$950,-000, or about \$1,000 per pupil.



Truss-framed "floating corridor" with clear spans of 80 ft. connects upper floors of classroom wings and provides shelter for open-air corridor beneath. (above) Elimination of supporting columns makes adjacent play areas safer, cuts corridor cost \$15 per ft. by reducing number of pilings required in marshy soil.







The rising cost of building service raises the question:

# ARE APARTMENTS ECONOMICALLY OBSOLETE?

Because the apartment dweller must pay indirectly but dearly for lawn mowing, leaf raking, snow shoveling and for all forms of household maintenance and repair while the homeowner does most of these chores himself, a diminishing proportion of U. S. families can afford the luxuries of apartment life. This is the thesis argued below by

JAMES C. DOWNS, JR., President Real Estate Research Corporation and Chicago Dwellings Association

Pressure against luxury living has been characteristic of our expanding economy during the past 50 years. Take, for example, the case of domestic servants. Everywhere one hears the common householder's lament: "You just can't get help these days!" The inference is that maids, gardeners, housemen and chauffeurs have disappeared from the face of the earth. Of course that is not true. There are still plenty of domestic servants, even though their number has dropped from more than 27 per thousand population in 1870 to less than 13 per thousand in 1950. The wealthy continue to have servants in their homes, but in spite of our current heights of prosperity a steadily diminishing percentage of U. S. families *can afford* that luxury.

The prime objectives of housing design during the past half century have been to overcome the impact of higher construction costs and to eliminate wherever possible the need for purchased services. In this period we have seen a single living room substituted for the traditional front and back parlors; we have watched the dinette or dining alcove replace the dining room; we have witnessed an increasing shift from bedrooms to bed closets and studio couches. Gone almost completely are the maid's room, the sewing room and the pantry. The housing consumer has been forced to these compromises and deprivations because he just *could not afford* the space.

Of even greater impact upon the pattern of housing has been the need to eliminate purchased services. Broadly speaking, the economy has accommodated this need in two ways: by the use of labor-saving devices and by wider reliance upon self-help. In many instances the elimination of purchased services has been a combination of the two. For example: The home-wave kit and the portable hair dryer, combined with the labor of the consumer, have cut in on the beauty operator. The purpose of this article is to pose and to present arguments defending the following syllogism: An increasing percentage of U. S. people cannot afford purchased services of any kind; apartment buildings differ from other housing accommodations in that they offer a higher level of purchased services; therefore, apartment buildings must decline in relative importance as a means of housing.

### Apartment: "A pretentious flat"

Although there does not seem to be any clear-cut definition of the term *apartment building*, it is commonly understood that the difference between an *apartment* and a *flat* or *tenement* is the implication of service in the former term. One of our dictionaries says that an apartment is "a pretentious flat." Certainly in the lexicon of the average realtor, builder and architect, a *tenement* means a unit in a multi-family building wherein no services of any kind are provided; a *flat* means a unit in such a building wherein a modicum of such services (perhaps only heat) is provided; but an *apartment* envisages a broad range of services including heat, hot water, janitor service, maintenance of furnished equipment (embracing stoves, refrigerators, plumbing and other utilities systems), cleaning of public spaces, grounds, etc., as well as maintenance of structure and the payment for all public services (taxes).

These apartment buildings came into being when central heating and utilities distribution systems made it possible to erect structures truly multi-family in character, yet offering living amenities comparable to those previously found only in single family dwellings. They originally were intended to accommodate the need for higher-density occupancy of land by persons in the upper income groups who did not wish to follow the pattern of moving farther and farther from central city areas in pursuit of such amenities. Inasmuch as these original tenants were used to a high level of service, the initial apartment houses catered to their wants.

The first residential buildings to offer a level of service high enough to qualify them under our definition as apartment buildings were luxury two-flats. Here two families could occupy no more land than was needed by one, and an owner could provide himself with service, or profit, or both, from the rental paid by his tenant. Even before the depression, however, it became obvious that the benefits of ownership of this type of building in many cases were an illusion. Mounting costs of construction and service in the period after World War I tended to make the rent of the owner more than that of his tenant. As a result, two-family structures, which aggregated 20.4 per cent of all residential units erected in 1922, began to play a less and less important role in housing construction. Since 1929 this type of building has never provided as much as 10 per cent of all residential units constructed and in 1950 it accounted for fewer than 4 per cent of the housing units built.

### The apartment's role in history

Prior to the year 1920 the apartment building had never assumed a really important role in the construction of new housing for U. S. families. In fact apartment units built in any one year had never totalled as much as 10 per cent of all dwelling units. More than 80 per cent of the new residential quarters in 1920 were single family houses; something over 9 per cent were in buildings of less than four units and the balance of 8½ per cent were apartments.

Two factors in the post World War I period contributed to the dramatic increase in the number of apartment buildings erected in U. S. cities. The first of these was the sharp rise in urban population and the consequent pressure for more intense land use. The second was the technique of financing such buildings through (Continued on page 68)





Cutaway drawing shows scheme of operation. Left is plan of typical floor. Rotor stores 28 cars, with three more in dead space between elevator shafts. Below is plan of street level.



# **AUTOMATIC PARKING GARAGE**

Rotogarage parks 400 cars on a plot 100 x 125 ft. with  $1\frac{1}{2}$  minute delivery

One of New York City Mayor William O'Dwyer's last whimsies before he left office last year was to suggest that the traffic and parking problem in Manhattan be solved by paving over the streets and the traffic on them, and starting in clean on a new level 8 ft. higher. This was a lightly made remark but a significant one; the despairing words are illustrative of the vast and seemingly incurable automobile sickness of American cities, whose streets cannot hold both parked cars and traffic, but nevertheless are made to.

A more hardheaded approach to the intricate problem is a new design by Rotogarage Parking Units Co. of New York for multi-story parking buildings to take cars off the street for hourly storage.

Rotogarage's ingenious design for a mechanical parking tower on clamorous 34th Street between Sixth and Seventh Avenues in New York-across the street from Macy's department store-is brand new. Its parking floors are actually a stack of turntables set on a core of four elevator shafts. City motorists will drive in on a clear street floor, leave their cars before one of the four elevator doors, turn the ignition off, and get out, leaving the cars completely locked if they wish. A dolly will emerge from the elevator, lift a car a few inches off the floor, and pull it into the elevator. The elevator will carry the car upstairs to one of the rotor floors which has an empty slot on its turntable-and while the elevator is rising this rotor will be revolving to present its vacant spot before the elevator door. The elevator will stop, the dolly will run the car out of the cab and drop it on the rotor, then the elevator will either unpark another car which has been called for and take it down, or return below empty. The time elapsed from when the elevator doors open to receive one car, the car is stored upstairs, and the elevator returns to pick up another will average one and one-half minutes.

This building is designed to store 400 cars on a plot 125 x 100 ft., which is approximately seven times as many as a parking lot that size could store. Street congestion would thus be relieved to a degree. But the building is also designed to make money as a prudent investment. Its backers figure it will pay on any site which is as expensive as \$15 per sq. ft. (Less expensive areas are less congested, and parking demand will not support the building investment. Real estate in the 34th Street area runs about \$30 per sq. ft.) The building is cheaper to build and operate than a ramp garage. For detailed analysis of the 34th Street project compared with a parking lot and a ramp garage of equal capacity, see opposite page.

Elevator parking garages, even automatic ones, are not new. The elevator did much to create to-



PETROFF & CLARKSON, Architects GUY D. PANERO, Consulting Engineer STROBEL & SALZMAN, Structural Engineers

day's congestion in city streets by making skyscrapers possible, and inventors have long tried to use it also to solve the situation. But elevator parking garages which are merely one storage floor above another, using attendants to drive cars into place, cannot give fast service in unparking. Other automatic parkers have been developed and are in use which handle all cars mechanically by dollies on elevators, but those designs in use have a common weakness: if any part of the mechanism goes out of order, a certain number of the parked cars cannot be unparked until it is fixed.

It is highly improbable that cars ever would be frozen in a rotogarage. This design sidesteps this weakness by making all the cars accessible to all the elevators by means of the turntables. Even if three of the four elevators should go out of commission simultaneously, the system is not immobilized. One elevator can clear the entire building. Another place of possible mechanical failure, the motors which revolve the turntables, is diminished as a danger by the design of the rotor mechanism. Only 6 h.p. are required to move a turntable fully loaded with 28 cars (gross wt. 200,000 lbs). Actually, four 2 h.p. motors are provided in the design, but even if they go out the turntable may be turned practically in emergency by manpower at a slower speed than usual. Engine failure freezes nothing unless all elevators go out.

A basic factor in parking garage design should be the number of cars which can be discharged to the street without disrupting traffic. The rotogarage will discharge 40 per cent of its capacity in one hour —160 cars—but can hold a number of them waiting on the comparatively open ground floor ready to roll away in traffic breaks. The 400 car capacity includes 11 "rotofloors" above the ground and one in Construction can be either steel frame or, as above, reinforced concrete.

12: \*

1007

TYPICAL FLOOR

# (Continued on page 162)

### A COMPARATIVE STUDY

	Parking lot	Ramp garage	Rotogarage
Plot required (in sq. ft.). Land & building areas, overall. Assessed value of land (not for sale).	\$80,000 \$80,000 \$1,920,000	\$25,000 \$128,750 \$600,000	\$12,500 \$113,269 \$300,000
BUILDING COSTS Demolition (includ. improvements for parking lot) Excavation & foundations Structure (includ. sprinklers) Elevators & parking dollies Rotors with traction drive motors, installed. Costs during construction (archt. & bldrs, fees, etc.).	\$228,000 none "	\$12,000 130,000 1,045,625 none 118,763	\$6,000 75,000 889,518 225,000 360,000 119,551
Total building costs	\$228,000	\$1,306,388	\$1,675,069
Mortgage, probable (60% amortized loan) Equity of ownee (land not included)	\$ none \$228,000	\$783,000 523,388	\$1,005,000 670,069
ANNUAL OPERATING EXPENSE (based on operation day of 24 hrs.—full 365 days a year) Ground rent (land available on long term lease). Taxes, land & improvements (3%). Interest on loan (4%). Amortization (2%) Depreciation (2%). Rotogarage licensing fee. Insurance Utilities (Power, light, heat & water). Supplies, repairs & misc. Operating staff (three 8-hr. & relief).	\$230,400 64,440 none " " 6,000 5,000 1,000 104,000	\$72,000 57,191 31,320 15,660 26,127 none 15,000 14,500 4,000 104,000	\$36,000 59,252 40,200 20,100 33,501 12,000 7,000 11,900 10,000 74,360
Gross annual expenses	\$410,840	\$339,798	\$304,313
ANNUAL ESTIMATED INCOME (based on a 300 day operation year—average daytime hourly income: 50 cents) Shopper's parking period (10 a.m6 p.m.) No income shown for add. parking time, etc Gross annual income, estimated	\$444,000 	\$456,000  \$456,000	\$480.000 \$480,000
RECAPITULATION: Estimated income Estimated expenses	\$444,000 \$410,840	\$456,000 \$339,798	\$480,000 \$304,313
Gross net profit (before corporate taxes) Annual income per car stall Annual operating cost per car stall	\$ 33,160 1,110 1,028	\$116,202 1,140 849	\$175,687 1,200 760
Annual net income per car stall (before taxes) RETURN ON EQUITY INVESTMENT. RETURN ON ANNUAL OPERATING EXPENSE.	\$82 14% 8%	\$291 22% 34%	\$440 26% 57%



# MOVING STAIRWAYS MOVE INTO OFFICE BUILDINGS



Vital to fast moving stairway transportation is the scissors arrangement, with no necessity for walking between stairway landings on any floor. Diagramatic section above shows typical scissors layout (one bank up, one down). The big news in Boston and much of the rest of the office-building world is that office workers in the new John Hancock Building don't mind riding all the way up to the ninth floor on moving stairways.

This is the first big test of moving stairways versus elevators for office building transportation, and it has been watched closely for two years by smart building men who questioned the elevator engineers' old maxim on vertical transportation which had limited most such moving stairways runs to three flights. These same observers are waiting now for the next big news coming up on moving stairways an increase in their speed.

Although they broke the old three-floor rule, the designers of the John Hancock Building were careful. They compromised by including elevators for the first eight floors as well as moving stairways (the catchy word escalator was invented by Otis Elevator for their own moving stairway but appropriated by the public to describe all other moving stairways too; the Hancock Building is a Westinghouse installation). The Hancock Building elevators run express to floor four, then stop at five, six, seven and eight. Hancock employees working on the second and third floors are expected to ride the escalators if they are physically able. Employees on the 4th, 5th, 6th, 7th, and 8th floors are offered their choice of moving stairways or elevators, although the management has indicated its preference for having them use the stairways.

After six months experience, the employees preferred the escalators, acording to a recent informal poll for BUILDING. Said Rita Cullinane, who works on the 7th floor: "At first I didn't like it because I was afraid I would get my foot caught, but now I'd rather go on the escalator because there's no crush and you don't get somebody's cigar in your face, as you might on a crowded elevator." Jacquis Harison, manager of the Hancock employees' store on the 8th floor, said: "I like the escalators better because they move so smoothly, and I can just relax and get my thoughts together for the day ahead or plan my evening at home."

On the basis of this kind of testimony, a number of office building projects now in the works will shortly substitute moving stairways for elevators up to eight floors. A new eight story office building for Dun & Bradstreet in New York by architects Reinhard, Hofmeister & Walquist will rely almost entirely upon moving stairways. The Chrysler plant in Highland Park, Mich. runs eight escalators up to its fifth floor in the mornings, reverses them at night. The Virginia Light & Power Building in Richmond has nothing but moving stairways for its four floors. The Metropolitan Life Insurance Co. will equip its big new 14 story, 6,545 employee office building with moving stairways up to floor eight. Skidmore, Owings & Merrill's design for the projected Ford Research Center (BUILDING, Dec. '50) swings heavily to moving stairways for vertical transportation.

### Today: economy

Moving stairways can save space and money for the building owner, but only if the first eight floors of his building are big enough to require mass transportation. Escalators cost less than elevators, but obviously each escalator runs up only one floor. To serve eight floors, 14 escalators are necessary; this may be economical in a situation when they supplant a bank of eight elevators, but if the floors are small and traffic requires only three elevators, it is not economical.

A continuous 32 in. wide moving stairway operating at the rate of 125 ft. per minute can carry 580 people in a five minute interval—which is equivalent to about thirteen 2,500 lb. capacity elevators, or about ten 3,500 lb. capacity elevators. The area required for two of these moving stairway units, side by side, is 8 ft. 8 in. wide and 55 ft. 6 in. long—including 10 ft. access at each end of the units. This is about the same area required for three average size elevators with their access corridor. Operating expenses for escalators are considerably below those for elevators because they need no attendants, use less power, and have fewer expensive wearing parts.

So if the traffic is there, in an office building with large floors, moving stairways are strikingly economical, although for office buildings with small floors this may not be so. But even when few enough elevators are needed to keep the daily operating cost down near the level of moving stairway's daily cost, there is sometimes a fat saving on initial investment.

There is a large psychological element which for many years kept moving stairways out of office buildings. Tenants would not tolerate the moving stairways—or at least the building owners thought they would not. Even the example of the Hancock Building does not necessarily prove that general rental office buildings can succeed with moving stairways, because Hancock employees obviously do not rent their own offices; they are put in them, al-



though their favorable reactions to the situation are encouraging to moving stairway proponents.

An important factor which is switching designers from use of elevators to moving stairways is change in the relative cost of equipment. Since 1940, elevators have gone up in price. In the same period, moving stairways have come down in price about 25 per cent. One reason for this has been simplified truss design achieved through standardizing run lengths up to 20 ft. (in earlier models, runs were practically limitless) and by manufacturing stairways in two standard widths, 32 and 48 in., instead of 24, 36 and 48 in. as in older units. Width, incidentally, is measured between the tops of the balustrades rather than at the somewhat narrower treads -designed to match people who are wider at the hips than at their feet. Also, devices previously installed in their own machine room are now incorporated inside the truss. Another cost cutting factor in moving stairways has probably been the entry into the field of a new company, Peelle Motorstairs, who are now competing with the two big producers, Otis Elevator Co. and Westinghouse Electric Corp. Since the end of World War II, the use of moving stairways has taken a big upturn; 40 per cent of all those now in operation in the U.S. are new since V-J day.

### Tomorrow: speed

But the biggest persuader to increase installation of moving stairways in office buildings will almost surely be an increase in their speed. The origin of the comparatively slow speed of moving stairways in the U.S. is not clear, but their use principally in department stores may have had a lot to do with it. For department store owners, who have learned from experience that a shopper taking a slow ride on moving stairway and seeing a panorama of merchandise is likely to do more impulse buying of items he sees as he rides, the slow speed of moving stairways has been a plus value rather than a hindrance. But for office buildings the slow speed of the escalators has been a major drawback, since they travel only about one-third as fast as a man would normally walk. The legal maximum speed of moving stairways in New York City is 125 ft. per minute, but, except for one in Rockefeller Center, most New York moving stairways still travel at 90 ft. per minute. This is only half as fast as moving stairways move in the London subways during rush

(Continued on page 158)



In vertical transportation scheme requiring 24 elevators, the units could be placed in the center of the building and arranged so that they share four 10 ft. corridors. In second plan (right) moving stairways would be centered and banks of three elevators situated around them. Space taken by the stairways side by side and their approaches is no greater than three of the elevators plus access corridor. In a 12 floor, single-purpose office building with a population of 6,000 (3,750 people on the first five floors above ground and 2,250 on the upper six floors) two methods could be used to empty 1,200 (or 20 per cent) of the occupants in the 5 minutes which is considered good practice. To do this with elevators alone would require twentyfour 4,000 lb. units, since one elevator can carry only 50 persons down in 5 minutes. Moving the same number of people with a combination of elevators and moving stairways could be accomplished with eight 48 in. stairways operating in a scissors between the first and fifth floors, plus 12 elevators running from floors one to twelve. If just half the stairways in this plan run "down" they easily can move out 600 people in 5 minutes and the 12 elevators can handle the remaining 10 per cent. Elevators cost about \$50,000 each to buy, and take a big chunk of capital in operators' salaries (except in a single experimental office installation in Dallas, Tex. where "operatorless" elevators have been installed). The economic advantage of a combination is evident in the graph above which compares initial costs and upkeep for the two plans.



# REVIEWS

THE NEW SCHOOL by Alfred Roth. Editions Girsberger Zurich. 224 pp. 7 x 91/2. Illus. \$8.

Alfred Roth is a sparse, cultivated Swiss, with a sharp but kindly eye. He is one of Europe's top architects, especially on schools, and beyond that, editor of *Werk* which in art circles requires no further tag.

But what Roth did that was really unique, before sending his manuscript to the printer, was to spend a year in the U.S., closely observing. Consequently he is the rare kind of European whose understanding of America is genuine and free. His book, The New School, compactly written and of handy size, is to date the best handbook and guide available in the English language to the American architect and schoolman. It is well versed on social aims, clear and reliable on technical advances, and discriminating on the very best, here and abroad, in school design. It gives the serious American a broader base than our own usually parochial publications to measure himself against the best the West can do.

From Roth's technical section there emerges comforting evidence of American leadershipdue however as often to opulence as to brains. The advanced American school has the most generous space standards, inside and out; the structural methods and mechanical integration here have reached the highest degree of flexibility; our climate with its sharp contrasts of light and shade, hot and cold, has forced keener thinking on daylight and climate controls than the British with all their proclamations have as yet achieved, and it is pleasing to have the evidence presented competently for a change. But in such a coolly objective compendium there is little room for chauvinistic smugness. From Roth's figures there emerges a clear minus for the U.S. in the field of programming and overall planning. When Roth sets down the size for a "large school" of primary type as 400-800, he hardly realizes how revolutionary has been the achievement of densely populated Switzerland in holding it there while sparsely populated America, in its big cities, has not hesitated to jam small children into huge plants several thousand at a time, for no other purpose than administrative convenience. But then, few American schoolmen have grasped the keenly human objective Roth sets down for school sites: "the closest possible connection between school, home, and nature, and to reduce distances to a minimum."

It is this human kind of thinking which makes the book valuable throughout, and gives edge to the rounded presentation of seven Swiss schools, five American, three British, two Dutch, and one apiece from Italy, Denmark, and France. These include the classical examples.

(Continued on page 154; see also page 114)



Photos: Pfeiffei

### The Felsberg School, a Swiss school in a park

Proving that the same ideas turn up in many countries, this Swiss school-in-a-park was built at Lucerne shortly before Perkins & Will's well known Parkside School at Riverside, Illinois, saving land costs and redoubling park use. To spoil less ground, Swiss architects Jauch & Bürgi ranked their pavilions side by side rather than parallel. All classrooms are lifted into the clear above the rising slope, and the ground-floor space beneath is cleverly converted into sheltered play space. (See plan, photo below.) Here, too, are the washrooms. The play courts running out from each such shelter raise demands for respect to plants rarely obtainable in the U. S. but help protect the park itself.

Classrooms are square and well daylighted from the south—how do the Swiss maintain those exterior awnings?—but strangely the fine opportunity for bilateral daylighting has been passed over.

The carefully proportioned structures were economically built in concrete frame with brick filler-panels in the walls and granite facing for the exposed columns below. Roofs are wood-framed, and in the case of the gym carried on heavy laminated timbers (top left opposite page).

(From Alfred Roth's "The New School")







Top view, opp. page, shows landscaped approach; top views this page, the timber-roofed interior and concrete column exterior of the gym. (It is in the bottom right corner of the plan.) Typical classroom floor plan shows above the general (groundfloor) plan in upper left corner.



# Pace-setting Swiss nursery school

In view of the approaching defense era, when women will be called back into industry, close attention must be paid once more to nursery schools. Swiss architect Alfred Roth's example near Bern is a fine prototype.

Under a simple cross-shaped gable roof, Roth has been able to accommodate every type and degree of needed space, all within easy supervision by the teacher. The large view shows the coatroom entrance. Since small children spend so much time there, it was an act of genius to give it a transparent glass partition so the teacher can see through at all times (it is well protected by benches against breakage). Sharing the entrance wing are toilets and the shop. To the left of this wing, in the plan, is an open covered play shed (seen also in the top photo). Its end-window with squares of colored glass gives the children endless fun looking at one another and the landscape. On the opposite side of the main classroom are two play alcoves, for boys and girls. Among author Roth's excellent details is his grooved-wood acoustical ceiling.

(From Alfred Roth's "The New School")







# ROUND TABLE REPORT: Cut standard of waste to save standard of living while rearming

#### MEMBERS OF THE ROUND TABLE

#### for the Architects

RALPH T. WALKER President, American Institute of Architects JOHN N. HIGHLAND JR. Vice-Chairman, AIA-NAHB Committee on Architect and Builder Cooperation

LESSING WILLIAMS Member A.S.A. Code Committee S. 51 for the Home Builders

#### CLARKE DANIEL

President, Standard Properties Inc. Chairman, NAHB Design & Construction Committee JOSEPH GOLDMAN

Construction Superintendent, American Community Builders **IRWIN JALONACK** Chief Engineer, Levitt & Sons, Inc.

DAVID SLIPHER Technical Manager, Kaiser Community Homes EARL SMITH

President, Earl Smith Associates

#### for the Prefabricators

JAMES PRICE President of National Homes Corporation and Chairman of Prefabricated Home Manufacturers Institute

for the U. S. Public Health Service RALPH J. JOHNSON Consultant, Hygiene of Housing Division

for the American Standards Associaton HOWARD COONLEY, Past President

for the American Society of Building Officials

WALKER LEE Commissioner, N. Y. State Building Code Commission

### Research

CARL F. BOESTER Director of Housing, Purdue Research Foun-dation ROBERT DAVISON

- Director of Research, Howard T. Fisher & Associates, Inc. F. M. DAWSON
- Dean, College of Engineering, The State University of Iowa
- WILLIAM SCHEICK Executive Secretary, Building Research Ad-visory Board of the National Research Council

WALTER C. VOSS Head of the Department of Building Engi-neering & Construction, M.I.T.

for the Producers RICHARD G. KIMBELL

Technical Director, National Lumber Mfrs. Association

HARRY C. PLUMMER Director of Research & Engineering, Struc-ural Clay Products Institute LESLIE D. PRICE

Manager, Engineering & Safety Regulations Department, National Electrical Manufac-turers Association B. L. WOOD

Director of Research, American Iron & Steel Institute

**Dimensional Coordination** M. EDWARD GREEN

Land Planning

CHARLES D. CLARK

### Presiding:

P. I. Prentice, Editor & Publisher of The Magazine of BUILDING, presided. Leonard Haeger, Assistant Director of Housing Re-search, HHFA, gave assistance on technical points. John L. Haynes, Director of NPA Building Materials Division opened the dis-cussion

Once again the oft-maligned home building industry has set an example for every other industry in the national emergency-an example of constructive thinking and cooperative action. Specifically, the home building industry has:

1. Affirmed that an all-out attack on waste can cut its own costs in labor, materials, and dollars by between 20 per cent and 40 per cent.

2. Outlined a comprehensive program for government and industry cooperation to achieve these savings.

3. Proposed that every industry take similar action, in order that America's need for arms may be met, not by lowering the American standard of living, but by reducing the American standard of waste.

First step in this program was the convocation of a Round Table of home building experts called by the editors of THE MAGAZINE OF BUILDING. Assistance was given by the Research Division of the Federal Housing & Home Finance Agency and others in Government in preparing the plans and procedure for the conference.

Only top experts in every aspect of home building were invited to participate. They included the President of the American Institute of Architects and two architects selected by him for their special familiarity with home building and building code problems. They included five practical construction experts nominated by the National Association of Home Builders. They included the Chairman of the Prefabricated Home Manufacturers Institute. They included top building research men from the best technical schools. They included representatives of some of the principal material-producing industries. They included a past president of the American Standards Association.

All of these men came at their own expense to contribute their expert knowledge, some of them from as far away as California and Texas. During a two-day session they outlined a complete program for waste elimination in every aspect of home building, including site planning, foundations, structure, plumbing, heating, wiring and design.

The program drew immediate and unanimous support from the heads of every key group in the industry. The president of the AIA himself played an important part in drafting the plan. The new president of the Homebuilders approved the program almost in its entirety and went on the air from the Home Builders' Show with a radio broadcast based on its recommendations. Similar endorsement was given by the heads of the Mortgage Bankers' Association, the U. S. Savings & Loan League, and the National Retail Lumber Dealers. The managing director of the Producers' Council sent congratulations. The Building Officials Conference of America named an emergency committee to cooperate in the conservation program. The AIA-NAHB committees on architect and builder cooperation called a special meeting to carry out their assignment under the plan. The program follows in full:

# The Round Table Technical Report

# Home building costs can be cut up to 30%

Without an all-out attack on waste there is no use hoping that increased production alone can meet America's tremendous, absolute and over-riding need for arms. The only alternative to a drastic reduction in the American standard of living is a still more drastic reduction in the American standard of waste.

We believe such an all-out attack on waste could achieve amazing results in almost every sector of the economy. We are certain it could achieve amazing results in our own industry. We are satisfied that these great savings and economies in home building can be effected without any real sacrifice in the quality and livability of the finished house.

Some of these economies would express themselves in dollars and thus contribute importantly to the fight against inflation. They would give the home-buying public better value, both now and after the emergency. They could make possible the erection of far more houses than might otherwise be justified at this time. And, war or peace, the more waste we take out of the house, the more quality and livability we can afford to build into it.

We are all agreed that these savings could easily run 20 per cent; if *all* obstructions are removed they could reach 30 per cent or even 40 per cent. Sacrificing nothing but waste, it should still be possible to build a *better* house with 50 per cent less cast iron pipe, 50 per cent less cement, far less lumber, far less gypsum, far less steel. It should be possible to build just as good a house with 75 per cent less copper. In other words, an all-out attack on waste could save more critical materials and more critical manpower than could be saved by a drastic further cut in housing starts.

Some of these savings and economies can be effected immediately by the home builders and their architects, but by far the greater part of these critical savings are blocked by senseless requirements imposed upon the home building industry by obsolete local building codes, union rules, mortgage requirements, and other regulations. These obstacles are all the more frustrating because they vary from state to state, from city to city, and from FHA office to FHA office.

It is unfortunately true that someone stands to make money at the home buyers' expense out of almost every wasteful practice thus entrenched. Without the pressure of a national emergency, the home-buying public migh well have to go on year after year paying billions of dollars extra as the price of these wastes. It is our hop however, that in this national emergency obvious r forms which might otherwise be delayed half a centur can be put into immediate effect by the patriotic coop eration of public officials, home builders, architect land planners, mortgage bankers, manufacturers, an building trades unions. FHA can help materially by r viewing and streamlining the widely different propert standards imposed by each of its own 62 local officesstandards which are often much more wasteful than th local codes.

But the most important part of all must now b played by ODM and DPA through the firm and en lightened use of their emergency powers, including specifically their power to allocate scarce materials only to projects for which state or local codes, ordinances union regulations and financing requirements have bee brought in line with a national program for minimizin waste of materials and manpower in home building.

All of us, believing in a free economy, would fa rather see Federal controls on home building applie directly to save materials and manpower while permi ting as much home building as possible, rather than in directly by reducing the volume of construction whil permitting needless wastes to continue.

Late in the last war a clear precedent for such use of Federal power was set when WPB issued certain nations conservation standards with which local regulations has to be conformed. What we urge is that action similar t that taken late in the last emergency should be take early in this emergency—and on a far bolder scale.

In addition to this use of its emergency powers, th Federal Government can make a very great contributio to the attack on waste in building by setting its ow house in order and insisting that the same econom standards be practiced rigidly in all its own constructio work. In the last war the Government set a shockin example of waste in building—most particularly hous ing. Whatever standards are set for permanent privat housing this year should immediately be made the maxi mum standards for all housing built by the Government whether for civilian or military use.

The Federal agencies charged with administering pro grams affecting construction should request the Building Research Advisory Board of the National Research Council, National Academy of Sciences, to set up com mittees from industry to work with them. Wherever needed, funds should be made available to HHFA and through HHFA to BRAB to pursue additional research on construction economies and to coordinate existing private or HHFA research. It would be most helpful if HHFA would also provide funds for the actual construction of demonstration houses and mock-ups of the various waste-eliminating proposals.

# and this is how the cuts can be made

# The Round Table Technical Report (cont'd)

We cannot attempt to detail all the wastes entrenched in home building or to list all the economies of material and manpower which it should be possible to put into effect. A partial list for immediate action would certainly include the following points, with particular reference to the one-story, 1,000 sq. ft. house which now accounts for the great bulk of all new family-owned homes:

# ELECTRICITY

Because copper and aluminum are the most critical of all commonly used critical materials, it is particularly important to minimize waste in electrical installations. Out of 766 local codes, there are still 541 which compel home builders to install more costly and elaborate wiring systems than are prescribed by the national electrical code. In addition, there are many communities which compel home builders to waste wiring on ceiling lights in every room, although these have long since gone out of style.

**Recommendation:** To save critical materials and to relieve home buyers of unwarranted costs, we recommend:

1. NPA should not allocate metals for use in any wiring system in excess of the requirements of the national electrical code.

2. NPA should not allocate critical metals to houses for which local or FHA regulations compel the installation of ceiling lights in rooms other than kitchens, halls, and stairs.

3. Since non-metallic protective systems are available which are just as economical and just as satisfactory as metallic installations, NPA should not allocate steel for conduits and fuse boxes.

4. The use of low voltage wiring to light switches, which often offers substantial material-savings in wiring wall switches, should be actively encouraged by NPA, HHFA, the AIA and NAHB.

5. Since the electrical requirements of the great majority of houses are very similar, NPA should invite the collaborative AIA-NAHB committees on architect and builder cooperation to draw up standardization requirements and should ask BRAB for an immediate recommendation for the most economical use of metals in such standardized installations.

6. Copper is in shorter supply than aluminum. Aluminum is a satisfactory substitute for copper in wiring. The principal reason it is not more widely used is that electricians are not familiar with its use and with the slightly different problems its installations involve. The NPA should take immediate steps to encourage the substitution of aluminum for copper in wiring and most particularly to familiarize electricians with these problems so that they will be ready to begin using aluminum wiring. To that end, NPA should notify all government agencies including the armed services that no allocations or priorities will be granted to governmental agencies for copper wire unless such agencies can satisfy the NPA that aluminum wire cannot meet the requirements.

# DIMENSIONAL COORDINATION

The 4 in. module sponsored by the AIA and the Producers' Council and approved by the American Standards Association offers savings and economies very conservatively estimated at 5 per cent to 10 per cent of the total cost of construction—perhaps a billion dollars a year on home building alone and perhaps two billion dollars a year in the entire construction industry. There is unanimous agreement throughout the industry that dimensional coordination would save countless hours fitting materials together and save great quantities of material now cut off and wasted in fitting. It would also permit impressive quantity production and warehousing economies which are impossible without such standardization of sizes.

Unfortunately, under normal conditions it might take many, many years to bring dimensional coordination into general use. And its full benefits cannot be realized as long as some architects, some builders, some suppliers, some cities and some Federal construction agencies delay its adoption, thereby compelling producers to continue the present multiplicity of sizes.

**Recommendations:** 1. We recommend that NPA issue orders that all projects to be paid for by the Federal Government must be planned for dimensionally coordinated materials.

2. We recommend NPA withhold scarce materials from projects designed after April 1, 1951, which are not designed to take advantage of the savings made possible by dimensional coordination.

3. We recommend that NAHB call upon all its members to ask their architects on all projects designed after April 1, 1951, to design them to dimensional coordination.

It is our belief and hope that such a concentrated attack on the wastes inevitable without dimensional coordination can achieve, within a few months, progress towards economy in materials and manpower which might otherwise have to wait a generation.

# FOUNDATIONS AND FLOOR SLABS

The foundations now required in almost every community for a one-story house are far in excess of any real need. Recent research has shown that except on soils with a high moisture retention it is not necessary to extend these foundations down below the frost line. A shallow foundation is usually quite adequate for a light building. Where it is necessary to go deeper a post and beam foundation is usually all that is needed. It is also unreasonable to require 1,600 or 2,000 lb. concrete in the floor slab, especially when that floor slab is to be protected by an asphalt tile or wood flooring. Much excellent and costly research has already been done to make possible more realistic requirements for foundations and floor slabs.

**Recommendations:** We urge the Government to make funds immediately available to HHFA and BRAB to coordinate this existing research and provide the basis for new foundation and floor slab standards which will be less wasteful of materials and manpower. As fast as these standards can be determined, we urge the Federal Government to use its emergency powers to bring them into general use.

### PLUMBING

Within a short time a new National Plumbing Code will be announced.\*

General adoption of the minimum standards approved by this new code would make possible great savings of materials by permitting hitherto impossible mass production economies due to nationwide standardization. Beyond that, it would eliminate many of the most costly wastes now imposed by a large majority of local plumbing codes. Specifically, it would save as much as 2/3 of the cast iron required for drainage inside a small house by reducing the required diameter of the stack from 4 in. to 3 in. and eliminating the requirement for extra heavy pipe. It would save all the cast iron usually required for drainage outside the house by accepting nonmetallic pipe. It would eliminate the necessity of a house trap which now adds from \$40 to \$75 to the cost of many small houses, although as far back as 1925 the Hoover Plumbing Code declared it unnecessary, and many cities now forbid its use. It would reduce the height of the stack above the roof to 2 in. Its approval of stack venting and wet venting would eliminate the great cost of individual back vents.

**Recommendations:** With plumbing requiring many of the most critical materials, the NPA should insist that no critical plumbing materials whatsoever should be allocated for construction in communities which impose plumbing requirements in excess of the minima set forth in the new national code.

# BATHROOM STANDARDIZATION

A study of bathroom arrangement in thousands of builders' houses shows they have become *almost* standardized without achieving any of the advantages of full standardization. In almost every case the bathtub, wash basin and toilet are in line (usually in that order), sometimes backed up against the kitchen sink, sometimes backed up against another bath with the kitchen sink crossing the T. Although these baths are almost alike, there are still enough inch differences to make uniform plumbing assemblies impossible and to necessitate the waste of millions of hours of manpower and millions of pounds of pipe, cutting up and fitting together special assemblies.

**Recommendations:** We urge the collaborative AIA-NAHB committees on architect and builder cooperation to agree immediately on a dimensional standard for the spacing of tub, basin and toilet which will permit standardized, mass-produced assemblies for all houses with the bath backed up against the kitchen and for all houses with two baths back to back.

We urge the NPA to make use of these standard assemblies mandatory for the duration of the emergency. Frankly, we hope that once these standard assemblies are available, the public will continue to benefit from their economy long after this emergency is over. Standard walls could be fabricated to fit these standard assemblies.

# **OTHER STANDARDIZATION POSSIBILITIES**

We believe there are many other aspects of the builders' house which are now approaching standardization without realizing the full benefits of standardization. Certainly great waste results from the present lack of uniformity in door and window assemblies. But we believe still greater savings might be effected if the present trend to standardization of ceiling heights around 8 ft., living room sill heights around 32 in., bath and kitchen sill heights around 52 in. and bedroom strip sill heights around 52 in. or 60 in. could be carried through to a conclusion which would permit asking lumber, wall board, and other producers to supply materials in sizes precut to fit. We recall that the builders of the industryengineered house had to choose between sawing ends off all their lumber if the ceiling height conformed to wall board sizes or sawing ends off all their wall board if the height and width of rooms conformed to lumber lengths. We are further intrigued with the suggestion that standard joist lumber does not come cut to fit optimum room widths. We are sure there are many other similar opportunities for better standardization.

**Recommendations:** We urge the collaborative AIA-NAHB Committees on architect and builder coopera-

<sup>\*</sup> Sponsored by the American Public Health Association; American Society of Mechanical Engineers; American Society Sanitary Engineering; Building Officials Conference of America; Conference of State Sanitary Engineers; Western Plumbing Officials Association; National Association of Master Plumbers; Uniform Plumbing Code Committee; Federal Housing and Home Finance Agency; Department of Commerce, and Public Health Service.

tion to make an immediate and careful study to determine where standardization could permit substantial economies without sacrificing freedom for good design. As soon as these committees can report AIA, NAHB and the Producers' Council should ask suppliers to make materials available to fit these standards without waste. And HHFA and DPA should use their influence and power to assure quick action.

# HEATING

With efficient insulation and double glazing in colder climates, there is no reason why small houses erected during this emergency cannot be heated comfortably if not luxuriously by wall or space heaters, eliminating radiators, duct work, or floor slab tubing and effecting enormous savings in both money and metals.

**Recommendations:** The NPA should call on HHFA and BRAB immediately for more detailed recommendations, and the use of scarce materials for heating installations in excess of the requirements proposed by BRAB should be restricted.

# STRUCTURE

Practically every small house in America is structurally over-designed. This is partly because various codes require the structure to meet such unrealistic standards as a 40 lb. live load on the floors, a 20 to 30 lb. wind load and a 30 lb. snow load (5 ft. of wet snow in the places where even 2 ft. of wet snow has never been seen). It is partly because too little thought and study has been given to more economical engineering of the structure.

We can point out certain obvious structural wastes. For example: 1) 2 x 3 studs on 16 in. centers would give more than enough strength. Their use, instead of the usual 2 x 4 studs would effect an immediate saving of 25 per cent in all vertical lumber; 2) the wood or gypsum sheathing which now adds more than \$100 to the cost of the average small house often serves no purpose in an otherwise well insulated house except to give a rigidity which can be achieved at a fraction of the cost by corner bracing.

The structural re-engineering of the small house for greater economy of manpower and materials requires additional study and, most particularly, the coordination of existing research to establish more realistic standards—standards which can properly vary from region to region to meet differing climatic problems. Fortunately there is time to complete this research before any acute lumber shortage is likely.

**Recommendations:** The Federal Government should make funds immediately available for such studies through HHFA, in consultation with BRAB, and these studies should be completed as quickly as possible. As soon as they are completed, NPA, NAHB, AIA and the National Retail Lumber Dealers' Association should collaborate to bring new and less wasteful structural standards into general use.

# **BASEMENTLESS HOUSES**

In most parts of the country it is now possible to build basementless houses with the floor slab poured directly on the ground. Elsewhere basementless houses can be built economically over crawl space. Even after providing a more generous basement substitute than is now customary, these basementless houses can often be erected for about \$800 less than houses with basements, with substantial savings of labor and a saving of nearly 40 per cent in cement.

**Recommendations:** Where practical, these savings should be encouraged by NPA, FHA, AIA, NAHB.

# **OPEN ROOF TRUSSES**

Many builders would like to use roof trusses to save materials and manpower and to achieve complete flexibility for their room layouts (since interior walls would no longer have to be spaced to help support the ceiling). Unfortunately, most present trusses make it impossible to use the attic space for storage or future expansion.

**Recommendations:** HHFA and BRAB should cooperate immediately to correlate and complete the necessary research to make generally available a roof truss design which would permit maximum attic use.

# SEPTIC TANKS

Savings of many millions of dollars and thousands of bags of cement on septic tanks (now adding from \$200 to \$500 to the cost of some 400,000 homes) can be made by immediate application of the findings of a \$300,000 research jointly financed by HHFA and U.S. PHS and carried out by the latter. This research indicates that the complicated steel or concrete tanks now used can be replaced by four large sections of clay pipe arranged in series on a thin concrete base. The proposed system would actually work better. It would require much less labor and material, cost very much less.

**Recommendations:** HHFA, NPA, the AIA and NAHB should take prompt action to eliminate every barrier to the more economical tanks and should encourage their immediate use as soon as the Public Health Service can release its recommendations. Scarce materials should not be allocated for sewage disposal systems beyond proposed PHS requirements.

# SITE PLANNING

Millions of pounds of copper wiring, millions of pounds of steel pipe, millions of bags of cement and millions of hours of labor could be saved by bringing site planning in line with the standards jointly proposed by the Urban Land Institute and NAHB. These standards provide a

26 ft, roadway from curb to curb for tertiary residential streets-enough for two lanes of parallel curb parking and one lane of moving traffic which is entirely adequate for local circulation. They permit somewhat narrower widths on cul-de-sac streets. They recommend rolled curbs and gutters, rather than vertical curbs, with the sidewalk (if any) right next to the street. They suggest that a 4 ft. sidewalk is ample; that sidewalks on both sides of the roadway are seldom necessary. They require a minimum distance from front to front of the houses of 80 ft. New developments should be planned to eliminate through traffic from residential sections thus permitting longer blocks with resultant saving in lighter pavement and fewer cross-streets. These standards are more than ample, but very much higher standards are imposed on low cost housing developments in many communities-sometimes by the local authorities, sometimes by FHA. The cost of these excessive requirements falls on the home buyer both as owner and as taxpayer, and he usually pays substantially more for these improvements than for his land. They are one reason why the lots in the average builder development are so narrow. (And wider lots would not only be more pleasant but would also permit simpler and more economical planning of homes in the "Bar" type). They contribute to the use of considerable more cement outside the house than is necessary. Most importantly in the present emergency, they necessitate longer driveways and much longer runs of pipe and wiring than are necessary.

**Recommendations:** These excessive standards should

be discouraged in peacetime, and if possible, forbidden in any time of emergency.

# CONTEMPORARY DESIGN

Architects are making a direct attack on the wastefulness of imitating structures designed primarily to fit yesterday's materials, methods of production, and labor attitudes. This attack is developing a modern and contemporary architecture which is winning increasingly broad public acceptance. Home builders could achieve important savings by wider use of the many economies inherent in this more direct approach to better building.

A specific case is the flat roof. Architects have learned to give flat-roofed houses, properly situated, designed and grouped, the feeling of domesticity that the public desires; and builders in some locations report that the flat roof has saved up to 20 per cent of the cost of the structure. Yet many communities still forbid the erection of flat-roofed houses, many lenders refuse to finance them, and many local FHA offices will not approve them.

**Recommendations:** FHA should advise all its 62 local offices to recognize the increasing public acceptance of good contemporary design and urge them to encourage all the economies it can make possible. Similar action should be taken by the U. S. Savings Loan League and the Mortgage Bankers Association. Where local building or zoning regulations forbid these economies, FHA, NAHB and the Producers' Council should cooperate at the local level to educate local officials and to win approval for these economies.

# Some of the things they said:

Highlights from the 17 hour long discussions of the housebuilding experts who made up the two-day round-table follow. This technical testimony was selected from the stenographic record, 360 pages packed



with important time, material, and money-saving suggestions:

PRENTICE: You know, there are a great many people—almost everybody—who think it is impossible for the United States to get the rearmament that we have to have without a great lowering and sacrifice of the American standard of living.

Yet the problem we face now in rearmament and standard of living is substantially different from the problem we faced in rearmament and the standard of living in 1941 and 1942. Then there was no question about it. We were at war. In all war, you can figure the need is immediate and pressing, but the duration can be short.

But that is not our situation today. Sure, the need is immediate and pressing, but there is no way of knowing how much time we are talking about. As a matter of fact, you have got to face the very real possibility that we are moving into some sort of garrison-state situation, that we are going to live with and work with for as long as you and I are living and working. The problem is not one of lowering the standard of living in order to get through with the war quickly so that we can get back to the better life. This may be a semipermanent condition.

The only possibility I can see of being able to get the rearmament we have to have without a drastic cut in the standard of living is, perhaps, making some kind of all-out attack on wastefulness in our present production, and that is why we are here together today. It seems to me the question America has to answer now is whether we are going to get guns primarily by a sacrifice of the American standard of living, or whether we are going to see whether we can get as much as we can of that by the sacrifice of the American standard of wastefulness. I would suspect that the American standard of wastefulness is probably costing this country very close to 40 or 50 billion dollars a year. We are not talking about small potatoes when we talk about the American standard of wastefulness.

Last year we built something like 1,300,000 homes, and building those 1,300,000 homes strained the resources of the industry, even with no competition of rearmament. It strained the resources of the industry just about to the breaking point, and when we tried to build 1,300,000 homes, we found ourselves in a labor shortage and we found ourselves constantly involved in material shortages.

War or peace, war or garrison state, peace or garrison state, it seems to me we have reached a point where we have got to build with less use of manpower, and we have got to build with less use of materials. Although we are addressing ourselves to an emergency situation, I hope we can think somewhat in terms of the long pull and what would be sound after the emergency as well as in terms of meeting the immediate crisis. What we want to talk about here is not temporary housing. What we want to talk about is permanent housing. The record of the last war shows that all the temporary housing that went up cost almost as much as permanent housing and, moreover, the temporary housing is still there.

So much has been said about what a backward industry the building industry is that, frankly, nothing would give me greater satisfaction than to feel that some good had come out of Nazareth. The other quotation is: "Out of the carcass He brought forth honey." I would like to feel that the "chaotic and disorganized" building industry has set an example for other industries in the country in the matter of pointing out ways in which the excellence of our production can be stepped up, ways the rearmament can be accomplished, less at the expense of the American standard of living and more by a long overdue attack on this American standard of wastefulness.

Just for two days, let us pretend that we are Utopia and figure out what kind of home building we would like to do if we weren't hampered here and restricted there and forbidden in the other place—and if we had caught up with technology.

I think perhaps the best way for us to start our talk is to let John Haynes tell you just exactly where we stand in the emergency.

HAYNES: With respect to materials, the recently created Office of Defense Mobilization, headed by Charles E. Wilson, has been empowered to do just about anything that becomes necessary for the defense of the country. There are almost no limitations on powers with respect to materials.

As to prospects for construction in 1951, in these fast-moving times, particularly in this war situation, there are not only direct military requirements for manufacturing munitions but also the need for stockpiling aluminum, copper, tin, zinc and a lot of other scarce metals. This renders our pre-Korean methods of estimating future construction volume rather poor. But there is little doubt that in the coming months it is the seller rather than the buyer who is going to determine the amount of construction volume we have.

Somewhere between 30 and 50 billion dollars has been appropriated by Congress for defense, most of which will go into hard goods. If, for example—and I can only say "if"—by next Christmas we will have spent somewhere in the neighborhood of 40 billion dollars for munitions, —roughly one-seventh of what the civilian wants will be what you might call "gone". What is worse from the standpoint of construction is that it is not one-seventh of convertibles and rugs and television sets, but it is far more than one-seventh of your metals.

The total volume of construction last year was 27 billion dollars, plus 8 billion dollars of maintenance and repair. With potential military expenditures of between 30 and 50 billion dollars this year, there will not be enough materials to support any such construction volume.

One other thing worthy of observation: Our defense organization has caught us woefully behind in hospitals and schools and many other public buildings. We didn't build them during the depression because we didn't have the money, and through the war we didn't build them because we didn't have the manpower.

In 1948 we had 3<sup>3</sup>/<sub>4</sub> million babies. These kids are going to be ready for school very soon, and the school program is faced with shortages of materials, and it is going to be tough. So is the hospital program.

Some further curtailment of the construction volume seems inevitable. Very little construction is nonessential, but in the situation with which we are faced today you come to the inevitable conclusion that some construction is less essential than other construction, and, as your chairman suggested, something is imminent.

A lot of uses of copper in hardware, lighting fixtures and other lighting materials are already prohibited. Further prohibition is imminent, and a similar order with respect to aluminum is being discussed now. It is no secret. Several hundred manufacturers have been consulted, and aluminum prohibitions are practically with us now. The limitation orders apply to the producers and carry no prohibition on the use of quality products if you can find them. A little bit different is the case of copper pipe and tubing and wire, with respect to which the builder is treated as a manufacturer and is subject to quantitative limitations.



All photos: Hugelmeyer

MR. HAYNES: If by next Christmas we will have spent somewhere in the neighborhood of \$40 billion for munitions, roughly one-seventh of what the civilian wants will be what you might call 'gone'. . . Some further curtailment of the construction volume seems inevitable."

Of course, persons affected by the order can always appeal on the ground of personal hardship.

In the coming months, I think you will see quite a bit of emphasis on conservation, simplification and standardization. For example, I hope because of the fuel savings it will bring about we can still afford to have weatherstrip, but we ourselves and manufacturers both agree that in the present emergency a lush selection of types and sizes is not warranted.

As to my last point, priorities, so far the authority to use the "DO" symbol is only applicable to military purchases. Only five agencies are authorized to use it. As yet there are no civil:an priorities. Industrial construction is making a strong bid for priorities, but it would be profitless for me to guess just when they would come about.

This is a trite statement, but I think it conforms, really, to the essence of this meeting: Architects and engineers would be well advised to spend quite a bit of time on economy of materials and design, and the advantage of using standard types and sizes cannot be overemphasized. It is not only that you save metals by standardization, but in a good many products, production doesn't increase just 2 or 3 per cent, it increases 20 or 30 per cent by use of standard sizes.

PRENTICE: May I ask you to supplement one more thing for just a minute? My understanding is that while manpower in the end is the ultimate and unincreasable shortage, because it takes 18 years to produce more manpower, the other shortages, in order of pressure, are (1) copper, (2) aluminum, (3) steel, (4) other iron products. I take it that the pressure on steel is greater than the pressure on cast iron. HAYNES: Yes.

PRENTICE: What do we come to next? HAYNES: After you have gone to steel, then it gets a little fuzzy as to precise order. It would probably be a lot of chemicals and plastics, and then a lot of others such as cobalt, which very few people use directly, but which is one of the greatest shortages. It is very difficult to say one is more scarce than the other if you are looking toward substituting one for the other. As far as aluminum is concerned, there is relief in sight because you can make aluminum, and new plants are going up, but you can't make copper; you have to dig it. Copper and zinc are probably our worst shortages now. VOSS: I would like to ask Mr. Haynes if there is any attempt at planning for critical materials, not only from the standpoint of the volume you need for military and home uses, but from the standpoint of release of a few of those materials in such places as home building where they are absolutely necessary for maintenance and stability. Will copper be out altogether, or is copper restricted under certain conditions? HAYNES: It would seem that copper is in a very bad position. So, if you ask, "Will you have enough copper to finish houses?" I am afraid the answer is probably "no", and it is a case of scouring around for some galvanized steel, which is also difficult.

COONLEY: I want to supplement what John Haynes said about the everyday changes in the original set-up of the production activities of Washington by indicating that I think we have today arrived at a cleaner, clearer organization chart than we have ever had, and by far, better than we ever had in World War II, and as the smoke clears, I think you will find that Charlie Wilson is in a similar position to Byrnes in World War II. Mr. Harrison is in a similar position to the team of Donald Nelson and Charlie Wilson.

Conservation is my hobby, and I agree thoroughly with Mr. Prentice that it is not a characteristic of the American people. However, we can solve so many problems by conservation I wonder why people don't give more attention to it. I have in my desk many statistics on the savings that were made through the various means of conservation, of which standardization, simplification and substitution are the most intelligent and the ones that accomplish most.

I went down to Washington last spring on a part-time basis to plan the conservation activities of the National Security Resources Board. While I have been down there, I have been in touch with many of my friends and associates during the last war who are doing intelligent planning for conservation. Some of them believe that if the building industry does a really effective and rapid job, they need not cut down the building program, because the savings that are possible through intelligent conservation methods are perfectly amazing.

In the various conservation activities—and I am going to refer for the moment to standardization and simplification—we found that we could very often increase output by 25 per cent and cut down manpower requirements by considerably more than that. Some of those things in World War II have been learned so well that they have been carried on. I think the emergency steel specifications are pretty well still intact, and they constituted a tremendous saving.

Let me say just one other thing. You may have to go to other unusual means. I think, perhaps, Mr. Price will remember that we were working on the down-grading of the electric motors. That sounds bad. But you build an electric motor for 25 years of life. During a war emergency a 10- to 15-year life in a motor would be enough. So you could down-grade your motors and use them with the knowledge that they were going to wear out more quickly. There are many things that can be done if an intelligent group sits around the table and decides they are going to do them.

I think we have in Washington now a group that is eager for the suggestions and advice of men of knowledge and ability. I know you will receive a welcome there. I think it is very timely that you hold a meeting of this kind, because it is already too late to start metal conservation, and I am sorry to say that I find that we have far greater shortages in many more items this time than we did in the last war, whether or not we have the misfortune to get into war at present. What you do here is of tremendous importance.

SMITH: Mr. Chairman, I wonder if I might ask Mr. Coonley a question. Out in the San Francisco Bay area during the last fracas, those of us who were endeavoring to build housing frequently found ourselves without a keg of nails or a  $2 \ge 4$ , but we could look over the fence and watch them burning huge piles on government projects where the splinters were getting too rough for the boys to handle. People whom we knew who were in places of reasonable responsibility were telling us of things going on in the shipyards which were appalling to us,



MR. CLARK: "We should give more consideration to the long-term use of those things which we must install from the military standpoint in order that, when the military need has ceased to exist, they will be of value for peacetime use."

because we were on the outside having a dickens of a time getting anything to build a home with under the restrictions that were imposed in the matter of construction and design. The reason advanced out there, and it was quite general in the area, was, "It is cost plus fixed fee. What the hell! This is war," and so on. We also had a deterioration in productivity of manpower. I recall when the war was ended and the men began coming out of the yards and back to work for us on the outside, it was six months to a year before we could get a day's work out of those people. I am just wondering if anything is going to be done along that line of attempting to fix responsibility, because it seems to be indicated that something can be done. In our own business, if we let work on a cost plus fixed-fee basis, we will get a poor showing on value of return for our dollar. Is something going to be done along that line?

COONLEY: Let me say, Mr. Smith, we have put up a program of a more effective use of material in shipyards. We are planning to ask each one of the services such as the Navy and Army and Air Corps to set up a conservation department that will be in a position to investigate such situations.

SMITH: You didn't have that during the last war?

COONLEY: We did toward the end.

SLIPHER: Mr. Chairman, we were referring to some of the limitation orders during World War II, and I recall only too well a situation. At the time, there was a limitation of five board feet of lumber per square foot of house area, if I remember correctly. We happened to be in a position where we were building war housing, so we also had a contract for staff residences at three ordnance plants for Army personnel, and there was no similarity or coincidence or anything else between civilian and Army standards. It was a dramatic evidence of the lack of impostion of equal restrictions at both ends of the line.

DAWSON: The greatest waste we know of is in the armed forces themselves, and if there is anything that the Security and Resources Board can do to minimize that waste, it will simply multiply by many, many times the savings that we could make in housing and all that sort of thing. They are the greatest single wasters of material we know of.

COONLEY: And also the greatest single users. I have been promised every possible cooperation in this conservation work, in the military group. PRENTICE: Is there any good reason why the standards which may be set up for the home building industry shouldn't automatically be extended to home building which the armed services do themselves?

COONLEY: I think they should be, and I believe they can be.

DANIEL: Is there a possibility of setting up some civilian inspection as to military waste in building?

COONLEY: I don't see any good reason why there shouldn't be.

WILLIAMS: Why restrict that to home building? We have seen a lot of funny stuff going on in defense plant building and everything else. Why should not the armed forces be examined by civilians to see that they are not indulging in wasteful practices in any construction that is not military in the sense of making tanks, or things of that kind?

PRENTICE: I wonder if we can't make the first thing on the conservation item list that we are all agreed here that it would be a very good thing for conservation in our private building industry if the Government would set us a good example of conservation in the Government. (Applause).

# LAND USE: Sites should be selected more shrewdly and streets and sidewalks sized more sensibly

PRENTICE: Last spring, when our magazine set out to get the architects and builders working together, the very first thing that Ralph Walker said was, "Let's not think about this in small terms. One of the very first things that the architects and builders ought to get themselves together on is the perfectly ridiculous requirements for streets that are imposed on the average subdivision." I am under the impression that more than half the cement that goes into the average builder's house goes not into the house but into the streets, curbs and sidewalks that are imposed by local building and zoning codes.

CLARK: I think we can start back even further—with the fellow who goes out originally and picks out the land. Bad choice of land means money wasted improving it. I will give you an example.

Dave Slipher had the dubious pleasure of building, during the last war, Willow Run Village near Ypsilanti, Mich., and Dave knows a great deal more about it than I. He tells me that for the 2,500 units involved, the cost of structural improvements was something a little over 5 million dollars, and that the cost of the physical improvements to the land was either a little under or a little over 3 million dollars. Now, that is slightly out of proportion. We on the West Coast consider that 5 per cent of the total package for land improvement—not the land, but the improvement—is about right. Our land cost is about \$2,500 per acre, which isn't the case in most places.

Mr. Slipher also tells me that at Willow Run several things happened which didn't exactly justify the project. First and foremost, 2,500 units were built and about 900 of them were finally occupied. That was a bit of misplanning; considerable materials went down the drain. Furthermore, the utilities were inadequate and the project was not favorably located. I mention this particular project only because it is typical.

As to the street widths, I have been talking for years in the same vein with most of you. Public officials are asking for entirely too much



MR. PRICE: "The big variation I see is not in the street width, but in the different kind of paving required by local FHA administrators."

pavement, and too many streets. I feel that a street 24 ft. in width is enough. Most public officials want 30—and I know of a town where an 80 ft. right of way and 60 ft. of pavement is the standard for all streets.

If we consider the cost of a 24 ft. street as compared to what I think most cities are asking for—36 ft.—there is a terrific saving of a third of the pavement cost, which amounts to a lot of square feet of pavement. No matter whether it is 3 in. of rock and oil, or 6 in. of concrete, it is still a  $33\frac{1}{3}$  saving in just that item.

I believe that we cannot start too early in thinking of conservation when it comes to planning homes. The architecture certainly is allimportant. Yet, on the other hand, just the moving of the dirt can be terrifically important not only from the standpoint of the cost of moving that dirt, but from the standpoint of the architectural cost of putting foundations on the land after the dirt is moved.

WILLIAMS: Let's make some distinctions here. If we consider there are different types of streets, I think we can say your main streets might under certain conditions require a certain minimum width and your dead-end streets would require vastly less. Isn't that correct?

CLARK: Absolutely right.

Getting down to basic principles, first we must have our traffic carriers. If you please, call them superhighways or freeways or limited access ways. Then we must have collectors to feed the arterials. I should like to set 76 ft. between curbs as the widest collector street. That allows for six lanes of traffic and two lanes of parking. I might even eliminate the parking under proper conditions, but under present public thinking it is a little hard to remove it entirely.

Next, we have the streets we call secondary collectors. I'd like to see them 80 ft. wide, with 56 ft. of pavement, allowing four lanes of traffic and two lanes of parking.

Then we have neighborhood collectors with 36 ft. between curbs. They would provide for two lanes of traffic and two lanes of parking.

From there, we drop to the 24 ft. road which allows a combination of several things.

First of all, it will allow two cars parked exactly opposite each other with one car able to go through conveniently. This rarely occurs, if you will observe.

Secondly, this type of street, if it is properly designed, lessens the possibility of accidents because it slows down traffic to a great extent. I think that that is also a place for an 18 ft. road in an area where you have large lots and a small density of population—generally the estate-type of subdivision.

DANIEL: In Montgomery County, Wash., where we do our building, they have just passed a new ordinance on road specifications which would increase the price of the development of the ordinary lot (which would average 63 ft.) from \$500 to \$1,500 a lot. They really make it gold-plated.

The Urban Land Institute has published a booklet on planned planning that was very carefully prepared, and they have the regulations set out after years of study, and their minimum is 26 ft., secondary residential, and on up. I think that after the 36 years of study—and commonsense study—that has gone into it that it can he recommended.

HIGHLAND: When we save on the width of these streets, we can afford broader frontages on the lots. If we can afford broader frontages, we can build properly without having to cram a ranch house into a Z shape to fit into 40 or 50 ft. If we have a wider lot, we can reduce the setback of those buildings and still keep a decent appearance. I have seen builders try to save \$300 on land and then spend \$800 trying to get a Z-shaped building into a lot.

L. D. PRICE: Mr. Chairman, so far the discussion of planning of streets and lengths and what-not has been related largely to cement. There is an element of copper in there.

Many of the utility companies have given a great deal of consideration to increasing the voltage on the street distribution circuits. In other words, the generally accepted street distribution circuit today is 4,000 volts. Many utility companies have considered 13,000, 13,200, 13,800 volt distribution circuits, which would decrease copper used in the lines proportionately.

Many of the local zoning authorities and town authorities have refused to permit distribution of electric current at that voltage on city or town streets.

It is generally the zoning commissioners who object. It is a matter of considered hazard having that high voltage running up and down the street. Actually, personally, I don't think it makes much difference. If you get tangled up with 4,000 volts, you are just as dead as you are if you got tangled up with 13,000 volts. Many utility engineers may not agree with me on this 13,000-volt business. However, it is given as an illustration of one of the things that might be done.

PRENTICE: I want to come to one more thing we have had considerable discussion on, and that is the subject of sidewalks on both sides of a local street. Of course, sidewalks are necessary in the shopping streets; I am not arguing that. I am now talking about a dead-end street and this 26 ft. local street. How much sense does it make to require a sidewalk on both sides of the street?

VOSS: I think the general consensus, and the result of the survey made by the American Association of Highway Officials, is that in small subdivisions concrete sidewalks are not necessary. Most people walk on the street. Gravel road sidewalk with oil impregnation is good enough. Minimum paving for a subdivision is gravel surface with a good coarse sand and two coats of oil. That kind of pavement has been in front of my house for 26 years, and it hasn't cracked up yet, because it is only a tertiary street, and because the town does oil the sand during the hot days of summer.

# THE FOUNDATION: Basementless houses should not be legislated against; trim the foundation to the terrain

PRENTICE: Let's come into the house. And unless somebody objects, I'd like to approach the house not from the top, but from below. This takes us to the subject of cement, the bottom of a house, the foundation.

HAEGER: You all know it is very difficult to estimate the cement take on a house. The cement industry has no records. But it does appear that something like 30 barrels of cement go into a typical house. That represents, in turn, about 15 to 20 per cent of the cement production in this country.

In the case of a house that might be, roughly, 24 ft. by 30 ft., with a full basement made out of concrete masonry units, and a slab down in the basement, as opposed to a foundation made out of masonry units with the slab pushed up to the grade, I believe adequate facilities for the basement equivalent could be found. So I don't think we are talking about that point. It would appear that about 12 barrels of cement could be saved in that simple item—40 per cent.

VOSS: In the first place I disagree that a onestory house is more economical. For the same floor area, for the same mode of living, that now goes into a two-story building, your foundations for a one-story building would be more expensive; that is, you use more materials than you do in a two-story building. And the same goes for your roof structure. And there is a tremendous amount of wasted space as far as use is concerned.

As for concrete, 1-3-6 concrete is plenty good enough if the sill is properly anchored, and if the first-floor frame is put in to restrain it laterally. As I remember it, you get 18 ordinary concrete blocks ( $8 \ge 8 \ge 16$  in.) out of a bag of cement, and that kind of concrete is only—at best—1,500 lb. concrete. It has been proven conclusively that the cast concrete we are putting into most of our foundations is way overstrong—unnecessarily rich in cement.

I, personally, favor not to exceed 8 in. of concrete at least for cutoff walls or basement walls where you have the proper type of soil and proper anchorage.

SLIPHER: We have found in our area that it is better to build trench wall foundations with a wooden floor above. We can cut our concrete consumption in half by using gunnite, and our wall thickness is  $3\frac{1}{2}$  in. at the top, and 6 in. 'at the base.

One of the most distressing things on the West Coast is the fact that we are faced with requirements there emanating from FHA which are strictly belt-and-suspender requirements so far as concrete usage is concerned and so far as slab construction is concerned. They make no differentiation between a slab which is poured over adobe, which creates a volume change condition similar to frost in this area, as compared to a slab poured over well-drained decomposed granite. They will require the same reinforcing for each and the same amount of



MR. SLIPHER: "FHA ... belt and suspender requirements so far as concrete usage is concerned ..."

waterproofing for each. It is utterly ridiculous. It is a question of the design of the foundation to meet the conditions of soil present upon the site where that building is being placed. If we just get that point over, and develop a source of information, or collection agency, for the various technique that have been evolved in engineering foundations it would be a great help. Most building codes don't do that. They just say, "This is the minimum"; and that is figured with 200 per cent factor for safety. We can't work on that basis any more.

PRENTICE: I know that Mr. Jalonack from Levittown thinks a 3 in. floor slab is plenty thick enough, but the law makes him put down a 4 in. floor slab. He thinks that pouring a 2,000 lb. concrete for his floor slab under an asphalt tile floor is preposterous. He thinks that on Long Island, where the soil is so sandy there is no frost, it is ridiculous to make him



MR. DAVISON: "Alternates to the use of the cement floor: tile units, asphalt." go down as deep with his foundation as he would have to where he did have frost to contend with.

DAVISON: I think we might express alternates to the use of the cement floor. I know that some of the modern architects have used flagstones in very expensive houses. Another would be to use tile units an inch and a half thick, selling for 27 cents for a  $9 \times 18$  in. unit. They use it in patios in California. That may be more expensive than cement at the present time. But if you can't get cement, there is an alternate that can be laid on a bed of sand.

Another one we did work with was an asphalt floor right on the ground; about 5 per cent asphalt mixed with certain types of soil. Stabilized earth, if you can get that result, can be used. We have built several floors using asphalt, stabilized earth, and then covered it. VOSS: I think perhaps a summing up of this would be something like this: That any method of construction, as far as we know now, that can show a substantial saving in critical material, regardless of the extent of planning or the condition of the materials used should not be stopped. It is our recommendation that restrictive regulations on the quality of concrete, or on the necessity for a basement where a basement can be proven to be more expensive, should be relaxed so that he may build. DANIEL: Could we ask the question whether anyone in this field feels the code in his area is actually minimum at the present time? I think we can all feel we can go back and with an engineering approach, and prove our case in many, many points-that we can cut down and still produce a perfectly safe structure. J. PRICE: We could.

VOSS: I think that is generally accepted. But hardly any local building department will even accept long standing tests of the Forest Products Laboratory on strength.

DANIEL: It is a long, hard pull. For that reason, I think the answer to that is a local advisory board of citizens, businessmen, etc., who will meet with the engineer and go to these people who are hard to get along with and appeal these cases and get some action.

# HEATING: It's not the heat, it's the insulation. A space heater can create comfort in a properly designed small house

BOESTER: In heating, this comfort business really starts not with building the house and then trying to find some kind of equipment to make it comfortable but in a realistic analysis of the materials out of which you build the house to reduce the heat loss to a minimum, and more particularly to control the interior surface temperatures.

When you do that, you get comfort, and it is simple then to find inexpensive, efficient equipment to compensate for the heat losses of the building and give you uniformity of heat in the various spaces of the enclosure.

In so-called emergency housing you can get very adequate thermal comfort with the so-called space heater—the wall-type of furnace device. It is, you might say, a greatly improved space heater, where we don't have to have the forced warm air devices and motors, filters, ducts, grilles and other things, to achieve comfort.

You can take the very simplest type of space heater equipment, and the more improved types, such as the wall furnaces, and locate them correctly in the house and achieve every degree of comfort that you can with the most complex system that has yet been devised.

VOSS: I want to second everything that Mr. Boester said. There is a terrific degree of misinformation as to what the difference is between comfort and standard heating. I think the most important thing that everybody has found, after a careful study, is that you must be as close to your air temperature or exposed temperature<sup>w</sup>as it is possible to get, in order to insure comfort.



MR. VOSS: "We design single joists taking the full contributing load . . . There isn't a joist in the U. S. that ever takes a load that way . . ."

You must have exterior heat insulation aids. If you accomplish that on your floor, ceiling and walls, the ordinary space heater will do an excellent job.

The objection to the space heater is that it is in the way. But that is all taken care of now by insulating jackets and things of that kind, which may require some thinking in connection with materials that are short.

I am deathly opposed to all these gadgets of heating, fittings, valves and radiators that are presently existent in houses. I think that the difference between the old house that I was born in, in which you burned your stomach and froze your rear end with the old parlor stove, and this modern house, is that we didn't have the insulation at that time, so we didn't have the means of keeping that comfort level in there. However, we now have it. You would be amazed at how a small space heater will take care of a little two-bedroom house.

PRICE: A well-insulated house does not need much heat. We developed a modification of the space heater that we called a wall heater, which we used in houses up to 850 sq. ft. It has very little metal, and it has been acceptable to FHA. The cost of it was around \$55 per house. It had no ducts. The average run in oil is 400 gal. per winter.

GOLDMAN: On a concrete floor, with a space heater, you will have a cold floor. I have seen too many people take out the space heaters and put in another type of heater.

DANIEL: In the emergency that is coming up, I think the home should be designed for whatever system is considered best. That doesn't mean that you can't go to the radiant heating coil in the slab, but a satisfactory heating job can be done with a space heater, and it is not so expensive that it cannot be discarded or sold second-hand.



MR. DANIEL: "... a satisfactory job can be done with a space heater ..."

# LOADS: Are the design loadings now enforced by codes for small houses too high?

PRENTICE: God is good to us, and there is as yet no lumber shortage. Consequently, the problem of doing something about the frame of the house is not as pressing as, for example, the problem of doing something about copper, where, if you don't do something about that, you are not going to have any houses built. But lumber may become very scarce before we get through this situation. I should think that if it doesn't become scarce, it will become expensive, because the only way you can get more lumber is to make it worthwhile for the men to go into the woods and get it out. One of these fine days we are going to face the problem of what you can do about building a house with less lumber. So now we are talking about the frame.

SCHEICK: Certainly the experience of a man like Price in prefabrication shows that house construction is over-engineered. Much of the framing is originally hooked up so that it has something to nail to.

VOSS: A 2 ft. long 2 x 4 would carry 20 tons. Why use 2 x 4's? Why not 2 x 3's?

SMITH: The 2 x 3 is more than adequate to carry the load. All of us are using 2 x 4's. You would save 25 per cent by going to 2 x 3's,

PRENTICE: Let me ask you another question: Is the barrier to using 2 x 3 studs due to the codes, FHA, HHFA, or is it just because you just didn't get around to it?

SLIPHER: There are states in which FHA does not permit 2 x 3 studs in exterior walls.

BOESTER: The single barrier is a statement in the code, and I get around that with the building inspectors by saying that there is nothing to keep you from turning the  $3 \times 4$ 's flat on the center, and the intent of the code is defeated anyway, and then they say, "Well,  $2 \times 3$ 's are all right."

PRENTICE: There is one more question on vertical support that I would like to bring up.

Three people have volunteered to say that the sheathing is practically useless if you also brace your corners against the wind loads.

HAEGER: We have argued both sides of this story. We have eliminated the corner bracing, saving as much as \$27 on a house. On the other hand, there are plenty of FHA jobs that have no sheathing, but only siding. I think that in the end it is strictly an engineering problem.

KIMBELL: It is a matter of the degree of insulation that you want.

SMITH: In the southern part of California we use only the bracing, and we have paper over it and chicken mesh wire to hold the outside plaster, and those houses show less cracking than the conventional job with the sheathing underneath. It made a fine job.

VOSS: It wouldn't do up our way.

JALONACK: We have to put sheathing because of the code.

HIGHLAND: Even if houses without sheathing are theoretically strong enough, isn't there the danger of incompetent building?

PRENTICE: It seems to me that we are all watching a major change in who does the building in the United States, and a greater percentage of the building that is going on in this country is coming into the hands of the volumebuilder or the speculative-builder. I don't think you like to be called that. But it is a different animal from the animal that did the building 20 years ago.

And don't let us forget our friend across the street here, Mr. Price, who is a good industrialist. The change has been made possible by FHA financing, which made it possible to finance a volume construction as it was never possible to finance before. I would agree with you that in any event the house ought to be over-designed. It is simply a case of to what extent that should be done. That is what we should determine.

# THE FRAME: $2 \times 3$ 's should be substituted for $2 \times 4$ 's; sheathing might sometimes be left out

HAEGER: Over a long period of time, I have made a study of the records of movers. The possessions which we have, including our furniture and clothing, as shown in the movers' records, would indicate that the design load for that phase is actually somewhere in the neighborhood of 5 lb. per sq. ft. That has been established over the years. If we used more realistic design loads, as opposed to the 30 and 40 lb. per sq. ft. now used, considerable savings in structure could be made. Except in the case of an occasional circumstance—a cocktail party, a funeral or a wedding—there are few 30 or 40 lb. per sq. ft. load situations in homes, and the safety factor we use would more than adequately take care of the exceptions.

That is the general concept. I am not suggesting that we use rash standards, and have the floor fall down, or the walls cave in, but I simply say that a more realistic approach to these subjects of design assumptions is certainly indicated.

VOSS: The normal vertical roof load that is considered standard all over the country in the northern section is 40 lbs. You have to account for sliding snow, and so forth. The more precipitous the slope, the greater the reduction. The minute you get a thaw, or get heat from the inside, the whole thing slides off.

So, these are all factors that have to be taken

into consideration on loading. Let us talk about the inside of the house first. If it is a slab-on-the-ground-house, forget floor loads. If it is joist-supported, I don't think we are justified in asking for more than 30 lb. per sq. ft., with a concentrated load of 130 lb. over the supporting power of four joists.

When it comes to the roof, I am in favor of limiting that to 40 lb. per sq. ft. of horizontal projection up to certain slopes.

WOOD: We are working more and more toward lighter and shallower constructions, and in the design of those lighter and shallower constructions, it isn't always the load capacity that proves critical; often springiness is the critical factor a matter that involves physical and psychological reactions. That is a feature on which, at present, we lack design criteria.

DANIEL: Let me speak from the homebuilding industry standpoint. The floor will move up and down in a fairly long span. People will come in and say, "What kind of a house are you building?"

VOSS: One of the latest ways to avoid springiness, not generally accepted by most people, is to have a stressed floor construction. Even if it is 2 in. shallower than the normal design, it will have a deflection of only half that of the normal design and save 2 in. of depth on all joists when the skin is nailed 6 in. on the centers.

Now, if you make a prefabricated panel that

has cross bridging—the waffle type—you can cut the joists down to  $2 \ge 4$ 's for a 12-ft. span with 3-in. plywood on the ceiling, and have it glued, and  $\frac{5}{8}$  in. plywood on top, if you wish to cover it with linoleum. This has 14 times the rigidity, and five and one-half times the strength of normal construction.

DANIEL: You are using more labor, and it is much more expensive.

VOSS: If you have metal lath on your ceiling or gypsum board, you will materially stiffen those joists, and reduce deflection.

Now we design single joists taking the full contributing load, and there isn't a joist in the United States that ever takes a load that way without consideration of covering.

# PLUMBING: Vast savings in the scarcest material, metals, could result from the replacement of antique plumbing codes, standardization of plumbing trees and fixtures, substitution of synthetic enamels for galvanizing, and use of new septic tank designs

DAWSON: I have estimated that there is something like a million and a half miles of piping in the plumbing systems of the U. S. A million and a half miles just in houses. I estimated that there would be something on the order of 400 million valves, faucets and similar fittings—and that's a lot, too. Now, if in the future we can save possibly 1 or 2 per cent on similar items, it would be important.

The recommended new National Plumbing Code which my committee has been working on for three years will help to do this if it is adopted in place of the 1,000-odd codes now in use throughout the country.

For example, 30 per cent of the local codes now in use require 4 in. extra heavy cast iron and soil pipe for building sewers, building drain and soil stacks, including the installation of a house trap, and a fresh inlet. Most of those are now not in our code. For another example, we are definitely not recommending the use of house traps; we are not recommending the use of 4 in. extra heavy cast iron soil pipe. We are recommending for one- or two-family houses the 3 in., and not necessarily the extra heavy; ordinary standard pipe will do, particularly in an emergency. The nonmetallic building sewer is important in the problem of saving materials. You can use clay pipe, fiber pipe, or plastic pipe in place of iron.

The new national code will permit a 3 in. building drain and a 3 in. soil stack of a weight to be known as commercial standard service weight, a nonmetallic building sewer, and no house trap or fresh air inlet.

Gentlemen, the savings on all of these items totalled for an ordinary house would probably be about a quarter of a ton of cast iron.

The question of the stack vent is one of the items that came up for long and serious discussion—the question of whether any system or fixture should be back vented or individually vented. The new code definitely permits wet venting, with limitations, of course. That will save many feet of pipe and is, in my opinion, much better than dry venting.

The national code definitely permits stack venting. That means, to those of you who are

not familiar with it, that you don't need any separate vents on the top floor of any building. Or, of course, in a single-family dwelling you obviously don't need any vents if you have the proper amount of stack venting. This new code shows substantial saving-particularly in multiple-dwelling units. For example, a multipledwelling unit with 6 bathrooms would require, in the majority of cases, a 4 in. soil, 3 in. vent, wall fixtures back vented. The new code permits 3 in. soil stack for 6 bathrooms, or 6 stories, with a 21/2 in. main vent with the bathroom on each floor stack or wet vented. An estimate of the materials requirements showed that practically one half the weight of the material may be saved.

All this, of course, is predicated on the cities and counties in these states adopting the code. We are recommending the code, but that doesn't say anybody is going to adopt it. The plea 1 am making here is that you do everything you possibly can to have this new code adopted by whatever community or state or municipality you may happen to live in.

Getting away from the code, I want to talk about a few things in connection with the plumbing fixtures themselves. For example, the prohibition in the use of cobalt would no doubt prevent the manufacture of formed steel fixtures, unless a practical substitute is found. Colored fixtures should not be further considered, because invariably they require very strategic materials in order to provide the proper coloring. Deluxe equipment should not be manufactured. Standard-type fixtures should be utilized.

For example, water closets of the closecoupled type require less use of critical material. If you have them close-coupled together, you will have a lesser amount of work as against ones that are 6 or 8 in. long or more. Also, lavatories with towel bars or chrome legs are another item that might easily be done away with.

Another saving is the use of ordinary chain and rubber stoppers instead of the pop-up valves on lavatories and bathtubs. A 1½ in. connected waste and overflow should be used in bathtubs in place of more elaborate mechanical wastes. DEAN DAWSON: "Gentlemen, the savings...totalled for an ordinary house would probably amount to about a quarter of a ton of cast iron."



The shower head is another thing which could easily be reduced. Two inches should be the maximum diameter.

Another recommendation is that the transfer valve hose and spray should be eliminated from sink combinations with hose sprays. That is a fitting which requires an awful lot of brass, and is not very satisfactory. Most of them leak after a while, and there is very, very little chance of fixing them; they have to be taken out.

One of the most important opportunities for metal conservation is in use of the new synthetic enamels. In the last few years we have had some enamels which are so far superior to the old methods we have had of coating pipes that we have not yet learned how good they are. The new synthetic enamels will, if properly applied, prevent rust and deterioration of iron, and it is my honest opinion that is will be the most important saving that could be made. In other words, you don't have to galvanize these things if you can find some way of putting the synthetic enamels on there-the same type of enamel we found going on the inside of the tin cans. All trim under sinks and lavatories should be of cast iron or a ferrous material, painted or sprayed with these enamels to present a neat finish.

Another item which I would suggest your considering is the reduction from the 17 gauge brass tubing for trims. It might be reduced to a 20 gauge, eliminating something like 40 per cent of the total copper required. I don't think you can use any thinner than the 20 gauge, or you will have an awful lot of trouble.

There are a lot of other items which I have down here where the savings of copper and brass could be of importance. For example, shower curtain tracks and rods and bars, bathroom accessories, paper holders, towel bars, hold-back hooks on curtains of showers, etc., are all places to save. These may in very many cases perhaps be better if they are made of plastics.

Now, let me touch on the thing which is closest to my heart. Savings on critical materials can be made by careful planning and design of a plumbing system. I want to emphasize that *—careful design of the plumbing system*. And let me say at once that in new buildings the greatest offenders in this situation are the architects who, generally speaking, design a building from its appearance standpoint and pay no attention whatsoever to how we are going to fit the plumbing or the heating into the situation. There is much more to be gained from careful planning than almost any other single thing.

Now, let me repeat: The biggest thing that we can do is to advocate the adoption of the report for a national plumbing code. The sooner it gets through the mill of the American Standards Association, the American Society of Mechanical Engineers, the American Public Health Association—all of whom are engaged in working with it—the sooner it can have the opportunity of being scrutinized by the various state organizations.

DANIEL: How long do you think that might take?

LAWRENCE: A minimum of 90 days.

DANIEL: As quick as that?

LAWRENCE: That's a minimum. Personally, I think it will take 6 to 9 months.

DAWSON: I will be happy if it got through in 120 days.

SLIPHER: Would it be possible that the request be made to the NPA it be established as an emergency plumbing code similar to the one that was established during the last war, and made the NPA basis of restrictive orders on materials going into construction? I mean it worked last time, and that came in advance of this 180 days.



MR. JALONACK: "Any mechanic on a plumbing job spends much more time on attempting to think than in actual work. The only way we get our time down to what seems to be such a ridiculous figure, is because we do not permit a man to do any thinking. We try to do that for him." DAWSON: There is very little in this code that wasn't in the Uniform Plumbing Code as established last time, except in connection with certain of the substitute materials.

In the matter of substitutes, I'd like to point out that this idea of using copper pipe is not necessary at all. It is a question in my mind whether we even need galvanized pipe if we take proper care to have pipe properly coated on the inside and outside with the types of enamel now available. I am not saying it will last as long but it will be satisfactory in an emergency. I am not talking of an emergency of three years; I am talking of an emergency of 10 years.

There is another item that I want to speak about. The question of a vent pipe going through the roof in a frost closure is a controversial thing. Now, there is no doubt that there is such a thing as frost closure. No question about it. Vents do close because of moist air rising and condensing and then freezing on the inside of the pipe. But the best safety is not having the safety go too far up from the roof. For example, some codes require two ft. through the roof. That's a lot of bunk, frankly. I, personally, am advocating that that vent pipe only go through the roof about two in. Immediately you will say, "What about rainwater coming in?" I say, "So what?"

VOSS: How about snow coverage?

DAWSON: It won't.

HIGHLAND: What diameter is that pipe you recommend—you said two in. above the roof? DAWSON: For northern climates, I am recommending a minimum of three in.

JALONACK: This proposed code, or whatever you want to call it, was undertaken in the interest of standardization rather than for strict economy with a war design in mind?

DAWSON: We had no idea a war was coming up when we started working on this code.

JALONACK: Here is my second question: If you were recommending to really get down to using the minimum materials and still have a safe and helpful sanitary plumbing code, would you recommend the code in the form it is? Would that encompass everything you would want to do in the interests of saving?

JOHNSON: Mr. Dawson, may I attempt to answer Mr. Jalonack's question about a standard lower than the national plumbing code?

I talked about that very point to Mr. Hope, Public Health Service representative on your National Plumbing Code Committee just before coming to this meeting and he estimated it might be possible to effect a saving of critical materials of 15 to 20 per cent over that of the National Plumbing Code on a wartime basis and utilizing substitute and lighter weight materials. However, this would result in some concurrent loss of serviceability and durability of the plumbing system.

JALONACK: Since we are talking about onebathroom houses, with a kitchen on the back, there is no reason why a plumbing assembly like the one we use at Levittown or something very similar to it—perhaps even more simplified could not be standardized. <sup>\*</sup>Our pre-assembly comes to our shop with two fittings, and a couple of pieces of pipe. One fitting takes care of the bathroom and the kitchen, and the pipe is simply cut up in the shop in a lot of pieces at one time. It is gang-sawed. The rest is assembled in the shop. There are only two precast fittings. SLIPHER: We have used precast sections of a draining system, which in turn have been delivered to the site as an assembled Christmas tree, and there is no problem in making them work. PRENTICE: Am I right in thinking that there will be considerable savings in metal because there would be less waste ends?

DANIEL: The savings of lead alone would be terrific.

DAVISON: I do feel that we can consider a onedesign bathroom, and an inch and one-half or two-inch vent. There has been so much damn argument that you just have to say, "There isn't going to be any argument." I think you can make one bathroom and say, "This is it."

WALKER: It is silly to keep on doing the thing in any other way.

SLIPHER: Another matter. In Los Angeles County this year there were approximately 80,000 single-family residences completed. We completed a survey last week that showed there were somewhere between 2,000 and 2,500 bath tubs and 4,000 sinks lost due to job damage, where the porcelain enamel was knocked off. That is roughly 3 per cent.

We have done some checking on the national averages with two different manufacturers, and there is somewhere around a 3 per cent loss nationwide. You don't realize it until you see those tubs stacked up at the end of the project, totally lost—not in metal damage, but simply due to surface damage.

Isn't there something that can be done to help relieve that situation? We have made one step, but it is a very faltering step, and we don't claim any authorship for it. We have found that the usual methods of protection are only effective to limited extent, and this 3 per cent damage comes after that. We have found that by using a spray developed by the Navy, we have successfully reduced it on our own jobs to less than 1 per cent.

Here is my next question: Is there any practical method of repairing porcelain enamel surfaces after the damage? So far as we can find out, the answer is "No."

JALONACK: This year we used the corrugated covers, and we had no damage. We also have someone who does repair the porcelain.

SMITH: You will find that if your house is carefully checked before your purchaser moves in, you can detect the damage and remedy it. If you catch it yourself and train a man to do the job by a building, rubbing-down process, you can do a satisfactory job of repairing the tub. We do it all the time.

SLIPHER: We have been through that mill. These tubs that I am talking about are lost as a result of FHA inspection or VA inspection; lots of other tubs are repaired. Two manufacturers have told us that they have a loss between their factory door and the job site of another 2 per cent, which means roughly 5 per cent of the bathroom fixtures and porcelain enamel that goes right down the drain. The metal is lost, and you can't use it again. That is a lot of waste! PRENTICE: While we are recommending things to FHA and recommending things to WPB, maybe we ought to make a recommendation that the sooner the plumbing manufacturers move towards less diversified lines, the less material they are going to waste at a time when that material is important.

DANIEL: You are right. There should be more standardization.

SMITH: You are right.

VOSS: The waste in unusual types is startling. DANIEL: And they have to have the space to keep the damned things.

MR. JOHNSON: "In septic tanks, clay can replace steel and cement."



JOHNSON: I would like to mention a few words about research on septic tanks. During the past several years the Public Health Service has been carrying on research in septic tanks financed jointly by the Public Health Service and the Housing & Home Finance Agency.

We are talking about an item that during the past few years applies to approximately 500,000 to 700,000 dwellings, the number of dwelling units constructed each recent year that were not connected to public sewer systems.

Perhaps the most important fact that the research has yielded to date is that new kinds of structural shapes for septic tanks—primarily round shapes—will be allowable. That means that you can use clay products, for example, instead of steel or cement. I do not know exactly how much cement is involved in an ordinary rectangular 500 gal. septic tank, but certainly over the nation it represents a substantial amount. Then too, the admission of round shapes should allow savings in construction costs.

In our studies, for example, it appears that 2 stacks of 2 lengths of 36 in. pipe each plus inlet and outlet devices, placed in series, will do a 40 to 50 per cent better job of treating the sewage (removing suspended solids) than the standard rectangular tank. Gentlemen, please realize that this research has not been completed and these results are not final, but there is a strong indication that construction time and materials, especially critical material like steel and cement, can be saved, and we can still build a septic tank that will do at least as good a job as the standard rectangular tank.

We are now working on a fairly simple device that we hope will indicate to the householder when it is necessary to clean the septic tank. This should reduce the clogging of the drainage system due to poor operation, the usual cause, to a minimum. Therefore, the capitalized cost of the septic tank installation for the life of the dwelling should be reduced.

# ROOFS: In many localities, flat roofs are a design answer to the need for economy

SMITH: I have built my share of Cape Cods, and I still like them. But I think this: We are trying to get the most in the way of housing facilities with what manpower and materials we have. I think you can get the most by intelligent use of contemporary design, specifically, by building flat roofs.

The house my firm is building is not stripped down. We have good insulation, moistureproofing, steel sash and copper plumbing, as well as copper screens—all of the amenities that accrue to the intelligently designed contemporary house. We have 1,060 sq. ft, which we are building for something under \$4,200 or \$4,400, about \$4 a ft. in round figures. That is accomplished, primarily, by the intelligent use of contemporary design, and not by any mass production techniques or mass buying.

We have a high cost area. We pay carpenters \$20 a day. We pay the masons \$35. It is a terrific proposition. The plumbers are now getting \$3 an hour,

The important thing is that through the intelligent use of good contemporary design you do get collateral savings. You don't have to have the plumber figure the supply lines. A couple of the boys walk over and set it down. We install the rock, roll it, put our membrane down and also put the slab in. The painters can stand on a couple of saw horses and reach the whole house.

VOSS: That is interesting because I have just done a lot of figuring. Do you realize that on your house, if you put a slope roof on it, it would raise that cost up to \$5 per sq. ft.?

SMITH: Yes. And I know the question that is coming now. "What happens in snow country?" they ask. Well, as you know, in snow country they do build flat roofs, but only for people with a lot of money. But we are dealing with the little fellow. That is the fellow I am interested in. He is the fellow we are going to cater to during this next period.

In California, I am building a roof, carrying 34 lbs. As a carpenter, and not an engineer, I thought it ought to be safe. The wood is resawed in 6 x 8's. It comes up to 6 ft. maximum centers. They tell me that will carry a 34 lb. live load. It will take a little more to bring it up to 50 for snow load. But the additional cost factor would be negligible. I think that \$25 or \$30 would take care of the snow in your country, wouldn't it—figuring the extra timber?

VOSS: I don't think we would have to spend that much, unless it was in a terrible area.

J. PRICE: Could you sell them on Long Island? SMITH: That is a typical question. I get that all over the country. In California when I built the first flat roof house, I even had people in the community get up a petition to stop me from building a house without a roof on it. I said I would continue to build this as long as there was a market. I believe there is a market, due to the good work of the architectural group who have been selling the advantages of this kind of a package to the American people. I am a carpenter, but I am also a merchant. When there is something that the people might want, I will attempt to give it to them.

I used to build 30 houses a year. I sold 1,100 last year. It is a very satisfying business, believe me, because there are growing numbers of people who will buy the house if they are given an opportunity. I have no patience at all with the guy who says it will not do in his area. JALONACK: Would you sell 5,000 of them?

SMITH: I could sell 100,000 if I had the organization that you have.

JALONACK: You probably could. But we are not allowed to do it. The code prohibits a residential house with a flat roof out in Long Island. PRICE: I built a flat roof house for myself, and I liked it. We tried one down in another area, but we didn't get any satisfaction. Nobody in that district liked the flat roof house. It makes a big difference what area you are in. In some areas the flat roof will go. In others, it will not. One of the important things is climate. The question of internal condensation comes up. VOSS: The question of condensation, rotting of timber, erosion or decay of applications and warething also is a question of wartilation. We

everything else is a question of ventilation. We have the same thing in the slope roof in our area, where they have been foolish enough to put insulation in the ceiling and attic, and the first thing we knew was that the whole thing went to pieces.

The answer to that is to cut a hole in two ends, and put a fan up there, and your troubles are over. So far as the roof is concerned, you can use the regular joist construction with the released ceiling for cross-ventilation and ventilate through your exterior walls by screens and so forth. Mr. Boester said that if you do that it costs just as much as a gable roof. I disagree. I think the amount of thinking that a carpenter does costs you money. That is of tremendous importance. A lot of time is consumed there.

DANIEL: We figure flat roofs in small houses, but we haven't been able to find a saving on them.

HIGHLAND: We still have banks, and the FHA figures its costs on a cubic footage basis. With a flat roof we hit diminishing returns quickly; if the poor builder goes into that, he hasn't enough cubic footage.



MR. HIGHLAND: "We still have banks . . ."

MR. SMITH: "I am a carpenter, but I am also a merchant."



# ELECTRICAL WIRING: Eliminate restrictive regulation in local codes, educate the public and some electricians too

L. D. PRICE: You can't talk about the electrical business without thinking in terms of rather scarce materials — copper, steel, iron, rubber, cobalt, and at the moment, aluminum.

Now, there are factors that have to be taken into consideration in anything that we may do, or that may be done to effect the electrical work in building construction. There is the fact that almost all of the apparatus types of electrical equipment are used in armament. Whatever is due to take care of building must be coordinated with what may be done for these other uses.

Probably the principal factor that we are confronted with is that of safety. Electricity misused can be a hazard. Consequently, there was developed some 54 years ago a national electrical code, and that has been revised every two or three years since then.

Last year we completed a study and an analysis of 376 ordinances and codes. Of those, 325 have no special rules or regulations deviating from the national electric code, and 41 have special rules—some of them minor, some major. Some require that everything may be done in conduit. In other words, they require that the



MR. PRENTICE: "What we want to talk about is permanent housing . . ."

electrician has to do a plumbing job first, and pull the wires in through the line afterwards.

Even if they are wiring a hen coop, that is true. They range all the way from the boycotting of certain well recognized materials, down the line to just minor deviations that may be a matter of misinterpretation or difference in interpretation by local authorities.

The one thing that will answer our problem about as much as anything is to gain uniform recognition of the national electrical code.

PRENTICE: Am I right in believing that if they all did adopt the national code, it would result in substantial savings in costs and in the use of materials?

L. D. PRICE: Yes, definitely. I know of no local code that is below—I am speaking now of a floor that may be established as a minimum standard — that standard.

SCHEICK: Is there any possibility of greater standardization of the electrical field? How much waste is there in wiring on the part of the smaller operators who have very little in the way of anything to guide them to the most economical wiring systems?

L. D. PRICE: A plan for engineered wiring was started toward the end of the last war and got into operation in a few localities, but it came rather late in the war. The plan is fundamentally all put together, and work is now being done toward getting it widely used.

It involves assistance from such groups as the local electrical people and the utility companies in assisting home builders in laying out a wellengineered wiring job with a minimum of feeders and circuits.

BOESTER: Do you feel that porcelain would be equal to the other material now used, from a safety viewpoint? I refer to porcelain boxes and fixtures, and so forth.

L. D. PRICE: From my own point of view, it is probably the safest system that can be put in a house.

SMITH: I understand that you can use aluminum successfully in electrical wiring. Would it be possible that Uncle Sam could step in and start specifying aluminum wire where it seems practical and feasible, rather than taking all the copper for the work?

L. D. PRICE: There has been developed an aluminum rubber-covered wire, and other types of insulated aluminum wire in all forms. People preferred the use of copper. One reason for that is the fact that aluminum does not have the same conductivity as copper.

Generally speaking, you have to use one size

# COORDINATION: There should be a smaller vocabulary of dimensions in products and on blueprints; standardization is economy

GREEN: Most people don't seem to understand that modular coordination has an unfortunate name, and really is a very simple process. The coordinating part is simply a standardization, and the modular part is simply a standard unit of measurement—4 in. in length, 4 in. in height, and 4 in, in depth.

From that point on, it is simply a question of standardizing building material so that it would work with that dimension.

The perfect size of a brick is 4 in. x 4 in. x 12 in., which lays in the wall and saves labor in handling, and saves material and mortar. There are a lot of advantages in the standardization of brick. But you can't standardize brick without standardizing your backup.

When the mason comes to the job and lays modular brick up to a modular window, it will fit, and modular inside backup will also fit to the steel sash. There is no cutting on the job. There is no carting away of a lot of material or rubbish—you all know that is the one big place where savings can be made.

There are a great number of manufacturers who are working on the standardization of materials. The wood window manufacturers have standardized their wood units in a reasonable manner. The metal kitchen unit people are trying to develop a unit which will fit on the wall so it will not be necessary to scrape your plaster off in order to put it in place.

Now, the architect who lays out the job also has to use modular dimensions on a basis of 4 in.—or obviously the modular materials will not fit on the job. But that is not difficult.

If I told you what some of the jobs in our office have shown in the line of savings in draftsman's time, you wouldn't believe me. When a draftsman puts down a dimension, it has to be a 4 in. dimension. He doesn't argue with himself. It just has got to be a 4 in. dimension. So that saves a lot of time there in our office.

When it comes to checking materials, there are tremendous savings of time in the office, because there are no <sup>3</sup>/<sub>4</sub> in. dimensions, or 1 in. dimensions. They all add up to 4 in. and we get used to that. On vertical dimensions you have more difficulty, because you come into the height of the framing members that carry the story over.

larger aluminum wire than copper wire. That complicates certain installation problems slightly, but it can be used, and it is used. If it is not immediately available, it may become available.

SLIPHER: Does the national code fully permit the low voltage control system?

L. D. PRICE: Yes. And if you have a lot of overhead fixtures and a lot of remote control appliances and lighting fixtures, you will save a good deal of copper using the low voltage.

WILLIAMS: We are discussing pretty much a minimum house—one in which I think we could very well rule out all ceiling fixtures. Certainly, I know most of the architects in the East never use them.

SLIPHER: We don't use ceiling fixtures.

GOLDMAN: Neither do we.

DANIEL: We don't use them any more. SMITH: We use two in the kitchen and dining

room.

WILLIAMS: We do use them in the kitchen but in the kitchen only.

DANIEL: A wall plug, with a switch at the door, is a luxury.

SLIPHER: With low voltage switching you also use a great deal less steel. In our area that is the most critical thing. We have to put 150 lbs. of conduit in every house, which this eliminates. L. D. PRICE: If you had the national electric code, you wouldn't have that.

SLIPHER: The code is used, but it is chopped off before you get to the bottom. Everything is named in there, but it isn't necessarily permissive that you use them all, and that is the critical thing.

L. D. PRICE: That is what I mean when I say "uniform recognition of the national code without any restrictive local regulation." I know of some operational builders in the South who have been getting their materials from the Southern Brick Manufacturers' Association, and they have reported to the Senate Committee that up to 20 per cent savings have been accomplished. With standardization you ought to have savings from 5 to 10 per cent on your overall construction job. That is a substantial saving.

PRENTICE: Is modular coordination now to a point where the Government can really put weight back of it as something which is of importance? For example, the Federal Government might set its own house in order and tell the architects on all projects to use a modular basis.

GREEN: I think that could be done. I don't see any reason why projects couldn't be developed on the basis of modular dimensioning without hurting anybody in the industry. You will



MR. COONLEY: "... 1 hope you will come out with some real things that I know those of us who are down in Washington representing you will try to put through."

have to invite all these fellows into a conference and get them to agree. It can be worked out.

There is only one thing that I can see which stands in the way of adopting those standards. We had this trouble in a veterans' hospital: They said that four-bed wards had to be 15 ft., 9 in. long. We thought that was just a dimension which was approximate, so we put it on a modular dimension basis, but we found that wasn't what they wanted. They said, "We asked for 15 ft., 9 in., and we insist upon it."

If the Government is going to take that attitude, of course, they are going to upset the applecart, and it can't be done, because 15 ft., 9 in. does not fit the modular dimension.

VOSS: I don't know what right I have to talk for the manufacturers, but I am going to do so for a minute. They have a big reason for supporting modular coordination. I have had any number of manufacturers tell me on a great many occasions, "Tell us a few things you want, and we will make them, and we will reduce the price."

I am in favor of recommending that plans be drawn on a modular basis, and when they are, I am sure that the manufacturers will feel that they can cut their specialties on those big jobs, and afford to make them at a less cost and still fit them in.

Why? Because the manufacturer is interested in selling his product in the size that the architects want it. But if every architect wants a different size, the price is going to be higher. There is a big saving there in mass production application to anything that comes from modular planning. KIMBELL: One of the assets of the modular theory is the fact that it has not been held to an inflexible basis. One of the best arguments for the modular approach is that there are not very many valid arguments against it. In the planning, the fact that there are tolerances permitted in the matter of products proves that there are assets.

SMITH: Isn't there a problem in connection with this? I am not a manufacturer, but I would assume that to do this at this time for all segments of industry, there might be a tremendous problem of retooling for this thing.

SCHEICK: No. Mr. Green, if you dimension your plans for a modular basis, that does not preclude the use of non-modular products, does it?

### GREEN: That is true.

PRENTICE: Is there any other place in the houes where agreement on standardization could make possible major savings?

SLIPHER: Yes, the depth of a house—whether it should be 20 ft., 24 ft., or 26 ft. That makes a lot of difference. In an emergency housing program, if you establish one depth, the areas can vary in width. There are a number of factors that go into it. For instance, the last time, it was found economical to have trusses up to 22 ft., but not over that.

PRENTICE: How deep is your house, Mr. Slipher?

SLIPHER: It is 26 ft. GOLDMAN: Mine is the same. DANIEL: Mine is 24 inside. SMITH: Mine is 28.

JALONACK: Mine is 25.

VOSS: I think if trusses for the ceiling of a one-story house, plus the roof support, could be limited to certain slopes—maybe two slopes and prefabricated, purchasable by the contractor in given spans, we would get away from bearing partitions entirely.

SMITH: I think there is another thing that can be kicked around a great deal, and that is a standardization of the doors that come from the manufacturers with the jambs. Now, the big prefabricators and large developers of houses can set up a shop to take care of that, but for the bulk of the builders, who are the little fellows, the doors come in all sizes, with all sorts of jambs.

It seems to me they could just have a package —a standardized door. Why not? Then they could bring it on the job and simply nail it together. This would be for the little fellow. I do that in my shop. We build—not a lot of houses —a few hundred houses a year. But the bulk of the building is done by the fellows who build ten to one-hundred houses a year. They can't afford to set up a shop. They have got to fit the thing the hard way. If that was standardized you could save from \$1.50 to \$2 per opening in manpower.

VOSS: Wouldn't you include windows too?

SMITH: Of course. There is no reason why parts of frames can't be precision-cut, with the doors or the sashes going into them made to fit. There is no reason at all.

VOSS: There are three cases that I know of per-

sonally where some of these package panels come in, but the unions refused to touch them. WILLIAMS: That is another problem.

COONLEY: I found that the manufacturers in my industry—valves and fittings—were very reluctant to standardize at first. They felt they had designed certain valves that couldn't be replaced by another manufacturer, and if they once got them into a large installation, the replacement orders would have to come back to them. We had quite a scrap to get through the idea that that was plain bunk. Little by little the facts became evident that standardization is not only sound, but economical and profitable.

I think our major piece of education came about when six of the major oil companies issued individual specifications for 150 lb. and 300 lb. steel valves and steel fittings, with the requirement that within three years we who are making the valves for them must provide valves and fittings of those dimensions.

Of course. our engineers got busy right away, and we found there were no two dimensions in any two of those standards that were the same. I told them to find out what it would cost us to qualify for those six companies' business. They came back with the answer that it would cost \$2 million to develop the drawings, patterns, tools and fixtures, without saying anything about the inventories we would have to carry with the work in process.

That was so impossible for us that we went to the consumers—the petroleum industry—and they sat down with us to see if we couldn't work out single standards for those two lines. Then we saw the place to lay our heads and work it out together, and we took it to the American Standards Association.

Within the next two years we developed a single standard of both those lines, and the changes necessary for my company cost us \$36,000. We had to carry only one line of work in process—finished stock and parts. So we were able to deliver those valves to all the companies at about half the price we would have had to charge otherwise. Now, I hope you will take that thought home with you.

PRENTICE: The particular problem which we face today is how we can profit by this emergency situation. Use of atomic energy was expedited by something like 60 years by the last war. Can't we profit by the present emergency by expediting modular coordination right now to the very great immediate and also long-term benefit of the building industry.

WALKER: If we could get the Government to say definitely that they would only purchase goods or products on the modular basis, we will be making an enormous step forward. The architects will follow.

We don't ask for a lot of different elevator platforms. We take what is offered in the trade. The standardization is there. We don't do the same thing with door closures. We take the door and door frame all together in one package, just because the demand is there. If demand is created for standardized material by the Government, who are going to be one of the largest users of material in the next several years, the building industry is going to take a great step forward.



FLORIDA—How to be comfortable (summer and winter) despite heat, glare, rains, rot, hurricanes and bugs

Miami architects at long last are thinking out a tropical architecture that will make living there pleasant the year round. Already their progress promises more comfort in the tropics throughout the world.

The would-be quaint ordinances of many Florida towns still require the heavy roofed, heavy walled style that Ponce de Leon brought over from sunny, mountainous, temperate Spain; but an eskimo igloo would be almost as good an answer to such Miami problems as:

Sun—Nine months of the year the No. 1 comfort rule in Miami is to keep out of the sun; and to keep the sun out (particularly in the hot afternoon) becomes the No. 1 rule for a comfortable Miami house. This means wide overhangs, smaller windows or wooden louvers on the west, reflective (instead of red tile) roofs. It means plenty of shade outdoors too.

Rain—Part of the year it rains hard almost every day—often a driving rain at a 45° angle. Miami gets four times as much rain as Southern California, about twice as much as the national average. This again calls for wide overhangs and plenty of shelter for outdoor living, too. It also calls for windows that can be kept open in the rain (a development in which Florida window makers have been leading the world).

Bugs-So many bugs and so many kinds of bugs infest Southern Florida that even outdoor living means living behind a screen.

Hot nights—Hot enough so that keeping cool is often a 24 hour problem. (Actually this makes the architect's problem easier, for it lets him concentrate on how to keep cool.)

Rot—Dampness and termites require special attention. Wood needs perservatives. Walls must be ventilated to reduce condensation. Concrete joists and terrazo floors are desirable.

Hurricanes-Such an old problem it will not be discussed here.

*Glare*—Too few trees, bright sun on the water and coral roads. Miami architects are still slow to realize the anti-glare value of bluegreen glass. They are apt to use wooden louvers instead.

The one thing that makes pleasant all year living possible in the face of all these problems is the never failing breeze from the ocean. But the trick is not only to catch the breeze and get it into your Florida house—it's how you catch it that makes the difference. One idea these architects have been working on is like the Venturi principle of aero-dynamics: The window or screen opening toward the breeze is large, and the opening on the oposite wall is small. The result is a forced draft through the room and out again through the small window. Another idea is to let in the breeze low down and close to the floor, let it escape near the ceiling on the opposite wall. Result: The breezes fan your body, scoop up any warm air layers around you. Without these breezes, Miami would be almost as bad in summer as deserted Palm Springs.

For such a climate the new architecture of California is not much more help than the old architecture of Spain. Indooroutdoor living takes on a completely different meaning—it means living outdoors night and day most of the year with all the comforts usually found only indoors—but it also requires a special kind of outdoors, protected from the sun and rain by a wide overhanging roof, protected from the insects by a screen. Above all, it means living in the breeze. And yet, because for a few weeks each year the mercury dips down into the Thirties, each house needs some provision for cold weather.

This magazine has already reported one dramatic attempt to solve all these problems—Architect Polevitzky's bird cage house (BUILDING, May '50). Another solution—Architect Rufus Nims' second-story house—will be reported shortly.

On the pages that follow are four more solutions-

A house by Marion Manley which could almost serve as a text book on all the problems and answers;

A three-unit house by Alfred Parker (also notable for its big roofed-over patio);

A second house by Alfred Parker which carries some of his ideas a step further;

And an all-porch house by Igor Polevitzky.

# TEXTBOOK HOUSE shows how to beat the Florida climate

MARION I. MANLEY, Architect LYLE ROBERTS, Inc., Contractor LOCATION: South Miami, Fla.

Photos: Rodney McCoy Morgan: Photolo



If Philip Wylie wrote textbooks instead of novels, he could use his own house by architect Marion Manley as a perfect object lesson on how to beat the Southern Florida climate; for his house does all of the following things:

It turns the living room into a completely furnished "porch" to be used that way 11 months out of the year;

It uses the prevailing breeze from the southeast;

It cross-ventilates every room;It is sited to take advantage of its trees to cut out glare;

▶ It has a second story master-bedroom that catches more of the breeze than any other bedroom;

And it is liberally endowed with overhangs, screens, and projecting windows that further control the sun and the bugs, and make it possible for the Wylies to sit in their outdoor "living porch" even when it rains.

Despite all this openness, the Wylie house is also an object lesson on how to provide complete privacy for every member of the family—a basic requirement for all families whose members want to go on liking each other.

### **Open for ventilation**

Like the house by Alfred Parker (p. 134), the Wylie house was built in three separate units which are linked by a screened porch. These units are a study for Mr. Wylie to work in; a bedroom wing for guests and the daughter; and a living room wing with dining area, kitchen, carport and upstairs master-bedroom. Because these wings converge on a screened porch, each can be cross-ventilated through that porch. The living room can be opened up and merged with the porch for 11 months out of the year, an arrangement which actually gives the Wylies an outdoor living area 35 ft. long and at least 18 ft wide, with three sides almost completely open to the breeze To keep out the bugs all openings are screened; to keep out the rains and still let in the cooling breeze, all windows are of the awning type; and because rains in southern Florida are driven in by winds at a 45° angle, these windows are further protected by deep overhangs.

#### **Closed for isolation**

With all this openness it is astonishing that the Wylic house is also an object-lesson in splendid isolation and per fect privacy for every member of the family. When Mr Wylie is in his study, he need not be conscious of anyone else around him; the bedroom wing is similarly isolated and the master-bedroom on the second floor is the exclusive and private domain of the owners.

#### **Equipped for climate control**

In any Florida window maker's catalogue will be found some of the screens, projecting windows, louvers and shutters that a Miamian requires to face a tropical climate. But un less these controls are all in the right place, they will do very little good. In the Wylie house, architect Manley has used blank masonry walls where they should be used, to keep



iew of living room (below) from the screened porch shows fireplace for cold venings, windows on both sides for cross ventilation.





Screened porch (above) is completely cross ventilated, can be merged with the living room (below) when sliding doors are opened. During cool days and evenings, living room proper can be closed off.



Photo above: Rada

out the hot western sun. She has built a cement asbestos board roof for added sun protection. She has used overhangs 2 ft. 6 in. deep over the porch to combat both sun and driving rains; she has provided large openings facing east and south-east to receive the breeze, and placed most sills along *those* sides as little as 2 ft. off the floor so as to let the breezes fan your body (while openings on opposite walls are smaller and high—an 'arrangement that creates' a draft in every room); and, finally, she has placed her house among existing trees for protection against glare.

### **Built to last**

Architect Manley has paid careful attention to the way building materials stand up to rot, termites, humidity and heat: Floors are of white terrazzo, 4 x 4 ft. square, divided with brass strips. They are cool and can easily be cleaned (which is important in an "outdoor house"); the floor of the screened porch is slightly lower than that of the other rooms, because it tends to get flooded in heavy rains. An outward pitch drains off the water in short order. To combat rot, the house is built of indestructible materials throughout: concrete joists carry the floor slab, walls are of concrete block faced with stucco, clinker brick or cypress. The sq. ft. cost was \$12.

Says author Wylie: "This is the most livable, easy-tokeep, bugless house I've seen . . . It does what a house should do. It's efficient." Coming from one of "America's 'most scathing critics of his environment, this is high praise indeed.

1

# THREE-ZONE HOUSE spreads its wings towards the breeze

LOCATION: Miami, Fla. ALFRED B. PARKER, Architect & Contractor



Living room and screened porch can be thrown together by opening large cliding slace doors Photos: Rodney McCoy Morgan: Photolog



One way of making sure that your house is well ventilate is to punch a big hole into its center. That is exactly wha architect Alfred Parker has done. This Miami house is reall three separate buildings: a bedroom building, a living room building and a service building. All of them open to a central screened porch which for 11 months of the year can b combined with the living room area to form one big outdoor living space 42 ft. long and about 20 ft. wide, protected b screens, louvers and 2 ft. 6 in. overhangs. To get so big living room in a \$18,600 house is little less than miraculou

### Year-round outdoor living . . .

Out of the 777 sq. ft. thus devoted to almost year-roun outdoor living, some 300 sq. ft. can be sealed off from the elements to be used as a traditional living room on colnights and in January. In the bedroom wing every roomand especially, of course, the sleeping porch—is completed cross-ventilated, with awning- and jalousie-type windows se at different heights above the floor creating a draft like the in the Wylie house shown on the previous page.

In addition to taking in the breeze from the south-eas this house also tries to keep out the hot western sun by mean of louvers, overhangs, small windows or blank walls. Th owners like this fine, but complete all-year round ventilatio in the screened living area and the screened sleeping porc makes these rooms very cold indeed for part of the yearespecially at night. Moreover, there is not much privace from the street in the big living porch, so that crossing th porch for a breakfast snack on cold mornings can turn int a race with virus pneumonia, as well as into a frantic strug gle to preserve a minimum of modesty. Still, the opennes of the living area and of the sleeping porch pays big div dends in climate comfort for most of the year.

# ... at low cost

To get his 2,200 sq. ft. at \$7.10 each, Parker built th house himself and did some fancy cost-cutting. The scree wall that gives this house such a generous outdoor livin area cost only 25 per cent of the regular frame wall use elsewhere; in the roof construction, the sheathing served a a ceiling for most rooms; a minimum of trim was used i the house; and all interior wood was given one coat o sprayed sealer to close the pores and simplify maintenance

All roofing is covered with white gravel to reflect the heat but there is no insulation. Says Parker: "In dealing with limited budget, I've considered insulation of minor importance. Most ordinary insulation gets heated up to the poin where it does more harm than good. Reflective insulation is probably best, but the aluminum foil gets dull in the salt air and loses its effectiveness,"

Another money-saving device was to make one bathroom do for three bedrooms by splitting it up into three separat units that can all be used simultaneously. An old idea resurrected again and again by architects for its obvious planning advantages, the three-unit bathroom has yet to find a builde imaginative enough to grasp its importance as a major design innovation for small houses.

(Continued on page 150



View of west end of living room shows fireplace that comes in handy on cool days, dining area to its left on porch.



Screened sleeping porch is completely cross-ventilated, useful on hot nights.

View of south side of house shows five different roof levels that create sense of changing spaces inside, provide clerestories where they are needed. Screened porch is at center.

# THREE-LEVEL HOUSE takes in the view on the nor

LOCATION: Miami Beach, Fla. ALFRED B. PARKER, Architect ALBERT HALLQUIST, Contractor

Photos: Rodney McCoy Morgan: Photolog





Upstairs bedroom (left) has awning-type windows facing north jalousies facing west. View of house from main approach (above) shows second-story bedroom wing shading living room roof against western sun.



Open stair connects second-story bedrooms, living room leve and kitchen-dining level below. View of living room (opposite, shows spacious effect of roof-ceiling, thorough cross-ventilation and cross-lighting. Screened porch extension is at right.

# breeze on the south

his house has all the sun, rain, glare, breeze and bug conol gadgets needed around Miami Beach; but in addition, it as a nice sense of spaciousness and a good feeling for direct nd unpretentious design. Although hamstrung by a 75 ft. ot and a tight budget, architect Parker produced one of the leasantest and most spacious living rooms around Miami, esigned it for almost year-round outdoor living in the shade nd in the breeze.

Most of the points that make this a good southern Florida ouse have been discussed elsewhere: All rooms are crossentilated in a way to create cross-drafts that enter low nough to fan the body. The living room has a jalousieouver wall on the south and, on the north, adjoins a second orch that overlooks the bay. It is, in effect, a large living orch, 31 ft. long and 22 ft. wide (actually it seems wider), nd covered by a high gable roof that is furred down here and here to create a sense of changing levels. The living room of is not insulated, but the second story at one end shades from the western sun. Moreover, a continuous screened ent along the soffit of the overhang allows the breeze to rive out any hot air that may collect under part of the oof.

Upstairs bedrooms have wood jalousies facing west to keep ut the sun, and awning-type windows or wood jalousies on the east. Again there is an attempt to induce cross-drafts by varying the sizes of openings on opposite walls. This explains in part why architect Parker changes his window sill heights constantly; it does not explain why he uses so many different ventilating devices to do the same job.

Parker has used 2 in. thick, 2 ft. square reinforced concrete tiles for his downstairs floors. They are placed directly on top of concrete joists, which gives him a complete floor at \$1.20 per sq. ft. as compared with \$1.25 for wood floor construction in these parts. The porch (with its lower dining area extension), the kitchen and the carport have a 4 in. concrete slab floor poured on the ground at \$.60 per sq. ft. (with an integral green color). The kitchen floor is of asphalt tile laid on the slab, which raises the cost to \$.85. Any one of these floor finishes is cool and easy to clean.

The house cost about \$7 per sq. ft. to build, with both architect and owner pitching in. As in his three-zone house, Parker has added some pleasant decorative touches: His supporting post at the entrance is a trunk of Australian pine; planting boxes of wood and Oolite stone emphasize the indoor-outdoor character of the house; and the cypress boards used throughout the interior give this building a warmth and an air of easy comfort that belies the hard and elaborate thinking that went into the plan.



# PORCH HOUSE is one big outdoor living room

LOCATION: Miami Beach, Fia. IGOR B. POLEVITZKY, Architect BRADFORD BUILDERS, Inc., Contractor JACK CAMERON DESIGNS, Interiors FREDERICK STRESSAU, Landscaping

In effect this Biscayne Bay house by architect Polevitzky is one tremendous porch 85 ft. long and 26 ft. deep, with solid end walls and long sides that are as open as a sieve. Through these open sides there is a steady flow of air from the southeast; and toward the north-west, the mammoth porch is wide open to a view of the Bay.

No house could be a more unequivocal statement of modern Miami living: The living room is a porch, and the porch is the house. And no house could make this statement more simply and more directly. The result is a piece of good (and very colorful) architecture, growing out of a single good idea expressed simply, forcefully and in a unified design.

### Subtropical structure

Briefly, what Polevitzky did was this: Faced with a 100 ft. waterfront lot bounded by other houses, he built two long cement brick walls parallel to his lot lines, colored the cement taupe and salmon pink to make it look rich. Where he wanted his living porch, he put up six 28 ft. stressed-skin plywood trusses on 12 columns to divide the space between walls into seven 12 ft. bays. This construction left him free to shift partitions at will.

The bay size was determined by the  $4 \ge 12$  ft. dimension of 2 in. cement asbestos board which Polevitzky used for his roof, exposed on the gray underside to form the ceiling, and finished with mopped-on roofing on top. He is completely sold on this type of roof for southern Florida. Among its many advantages: The composition sheets went up in a single day, gave other trades a chance to work under cover.



Bay side of Porch House has screened aluminum windows that slide into concrete pocket along outside face of footings.



Approach side has curved louver wall, clerestories above to help light the living area. Louvers are painted turquoise.



On the south-east side of his big porch, Polevitzky solved the twin problems of taking in the prevailing breeze and assuring privacy by building a curved wall of wood jalousies. These let in enough light to illuminate the entrance space and passages; but for the living room proper, Polevitzky felt he needed more south light, built a strip of fixed clerestories to Rodney McCoy Morgan : Photolo



do the job. His north-west facade he protected with a continuous low overhang, 6 ft. in depth! Under it he installed single-hung, aluminum windows: These consist of one fixed pane reaching from the floor to a rail  $2\frac{1}{2}$  ft. above the floor, and a movable frame reaching from that rail to the ceiling. The movable frame can be lowered into a deep, concretelined slot along the north-west footing of the house to open the upper portion of the window wall. The open portion is, of course, completely screened, so that the entire living area can be turned into a screened porch when the windows are dropped down into the slot.

When a man builds a veritable wind-tunnel of a house, he is bound to sacrifice some degree of privacy within his windtunnel. So one might criticize the fact that there is not as much of that between kitchen and living space, for example, as he has a right to expect in a \$42,500 house. Closing off the kitchen would have added only a few hundred dollars to the overall cost. But these are relatively minor details; for the all-important fact about this house is that it demonstrated how all the gadgets of climate control can be fully employed without producing a crazy-quilt architecture. Living room (above) is spanned with plywood girders. All floors are of cement Cuban tiles taupe and soft purple in color. Section (above, right) shows clerestory arrangement and deep overhang to the west. Pictures below show fireplace and clerestories in living room, entrance hall on east side with turquoise louvers for cross ventilation stained brown.





Photos (top, right): Rada, others Rodney McCoy Morgan




## LANDIA-Long Island's Levitt & Sons come up with an exciting new house and a new concept of the merchant builder's responsibility towards community planning

A continuing phenomonon in U. S. Building is how, year after year, the new house types developed by Long Island's famed Levitt & Sons influence the industry. Their 1951 house, shown in these pages, will be no exception. In its use of economical new materials and design techniques, it sets some challenging new standards for the builder's house. In addition, the Levitts have developed a new type of subdivision, known as Landia, where the emphasis is on neighborhood living and a complete integrated collection of community facilities.

Unfortunately, Landia and its house will not be built this year. Construction was to have started on March 15. The materials were ordered and a concrete mixing plant had already been delivered to the site when Bill Levitt announced last month that the 1,750 unit project was being postponed because of the defense emergency. (Besides canceling material orders, he had to return deposits to the 650 families who bought the houses before the model was open for inspection.)

This postponement in no way diminishes Landia's significance. The house was designed for peacetime use but its combination of shrewd design and economical construction make it an important case-study house for the coming period of austerity. The Levitts themselves plan to adapt the house for use in any defense-housing projects they may be called upon to build. Herewith, then, a report on an exciting new house and the community it was designed for.

In planning the "village of Landia" at Jericho, Long Island, the Levitts set some challenging new standards for U. S. subdivisions. In the first place, Landia is going to be completely equipped with every community facility—from a town hall to tennis courts. Secondly, it has been land-planned so that its 1,750 houses will be grouped in small neighborhoods rather than strung out in a single monotonous pattern of curving streets.

The neighborhood idea stems from the Levitt experience in building their big Levittown development, three miles south of the Landia site. Says Alfred Levitt, designer of Landia and its house: "We learned that housebuyers want to be identified with a neighborhood, not a subdivision. As a result, we have adjusted our land planning techniques accordingly." Landia is divided into seven neighborhoods, each containing from 90 to 350 houses. Community buildings and parks are placed between the neighborhoods so that a modified greenbelt pattern is arranged.

Each neighborhood is clearly defined by a "main street" which loops completely around it. (See plan, opposite.) Most side streets in the neighborhood go from one side of the loop to the other. This eliminates what Alfred Levitt calls "the maze" —subdivision streets which curve because FHA says they must curve but which don't lead anywhere in particular. The Levitts think that their system has the logic of the gridiron pattern without its monotony. Each neighborhood's loop street empties into Landia's main street, Landia Drive, which runs on an eastwest axis, ending at the village's own railroad station on the east end. The only other through street in the village will be a north-south county road which bisects the tract.

Typical of the care with which Landia is planned is the provisions for two schools. By splitting the schools so that each is within walking distance of every house, Landia will not need an expensive school-bus system. And, the Levitts figure, the cost of the second school will be completely amortized within ten years by eliminating the busses.

Landia's community facilities represent the largest investment of this sort which any U. S. builder has ever included in the price of his house. Included are a community center, railroad station, pre-school nursery, swimming pools, ice-skating ponds, tennis courts, baseball field and the sites for three churches and two schools. The Levitts plan to turn over all the facilities to a Landia homeowners' association after the project is completed. They anticipate that the association will charge each family \$3 a month to keep the facilities in order and also to keep the village clean.

In computing the \$13,000 sales price for the Landia house, the Levitts have charged off about \$1,200 for the cost of these facilities. "Theoretically we could cut the cost of the house a great deal by eliminating some of these items," says Alfred, "but we think that they are all necessary for a good community. Again we drew upon our experience at Levittown in arriving at this conclusion."



Three-sided fireplace and a low brick screen is all that divide living, dining and kitchen functions. Low wall separating kitchen and living room is one-brick thick, reinforced by parallel strips of steel tape in the mortar joints.



Rear view shows the two large window walls (the smaller one fixed) and also the conveniently located door to the storage room and garage.

#### What's new in the new Levitt house

1. The kitchen is just an alcove off the living room, creating a big (20 x 24 ft.) open-planned living-dining-kitchen area.

2. The expansion attic—a Levitt trademark—is no more. The result: a long ground-hugging house with three finished bedrooms on one floor.

3. The third bedroom can be added to the living room, if desired, by sliding back a wall.

4. A sliding window wall in the living area can be pushed back in summer to create an open-air "porch" within the house.

5. A handsome new low-cost as bestos cement exterior siding which can be applied quickly in big  $(96 \times 32 \text{ in.})$  pieces.

6. Two complete bathrooms (one inside)—and an ingenious plumbing stack that cuts labor and material costs to the minimum.

7. A windowless kitchen with plenty of light borrowed from other parts of the open-planned living area.

8. Bigger closets at lower construction cost.

9. A novel use of basswood sliding curtains in the dining area to create privacy from the street, the main doorway or the kitchen as desired.

10. More appliances in the kitchen—including a frozen-food unit and a dishwasher.

11. A 3-in-12 in. roof pitch with asphalt shingles, made possible by a new stapling method.

12. A floor plan made far more workable by moving the kitchen away from the baths.



In their Landia house, the Levitts have taken another big step towards integrating contemporary design into their mass volume operation. Esthetic considerations were not the only factor in the decision, however. Like every Levitt house, Landia's design is based on merchandising analysis. If the Levitts are correct, the 1951 housebuyer wants a house with three bedrooms, two bathrooms, a two-car garage, more kitchen equipment and more storage space. More important, he wants a house that is better adapted to the requirements of modern living. In their new \$13,000, 1,200 sq. ft. house (plus 400 sq. ft. garage) the Levitts have provided all these items.

The big change in the new house is three bedrooms on one floor, instead of the unfinished expansion attic which has been a standard Levitt feature for the past five years. When he first began planning the new house, Designer Alfred Levitt was reluctant to give up the expansion attic because it provides more space at less cost than any other type of construction. However, both he and his brother Bill—the family's salesman and expert on finance — agreed that a one-floor house had to be worked out. They also found out that the cost of adding a third bedroom on the slab was not significantly different from framing a high expansion-attic roof. For instance, they cut their roof-framing costs in half by adopting the lower, lighter nonexpansion roof in the new house.

Besides giving the house a cleaner, low-slung look on the outside, the absence of an expansion attic permitted Alfred Levitt a wider ranger of design possibilities inside. No longer was his interior layout confined by the inflexible requirements of an attic staircase in the living room.

Alfred has taken full advantage of this new freedom. He has

achieved the not-inconsiderable trick of opening up the whole living area as one big room without sacrificing the needs of privacy. (Floor plan, above.) Particularly noteworthy is the circulation scheme. Every part of the house is immediately available from the front door without passing through any other part. However, the living room has the gracious virtue of being protected from the front door. "There is no reason why, in the middle of the Twentieth century, we shouldn't have houses for sale that provide at least this degree of privacy," says Alfred with a Levittan air of finality.

To achieve a greater sense of spaciousness, the living area can be extended further both on the inside and the outside of the house. The large steel picture window in the living room can be slid open in the summertime so that the living room becomes, in effect, a large porch. (Photo, next page.) Slots for three large movable screens are provided to prevent mosquito invasion. Indoors, the living area can be made larger by rolling back the wall which separates it from the adjoining small bedroom. This bedroom, which Alfred describes as "the one you can do without," thus serves double duty to meet shifting family requirements. A young couple will undoubtedly keep the bedroom open to the living area. During the active child-rearing years, the wall will remain closed. (Almost all of the 650 families who ordered the Landia house from the floor plan had two or more children.) As the children leave home, the bedroom will probably be transformed into living area once more to meet the more frequent entertainment requirement of middleaged couples. In recognizing the needs of this family-cycle pattern, the Levitts have made a significant advance in an area that deserves more attention by builders and architects alike.



Basswood sliding screens in the dining area can be arranged to serve varying degrees of privacy. In the top picture, opposite, they are used to screen the area from the street, also to create a "vestibule" at the front door and to shut off the kitchen on the other side. In second picture, the dining area is open to street view but is still screened from the front door and the kitchen.





Sliding window wall is weatherproofed in winter by fitting four sponge-tipped  $2 \times 4$ 's along each side of the wall. The Levitts claim this simple system solved the sliding wall's biggest technical problem at a cost of \$7.

> Sliding interior wall can be opened to add 88 sq. ft. to living area when a third bedroom is not needed. Wall does not slide easily intentionally to avoid its being used by children.











Kitchen is well lighted though it has no windows. It borrows its light from the dining area and also from the living area over the screen and from the garage through an opaque door.

Plumbing stack, slightly abbreviated in this picture, is a typical example of the Levitt flair for cutting materials and methods down to a minimum without affecting their vital functions. This factory-fabricated stack serves two back-to-back bathrooms, also the kitchen drain. Kitchen outlet is located directly below the tub outlets on the stack.

"This is so completely a Levitt house that if a structural member is 2 in. out of line, the house will fall down." Thus does Alfred Levitt half-humorously described the cost-conscious attention to every detail of the Landia house.

The most important saving is in the simplified design of the house itself. An open-planned living area is not only a good selling point; it is also a cost-cutter. Item: there are no doors in the living area. Item: within this large area only the fireplace runs from the floor through the ceiling. ("Every time you touch the ceiling, it costs you money.") Item: the fireplace is in the middle of the house where it creates fewer framing problems.

In their selection of materials for the new house, the Levitts have made price the controlling factor. They make no apologies for the fact that, with the exception of kitchen appliances, their houses are built and equipped with a minimum amount of the lowest-priced materials available. "It is a self-imposed restriction which we owe our customers. We have a little problem known as merchandising. It means simply that we must supply as much goodness as we can at the lowest possible price."

When the Levitts don't like the looks or the price of the lowest-cost material, they arrange to get one they do like. In their development of the Landia house, this resulted in a new economical exterior siding panel to replace the asbestos shingles they have been using up to now. The siding is a large ( $32 \times 96$  in.) asbestos cement panel, only  $\frac{1}{8}$  in. thick, which was produced experimentally for the Levitts by a big New Jersey building materials firm. In addition to its low cost (about 8 cents per sq. ft.), each panel has 16 prepunched nail holes, can be installed in less than 10 minutes. It comes in four shades with a vertical striping made by integrating layers of pulverized white stone during the manufacturing process.

WATER CLOSET

WATER CLOSET

Another Levitt innovation is the use of asphalt shingles on the low (3 in.) roof. FHA and most banks have frowned upon this type of application in the past because of the waterproofing and windproofing difficulties it creates. Alfred Levitt thinks he has answered both objections by stapling the bottom of each shingle with a special machine which drives the staple through only two of the three layers of 15 lb. felt underneath the shingles. Thus the shingle is made more secure without creating another channel through which water can drip into the roof structure below.

Despite their single-mindedness about low cost construction, the Levitts are willing to spend extra money when it can be clearly justified. One example of this in the Landia house is the separation of the bathroom and the kitchen—a clear-cut violation of the dogma that all plumbing facilities should be located in one plumbing wall. Bill and Alfred batted this one around for weeks with their plumbing man Irwin Jalonack. Jalonack, who has been known to out-Levitt the Levitts on their own cost estimates, argued for a back-to-back arrangement. Finally Alfred won by arguing that the house plan would be more merchandisable by putting the kitchen on one side of the front door and the two bathrooms on the other side. The cost of the extra pipe (including another vent) was \$35.



All closets are closed by basswood screens which fold back on ceiling tracks. Storage is very carefully planned.



In the Landia house, the Levitts have cut closet construction to a minimum. Closets, in fact, are nothing but shallow alcoves hidden from view by flexible basswood curtains.

The Levitts gave up orthodox closet doors a long time ago but they have had a difficult time finding a satisfactory, low cost substitute. They experimented with all kinds of wooden and metal sliding doors, finally decided on the wood curtains shown in the pictures above. They eliminate the need for framing a head since they run on easily installed metal tracks. When the closet is closed, the screens are held together by two magnetic bars, one on the end of each screen. Besides giving a pleasantly textured effect, the basswood screens permit air to circulate within the closet. This is necessary with a radiantheated house, the Levitts have found, to combat condensation in the closets.



Front-door closet is divided three ways. One section is for street coats and hats, another for linen and a third, up above, for permanent storage.



Closet in small bedroom is located along hallway wall so that there is wall space within bedroom for two small beds, if needed.



Bulk storage is handled in two rooms at rear of garage. Garage itself was made slightly larger than standard two-car model to provide space for garbage cans and bicycles near kitchen door.



# READY TO ROLL-FAST

With the Oldest Volunteer Fire Company

### **Rō-Way** overhead type doors

When Rainbow Fire Co. No. 1 is ready to roll, they *bave* to get out fast. And the garage doors of their fire house have to operate dependably, easily, and quickly—regardless of weather. That's why this Reading, Pa. volunteer company, the oldest in existence, chose a Ro-Way Overhead Type Door for their new building.

Ro-Way Doors are exceptionally smooth and easy to operate. Thanks to Ro-Way's friction-reducing track, double-thick-tread ball-bearing rollers, and springs power-metered to the exact weight of the door. Ro-Way Doors can't freeze shut... won't jam or bind from frost-raised floors or moisture-swollen jambs.

So whenever your commercial, industrial or residential plans call for garage doors, specify Ro-Way Overhead Type Doors for fast, easy, dependable operation.

There's a Rollay for every Doorway!



Nationwide sales and installation service. See your classified telephone directory for name and addresses of Ro-Way Distributors.

978 Holton Street Galesburg, Illinois





#### A NEW STANDARD FOR WINDOW PERFORMANCE

When you have available (as you do in AUTO-LOK) a window that closes *ten times as tight* as windows that have been considered "good" in the past, you have...a new standard of window perfection.



For comparison's sake AUTO-LOK windows are as far ahead of the field as a smartly designed and engineered 1951 automobile in a field of Model T Fords. The Model T was a "good" car in its day... one of the best, but windows, as well as cars, must keep pace with progress, too!

## YERALDING A NEW ERA IN WINDOW PERFECTION

#### MAKE USE OF OUR ENGINEERING DEPARTMENT

Many architects are taking advantage of Ludman engineering service. Ludman's capable engineering staff is called upon daily to solve intricate window problems...they will be delighted to work with you any time!



ALUMINUM AWNING WINDOWS

Torporation MIAMI, FLORIDA

#### SCHOOLS, HOSPITALS, CHURCHES, HOTELS, RESIDENCES

Yes, versatile AUTO-LOK aluminum awning windows fit readily into *any* architectural scheme. They are being successfully utilized in all sections of the nation. You, too, can easily benefit from this widespread, job-proven window engineering experience.

Please examine AUTO-LOK! Compare it! We believe that you'll then agree with architects everywhere that AUTO-LOK gives you *performance... not claims*, and that it is the first and only window to successfully combine the BEST features of ALL window types.

Consult SWEET'S and write for name of your nearest AUTO-LOK Distributor. If you have not received a copy of the informative folder

"WHAT IS IMPORTANT IN A WINDOW?" Please address Dept. AF-2

> LUDMAN CORPORATION P. O. Box 4541 Miami, Florida



Screened porch is completely jurnished for use as an outdoor living room 11 months each year.



#### TOMORROW'S FIRE PROTECTION-TODAY!

Now-for the planner of discriminating building interiors-The "Automatic 400" Ceiling Sprinkler-designed to blend perfectly with the appointments of even the most modern structure-finished in satin chrome-less than one inch projection below the ceiling surface-and ready at all times to combat fire-in the service of saving lives . . . saving property and saving money the world over. The know-how of fire protection design, engineering and installation cannot be found in books. It's been accumulated by "*lationatic Brinkler* through over a half century of test and service. Development of The "Automatic 400" Ceiling Sprinkler is further evidence of our maxim-Tomorrow's Fire Protection-Today-For You! *Literature available upon request* 

"AUTOMATIC" SPRINKLER CORPORATION OF AMERICA OHIO



DEVELOPMENT . ENGINEERING MANUFACTURE . INSTALLATION OFFICES IN PRINCIPAL CITIES OF NORTH AND SOUTH AMERICA

#### **THREE-ZONE HOUSE**

#### (Continued from page 134)

Unlike the Wylie house which uses CBS (concrete block and stucco) construction, Parker's house sticks to frame construction; the living and master bedrooms have floors of handsome select grade oak at \$.85 per sq. ft. (with termite shield and joists, the whole floor comes to \$1.25 per sq. ft.) On the screened porch, Parker has used an integrally colored concrete slab finished with green wax; the cost of this, including fill and finish, was only \$.60 per sq. ft. To get rid of rain water during hurricanes, the concrete floor has been pitched away from the living room and outward, can be drained through weepholes in the base under the screen walls. Incidentally, the three-zone house is all set to cope with hurricanes in other ways as well: like all good Florida houses, it has ample storage space for hurricane shutters right next to the carport.

At less than 2/3 the sq. ft. cost of the Wylie house, architect Parker managed to enclose a great deal of space very cheaply-and make that space seem very large indeed. His gross indoor-outdoor living area is about 100 sq. ft. larger than that of the Wylie house, although the total cost of his house is only about half the cost of architect Manley's job. While a lot of this is due to the fact that Parker did his own building and used cheap or no finishing materials, a good deal of credit is due to him for some highly imaginative planning. Said the Miami News: "A good solution to problems of privacy, ventilation and sun control. It . . . can take Miami's hot summers." There aren't many houses that would rate such a compliment.

South-east side of the porch is open to breezes but protected against bugs. Overhang (2 ft. 6 in.) keeps out driving rains.



# YOUR SPECIFICATIONS ARE A TRUST

to this sound conditioning expert

No matter what type of building you're planning-no matter what noise problems may be involved-your Sound Conditioning specifications are a trust . . . to your local distributor of Acousti-Celotex products!

He can perform to your specifications without tampering. For he has the broad professional training and experience—the job-proved methods—the com-plete line of top quality materials necessary to meet every specification, every requirement, every building code!

So when you're planning, be sure to consult with your local distributor of Acousti-Celotex Products. He's backed by the world's most experienced Sound Conditioning organization, with thousands of actual installations to its credit. He can help you be sure in advance of the most attractive, most efficient Sound Conditioning installation possible!



Sound Conditioning Products PRODUCTS FOR EVERY SOUND CONDITIONING PROBLEM 120 S. La Salle St., Chicago 3, Illinois

Dominion Sound Equipments, Ltd., Montreal, Quebec, Canada



#### ACOUSTI-CELOTEX\* CANE FIBRE TILE

A lightweight, rigid unit, combining acoustical effi-ciency with a durable, smooth surface. Perforations (to within ½" of the back) assure repeated paintability, easy maintenance. Available in a variety of sound-absorbent ratings. Dry rot proofed by exclusive Ferox\* process.



#### **ACOUSTI-CELOTEX\*** MINERAL TILE

Made of mineral fibre, felted with a binder to form a rigid tile with a universal rating of incombustibility. Perfo-rated with small holes ex-tending almost to the back, this tile provides high acous-tical absorption plus unre-stricted paintability by either brush or spray method.

#### ACOUSTI-CELOTEX\* FLAME-RESISTANT SURFACED TILE

SURFACED TILE A cane fibre tile with a flame-resistant surface. This tile meets Slow Burning rating contained in Federal Speci-fications SS-A-118a. It may be washed with any com-monly used solution, satisfac-tory for good quality oil-base paint finishes, without im-pairing its flame-resistant surface characteristics and without loss of sound-ab-sorbing capacity. Repainting with Duo-Tex flame-retard-ing paint will maintain peak efficiency. Supplied in all sizes and thicknesses of reg-ular cane tile.

#### ACOUSTI-CELOTEX **FISSURETONE**\*

A totally new mineral fibre acoustical tile. Attractively styled to simulate travertine. It beautifies any interior and effectively controls sound reverberation. Lightweight, rigid and incombustible, it is factory-finished in a soft, flat white of high light-reflection rating.



1253-B

#### ACOUSTEEL\*

Combines a face of perfo-rated steel with a rigid pad of sound-absorbing Rock Wool to provide excellent with attractive appearance, durability and incombusti-bility. The exposed surface of perforated steel is finished in baked-on enamel. Acou-steel is paintable, washable, cleanable.

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

# Coming Next Month . . .

The Architect's Answer to the Problems of THE BUILDER'S HOUSE

# ... a 300-page Reference Issue reproducing the 58 PRIZE WINNING PLANS

in the

SMALL HOUSE DESIGN COMPETITION

sponsored by The Magazine of Building and The National Association of Home Builders

Chosen out of 2,730 entries in the greatest small house plan competition ever held, these houses represent the best thinking of architects, designers and draftsmen on designs for low-cost one-family houses with three bedrooms, no basement and a maximum area of 1,000 square feet.

And The Magazine of Building brings you floor plans, site plans, elevations and detail drawings of 58 winners to help you study the designs chosen for economical construction—imaginative use of materials—use of standard material sizes suitability for repetitive construction—acceptability by the home-buying public.

Be sure to get your copy-you'll refer to it for years to come.

# THE MAGAZINE OF BUILDING

# 40 FLOORS IN 4 MONTHS WITH Q-FLOOR

TTT	F-L-hAS	
PPP	JULIA	
	1100	/ 1
	-	- /
		1
	C.	-112
2		
-	ALLERIN	- ANARA
		1
		- dl
self.		
		TT TILL
	-	
1 a H H		
		1.0
		IL Car
in the	200	
0		and the second s

#### STRUCTURAL STEEL WORKER

12

says he was able to place riveters' forges close to crew on each floor without temporary platforms.

#### SPANDREL FIREPROOFERS

claim the work was greatly simplified by carpenter shop moved to each floor. Formwork fabricated near where used. Transporting concrete from material hoist to where it was poured was made much easier by smooth Q-Floors.

#### - ELECTRICIAN

was able to time work to his own convenience, roughing-in anywhere in the building, without waiting for other subcontractors to vacate floor space.

#### MATERIAL ELEVATOR

could work to every floor, increasing the tower height with the framework. Every floor was available for material storage. There was no double handling.

#### PASSENGER ELEVATOR

was helped by convenient storage. Several miles of rails were stacked close to where needed but never in the way of other workers.

#### STONEMASON

saved time on storage. Only one handling of materials from truck on the street to within 20 feet of where used.

#### BRICKLAYER

unhampered by forms or shoring, worked safely and quickly with materials and equipment loaded onto floor immediately behind the men. Streets and sidewalks not needed for storage.

#### CARPENTER

moved his shop from floor to floor, with power equipment always nearby.

had same storage convenience as masons; only one handling of material, every floor being a warehouse - HEATING CONTRACTORS could work on any floor without delay. Every floor was convenient for on-the-spot fabricating.

PLUMBERS

also had complete flexibility of storage and assembly areas.

#### AIR CONDITIONING

was speeded by needing no preset inserts for duct hangers. When changes of layout were called for, the flexibility especially was an asset.

Steel Q-Floor is shown here with suspended ceiling and a condensed presentation of mechanical equipment needed in a modern building. No preset inserts.



Time saved is merely another way of figuring money saved. Another saving accrues from the earlier completion date you get with Q-Floor construction. Earlier occupancy brings revenue sooner. When the price of Q-Floors is quoted, these savings cannot be actually deducted from the cost of the Q-Floor, but they should be kept in mind.



The General Contractor, and others closely associated with the building found it hard to realize that there were 1,000 men distributed over the building at once. This type of construction permits all the trades to work at one time with smaller groups. This is one reason for the speed-hence the lower cost.

#### \* \* \*

- PICTURED-The Mellon U. S. Steel (525 Wm. Penn Place) Building, Pittsburgh, when steel frame was completed.
- Architects-Harrison & Abramovitz, New York City.
- Associate Architect-William York Cocken, Pittsburgh.

Contractor-Turner Construction Co., New York City.

## H. H. ROBERTSON CO.

2403 Farmers Bank Building Pittsburgh 22, Pennsylvania

World-Wide Building Service





One Swiss and three American examples showing how important it is for the teacher to be able to supervise activity areas besides the main classroom. Examples by Roth, Saarinen, Perkins & Will, Kump.



# No other lighting combines THESE BASIC ADVANTAGES!

Whether your client wants the low-cost features of incandescent lighting or prefers the sleek, modern look of fluorescent units, he'll like Skylike lighting<sup>®</sup> because it has both!

This new kind of incandescent lighting combines the architectural advantages of fluorescent-type troffers with the best features of silvered-bowl incandescent units. With Skylike, you can plan lighting systems that include *all* the following features:



1. Wide architectural latitude — Skylike units fit 24" x 24" ceiling tiles . . . can be fully or partially recessed or surface-mounted — in rows or patterns.

2. Ideal light characteristics – Skylike lighting provides softly diffused shadows, comfortable low-brightness levels, and the warm color preferred by merchandising experts.

3. Easily converted for directional or accent lighting. A semi-silvered bowl lamp and a simple accessory replace the original lamp.

4. Low initial investment – Skylike lighting costs only  $\frac{1}{2}$  to  $\frac{1}{3}$  as much as other equipment delivering comparable results.

5. Low installation cost — Lightweight Skylike units require only minimum supporting construction, require no special installation skills.

**6.** Low maintenance  $\cot -$  No starters or ballasts to burn out. Lamps are easily replaced from the floor with a poletype lamp changer. Reflector requires only occasional cleaning with a damp cloth.

7. No flicker, no blink, no hum — Skylike units operate without starters, ballasts, or transformers . . . start the instant the switch is thrown.

8. Variable lumen output - 150- to 500-watt lamps are interchangeable in Skylike units - provide lighting flexibility of 2,500-10,000 lumens.

9. High initial and maintained light output – Built-in ceiling reflector provides 87% reflection, eliminates light loss due to darkening walls and ceilings. White baked-enamel finish does not discolor. Silver reflecting surface of lamp is hermetically sealed against dirt and corrosion.

#### REVIEWS

(Continued from page 114)

As seen in the figures at the left, Roth lays heavy stress on giving the teacher clear supervision where classrooms are articulated for multiple use. The example at the left is his own masterly kindergarten, with some five different kinds of area simultaneously visible; the others are familiar American examples.

Again, Roth makes a contribution in the discussion of school height. It will annoy New York City to realize that three stories are considered the absolute top limit by the densely populated Swiss. Roth has made a fine suggestion of his own in multi-story schools: the three-story school built precisely like row apartments, with stairwells serving one classroom left, one right, on each of three floors (drawings below), so there are no corridors above ground level, and there is bilateral lighting and through ventilation in every room. It will astound Americans to note the date 1933 on this drawing. The first suggestion in the U. S. of schools more than one story high but only one room deep was made, so far as known, by this reviewer in May, '45 (Architectural Record); and the first built was Kump's Antioch School of 1948-with outdoor corridors at both levels in the mild California climate. Roth's noise-preventing stairwell scheme has been proposed by Alonzo Harriman for use in Maine but only in recent years.

So, too, the international competition is very strict in matters of design, and although it would scarcely be expected that a selection of five schools would cover all eligible U. S. architectural firms, yet it is significant that Roth has confined himself to the work of only the Saarinens, Perkins & Will, and Kump. The chief difference lies in close carefully studied attention to detail, so that each of the schools seems to have had a chance to *mature.*—*D.H.* 



Like a row housing development, Roth's 3-story, one-room deep school of 1933 has frequent stairhalls but no corridors.



## shows you how to win on the 1951 *Home* Front

You can meet housing needs immediately, profitably by building the new 1951 P & H factory-engineered homes. Now home builders and project developers of every size can enjoy the sales appeal, controlled costs and assured profits of the biggest site operators. Serving industry for 67 years, Harnischfeger Corporation has invested \$3,000,000 in research, design, engineering ... to create P & H prices, profits and quality.

Whether you build 5 homes or 500, your projects gain unlimited variety, through choice of 60 individual P & H elevations, all reversible. Sell homes priced for every market from five basic P & H plans, ranging from 672 to 960 square feet . . . two bedrooms or three . . . full basement or utility . . . with sliding-door closets, self-storing storm windows, plastic screens.

FINANCING AVAILABLE! If local funds are limited, P & H builders can get construction loans, term mortgages through Builders Acceptance Co., a Harnischfeger service subsidiary.

Only P & H offers such a potent combination of sales appeal, competitive pricing, controlled costs —a formula that spells continuing, sure profits to the builder who follows the P & H Builder Plan. Write for details.

P&H Harnischfeger Corporation

νωΗ

12 Spring Street • Port Washington, Wisconsin



Coleman Blend-Air

## acclaimed by builders everywhere

From all over the nation, outstanding leaders in the building industry have given a resounding stamp of approval to Coleman BLEND-AIR—the spectacular new central heating and ventilating system developed, perfected and introduced by Coleman of Wichita, Kansas. Not mere words of praise, but orders! orders! orders! have poured in faster than Coleman can fill them. And why not—BLEND-AIR is a heating revolution! Coleman BLEND-AIR is startlingly new from its 3<sup>1</sup>/<sub>2</sub>" heating tubes that are easy and fast to install in old as well as new homes, to the flexible elbows that bend around obstacles, to the magic blender that blends just the right amount of freshly heated air with circulated room air for even comfort, to the compact, fully automatic Coleman Blend-Air Furnace that completes the revolutionary new system.

**3 <sup>1</sup>/2" Heat Tubes** save costly metal work on the b. They're pre-engineered and standardized for presion fit and lower cost. Flexible elbows bend around ostacles and overcome other job conditions. Individual bes carry heat from furnace to blender in each room. leat can be dampered down as desired.



2. Magic Blenders placed in the wall in each room lend hot air direct from furnace with the room air hat is pulled into the blender. This blended warm ir is RE-circulated through the room. Temperature an be controlled in *each* room. There are 3 types of blenders to fit any construction, new houses or old.



**3.** Special Blend-Air Furnace can be put in basement, kitchen, utility room or closet. Saves space. Heat tubes carry heated air from bonnet to blenders in rooms. A centrally located return air duct brings air back to the furnace for filtering and reheating. Models for gas or oil fuels.

GAS MODELS APPROVED BY AMERICAN GAS ASSOCIATION; OIL MODELS LISTED UNDER LABEL SERVICE BY UNDERWRITERS' LABORATORIES

Now every home . . . large or small . . . old or new . . . can have this central heating system that is as new as tomorrow, made of standardized parts, delivered on the job as a complete package, amazingly simple to install, surprisingly low in cost and remarkably economical to operate. Made by Coleman — the name that helps you sell. If you haven't already gotten all the facts, write today to The Coleman Company, Inc., Dept. MB-751, Wichita 1, Kansas.

Comfort costs so little with a Coleman America's Leader in Home Heating

#### What contractors and builders say about Coleman Blend-Air

#### Chicago, Ill.

"We found it to be the best heating system for our houses and it is, by far, doing a better job than the unit we previously used. . . . All our customers are very well satisfied."

- Fidelity Builders

#### Memphis, Tenn.

"One of the reasons we like Blend-Air is that it takes so little room for duct work in the attic . . . plus the fact it is easy to install. All the Blend-Air units have been so installed on time." - Louis Weeks Construction Co.

#### Randolph, Mass.

"Coleman's new Blend-Air Heating System has helped in the following ways: (1) Simple installation, (2) Trouble-free operation, (3) Economical operation, (4) Neatness in appearance, (5) Increasing the selling value of houses."

- Gerald M. Callahan, Inc.

#### What users say about Blend-Air

#### New Orleans, La.

"Our Blend-Air System has kept our home completely warm from floor to ceiling.... We have a little boy in the crawling stage and warm floors are a must.... It was installed in less than two days' time."

- Ed. J. Hemard, Jr. 1470 Granada Drive

#### Des Moines, Iowa

"We have been very pleased with the operation and comfort of this Blend-Air System....We especially enjoyed the even heat from ceiling to floor in every room throughout the house."

- John C. Lemke, 2002 63rd Street













The new narrower moving stairways have decreased the price, increased the market for this kind of vertical transportation. They are 32 in. wide between the handrails and narrow down to 2 ft, at the treads. They have 25 per cent more rated capacity than the old 24 in. stairway, but manufacturers sell them at a lower price.



Multi-Vent Panel Air Diffuser completely concealed; in stalled in ducts above sus-pended acoustical ceilings. YALE & TOWNE MFG. CO

The Ballinger Associates, Architects & Engineers. Turner Construction Co., General Contractor. Riggs-Distler & Co., Inc., Mechanical Contractor.

\* See SWEET'S Arch. & Eng. Files or: Write for detailed literature and the name of the Multi-Vent sales engineer in your vicinity

#### for COMPLAINT-FREE AIR CONDITIONING

Multi-Vent insures truly complaint-free air conditioning, because only Multi-Vent Panel Diffusers can provide perfect overall air distribution, through large perforated ceiling areas, entirely by pressure displacement - completely free from BLOW or high velocity injection. BLOW is the direct source of all draft hazards and is responsible for the most serious installation, balancing, maintenance and adjustment problems.

Multi-Vent is the best buy for virtually every type of commercial or industrial building, new or old where true comfort or where uniformity and accurate control of air movement, temperature, and humidity is the primary objective.

In addition the use of Multi-Vent Panel Diffusers makes possible substantial savings in the basic air conditioning equipment, installation and maintenance costs.

MULTI-VENT DIVISION THE PYLE-NATIONAL COMPANY 1376 N. KOSTNER AVE., CHICAGO 51, ILL

#### **ESCALATORS VS. ELEVATORS**

(Continued from page 110)

hours. Westinghouse set up electric stairway with variable speeds for demonstration pur poses in its New Jersey plant and ran then up to 160 ft. per minute. Even 160 ft. pe minute seemed slow to many passengers, a though it was noted that unless the leading edge of a descending stairway is marked clearly with a cross band, people will hav some hesitation about stepping on a stairway going down at that speed. And the faster stairway shoots down, the longer approach and landing area is necessary to satisfy care ful building owners. The fast London stair ways use an 8 ft. leveling area.

#### **Elevators increase speed**

The best elevator service is usually planned on the basis of not more than a 30 second interval. Floor-to-floor time for a single floor ride has been reduced since the war from 8 seconds to 6, but it is still necessary to allow one second per passenger for getting on or getting off. Passing a floor without a stop takes about one second. Consequently, an elevator trip to the 5th floor, skipping one floor and letting off six passengers, would take 25 seconds, plus whatever part of the 30 seconds interval the passengers had to wait on the ground floor-a total of anywhere from 26 to 55 seconds. On an escalator traveling 90 ft. per minute, allowing 5 seconds for walking from flight to flight at three floors, the time to the 5th floor would be about 75 seconds. Unfortunately for the elevator, which does come out best in this speed comparison, there are very few buildings whose elevator service meets this standard. Most buildings are seriously under-elevatored-especially buildings whose elevators have to handle inter-floor traffic for multi-floor tenants. Frequently the elevator interval runs over a minute, in which case escalator service, even at 90 ft. per minute, becomes faster in most cases than waiting for the elevator. And the scales would be tipped much more heavily in favor of escalators if they were speeded up to 160 or 180 ft. per minute, which most technical men believe is now entirely safe.

#### A code accelerates

Moving stairways have already begun to increase speed in the U.S. Recently the American Standards Association Code was revised upward from 90 to 125 ft. per minute, which is still considered a very sedate speed by many, but nevertheless was a notable and influential advance. A moving stairway is being designed for installation in New York's subway system which will have an emergency speed of 180 ft. per minute. By the time installation is completed, some observers think, it will be recognized legally that getting up stairs in a hurry is always an emergency.



For exits that are dependable, attractive and above all safe, leading architects and contractors specify Von Duprin exit hardware. The Von Duprin line includes latching devices and allied accessories for *the complete installation* on every type of exit. Consider these vital advantages in the complete Von Duprin installation shown:



TWO NL46A2 EXIT DEVICES— Drop-forged for extra service. Crossbar reinforced with full width, extruded bronze X-bar. Double-acting latch—pressure either up or down on the crossbar retracts latchbolt.

NO. 1254 FRAME PATTERN MULLION—For single door performance in double-door openings. Easily removable when full opening is required. Extruded aluminum body supports device

strikes.





1407J ADJUSTABLE ROLLER STRIKE — Drop-forged. Even if door warps as much as  $\frac{1}{2}$ ", adjustable feature assures perfect mating of latchbolt and strike. Roller axle pin is rustproof monel metal.



4

NO. 12390 LATCH-TRACK THRESHOLD—A sturdy extruded section of architectural bronze. Completes stop around entire door opening and retards wind and water travel. Proved stumbleproof.

When you specify Von Duprin accessories with the devices, you can be sure of foremost quality and performance in every item. And you get the *complete* job, ready to go, at one time, in one shipment. Naturally, installation is easier and performance better. For complete details, contact your Von Duprin "Exit Engineer." If you don't know his name, write:

VONNEGUT HARDWARE COMPANY Von Duprin Division • Indianapolis, Indiana



fire and panic exit devices and accessories

# SIMPLICITY AND STRENGTH IN STYLING DISTINGUISH THIS NEW KAWNEER STOCK SASH

CHAR CHERN



## KAWNEER RESILIENT-GRIP CONSTRUCTION INSURES RELIABILITY AND SAFETY

All the functional dignity of contemporary design is embodied in this handsomely-styled new Kawneer Stock Sash.

Its simplicity and clean planes reflect the rugged strength inherent in the sash itself.

Incorporated in this new assembly is the famous resilient-grip principle which is unequaled in structural soundness. Steel springclips minimize breakage due to normal structural settling, high winds, or hard blows. For complete details, write The Kawneer Company, Department MB-62, 1105 North Front Street, Niles, Michigan or Department MB-62, 930 Dwight Way, Berkeley, California.



Store Front Materials Aluminum Roll-Type Awnings • Modern Entrances Aluminum Facing Materials • Flush Doors

ARCHITECTURAL METAL PRODUCTS



the basement, each holding 28 cars, plus three cars in less transient storage on dead space on each floor plus ground floor parking. Basement space other than that used for storage in the 34th St. location will total 3,000 sq. ft., most of it under the sidewalk, and will be used for car-washing and repair facilities and additional dead storage. Only the first floor



Individual

# VIKON METAL TILES

Permanent Beauty at a Practical Price

Here's the perfect answer to decorating problems that call for tile. In either new or existing homes or apartments, bath and kitchen walls and ceilings take on a look of rare beauty with the richness of color afforded by *feather-light* Vikon tiles. *Individual* aluminum, steel or stainless steel tiles — no waste, order only the number needed. Always look to Vikon metal tiles for

- BEAUTY · ECONOMY · DURABILITY
- will not warp, crack or craze
- e fire-resistant, waterproof, seals out insects

e resist heat and household chemicals

• steel, aluminum, stainless steel

• 30 fade-resistant decorator colors and stainless steel

VIKON TILE	Dept. Please send me, without obligation or cost, a full-color descriptive brochure and sample of Vikon Metal Tile. I am interested in tile for: My home As a dealer As a contractor	IL
ashington, New Jersey	NAME (Please Print)	-
our catalog in Sweet's Files	ADDRESS .	-
	CITY ZONE STATE	-

#### AUTOMATIC PARKING GARAGE

(Continued from page 109)

office and basement are fully heated, for minimum overhead, and the only permanent lights on the upper floors are those marking the emergency stairway. Because there are no windows in the tower (there is no ventilation problem because car engines are cut off at arrival) each elevator is equipped with a floodlight, actuated when the doors open. Power costs are estimated to be about the same as those in a ramp garage of equal capacity

Parking rates for the 34th St. Rotogarage are based on present rates charged by uncovered lots in the vicinity: 75 cents for the first hour, and 25 cents per hour thereafter. Enc Foundation Reports state that 33 per cent of cars parked in such locations are left less than an hour, and another 30 per cent are removed after less than two hours. Income on the statement on page 109 is figured for only an eight hour day, 10 a.m.-6 p.m., although expenses are included for 24 hour operation.

One projected application of the Rotogarage system would use the interior space in a N.Y. City office building as a parking garage (see plan below). The entrance to the garage would be by means of a ramp down from street level to a basement reservoir area where cars would be left and picked up by their drivers. Theory of the Rotogarage Co. is that the interior space on such a plot is of less value than exterior space, and might better be used for parking in congested areas. Minimum dimensions in the heart of a building needed to house a Rotogarage would be 100 x 100 ft. on all floors except the ground floor, which would be clear except for elevator shafts. Although only 9 ft. are needed vertically floor to floor for the parking unit, the office building's more generous ceiling heights would be followed to simplify framing. A 15 floor plus basement unit of the plan shown below would keep 500 cars off the street. Patents for Rotogarage are held by Albert F. Buranelli, 10 E. 40th St., New York City.



## Keep pace with VMP ... and progress

You will want to have these completely new and up-to-date Catalogs on your desk, for they give you the very latest developments in:

MOBILWALLS

in Metal P

Library Bookstack Equipment—Catalog A Hollow Metal Doors and Frames—Catalog B Mobilwalls, Movable Steel Partitions—Catalog C

These descriptive Catalogs on VMP products show you how to get the maximum effectiveness from VMP quality products. Send for your personal Catalog today.

Product Info 60 HUDSON STREET,	rmation Dept. NEW YORK 13, N. Y.
Please send me a personal copy of your Catalog	A B C
Name	
Firm	a tat da la
Address	
City	State

COMPLETE CATALOGS FILED IN SWEETS' BUILDERS' AND ARCHITECTS' FILES

BOOKSTACK EQUIPMENT

MOBILWALLS

AND ROUTE CONTRACT



## How to Specify Armstrong's Rubber Tile for Grade-Level Subfloors

Now architects can specify Armstrong's Rubber Tile for grade-level installation. This is made possible by an adhesive known as Armstrong's No. S-104 Chemical-Set Cement developed originally for cementing linoleum to metal and other nonporous suspended subfloors. Until the develop-ment of this adhesive, rubber tile installations were not recommended over grade-level concrete because the alkaline moisture in such subfloors attacked and destroyed the bonding qualities of standard adhesives for rubber tile.

Armstrong's No. S-104 Chemical-Set Cement resists the harmful action of alkaline moisture in grade-level concrete floors. In order to obtain a satisfactory bond, it is extremely important that the subfloor meet certain conditions. It must be clean, free of all oil, grease, and other foreign substances. No. S-104 Chemical-Set Cement will not bond satisfactorily to areas upon which paint, varnish, or flooring adhesives have been applied.

Armstrong's No. S-104 Chemical-Set Cement is a two-part adhesive-mixed on the job. It is trowelled on the subfloor in the same manner as standard resilient flooring adhesives. It covers approximately 100 square feet to the gallon. Armstrong's No. S-104 Chemical-Set Cement is also used to bond metal edging to concrete and metal stairs.

Present restrictions on certain raw materials used in its manufacture limit the production of Armstrong's No. S-104 Chemical-Set Cement. It is advisable to contact your Armstrong flooring contractor as to availability in your locality before specifying. For complete architects' specifications and other information on the installation of Armstrong's Rubber Tile over grade-level subfloors with Armstrong's No. S-104 Chemical-Set Cement, architects are invited to contact their nearest Armstrong District Office or write directly to the Armstrong Cork Company, Floor Division, 2602 State Street, Lancaster, Pennsylvania.



LINOLEUM . LINOTILE . ASPHALT TILE (A) RUBBER TILE . CORK TILE . LINOLEUM TILE

# GREATER SAVINGS

NOW ...

EVEN

with Reinforced Concrete

by Specifying Reinforcing Bars that meet ASTM A305

Your steel company is now offering you reinforcing bars that meet ASTM Specification A305-50T. Because of their higher deformations and closer spacing, these bars provide a greater bond between steel and concrete—eliminating the need for hooks under practically every condition. Equally important, they reduce the size of tension cracks to provide a better appearing structure requiring less maintenance.

Some building codes already permit greater bonding stresses and the elimination of hook anchorage when ASTM A305 bars are used. Similar changes in the ACI Building Code are awaiting final approval.

For greater economies in design and for sounder, more permanent structures, specify A305 bars by their new number designations. A new bar chart, covering these designations, will be sent you upon request. Write ...

CONCRETE REINFORCING STEEL INSTITUTE • 38 S. Dearborn St., Chicago 3

# Combat Mounting Costs

#### COSTS:

About 25¢ per sq. ft. of standard ¼" thickness for 1,000 sq. ft. depending on size and condition of floor, colors chosen and freight rates. For an accurate estimate, consult your Kentile Dealer. His name is listed in the classified phone directory under FLOORING.

#### MAINTENANCE:

Smooth surface resists dirt and stain...washes clean with only mild soap and water...requires only occasional no-rub waxing.

#### WEAR:

Colors are permanent...can't wear off because they go clear through to the back of each tough tile.

#### **GREASE AND OIL:**

Standard Kentile may be affected by grease and oil. For this type of area, specify SPECIAL KENTILE which is greaseproof. SPECIAL KENTILE is now available in new *deluxe* colors...lighter and brighter. Cost is approximately 40¢ per sq. ft. of 1/8" thickness.



# with long-lasting Kentile Floors

#### WALL BASE:

Use Kenbase for sanitary meeting of wall with floor. Never needs painting ...mop and scuff marks won't show.

#### COLORS:

Black Quarry Red Green Tan Grand Antique Sarrancolin Heights —4" and 6" Length — 24" Wall Thickness — ½" Floor Lip — ½''



#### **KENTILE FUNCTIONAL DESIGNS:**

Colors never wear off...never need repainting. This type of treatment available for directional traffic lanes, trade marks, fraternal insignia, alphabets, basketball courts and numerals... or engineered to your specifications.





The Asphalt Tile of Enduring Beauty

KENTILE, INC., 58 Second Ave., Brooklyn 15, N. Y. • 350 Fifth Ave., New York 1, N. Y. • 705 Architects Bldg., 17th and Sansom Sts., Philadelphia 3, Pa. • 1211 NBC Bldg., Cleveland 14, Ohio • 225 Moore St., S.E., Atlanta 2, Ga. • Kansas City Merchandise Mart Inc., 2201-5 Grand Ave., Kansas City 8, Mo. • 1440 11th St., Denver 4, Colo. • 4532 South Kolin Ave., Chicago 32, Ill. • 1113 Vine St., Houston 1, Texas • 4501 Santa Fe Ave., Los Angeles 58, Calif. • 95 Market St., Oakland 4, Calif. • 452 Statler Bldg., Boston 16, Mass.

# ALUMINUM...MODERN METAL

#### ... PLAN FOR ITS USE

Aluminum troughs reflect light in lobby ceiling, harmonize with the bronze trim.



Permanent, maintenance-free aluminum louvers provide ventilation, keep hot sun away from air-conditioning equipment.



100 Park Avenue. Kahn & Jacobs, Architects. George A. Fuller Co., General Contractors. Alcoa Aluminum used for windows, spandrels, and mullions fabricated by General Bronze Corporation.

# FOR MODERN BUILDINGS

#### REMEMBERING REARMAMENT NEEDS COME FIRST

Elevator cabs by Otis are lined with easy-toclean striated aluminum panels. Combine strength, lightness and lasting good looks.



Aluminum mullions accent the vertical lines, blend with aluminum windows and spandrels.



Let he clean, efficient lines of today's architecture are well expressed in aluminum . . . the modern metal. In 100 Park Avenue, aluminum has been used for windows, spandrels, mullions, copings, louvers, and lobby ceiling. In each case, one or more of aluminum's qualities of lightness, economy, workability and freedom from corrosion have contributed to the building's efficiency and economy of maintenance.

As in this building, Alcoa Aluminum has been used in nearly every major office building erected in America in recent years. Alcoa engineering and production men are eager to co-operate with forward-looking designers and builders. For information on any application of aluminum, call your nearby Alcoa Sales Office or write, ALUMINUM COMPANY OF AMERICA, 1887B Gulf Building, Pittsburgh 19, Pennsylvania.





# Make Daylight Hours More Profitable with ... GLARE REDUCING COOLITE GLASS



Glare Reducing Coolite Glass installed in plant of American Box Board Company Vern E. Alden, Architect Clearing Industrial District, General Contractor

Blinding sun rays that cause eye fatigue and lead to inefficiency and production declines are turned aside or absorbed by Glare Reducing COOLITE Glass.

Of a cool, blue color with slightly greenish cast, COOLITE admits only softly diffused, comfortable daylight . . . reduces transmission of solar heat radiation and lightens load on air conditioning equipment. Temperatures inside are reduced . . . working conditions improved. Eliminated are painted windows, makeshift shields and bothersome blinds.

Used either in new construction or in modernization and sash replacement projects, the installation of Glare Reducing COOLITE Glass is an investment in greater production and decreased maintenance costs.

Installations of Coolite, Heat Absorbing and Glare Reducing Glass are stepping up output... reducing labor turnover in industries everywhere. For money-saving details, consult your nearby distributor of Mississippi Glass. See him today.

Rolled, Figured and Wired Glass by Mississippi is "Visioneered" for better daylight illumination. Available in a variety of patterns and surface finishes, all scientifically designed to distribute light to best advantage. Send for new catalog, "Coolite Heat Absorbing and Glare Reducing Glass."

For further data see Sweet Architectural File. Samples on request.



SAINT LOUIS 7, MO. NEW YORK + CHICAGO + FULLERTON, CAL.

ORLD'S LARGEST MANUFACTURER OF ROLLED, FIGURED AND WIRED GLAS

DECORATIVE ARTS 1950-51. The Studio Year Book Editors: Rathbone Holmes & Kathleen Frost Studio-Crowell Publications, 432 Fourth Ave., New York, N. Y. Illus, 132 pp. 9 x 12. \$5.95.

In spite of its hundred or so pages of beautifully photographed and reproduced modern interiors and objects, the most interesting part of *Decora tive Arts* is its Preface. This is a wry, readable and resigned chapter by F. A. Yerbury, entitled "Building a House in Britain Today." Here it one short chapter, he provides a volume's worth of information on contemporary building in Britain. To take on such a task, he advises, "you must first of all have immense faith, limitles tenacity, vast reserves of patience and a deep purse." Once assured of all these, he demon strates how and where they will be needed.

First, as to land. The price of land is nov fixed by the government on a "usage" scale. If the land has been unused (as is most likely) the value difference between its former "field" statu and its future house use, must be paid to the government. This practice has many very cogen arguments in its favor. As it works out how ever, says Mr. Yerbury, one finds the owner loath to let the price difference slip through thei fingers. If the site is wanted, and the purse i deep enough, the purchaser pays almost doubl -(1) the difference between land and field cos to the government, and (2) the full cost to the owners.

Next, the license. The difficulty here is that not only must the would-be builder prove hit need for a house but his need can only be gratified on a pro rata basis. Only one private house may be authorized for every five that the locat housing bureau has built.

Then, materials. The basic size for a three-bec room house is 950 sq. ft. and there are rules gov erning the amount of each material used to com pose this structure. Softwood, for example, i rationed and may only be used for certain pur poses (none may be used for ground floors) Plywood is also rationed "and the amount a lowed for each house is very small indeed . . Hardwood may be used as a substitute but costs several times as much—which brings yo up against the licensing figure."

The conclusion is inevitable: "Broadly speal ing, it is not possible to modify the design sufficiently to allow good quality materials to be use (Continued on page 177)

Overwhelming Ohoice





C. F. CHURCH MFG. CO., HOLYOKE, MASS. Division of AMERICAN RADIATOR & Standard Sanitary conformation THERE are good sound reasons why architects have made Church the overwhelming choice in toilet seats, whether for home, factory, school or institution.

Their styling and design is a compliment to the buyer's taste . . . their unmistakable quality a mark of good judgment—and the name "CHURCH" stamps them as *the best*.

Where hard use-even abuse-is anticipated, Church MOLTEX<sup>®</sup> Seats offer the architect the assurance of *lasting* quality, lowest cost *per year* of service.

With MOLTEX, first cost is last cost. They never need replacing.

There's no [|||||] to the flexibility in use or installation of





Bilt-Well Nu-Style Cabinets give beauty, warmth, friendliness, plus utility in kitchens.

#### Just Look at These Bilt-Well Specifications:

Drawers are dovetailed. Standards are solid <sup>3</sup>/<sub>4</sub>" thick. Framework is mortised and tenoned and assembled with a high-grade glue. Standardized sectional units in graduated sizes. Made of thoroughly seasoned kiln-dried Ponderosa Pine—can be scribed or sawed; can be enameled any color, or finished natural. Carton Packaged, completely machined and ready to be assembled.

And, Nu-Style Cabinets are Bilt-Well Products, nationally known for extra fine quality.

#### CARR, ADAMS & COLLIER CO. Dubuque, Iowa Manufacturers of the Famous Bilt-Well Lines

Mantels & Telephone Cabinets • Multiple-Use & Linen Cabinets • Stair Parts • Nu-Style Cabinets • Superior Unit Wood Windows • Exterior & Interior Doors • Entrances • Shutters • Clos-tite Casements • Carr-dor Garge Doors • Basement Unit Windows • Louvers & Gable Sash • Breakfast Nooks • Combination Doors • Screens & Storm Sash • Corner (China) Cabinets • Gli-dor Cabinets • Ironing Board Cabinets



Bilt-Well Nu-Style Cabinets add beauty, convenience

Multiple-Use —for any room

in the home. Units to fit any size or shape of room.

CEILING UNITS

UPPER UNITS

STORAGE UNITS

Can be finished natural or

enameled

any color.

and utility to dining areas or breakfast rooms.

Bilt-Well Nu-Style Cabinets solve storage problems, add beauty and convenience in any and all rooms.



EASY TO ASSEMBLE—

olve storage problems, in any and all rooms. All BILT-WELL Products are packaged or bundled units, completely machined and ready to be set up and painted.

Specify BILT-WELL NU-STYLE CABINETS



Architect, Hedrick and Lindsay; Mechanical Engineer, Wyatt C. Hedrick Company; Contractor, Linbeck & Dederick Construction Company; Mechanical Contractor, C. Wallace Plumbing Company.

## The weather is better in Texas

Better at the new Hermann Hospital in the Texas Medical Center, Houston, anyway.

This ultra-modern hospital is completely air conditioned by Carrier. The Carrier Conduit Weathermaster System conditions outside air at a central point, sends it at high velocity through small-diameter conduits to individual rooms. The occupant controls the room temperature at the twist of a dial . . . without interfering with the supply of conditioned air.

Because the room Weathermaster unit has no motors, fans or moving parts, it is extremely

**R** CONDITIONING

quiet. Because all mechanical elements are centrally located, servicing is simpler.

Weathermaster units and conduits are factory fabricated. Installation is simple and rapid. Small-diameter conduits take up to 85% less space, require much less cutting and patching in existing buildings. So that whether you are designing a new or remodeled hospital, hotel, office building or apartment house . . . you'll do well to consider the Carrier Conduit Weathermaster System. Carrier Corporation, Syracuse, New York.

**REFRIGERATION** • INDUSTRIAL HEATING

# with the building industry's prime prospects

nd Gardens

#### And Better Homes & Gardens, America's 3rd BIGGEST man-woman magazine, helps build your business in other **BIG** ways —

tung more and order of the constant of the con

3,500,000 families

**BH** G is **BIG** in reaching families building new homes -7 out of 10. No other magazine can deliver so many natural customers for what you sell!

BHG is BIG in Five Star Home Plan sales. Five Star Home Plan No. 2001 outsold all its predecessors by 5 to 1! Think how many of your own sales may be directly or indirectly coming from this one BIG, BH&G service!

BHG is BIG in building-dealer influence. A manufacturer of plastic-finished wall panels says: "4 out of 5 of our building supply and hardware dealers vote BH&G as the magazine having greatest influence on their customers."

Yes, any 3½-million circulation is important. When 7 out of 10 families building new homes read BH&G, this circulation becomes super-important to you. And when all those millions use BH&G as their building, remodeling and replacement guide-that's ALL-important!

So it's easy to see what a BIG sales help it is to your brands when they're advertised to Better Homes & Gardens' 31/2million families.



Here's how one of the Country's Largest House Fabricating Plants can help you

# CUT YOUR LABOR AND MATERIAL WORRIES BY 50% IN 1951

HERE ARE UNLIMITED PRODUCTION FACILITIES for RESIDENTIAL HOUSING SINGLE OR MULTIPLE UNITS ONE OR TWO STORY PRECISION ENGINEERED—PANELIZED—PRE-CUT READY FOR INSTANTANEOUS ERECTION FABRICATED ACCORDING TO YOUR PLANS OR OURS IN QUANTITIES OF 1 TO 1,000 OR MORE AT THE 1,000 UNIT PRICE PROMPT DELIVERY

Our assembled package, produced from top quality materials to your exact specifications, provides you with a building ready for the following trades: ELECTRICAL, PLUMBING, HEAT-ING, PLASTERING, FINISH CARPENTRY, AND PAINTING.

#### The LFI Package consists of:

- 1. Pre-cut floor framing with semiprepared subflooring
- 2. Fabricated exterior walls, including gables (with finished siding, cedar, or asbestos shingles, factory applied)
- 3. Windows, metal weatherstripped, with hardware, glazed, included in wall assembly
- 4. Exterior doors with hardware, hung in frames
- 5. Assembled interior partitioning
- 6. Pre-cut ceiling and roof framing or trusses
- 7. Interior doors and interior trim optional



The LFI Method of Construction was used to build the Ranch Home pictured above, from the Akron Builder's own plans



Above is the popular 3-bedroom Tri-Level home. This house is protected by copyright and can be sold only by LFI Builders



Distinctive styling, sturdy construction, and economy of ownership have made this LFI Ranch House popular in 36 states.

Write, wire, or call us today for the name of the LFI representative in your area

LUMBER FABRICATORS, INC., Fort Payne, Alabama



We doubt that you've done much work for the Three Bears lately.

We haven't, either.

But we *can* help you provide the proper thermal environment for any client – anywhere – in any kind of structure.

We have a lot of literature on all phases of heating, ventilating and air conditioning. Information you should have in your files.

And we have a lot of very well informed control engineers – in our 89 different offices – who have a lot *more* information right at their finger-tips.

We sincerely believe we can help you on any project that poses problems of control of any kind – for *control* is Honeywell's business.

So, why not *talk to Honeywell*? Why not *write* to Honeywell for complete information on the equipment discussed in the column across the page? And why not do it *now*?

# page? And

0

Honeywell

First in Controls

... AND FOR HELP WITH

WE'LL TALK TO

**HONEYWELL!** 

THE HEATING CONTROL,
### REVIEWS

to any great extent." In the light of these restrictions, it is not surprising that the erstwhile conservative British public should glance towards prefabrication with a much more affectionate eye than is customary in its American counterpart. Mr. Yerbury feels it necessary to dampen the hopes of individual home builders who cannot benefit by the savings of prefab developments. For them traditional methods (brick walls and timber and tiled roofs) prove cheapest.

Over and above these limitations, there is always the fine free play of human nature to keep up suspense to the end. Yerbury warns the complacent not to think that taking care of these factors means success: "the strictness with which local authorities interpret the rules varies; you may be lucky, you may not."

In the light of such a harrowing builder's progress, the trim houses which here demonstrate Britain's top postwar achievement, seem indeed, inspired—S.K.

JOHN NASH, Architect to King George IV. By John Summerson. Macmillan Co., 60 Fifth Ave., York 11, N. Y. 299 pp. Illus. 534 x 834. \$3.75.

John Nash (1752-1835) is the grandfather of today's speculative builder, whose operations on a high, wide and handsome scale raised this role to an eminence it has seldom known since. Nash was the first to perceive that the urban building block could become far more impressive than its individual units might indicate. Instead of an



endless repetition of single dwellings, Nash made all subservient to a single shapely facade which conferred distinction on all. It was outside his province to consider that this handsome front had no relation whatsoever to what lay behind it. For Nash, and for thousands of his copiers (who never flourished more bountifully than today) it is enough that he showed how every man's flat could be his palace.

Summerson tells the story of this adventitious builder and planner with balanced humor and insight. He is describing no stranger to the Twentieth Century when he comments on Nash: "He liked, above all, to be at the center of gravity of a big undertaking, juggling with manifold responsibilities. It was not self-dramatization; the essence of his point of view was to feel the reins in his hand, not to see himself in the saddle." Here, very much alive, is the man who conceived, created, pushed, schemed and wangled into completion such monuments of respectability as Buckingham Palace, Picadilly Circus and Regents' Park (above).—S.K.

(Continued on page 182)



We can't help you heat bear caves, but we can help you plan better Zone Control heating systems. So fill out the coupon below and send it to us for

# Facts you need-FREE!



An excellent way to achieve uniform comfort and economy in heating large buildings—institutional, commercial or industrial—is through the use of Honeywell Zone Control. Separate heating zones in a factory, for example, enable you to keep

office workers comfortable in their zone-while at the same time you maintain one low economy temperature in the fabrication zone, and still another fuel-saving level in the storeroom area. And in addition to occupancy and use requirements, Honeywell Zone Control equipment helps you compensate for *all* weather factors and varying heat losses.

In the home field, too, demands for uniform comfort in larger houses have accelerated the trend toward Honeywell Zone Control. For with Honeywell Zone Control you can maintain the desired temperature in every part of the house despite wide



differences in exposure, use, occupancy and structural heat losses. And Zone Control makes it possible to lower temperatures for economy's sake during the parts of the day when certain sections of the house are not in use.



For additional, specific information on the use of Zone Control, fill in and mail the accompanying coupon now. It will bring you material you'll want to read—and keep handy in your files.

MINNEAPOLIS-HONEYWELL REGULATOR CO. Minneapolis 8, Minnesota, Dept. MB-2-20

Gentlemen: Please send me information on Zone Control heating for
Large buildings Homes

Name

Firm Name

Address

City\_

Zone\_\_\_\_State



There's Beauty and Economy in Architectural Concrete

When the terminal building for the Seattle-Tacoma International Airport was being planned, three fundamental goals were set. The structure had to: (1) be attractive and functional, (2) have low first cost and (3) have low maintenance cost.

These goals were realized by using architectural concrete walls and reinforced concrete frame and floors. Beauty was achieved by the simple lines and arrangement of masses of the building and the use of decorative features such as fluting, grillwork and cantilevered canopies. To assure best results special attention was given to formwork.

Besides combining beauty and *low annual cost*, architectural concrete meets every other essential structural requirement. It has great strength and durability and is firesafe. It also can be molded economically into ornamentation for any style or period. All these factors result in structures which please clients and investors alike.

Architectural concrete is adaptable to structures of any size or purpose—apartments, schools, hospitals, stores, factories and office buildings. Architects find architectural concrete a versatile material for creating beautiful, functional, economical edifices.

For more information about architectural concrete write for free, illustrated literature. Distributed only in United States and Canada.

WEST

C

GRAND

EMENT

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

AVENUE,



Upper photo shows the terminal building of the Seattle-Tacoma Airport from the ground approach side. Central section is five stories high surmounted by the control tower. In plan the structure is a blunted V, 800 ft. long from end to end of passenger concourses. Total floor area, 243,000 sq. ft. Lower photo shows entrance tower. Grillwork is cast stone. Designed by the staff of the Port of Seattle. Lease and Leigland, Seattle, were the general contractors.

**A S S O C I A T I O N** 

10, ILLINOIS

CHICAGO

PORTLAND

DEPT. A2-7, 33



# What would happen to him in case of a HOTEL FIRE?

What would his chances of safety be, if he woke up in the middle of the night with smoke pouring in over the transom?

His chances might be slim in a hotel of flammable construction without these protections: fire alarms to arouse sleeping occupants before heat and smoke make halls and stairways untenable... fire extinguishers and hose equipment throughout the building ... adequate separate means of exit, available from all parts of the building ... stairways and shafts protected by fireresistive enclosures with fire doors ... fire walls to subdivide large floor areas.

His chances would be favorable in a hotel of fireresistant" construction, with the above protections.

But his chances would be excellent in a hotel adequately and properly protected by an automatic sprinkler system such as Grinnell offers. Nearly seventy years experience proves this. Grinnell Automatic Sprinkler Systems check fire at its source, whenever and wherever it strikes, night or day, with automatic certainty. So, for safety in hotels...

SEE THAT GRINNELL SPRINKLER HEADS ARE ON GUARD In hotels, as well as in schools, hospitals, theaters and factories, there is a moral obligation upon architects and management to provide the utmost in protection of life and property. For your own sake be sure the hotels, hospitals, the plants, and the schools for which you are responsible are protected with Grinnell automatic sprinkler heads your assurance of positive, automatic fire protection. Grinnell Company, Inc., Providence, Rhode Island.





# REVOLUTIONARY NEW BOSTITCH H4 HEAVY-DUTY STAPLING HAMMER using heavier, longer staples, cuts your building costs

## "3 TIMES FASTER THAN HAMMER AND NAILS" report enthusiastic users

"We now apply three squares of asphalt shingles in the time we used to take for one," writes roofing contractor.

"30% labor savings on roofing and siding jobs," says pre-fab house maker.

"Cut labor costs in half applying heavy diamond mesh metal lath,"

reports a successful builder.

faster, better fastening on every job.

This team lets you take *full* advantage of all the cost-cutting, timesaving features of the Bostitch Stapling Hammer principle. Onehand operation... other hand free for better and faster placing of materials. One effortless blow drives the staple all the way home. Extra reach cuts staging needs. And remember! No mashed fingers ... no infected mouths.

You're losing money every day you're without Bostitch Stapling Hammers. Why delay? Mail the coupon below for more information and a free demonstration . . . without obligation.

	1×	Ē.
T	1	
L	R	
	-W	-



Applying insulation pads with Bostitch H2 Medium-Duty Stapling Hammer at top speed with much less worker fatigue than with hammer and nails.

Applying coarse screen to wooden frames with Bostitch H2 Stapling Hammer, A single blow drives home each staple. What speed!

Workers welcome Bostitch Stapling Hammers for outside work in winter... They can now keep both gloves on while working.



Applying ceiling tile quickly, neatly, securely with Bostitch T5 Tacker. No more soiled surfaces nor marred edgest Steples bold fast

CTITCU

BOSTITCH AND FASTER fastens it better, with wire

> ALL TYPES OF MACHINES FOR APPLYING STAPLES

ALL TYPES OF STAPLES APPLIED BY MACHINES

Trade-Mark "BOSTITCH" Registered U. S. Patent Office and Foreign Countries

### what other users say about BOSTITCH H4's:

Yes, this is it! The new Bostitch H4 Stapling Hammer. A tested and approved tool that drives  $\frac{3}{4}''$  staples. Rugged staples made from  $\frac{1}{16}''$ wire flattened to .070'' x .050'' for easy penetration. Staples that spread their sturdy legs deep inside the work for added holding power.

This new H4 Hammer is sure to make as big a hit as the time-tested medium-duty Bostitch H2 Hammer. The H2, you know, has been adopted as standard by many insulation manufacturers and contractors. Builders, too, are enthusiastic about H2's for screening, lathing and roof-papering jobs. So, team up both Bostitch stapling hammers for

BOSTITCH, 88 Mechanic Street, Westerly, Rhode Island Please send me literature and prices on: H4 Heavy-Duty Stapling Hammer

- H2 Medium-Duty Stapling Hammer
- T5 Automatic Tackers

Also arrange a demonstration as soon as possible

### Take a

28

# housewife's eye-view of a CURTIS KITCHEN

When it comes to kitchens, Mrs. America is sharp-eyed. That's why she so readily appreciates the years of experience that have gone into the design and construction of Curtis kitchen cabinets. Here are some features she'll notice in the Curtis kitchens you include in your plans!



Close-up of Curtis wall unit showing large storage space. Cabinet is made in 36" and 44" heights and in eleven widths-from 12" to 44". All are 14" deep,

Cur two "in the nish mat



Mixer and vegetable storage unit-24½" deep, 32" high, 18" wide. Ventilated vege-table drawer is below. This unit is a "must" with busy housewives.



Pan and bread drawer unit—has two small wood drawers 3" deep and one metal bread drawer 8½" deep, 19" long, 10%" wide. Two widths, 28" and 32".

en: to know more about Curtis kitchen and storage Please send your free book.
State

Curtis makes a architectural woodwork for th Make your next ho

For



Graeme Park (above) was built in Horsham, Pa., 1722 early Swedish contribution to U. S. building. America's first row house (Jamestown, Va. 1640) is shown in plan at right.





### Specify... Compact <u>Marlo</u> Evaporative Condensers and Cooling Towers... Designed for Easy

Installation Indoors

Architects find they can make their

buildings more beautiful by specify-

ing Marlo Cooling Towers and

Evaporative Condensers - space-

tailored for easy installation indoors

... or on the roof below the skyline.

Efficient Marlo Units save up to 95%



of normal water demand and offer these advantages too—4-way protection against corrosion for *longer life* ... mastic-coated sound deadening interiors and resilient-mounted motors and pumps for *quieter operation*.



### REVIEWS

### THE DWELLINGS OF COLONIAL AMERICA.

By Thomas Tileston Waterman. University of North Carolina Press, Chapel Hill, N. C. 312 pp. Illus.  $71/_2 \times 101/_4$ . \$10.

The structures which our forefathers brought forth upon this nation are so often surrounded with a mist of sentimentality that they seem more like elaborate stage sets than lived-in houses. The books-and lifework-of Thomas Tileston Waterman form a healthy contrast to this attitude. Waterman's interest in historic buildings has always been strongly grounded in their nature as buildings. Their designs and techniques-from the reed-thatched huts of Roanoke to the delicate finials of Bulfinch-are allowed to speak for themselves in this delineation of the course and complexity of early American building. In a volume that is a model of self-effacement Waterman traces without apparent effort the intermingled contributions of the settlers-English, Dutch, Walloon-Belgian, Swedish, French, Welsh, Scotch, Irish and German-all had put in appearance before 1700.

The floor plans of many now-disappeared buildings are included here (for example Americans first row house, above). These recall what may one day be appreciated as Waterman's great claim to public gratitude. The Historic Buildings Survey, which he instigated and encouraged, has preserved for our nation a treasury of measured drawings on its outstanding early buildings. (This survey also kept a number of contemporary architects in bread-and-butter money during the Depression.) Waterman's understanding of the reality of colonial building is a pleasant antidote to the fake colonialization of so many contemporary builders.—S.K.

#### AMERICAN SCHOOL & UNIVERSITY, 1950-51.

22nd Annual Edition. American School Publishing Corp., 470 Fourth Ave., New York 16, N. Y. 400 pp. Illus.  $81/2 \times 111/4$ . \$4.

Lest we forget that this is not the best of all possible architectural worlds, *American School and University* spreads out its yearly hoard of new school buildings to remind us. As its text admits and its photos make vividly clear, a great bulk of the present building designs differ little from the feeble, pretentious ideals of the 1920's and 1930's.

Such a volume has the beneficial effect of bringing within the range of all school personnel the best of new schools, with notes as to just what is commendable in each. Republished here, for example, are the six schools premiated by the American Institute of Architects at their Houston Convention.

Apt to tip the scales back to the side of confusion, however, an article like Walter Cocking's *America's Outstanding School Buildings Since* 1945. Such an article, professing admirable principles, uses as it illustrations a melange of schools present and projected. Some are good, some bad, some indifferent—not one of them is "outstanding."

(Continued on page 188)



You can build BETTER with

MEDUSA PAINTS

And at such reasonable cost, too! All you need to do is to have the *walls* painted with Medusa Portland Cement Paint. This beautiful paint actually protects basements against dampness as well as decorates. Then, on concrete *floors*, use Medusa Rubber Base Paint . . . a super tough coating that bounces off wear and resists the action of cleaning compounds, water, and other alkalies. And while you're building a beautiful basement, be sure it's lastingly dry by using those famous Medusa Products . . . Medusa Waterproofed Cements, Gray or White, or Medusa Waterproofed Powder and Paste. Properly used in all concrete and mortar, they keep basements dry for years! Medusa Products Division of Medusa Portland Cement Company, 1013-1 Midland Building, Cleveland 15, Ohio.

WHITE

WHIT

MEDUSA PRODUCTS

**Give homes 20% MORE LIVABLE AREA** 

at Little Cost



**New Plywood Reference Manual** 

### ... now available to Architects

Here, for the first time, is a new, fully illustrated Weldwood manual especially prepared for architects. It provides a wealth of valuable reference information in a single easy-to-use source – virtually a complete "short course" in the types, characteristics and uses of architectural grades of plywood.

The following is a partial list of contents ...

#### TYPES OF PLYWOOD

Sequence Matched Sets, Algoma grade, Custom Matched Sets.

#### TYPES OF VENEER CUTS

Quarter Round, Half Round, Sliced, Rotary Cut ... Butt, Crotch, Fiddleback, Swirl, Blister, Burl, Stumpwood, etc.

#### CHART OF VENEER CHARACTERISTICS

Texture, Color Figure, Origin, Veneer Length, etc., for 36 Woods.

#### CHANGE IN SPECIFICATIONS-

As another step in our policy of standardization and simplification, all stock panels of Weldwood Lumber Core Hardwood Plywood are now being manufactured in 3/4" thickness instead of 13/16". This permits interchangeability with Weldwood veneer core panels which have always been made in 3/4" thickness.



The beauty of Weldwood Architectural Plywood, in Brazilian Rosewood and Rift Oak, impresses one instantly upon entering the reception room of the Arthur Murray Dance Studio, East 43rd Street, New York. Architect: Morris Lapidus. Installation by M. Gerber Const. Co., Inc.



TYPES OF VENEER MATCHING

Book Match, Slip Match, and 8 different types of 4-way Center and Butt Matching described and illustrated.

HOW TO MAKE CORNERS

Various Types of Inside and Outside Corners described in detail.

HOW TO MAKE JOINTS Various Types described and illustrated.

HOW TO MAKE CURVED PANELS and SECTIONS FINISHING and FIREPROOFING DATA ROOM PANELING and COUNTERFRONT LAYOUTS HOW TO SPECIFY CHART OF RELATIVE AVAILABILITY OF

#### CHART OF RELATIVE AVAILABILITY OF DIFFERENT WOODS

Use coupon for your free copy of this valuable book. You will find it an indispensable addition to your library. Interior grade Weldwood plywood is guaranteed for the life of any building in which it is installed.

United States Plywood Corporation 55 West 44th Street, New York 18, N.Y.	AF-2-51
Gentlemen: Please send me a free copy of the illustrated "Construction Details and Specifications of Arch Grade Weldwood Plywood."	manual, bitectural
Name	
Address	
CityState	

WELDWOOD Plywood

Manufactured and distributed by

UNITED STATES PLYWOOD CORPORATION New York 18, N.Y.

and U.S.-MENGEL PLYWOODS, INC., Louisville 1, Ky.

Branches in Principal Cities • Distributing Units in Chief Trading Areas • Dealers Everywhere

# STAINLESS IDEA BANK Architects make wide use of

versatile stainless steel in remodeling Philadelphia bank building

HOWELL LEWIS SHAY, Architects

Interior canopy and heating columns. The heating problem associated with revolving door installations was met here by two specially designed and constructed convector units. Housed in stainless steel, they are thermostatically controlled by air admitted through the doors. With the stainless steel heating columns and canopy inside, the "picture window" entrance of glass and stainless retains its open, inviting appearance.

> Building front. The bank's facade is of stainless steel, buff limestone, and double insulating glass. Recommendation of stainless for the exterior was based on the metal's permanent beauty and low maintenance cost. Also, as the result of careful study, it was found that stainless was no more expensive and was easier to work with than other metals requiring special treatment and protective coatings after fabrication. All stainless steel in the building front is (Type 302) 14 gage with No. 4 CERMENA AND polish, except sign letters which are 16 gage.







While all types of steel are scarce now, here are some other architectural applications for stainless steel you might wish to consider for the future: Curtain Wall Panels . Doors and Windows . Signs . Marquees . Roofing and Roof Drainage Restaurant Equipment and Fixtures. For detailed information, see your Sweet's Catalog or write: Armco Steel Corporation, 61 Curtis Street, Middletown, Ohio. The Armco International Corporation, world-wide.

# Thorosealing can be Beautiful

THOROSEALING gives to the architect and builder, aside from masonry protection, distinctive textures and the opportunity to present finish coats of QUICKSEAL, in sixteen beautiful tints, without reflection or glare.

THE REAL

#### ACTUAL PHOTOGRAPHS OF THOROSEAL TEXTURES

C S STATE

Station of the local division of the local d

WHISK

STIPPLED

FINISH

HEAVY

BROOM

LINEN

FINISH

tanda

With very little effort, many distinctive textures can be produced by the workman with THOROSEAL.



Mercy Hospital, Miami, Florida. Commencing of THOROSEAL applications. Architect—Steward and Skinner, Miami, Florida. Contractor—J. Y. Gooch Co., Miami, Florida.

### The finished THOROSEAL job is shown at the top of the page.

# Complete Masonry Protection

Can be secured from foundation to roof with THOROSEAL. Beautiful finish coats of QUICKSEAL can be secured without hiding the THOROSEAL texture.

WATERPLUG To Stop Leaks THOROSEAL To Seal Surface QUICKSEAL For Beautiful Finish

NEW EAGLE

Write today for our new 20 page brochure 17-A and designer's wall chart.

PENNSYLVANI

roducts

representing the most advanced architectural and engineering practices . . . .

... the Port Authority Bus Terminal



# **Brant Wilson DUX-SULATION**

## the "engineered" duct insulation that insures less temperature loss between source and outlet

\*Dux-Sulation is just as practical for a small heating or air conditioning installation as it is for the world's largest Terminal shown above. A thermal/acoustical insulation designed expressly for duct application, Dux-Sulation steps up the overall efficiency of any system involving the transfer or travel of heated or refrigerated air. K Factor is .27 BTU and sound absorption is approximately 61%. Installation is fast and simple, and insulating values are constant.



Inspect Dux-Sulation yourself. A handy sample kit and complete engineering data is yours for the asking. Write Grant Wilson, Inc. for Kit No. 532-AF to Board of Trade Bldg., Chicago 4, Ill.



Photo of duct section in new terminal insulated with Grant Wilson Dux-Sulation.



For an air conditioning system thats...

"ELECTRICALLY RIGHT"

MOTORS

and

CONTROL

THE AIR CONDITIONING IN OUR

PUBLIC ROOMS HAS MADE SUCH A BIG HIT WITH ALL OUR GUESTS

THAT THEY KEEP COMING BACK.

THE SYSTEM. IT KEEPS RUNNING

WE'RE ESPECIALLY HAPPY WE

ASKED OUR CONTRACTOR TO USE RELIABLE G-E ELECTRICAL EQUIPMENT WHEN HE INSTALLED

CONTINUOUSLY

-

make a note today

tion G-E motors and control to your air-

conditioning contractor, architect, or

consulting engineer. Apparatus Dept., General Electric Co., Schenectady 5, N.Y.

You can put your confidence in-

GENERAL 🐲 ELECTRIC

to men-

WITHOUT

GIVING US ANY TROUBLE AT ALL.

### REVIEWS

American Schools is strong on statistics—many interesting to all involved in progressive school building. It is encouraging to see that the longbackward South is now the next-highest in the percentage of school boards planning constructing (64 per cent). Highest is the West Coast with 73 per cent. The mid-Atlantic States, with the smallest number of buildings are alloting the biggest lump sum (36 per cent).

Another hopeful school sign is the fact that 70 per cent of projected schools are single-story —a type which allows greatest flexibility and economy. Present costs for elementary and secondary schools are estimated to average \$12 per sq. ft. (ranging from \$5 to \$20); colleges average \$18. As for future plans, the editors believe that \$13.5 billion is a conservative allotment for building during the next decade. Whether events turn this conservative figure to a sadly radical one, is something only the events can show.—S.K.

### BOOKS RECEIVED

**MATTHEW DIGBY WYATT** by Nikolaus Pevsner. Cambridge University Press, 51 Madison Ave., New York 10, N. Y. 45 pp. Illus. 5 x 71/2. \$3.

**COLOR FOR PROFIT** by Louis Cheskin. Liveright Publishing Corp., 386 Fourth Ave., New York 16, N. Y. 333 pp. Illus. 5% x 8%. \$3.50.

WHAT IS MODERN DESIGN? Introductory Series to the Modern Arts-3 by Edgar Kaufmann, Jr. The Museum of Modern Art, 11 West 53d St., New York 19, N. Y. 32 pp. illus.  $7\frac{1}{2} \times 10$ . \$1.

THE ART OF BRICKLAYING by J. Edgar Ray. Manual Arts Press, Charles A. Bennett Co., Inc., Peoria, III. 240 pp. 6 x 9. Illus. \$4.

**PRESTINI'S ART IN WOOD.** Photography by Barbara Morgan. Essay by Edgar Kaufmann, Jr. The Pocahontas Press, Lake Forest, III. 24 pp. 10 x 11.

THE HUMAN COMMUNITY by Baker Brownell. Harper & Brothers, 49 E. 33d St., New York 16, N. Y. 302 pp.  $6\frac{1}{4} \times 9\frac{1}{4}$ . \$4.

**SIMILITUDE IN ENGINEERING** by Glenn Murphy. The Ronald Press Co., 15 East 26th St., New York, N. Y. 302 pp.  $6\frac{1}{2} \times 9\frac{1}{4}$ . \$7.

EARLY AMERICAN COPPER, TIN & BRASS by Henry J. Kauffman. Medill McBride Co., 200 E. 37th St., New York 16, N. Y. 112 pp. 9 x 12. Illus. \$5.

MODERN PUBLICITY 1950-51 ed. F. A. Mercer & C. Rosner Studio Publishers, 432 Fourth Ave., N. Y. 125 pp. Illus. 9 x 111/2. \$6.

BASIC LAYOUT DESIGN by Tommy Thompson. Studio-Crowell, 432 Fourth Ave., New York, N. Y. 79 pp. Illus. 6 x 91/4. \$2.85.



DUNBAR



copied from the fifty-year-old Riemerschmid original, is as admirable an example of good design as you'll find.

MODERN INTERIORS. Send 25 cents to Berne, Ind. for this profusely illustrated booklet on contemporary decorating.

NEW YORK: 227 East 56 Street CBICAGO: 1638 Merchandise Mart BOSTON: 203 Clarendon Street KANSAS CITY: 212 Merchaolise Mart PASADENA: 2014 East Wainut Street DUNBAR FURNITURE CORPORATION OF INDIANA • BERNE, INDIANA



USE WINDPROOF BALSAM-WOOL Wind infiltration through Balsam-Wool® in a

frame wall is less than .000203 cubic feet per square foot per hour. For complete information about Balsam-Wool application, send for free A.I.A. file folder containing informative data sheets. Wood Conversion Company, Dept. 147-21, First National Bank Building, St. Paul 1, Minnesota.



Sealed Insulation - A Product of Weyerhaeuser





for these advantages

- ★ Eliminates need of expensive central-heating system and labor costs of operating and maintenance men.
- ★ Minimum of installation space required and no fuel to order and store.
- ★ Flexible operation, heat is used only when and where it is needed.
- ★ Low operating costs resulting from the efficient use of clean gas heat, automatically controlled.
- ★ Engineering layout service assures sound installation planning to meet individual heating requirements.

★ Heating can be combined with ventilating or summer air-conditioning distribution systems.

Write today! for helpful guide on the practical use of unit beaters for commercial and industrial installations. Ask for A.I.A. File 30-C-43.



SURFACE COMBUSTION CORPORATION



SUSPENDED MODELS Equipped with Propeller Fans or Blower Units.

18 sizes and types provide capacities ranging from 50,000 to 450,000 Btu/hr. Features include individual ribbon burners converting heat to separate heat exchangers to provide greater efficiency in less space. Blower equipped units are used to quietly circulate warm air against higher static resistance, permitting the use of ducts.

DUCT HEATERS No fan or motor is required for these units as installations are made to temper yen-



are made to temper ventilating air or to supply heat through summer air-conditioning duct work where air is circulated by a blower system. 5 sizes provide capacities from 85,000 to 225,000 Btu/hr.

**HEAVY DUTY FLOOR MODELS** 



Sectional construction of units permits heating capacities up to 1,500,000 Btu/hr. Sections can be equipped with directional diffuser outlets or to connected duct work. Units widely used for heating large areas such as airplane hangars, warehouses and plants handling large assemblies.

TOLEDO,

OHIO



KITCHEN MAID Cabinets of Wood

Nothing quite takes the place of hardwood for kitchen cabinets—the warmth and beauty, the permanence, the way wood lends itself to planning and installation. And today availability is not the least of wood's advantages. When you choose cabinets by Kitchen Maid, you are assured construction that has been tested and improved over 40 years, styling that's ahead of the field, customer approval that comes from a famous name. You also get from experienced dealers intelligent cooperation which can save much time and money. Decide now to select Kitchen Maid for your next project. Send coupon below for new catalog with specifications.





### Insulating · Acoustical · Structural ROOF DECKS

- For variable spans up to 8 feet Nailable concrete surface provided on sloping roofs
- Heat insulation equivalent to 2 inches of cork Eliminates separate roof insulation Coefficient of Heat Transmission (U) = 0.16 Btu
- Good sound insulation and absorption Efficient and economical, exposed acoustical ceiling

#### **Typical Installations**

SCHOOLS-Auditoriums, Gymnasiums, Classrooms CHURCHES • THEATRES COMMERCIAL AND INDUSTRIAL BUILDINGS





Build Strength, Long Life and Permanent Beauty



# into your new hospital walls ... with **NATCO STRUCTURAL CLAY TILE**

ST. VINCENT'S HOSPITAL

Toledo, Ohio

Interior views showing 6-T series Natco Structural Glazed Vitritile walls. Natco partition tile was also used in the build-ing construction.

Architects-Maguolo&Quick, St. Louis

Sons, Toledo, Ohio

Natco Structural Clay Tile offers every desirable advantage for hospital wall construction-strength, permanence, attractiveness, firesafety, imperviousness to moisture . . . plus construction economy and practically no maintenance.

For interior walls, Natco Glazed Facing Tile provides added features of cheery

brightness, cleanliness, sanitation, and germproof qualities so necessary to wards, rooms, kitchens, laboratories, operating rooms, corridors, etc.

Many of today's newest and finest hospitals have used Natco Structural Clay

Tile for both interior and exterior wall construction. First cost is last cost-because Natco Structural Clay Tile never deteriorates. Installation is easy and speedy with minimum material waste due to modular sizes. Each tile is marked "NATCO" as an assurance of quality. Write for Catalog SA-50 for information and details.







Whether you are planning or building one residence, a multiunit development, an apartment, hospital, hotel or other structure, Wall-Tex fabric wall coverings are a sound investment in beautiful, durable decoration.



A New Concept of Continuity of Display

# adds value to every building!

Investors, owners and tenants are all better satisfied when rooms and hallways are beautified and protected with Wall-Tex. The strong fabric guards against plaster cracks; the colors and finishes are safely washable.

> Wall-Tex full color magazine advertising is telling the Wall-Tex story to your prospects right now. They know Wall-Tex is a highly serviceable wall covering, decorator styled, famous for enduring beauty, a money-saving investment.



Send for new free Wall-Tex *File Folder*. Includes sample swatches. Shows range of recent applications; contains charts, technical data and factual information you need. Mail the coupon now!

8

fabric wall coverings

•

Columbus Coated Fabrics Corporation Dept. AF-21, Columbus 16, Ohio

Send your new free File Folder and sample swatches.

name\_ address\_

Flextures eliminate costly detailing and hand labor while providing unlimited design possibilities. Completely flexible, free standing and self-supporting, they offer full merchandise visibility without structural partitions.



GRAND RAPIDS STORE EQUIPMENT COMPANY

GRAND RAPIDS 2

### MOR-SUN COUNTER FLOW FURNACE FOR RADIANT WARM AIR HEATING

For Perimeter or Spider design radiant warm air heat in slab homes, the MOR-SUN COUNTER-FLOW FURNACES (for gas or oil), solve architects and builders problems...

FREE... write for your guide to th selection of radiant war air beating systems for it stallation in basementle bousse, willity rooms, cla



MICHIGAN

ting systems for inn in basementless utility rooms, closves, recesses. Sight"



Patent Pending

# 85% PREFER OAK FLOORING for these sound,

# enduring reasons:

ale a familie and the state of the state of



USE OAK: for low-cost homes USE OAK: for medium-priced homes USE OAK: for apartments USE OAK: for luxury homes • Oak is the most *durable* floor. It withstands the weight of furniture and foot traffic better than any other floor.

• Oak is the most *economical* floor. No replacement of worn out spots is necessary with lifetime oak. It is the easiest floor to care for, too.

• Oak is the "*healthiest*" floor. Its natural insulating quality makes the big difference.

• Oak is the completely *adaptable* floor. Oak harmonizes with every type of house, with every style of decorating and with every period of furnishings.

• Oak is the only flooring that is available in a complete range of grades. There is a grade of oak priced for use in every type of house.

Because oak meets every flooring need-durability, economy, ease of maintenance, adaptability and healthfulness-it is the overwhelming choice of 85% of all prospective homeowners. National Oak Flooring Manufacturers' Association, Sterick Building, Memphis 3, Tenn.

OAK IS THE FLOORING THAT HAS EVERYTHING EVERYONE WANTS

There is a growing trend to show more Oak . . . Everett Brown, A. I. D., Decorator. Photo, Hedrich-Blessing





### FOOD STORES? RESTAURANTS? TAVERNS? BAKERIES? FLORIST SHOPS? HOTELS? HOSPITALS? SCHOOLS? INSTITUTIONS?

Tyler engineers have been working on the problems of open, selfservice food store merchandising for years—are abreast of latest practice. The Tyler line, with over 400 models, represents the most advanced available—includes Open, Self-Service Cases for meats, produce, dairy products, frozen foods; sectional, steel-clad Walk-In Coolers; Welded-Steel Reach-In Refrigerators; economical, factoryfinished Metal Shelving, check-out counters, etc.

The new Tyler Catalog is in reality a DATA BOOK on commercial refrigeration equipment—full of facts, dimensions, and specifications.





## FOR EXTRA METAL PROTECTION AND EXTRA PAINT DURABILITY ...SPECIFY ACP RUST PROOFING CHEMICALS AND PROCESSES.

For over ½ of a century, ACP has pioneered in the development of protective metal-working chemicals. These chemicals preserve the metal and the paint finish of both industrial and military products.



To assure extra protection and extra paint durability for . . . STEEL, Specify: All steel materials shall be Granodized with "Granodine".® ZINC, Specify: All zinc and galvanized iron materials shall be Lithorized with "Lithoform".® ALUMINUM, Specify: All aluminum materials shall be

Alodized with "Alodine".

Write or call for further information. ACP Chemicals Meet Government Specifications.

Pioneering Research and Development Since 1914



Building: PORTLAND CEMENT ASSOCIATION LABORATORY—Skokie, III. Architect: Carr & Wright Inc.—Chicago, III. General Contractor: Turner Construction Co.—Chicago, III. Acoustical Contractor: General Acoustics Co.-Chicago, III.

# **DESIGN** for **Quiet, Firesafe** BEAUTY

Fiberglas\* Textured Acoustical Tile-the low-cost incombustible acoustical material offers this unique combination of advantages:

- High Acoustical Value
- Decorative Beauty
- Good Light Reflection
- Ease of Application
- Dimensional Stability
- **Cleanable and Paintable**
- Sanitary High Insulation Value

For complete specification information on Fiberglas Acoustical Tile, see Sweet's File or call your local Fiberglas acoustical contractor, listed in the yellow pages of the phone book.

Owens-Corning Fiberglas Corporation, Dept. 67-B, Toledo 1, Ohio. Branches in Principal Cities.



\*Fiberglas is the trade-mark (Reg. U. S. Pat. Off.) of Owens-Corning Fiberglas Corporation for a variety of products made of or with fibers of glass.



BUILDING

WRITE FOR FIBERGLAS DESIGN DATA





INSULATION

DUCT

AT LAWS EXEMP Anoridio

> ACOUSTICAL CONTROL SYSTEM FILTERS



### PRODUCT NEWS

#### **RIGID INSULATING SHEATHING eliminates** need for diagonal corner bracing.

Having more than twice the racking strength of wood sheathing, Bildrite is the first processed fiber board to be approved by the FHA for horizontal application in frame construction without additional corner bracing. The sheathing is a homogenous material, composed of popular and jack pine hardwood fibers treated throughout with pulverized asphalt for complete moisture re-





You can be sure your client will have maximum roofing protection and economical metal roof construction when you specify Follansbee Terne Metal Roofing.

Follanshee Terne Metal Roofing is really lifetime roofing-many installations made over a half century ago are still in service. This is just one of the advantages of terne metal roofing; others you will want to consider are

- design possibilities
- fire-resistant construction
- · roof and trim color combinations

Here's a flexible metal roofing which you can specify with confidence because its record of permanence is well-known. Detailed information on design and construction methods will be sent you promptly -just address Terne Metal Department, Follansbee Steel Corporation.



**REPLICA OF MEDIEVAL ENGLISH HOUSE** Design of Terne Metal Roof conforms to architectural treatment



OLD NEW ENGLAND HOUSE Terne Metal Roof installed almost 100 years ago

### FOLLANSBEE STEEL CORPORATION GENERAL OFFICES, PITTSBURGH 30, PA. COLD ROLLED STRIP · ELECTRICAL SHEETS · POLISHED BLUE SHEETS · SEAMLESS TERNE ROLL ROOFING



Sales Offices-New York, Philadelphia, Rochester, Cleveland, Detroit, Milwaukee. Sales Agents-Chicago, Indianapolis, St. Louis, Kansas City, Nashville, Houston, Los Angeles, San Francisco, Seattle; Toronto and Montreal, Canada. Plants-Follansbee, W. Va.

FOLLANSBEE METAL WAREHOUSES Rochester, N.Y. Fairfield, Conn



Material and labor time involved in setting diagonal bracing are eliminated with this FHA approved structural insulation board.

sistance. Yet, Bildrite remains permeable so that the exterior wall can breathe. Whatever moisture penetrates the vapor barrier, passes quickly through the sheathing to the outside instead of being trapped within the wall to cause damage from condensation or frost. Pressed in panels 25/32 in. thick, Bildrite has a K-factor of .36double the insulation value of wood sheathing. In most climates it can be used without building paper. The sheets are cut 4 ft. wide and in lengths of 8, 9, 10 and 12 ft. with V joints on the long edges. Easy to carry, saw and fit, the panels can be handled and erected by a single carpenter. Price in the Minneapolis region currently runs about \$110 per 1,000 sq. ft. A cost table comparing labor and materials used in Bildrite and wood sheathing applications reveals a saving of more than \$25 for each FHA super-



vised house built with Bildrite. Several thicknesses of the sheathing may be used for insulating radiant heating floor slabs. It also serves as permanent formwork for the poured concrete.

Manujacturer: Insulite Div., Minnesota and Ontario Paper Co., 500 Baker Arcade Bldg., Minneapolis 2, Minn.

#### PREFAB CHIMNEY uses outside air for insulation, can be set next to combustible materials.

Ingenious is a word Product News tries to reserve for one product a year and here is the productthe Thulman chimney. While playing an important role in Washington's alphabet world, Robert K. Thulman (previously Chief Mechanical Engineer for FHA and now with the HHFA) became well acquainted with the cost and behavior shortcomings of most masonry chimneys. He worked out a design for a preassembled metal chimney which could sell for less than \$100 and, utilizing (Continued on page 204)

# .. NOW YOU

SEE Them

# NOW.. You Don't

### ..with VIKING FLUSH TYPE Sprinkler Heads

Here's proof of the greater beauty of Viking Flush Type Sprinkler Heads. Notice how Viking Flush Type Heads blend quietly and beautifully . . . even ADD a note of beauty to the office in the illustration. The Flush Type Head is unobtrusive. When a fire starts it springs into action . . . equalizes the chance of water against fire by instantly drenching it. In fact, the Flush Type Head is unexcelled for water distribution.

The Viking Flush Type Head is a typical example of the farseeing yet practical engineering that makes Viking the leader in the sprinkler field. And this engineering skill is complemented by the best distribution system . . . and the finest installation and service facilities available. GENERAL OFFICES: MERCHANDISE MART

Your nearest Viking representative is ready to help you with the design of a sprinkler system for your next building. Because he maintains a completely stocked warehouse, a complete engineering staff, and an experienced, full-time installation crew, you'll find that he gives you the finest sprinkler system available. Contact him today, or write direct to the Viking Corporation.

Write for your copy of "Fire and Your Business" . . . facts on how a Viking Sprinkler System can protect your buildings from fire; forever.

ALL VIKING DEVICES ARE APPROVED BY UNDERWRITERS' LABORATORIES AND FACTORY MUTUAL LABORATORIES



# Here's the new TRANE CentraVac ... it's more than a compressor!

Now...for the first time...Trane makes centrifugal refrigeration available for the all-important 45to 190-ton range.

# Complete centrifugal refrigeration unit cuts costs four ways

The CenTraVac is a new kind of centrifugal ... hermetically sealed direct drive ... with stable operation from 100% down to 10% of rated capacity ... with efficient operation on reduced loads.

#### **Power Saved on Reduced Loads!**

CenTraVac has *built-in* capacity control. Horsepower saving runs parallel to capacity reduction over wide operating range. Owner pays only for chilled water actually used.

#### Simplified Installation Slashes Costs!

Compact, lightweight, vibration-free CenTraVac can be mounted anywhere from basement to penthouse without special foundation. One hermetically sealed unit is a complete chilled water refrigeration system. One wiring job—one set of connections—one system of controls.

#### Less Maintenance Time and Expense!

Designed to run without special attention, Cen-TraVacs are simple to turn on or off-or may be run continuously season after season. Unit has only two main bearings, force-feed oiled; direct connected water-cooled motor in hermetically sealed compressor eliminates gear boxes, shaft seals and similar devices, resulting in a machine that minimizes maintenance time and expense.

00

#### High Efficiency Means Low Cost Cooling!

CenTraVacs are designed to deliver over a ton of refrigeration per horsepower. Efficient on small as well as large jobs. Five models-45 through 190 tons.



THE TRANE COMPANY, LA CROSSE, WISCONSIN EASTERN MFG. DIVISION SCRANTON, PA. TRANE COMPANY OF CANADA, LTD. TORONTO



New, 1951 S. C. Air Conditioner packs more cooling in less space. See Bulletin S-362.



Brand-New, All-New Trane Reciprocating Compressors and Condensing Units . . . Trane-designed and Trane-built, 10 to 50 tons, for higher efficiency . . . smoother running . . . longer life. Bulletin DS-361.

Ask the Trane representative in your area—or write The Trane Company, La Crosse, Wis., for Bulletin S-399.



MANUFACTURING ENGINEERS OF HEATING AND AIR CONDITIONING EQUIPMENT • OFFICES IN 80 CITIES



BLYTHE PARK SCHOOL, RIVERSIDE, ILL. PERKINS & WILL, Architects - Engineers, Chicago; CHELL&ANDERSON, General Contractors, Chicago; PAUL Y. O'BRIEN, Painting Contractor, Chicago.

Photos, Hedrich-Blessing Studio

**E**VERY practicable device to keep its pupils interested and happy is incorporated in the new \$430,500 elementary Blythe Park School, Riverside, III., which was recently featured in Life Magazine. The school was conceived as a low, friendly structure of three units connected by glassed-in corridors. These units consist of the gymnasium-theater-library building, main classroom building, and kindergarten. Each room has natural daylight on two sides. The school campus is a 5-acre public park.

Designed to serve the whole community, the gymnasiumtheater-library building is open to all citizens of Riverside. Fluorescent lighting is recessed behind the splayed pine sounding boards of the basement auditorium and above the splayed acoustical tile ceiling.

Pratt & Lambert Paint and Varnish were used effectively in the decoration of this modern school. Warm, cheerful colors enhance its home-like atmosphere, while also protecting surfaces from wear and tear.

The Pratt & Lambert Architectural Service Department offers architects prompt, practical co-operation in securing appropriate decoration for any type of structure.

PRATT & LAMBERT-INC., Paint & Varnish Makers NEW YORK · BUFFALO · CHICAGO · FORT ERIE, ONT.



Pratt & Lambert odorless wall coatings— Lyt-all Flowing Flat and Solidex — have proven immediately popular with propertyowners and painters. Complete details of these unique wall coatings on request.









What an orchid is to a beautiful lady, Canvas Awnings are to distinctive domestic architecture. Well-planned homes and apartments glow with the charm of color. They give assurance of comfort and protection in summer—and allow maximum outside light during the comparatively sunless days of fall and winter.

Consult your local Canvas Awning maker. He offers a wide choice of fabrics and hardware to meet all practical needs.

THE CANVAS AWNING INSTITUTE, INC. and NATIONAL COTTON COUNCIL

"There is No Substitute for Canvas Awnings"





For detailed information and test

data, see Sweet's

File, Architectural

13g-or write for

Do catalog.

The sound-deadening quality of the resilient cork base provides an unusually quiet floor.

DODGE CORK CO., INC., LANCASTER, PA.

# Solved! World's Tallest

... in air conditioning

Every architect and engineer knows air conditioning jobs get tougher in multiple proportion to height. That's why New York's Empire State faced one of the trickiest air conditioning problems ever. It's the tallest building in the world.

Cooling off this giant involves engineering problems for which there are few precedents. Columns of refrigerated water nearly a quarter mile high—bearing down with hydrostatic pressures of more than 600 pounds per square inch—mean new kinds of equipment, new installation techniques. A plant capable of keeping these highest-in-history columns chilled and circulating —of re-processing without waste an ultimate of 5,000,000 gallons of water daily—must be designed and manufactured.

You should, of course, know the answer. It's the architect's and engineer's most frequent answer to air conditioning and refrigerating problems that can't be easily solved by precedent—

York equipment, York's seventy-five years of experience, York's seventy-five years of leadership in engineering and manufacture, have been chosen to help Empire State solve the world's tallest air conditioning job . . . and take the first step toward making selective air conditioning available to Empire State tenants where and when wanted.

WHEN YOU'RE FACED WITH ANY PROBLEM in air conditioning or refrigeration, remember York has the most complete nationwide organization of trained engineers to help you solve the initial headaches. And remember York's Certified Maintenance Plan saves your client the headaches afterwards.

YORK'S SALES POLICY IS TO WORK THROUGH YOU—to channel all contracts through the architect, engineer, contractor. Experience has shown that our knowledge, working with yours, brings best results. Check your York District Office to save time and detail on your next "tall" job. York Corporation, York, Penna.

Consulting Engineer: Edward E. Ashley General Contractor: Starrett Brothers & Eken, Inc. Mechanical Contractor: Almirall & Co., Inc.

**YORK** 



Headquarters for - Refrigeration and Air Conditioning

The big advances come from

### **PRODUCT NEWS**

a simple physical law of gravity circulation, could rely on outside air for effective insulation. In cross section the chimney is a ring in a ring in a ring. The hotter — and therefore more rapidly—flue gasses travel up the 6 in. vitreous enameled steel central core, the faster cold air is drawn into the top of the outer aluminum jacket down to a 180° turn, then up and out the middle concentric duct. According to Underwriters' Laboratories, who tested the chimney under continuous operation at a torrid 1,700° F.,



PRODÚCTS to the limes

A NEW PERSPECTIVE can logically be taken of the masonry situation, particularly as it relates to those units where local production pares prices to bedrock.

> By the local conversion of local raw materials into highly desirable masonry units, primarily for local consumption, economic wastefulness is avoided. A new standard of values is created through practical decentralization.

> Compact machines make possible the establishment of many small-investment plants, each to serve its own region. Masonry manufacture becomes a community enterprise. Cost economies resulting from streamlined production reflect in dramatically lower prices to the consuming public.

# MASONRY..... Locally Processed



Low in cost, rich in eye-appeal, and offering a choice of design, Dunbrik, Dunstone and Cavitex combine to initiate new avenues of masonry flexibility ... to make available masonry units matched to any size or type of building or project.

DUNBRIK is standard size brick, with liberal recess for weight reduction and mortar lock. Straight and accurate in all dimensions. High in compressive strength; low in absorption.

DUNSTONE is a 2 or 3 multiple of Dunbrik...8" x 8", 8" x 12", 21/4" high. Opens up new decorative possibilities.

CAVITEX is a 16-inch long unit, putting emphasis on the horizontal. Modular in all dimensions. Technically, a hollow, load-bearing unit. Refreshingly new in concept.

All three are available in an extensive range of impregnated colors and shades, with self-contained waterproofing values.

Architects and contractors are urged to write us direct for literature and other descriptive material, also for information concerning procurement from local or nearby plants.

> W. E. DUNN MFG. CO. 455 W. 21st Street HOLLAND, MICH.

As hot gasses (gray arrows) travel up the chimney cold air (white arrows) is drawn down the outer concentric ring, serving as effective insulation.

the outer surface remains cool enough to be placed directly against combustible materials (or left frankly exposed-its simple aluminum casing is no eyesore). Unlike a masonry flue, the Thulman unit has very little mass or "thermal inertia" and so warms up almost instantly, creating a draft as soon as needed. When the burner shuts off, the chimney cools quickly and the cold air stream from outside stops. Thulman units may be used with any fuel-oil, gas, coal, wood, etc. They demand no special building construction nor special footings, and are light enough so that one man can install a chimney. The base section is 14 in. square and will fit easily between joists on 16 in. center and between roof rafters (aligned with the joists) without cutting and heading.

Manufacturer: Chimney Sales Co., National Bank Building, Fredericksburg, Va.

#### ELECTRIC GLASS RADIANT HEATING PANELS fit into baseboards.

A modification of the company's room panels (BUILDING, Jan. '50) Electriglas baseboard panels provide a complete furnace-less heating system, or may be used as a supplemental heat source for homes, schools, and commercial buildings. In new construction the panels are recessed flush with baseboard or they may be surface mounted in existing structures. Consisting of a virtually unbreakable glass panel encased in a steel frame with hammered finish, the units have a chemical heating 1

element fused into the back surface of the tempered glass. Surface temperature never exceeds 240° F. For operating economy, individual room temperatures may be controlled indi-



vidually by means of a low voltage thermostat and relay. The baseboard panels are made in two sizes: a 200 watt, 683 Btu model measuring 30 in. long which sells for \$19.50; and 300 watt,



1,024 Btu unit 42 in, long priced at \$29.50. Both are  $6\frac{1}{2}$  in, high and  $1\frac{1}{4}$  in, deep. A junction cover plate covers the terminal block and glass mounting brackets. The infra-red heat radiated by the panels is clean and oderless. Room air remains moist and dust free. Having no moving (Continued on page 210)

# Making Daylight work better for you is our business



Architects: Holabird and Root and Burgee, Chicago.

Illinois Bell Telephone Company's second long-distance switching center, Chicago.



Direct sun causes uncomfortable brightness near windows, extreme contrast in other parts of room. Insulux Fenestration (glass block plus vision strip) directs and spreads daylight to ceiling, keeps brightness at comfortable levels, provides vision and ventilation.

**P**UTTING DAYLIGHT TO WORK FOR YOU is the business of our Daylight Engineers. Your next problem may be careful designing for smooth operation and economical maintenance rather than of light control.

That was the chief problem before Holabird and Root and Burgee when they designed the Illinois Bell Telephone's second long-distance switching center in Chicago. While daylight was desirable, it was subordinate to good insulation for the air-conditioning system, exclusion of dust and dirt.

An Insulux Fenestration System provided this building with good insulation. It made possible lower cost air conditioning, heating and maintenance plus all the daylight needed. The Insulux glass panels will not rot, rust or corrode. No painting is necessary. Infrequent washing keeps the glass block sparkling.

Whenever you have a problem involving daylighting plus other building considerations, consult our Daylight Engineering Laboratory, Dept. MB-2, Box 1035, Toledo 1, Ohio. Insulux Division, American Structural Products Company, subsidiary of Owens-Illinois Glass Company.





# WELL-PLANNED DRIVE-IN RESTAURANT

uses strategically hidden, compact Frigidaire refrigerating units



LOCATION: Corona Del Mar, California MERLE AFFLERBAUGH, Owner

Here's a happy departure from the Western tradition of roadside restaurants built to look like hot dogs, milk bottles and coffee cups. This new California drive-in looks functional—and, even better, it *is* functional.

The gleaming stainless steel shapes that fill its serving area and kitchen are all parts of an amazing machine -a machine capable of serving 2,500 people a day.

Many factors contribute to this high efficiency—and one important factor is the designer's use of a unique refrigerating machanism. This mechanism, made only by Frigidaire, is a larger version of the unit used to power Frigidaire household refrigerators. It's called the Meter-Miser, and it's the simplest cold-making mechanism ever built—sealed in steel and oiled for life.

Because of the Meter-Miser's compact, rectangular shape, it was easy to design six of these units right into the stainless steel food-preparation island. Tucked under counters and hidden below shelves, they are out of the way-yet easily accessible.

Meter-Misers serve in the main kitchen, too. For the three giant Frigidaire reach-in refrigerators and two big Frigidaire ice cream cabinets used there are all refrigerated by built-in Meter-Misers.

Says Merle Afflerbaugh, owner of the drive-in, "We chose Frigidaire Meter-Misers for two main reasons: 1. Their exceptional compactness. 2. Their fine record for low-cost, trouble-free service."

Stainless steel food-preparation equipment forms island at front of serving area. Here, concealed Frigidaire Meter-Miser units provide refrigeration for the fountain, two refrigerated display cases, the salad refrigerator, three refrigerated compartments, and refrigerated salad-and-dessert table.

Two 62-cubic-foot Frigidaire reach-ins stand back-to-back in center of main kitchen. Another is in the bakery section. Powered by Meter-Miser units, these reach-ins have a special forced-air cooling system that cuts food losses by eliminating "hot spots" inside the cabinet. Owner prefers reach-ins to walk-in cooler because, he says, they save steps and time – can be moved around if necessary.





Broad expanses of glass and simple slump stone walls characterize the exterior of the restaurant. The building is surrounded by a hard-top parking space of about 90,000 square feet. Main kitchen and bakeshop are located in a rectangular stone structure at the rear.



Here's a carhop's view of the front serving section of Merle's Caffee Shop. This open side of the octagonal serving area is protected from the weather by the sweeping marquee roof. In foreground is the beginning of the open-air terrace, where 32 diners can be seated at garden tables under shelter of the marquee.

This is Frigidaire's commercial Meter-Miser refrigerating unit. Built with watchmaker precision and an absolute minimum of moving parts, it is quiet and extremely efficient. Meter-Misers are available in ¼, ½ and ½ hp capacities. All carry Frigidaire's special 5-year warranty.



A phone call will bring you detailed information on all Frigidaire Refrigeration and Air Conditioning, Call your Frigidaire Dealer or the Frigidaire Distributor or Factory Branch that serves your area. Look for the name in the Yellow Pages of your phone book. Or write Frigidaire Division of General Motors, Dayton 1, Ohio. In Canada, Leaside 12, Ontario.



America's No.1 Line of Refrigeration and Air Conditioning Products

Air Conditioners • Refrigerators • Food Freezers • Water Coolers Electric Ranges • Home Laundry Equipment • Electric Water Heaters Electric Dehumidifiers • Kitchen Cabinets and Sinks

### LIKE ALICE, MOTHER CAN LOOK THROUGH THE LOOKING GLASS



MOTHER'S

EYE

\*

CHILD'S EYE

To the MOTHERS-IT'S A WINDOW



### To the CHILDREN – IT'S A MIRROR

At the Cleveland Hearing and Speech Center, instruction in corrective speech is conducted so the pupils and instructor can watch each lip movement. Their mothers can watch, too, for guidance in conducting supplementary home instruction.

This mirror magic, reminiscent of the famous Fairy Tale, is really very simple. The secret is in the use of *Mirropane*\*, the *transparent* mirror. From the instruction room, it's an ordinary wall mirror, just like any used in speech instruction. But from the dimly-lighted observation room, it's a clear window!

This idea, affording sight unseen, is one you can use in many places. In schools, hospitals, institutions, stores, banks, offices, entrance doors—wherever you wish to provide a means for observing people without their suspecting it— *Mirropane* can be highly useful as well as decorative. Write for full information. \*®



TRANSPARENT MIRROR • PRODUCT OF LIBERTY MIRROR DIVISION LIBBEY • OWENS • FORD GLASS CO. L-121 NICHOLAS BLDG. TOLEDO 3, OHIO





IN EXTERIOR FINISHES

Architect: William Lescaze, New York

Cabot's Stains are *beautiful* – they bring out all the loveliness of grain and texture – come in a wide range of colors from clear brilliant hues to weathering browns and grays, many available from no other source.

many available from no other source. Cabot's Stains are *practical* – 60-90% content of pure creosote oil, the best wood preservative known, preserves the wood and keeps termites out.

Cabot's Stains are economical too – they cost less than  $\frac{1}{3}$  as much as good paint – go on quickly and easily – keep their fresh colors for years.

Write Today for color card showing many unique colors available from no other source. Samuel Cabot, Inc. 230 Oliver Bldg., Boston 9, Mass.

Cabot's creosote stains





IT'S GOT EVERYTHING, this NEW Universal-Rundle Catalog!







New architect-designed bathroom plans in full colors . . . Drawings and specifications of complete bathroom layouts, and of every individual Universal-Rundle fixture . . . Color schemes . . . Commercial, industrial, and institutional fixtures . . . Kitchen equipment, sinks, wall and base cabinets . . . The facts about fittings and trim . . . A catalog of complete help for the planning, specification, and installation of bathroom and kitchen fixtures . . . A "must" for your working library—send for your copy!

#### DESIGNS FOR BETTER BATH-ROOMS, are these full-color ren-

**ROOMS,** are these full-color renderings of the finished bath, with detailed mechanical layout drawings and specifications. Planned by an architect, they help prospects visualize the fixtures in a harmonious, decorative setting, help them make up their minds.

FIXTURE PHOTOGRAPHS TO HELP YOU PLAN are here in profusion. Actual photographs of every fixture in the Universal-Rundle line, with full specification data and accompanying drawings—of bathtubs, lavatories, and water closets in the home, commercial, industrial and institutional fields.

#### **SELLING KITCHEN FIXTURES**

is easier with help like thisl Ten pages of photographs, drawings and specifications of Universal-Rundle Enameled Cast-Iron sinks, cabinet sinks, base and wall cabinets, and sink trim.

UNIVERSAL-RUNDLE CORPORATION



WATCH UNIVERSAL-RUNDLE IN '51! 1951 will see a big-space national advertising campaign to sell home builders and remodelers on the "first" quality and style of Universal-Rundle fixtures. Smashing full-page, four-color, eye-opening advertisements will be seen in such national consumer magazines as the Saturday Evening Post and Better Homes & Gardens early this year. Watch for them! Powerful merchandising, direct mail, displays, catalogs, consumer plan-books, newspaper ads, etc., will make the American public "U/R-conscious"!

Mail This Coupon Toda

UNIVERSAL-RUNDLE CORPORATION New Castle, Pa.

NEW

Gentlemen: Please rush me one copy of your new 1951 catalog. My letterhead is attached.

Name\_\_\_\_

Street\_



Zone

State

CASTLE,

PA.

### **PRODUCT NEWS**

parts to replace or repair, the panels require no maintenance. They are factory guaranteed for five years.

Manufacturer: Appleman Art Glass Works, Bergenfield, N. J.

#### CERAMIC TILE form decorative motifs for walls and fireplaces.

Designer Warner Prins is tackling a century-old medium with a contemporary hand. His unusual





Shows Architects and Builders how to cut Figuring Costs the **PRINTING CALCULATOR WAY!** 

NOW MORE THAN EVERyou need <u>Printing</u> Calculator figuring efficiency This valuable new Remington Rand publication "A Blueprint for Figure-Fact Efficiency" is slanted for YOUR use in every phase of architecture and construction. It tells you graphically how to take money-saving short-cuts in estimating, computing, checking costs, figuring payrolls, performing algebraic and other mathematical operations. It shows how the famous Printing Calculator, with its *faster* 10 Key Keyboard, automatic division and direct multiplication, its lightning-quick adding and subtracting — can SAVE for you all along the line. With the <u>Printing</u> Calculator you get these advantages plus PRINTED PROOF — a constant visual check on every step. Send the coupon today.

Remington Rand, Business Machines & Supplies Division Rm. 2710, 315 Fourth Ave., New York 10 Please send me a FREE copy of "Blueprint for Figure-Fact

Efficiency" – the booklet that shows how to CUT COSTS the Printing Calculator way.

Name\_\_\_\_\_

Address

City\_

the state of

Remington Rand printing calculator

Zone State

Ceramic tile serves as a distinctive room accessory



handpainted underglaze tiles are now available to architects and builders at prices little higher than ordinary solid color tile. Sets of 18 six inch tiles for fireplace facings range in design from linear abstract repeats to humorous one-of-a-kind figure studies, and in retail costs from \$36 to \$126. Colors, developed from metallic oxides, are rich and practically limitless. The tiles are given matt, gloss or crackle finishes which are stain and smoke resistant and easily wiped clean. The design illustrated (above, left) is made in black or gold on oyster white, and white on green, brown or blue spattered backgrounds. Price, in quantity orders, is \$2.60 per sq. ft. The company will duplicate any submitted color swatch and also will produce original patterns for wall panels or large murals.

Manufacturer: Warner Prins, 36 East 22d St., New York 10, N. Y.

#### PORCELAIN ENAMEL WINDOW SILLS available for home construction.

Originally developed for schools and multiple housing projects, porcelain enameled steel window sills are now available for home applications and other types of private and public buildings. They are fabricated in several stock patterns in 16 gauge steel and in 48 permanent colors, but may be ordered in quantity to meet architects' specifications for size, shape and color. Waterproof, chip and acid resistant, the sills are not likely to be affected by household chemicals



spilled on them and so are especially suited to baths and kitchens. They are easily cleaned with a damp cloth. Prices vary from about \$1.25 to \$2.25 per lin. ft. according to depth, design and number of sills ordered.

Manufacturer: Bettinger Enamel Corp., Waltham, Mass.

(Continued on page 216)

seminaton san



# an artist with a practical eye



RESIDENCE of Artist Roland Rodegast, in suburban St. Louis, is protected against termites and decay by Monsanto Penta. Lumber used in the interior also is treated with Monsanto Penta to make it water-repellent while retaining paintability. When Artist Roland Rodegast built his suburban home near St. Louis, Missouri, he combined the beauty of *modern* architecture with the practicability of *modern* wood preservation.

Monsanto Penta (pentachlorophenol, technical), applied by pressure at the rate of six pounds of five per cent penta solution per cubic foot, preserves studding, ship lap and redwood siding. The residence is permanently protected against attacks by termites and other woodboring insects . . . against decay caused by fungi. Both the beauty and structural strength are protected.

Pecky Cypress, used in the interior, is treated with Wood-tox, a formulation including Monsanto Penta, which makes wood water-repellent and dimensionally stable as well as protecting it against insects and decay. When treated with properly formulated Monsanto Penta, wood can be painted, varnished or beautified with modern finishes.

Monsanto Penta is a permanent wood preservative. It does not leach out of lumber but penetrates deeper as time goes on. It is a chemical treatment that always is uniform, giving *dependable* results.

For suggestions on specifying penta-treated lumber and for information on sources of materials, contact the nearest Monsanto Sales Office or write MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1700 South Second St.,

St. Louis 4, Missouri.

DISTRICT SALES OFFICES: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Houston, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada, Monsanto (Canada) Ltd., Montreal.

Wood-tox: Registered Trade-Mark of Wood Treating Chemicals Company, St. Louis, Mo.



Monsanto

CHEMICALS -- PLASTICS







# Comfort AND SAVINGS PROVIDED with METAL WEATHERSTRI

It's mighty hard to provide maximum comfort in homes that do not have the necessary full protection of Metal Weatherstrip to seal the cracks around windows and doors. It literally puts a blanket around them ... prevents needless heat loss and discomfort.

Metal Weatherstrip pays for itself in two or three years by savings in fuel alone. Reductions in fuel cost range from 20% to 30%. In addition, it's a weather-tight defense against rain, wind, storm, snow and all moisture.

For better Metal Weatherstrip it's "smart business" to talk with anyone of the Weatherstrip Research Institute members. Suggestions and inquiries about metal

weatherstrip are invitedfor the benefit of all.

BOX 101 - RIVERSIDE, ILLINOIS Weatherstrip—the original Fuel Conservator . . . Saves Most Fuel in Proportion to Cost!

OFFICE OF THE SECRETARY

WEATHERSTRIP Research INSTITUTE

#### Members:

ALLMETAL WEATHERSTRIP CO. 2241 N. Knox Ave., Chicago 39, III. BARLAND WEATHERSTRIP MATERIAL CO. 1960 E. 59th St., Cleveland 3, Ohio CECO STEEL PRODUCTS CO. 5701 W. 26th St., Chicago 50,11. CENTRAL METAL STRIP CO. 4343 N. Western Ave., Chicago 18, III. CHAMBERLIN CO. OF AMERICA 1254 LaBrosse St., Detroit 26, Mich. DENNIS & CO., W. J. 4444 W. Irving Park, Chicago 41, III. DORBIN METAL STRIP MFG. CO. 2410 S. Cicero Ave., Chicago 50, III. E-Z TIGHT, INC. 611 S. Broadwa adway, Albuquerque, N. M. GARDNER WIRE COMPANY 1325 S. Cicero Ave., Chicago 50, III. MACKLANBURG-DUNCAN CO. Box 1197, Oklahoma City, Okla.

MASTER METAL STRIP SERVICE MONARCH METAL WEATHERSTRIP CORP. St. Louis 14. Mc 6333 Etzel Ave NATIONAL METAL PRODUCTS CO. 1025 Chateau St., Pittsburgh 12, Pa NICHOLS METAL STRIP SERVICE 2104 Gilbert Ave., Cincinnati 6, Ohio REESE METAL WEATHERSTRIP CO. inneapolis 15, Minn ROBBINS MFG. CO. 1815 N. Central Park Ave., Chicago 47, III. SECURITY COMPANY 1757 Puritan Ave., Detroit 3, Mich. SOUTHERN METAL PRODUCTS CORP. 21 Rayner, Memphis, Tenn SPANJERS CO., A. J. 82 Tenth Ave., N.E., Minn. 13, Minn. WARNICA PRODUCTS 6416 S. Ashland Aye., Chicago 36, III. ZEGERS, INC. 8090 So. Chicago Ave., Chicago 17, III.

buildings **Martin** That i HI F.F. alak-RE hu F The only sink guaranteed to outlast your ho risa Everlasting Beauty - Prestige -HAN PINEF Minimum Maintenance of Elkay A HERE A Lustertone Stainless Steel Sinks add a distinctive mark to the kitchens in this modern apartment . . . add rental appeal and re-sale value to any building or home-new or old alike. Lustertone remains permanently bright, unstained and untarnished . . . never needs scouring or bleaching. ACADEMY GOLD MEDAL FOR EXCELLENCE OF DESIGN

America's finest

America's finest

sinks for

ARCHITECT:

AWARDED FASHION

Frank A. McNally & Assoc., Chicago

STATE ST

BUILDER: 5858 Sheridan Corp.

Write for literature and prices **ELKAY Manufacturing Co.** 

The World's Oldest Manufacturer of Stainless Steel Sinks 1898 S. 54th Ave., Chicago 50



continuous lateral reinforcing for block, brick or tile walls and serves as a unit to tie face brick to back-up block.

Dur-O-waL is electrically welded; easy and fast to handle; assures tight corners; economical and dependable.

Contact nearest plant: Dur-O-waL Div., Cedar Rapids Block Co., 698 12th Ave., SW, Cedar Rapids, Ia.; or Dur-O-wal Products, Inc., P. O. Box 628, Syracuse, N. Y.




Recently a flash flood in Omaha, Nebraska washed away the foundation of this partially completed home, dropping the structure into the excavation.

DOUBLE-WATERPROOFED

As the unretouched photo here shows, Celotex Insulating Sheathing HELD THE WALL FRAMING INTACT, despite the terrific strain of the twisting action and jolt accompanying the drop!

Dramatic proof indeed of its superior structural strength and rigidity! One more reason why Celotex Double-Waterproofed Insulating Sheathing belongs in *your* specifications! Send now for *free* booklet giving full details. The Celotex Corporation, 120 South LaSalle Street, Chicago 3, Illinois.



BUILDING PRODUCTS THE CELOTEX CORPORATION • CHICAGO 3, ILLINOIS

#### Celotex Big Board Sheathing Meets F. H. A. Standards with NO CORNER BRACING

cam camp

As the test results below show, 4 ft. wide, <sup>25</sup>/<sub>20</sub>" thick Celotex Double-Waterproofed Insulating Sheathing without corner bracing GREATLY EXCEEDS exacting F.H.A. Standards, which require bracing strength at least equal to horizontal wood sheathing with corner bracing.

Yes—you can make this additional saving, yet build a better, stronger wall with this Celotex Double-Waterproofed Insulating Sheathing. Remember, it insulates as it builds!

#### Results of official tests prove 4-ft., 25/32" Celotex Insulating Sheathing beats rigid F.H.A. requirements by far!

	F. H. A. Technical Circular No. 12 Criteria		Average of Test Results	
	Dry	Wet	Dry	Wet
Maximum Load, lbs.	5200	4000	6720	7290
At Load of 1200 lbs.	1.50	13 8 2 3	Carl Marine	COLUMN 1
Average Total Deflection, in.	0.2	0.28	0.217	0.147
Residual Deflection*, in.	0.1	0.14	0.067	0.040
At Load of 2400 lbs.	1×10 00 1			North State
Average Total Deflection, in.	0.6	0.8	0.533	0.483
Residual Deflection*, in.	0.3	0.4	0.230	0.187
and the star and star after some of	af land			



#### MINIMUM BACKSET DEADLOCKS USED ON ALL EXTERIOR DOORS AT THE BON MARCHE STORE, SEATTLE

Installed in all Kawneer Narrow Line doors at the Bon Marche Northgate, these Adams-Rite Series 970 Minimum Backset Deadlocks are fitted into the narrowest stiles

... and have been specified because of their design and quality construction.

To OVER HALF & CENTURY

The locks have a depth of only 1 1/2", yet they take 1 or 2 standard cylinders of any manufacturer, keyed to the job. The Thumb Turn (shown) is optional for emergency operation. John Graham, Jr., Architect

Write for catalog

REPLACE THIS

WITH THIS



QUALITY HARDWARE FOR

NEW RIDER BOOK PROVIDES PRACTICAL GUIDANCE FOR ARCHITECTS, LANDLORDS, REAL ESTATE AGENTS, HOTEL MANAGERS, SUPERINTENDENTSI

> **TV MASTER** ANTENNA SYSTEMS

by Ira Kamen and Richard H. Dorf Hundreds of TV antennas atop a building are not only unsightly but are also a life and property hazard. The answer to this problem is the Master Antenna System ... whereby a single antenna does the work for all the TV sets in the house. However,

Mail This Coupon Today! 10-Day Money-Back Guaranteel JOHN F. RIDER PUBLISHER, Inc. 480 Canal Street, New York 13, N.Y. Please send me your book, "TV MASTER ANTEN-NA SYSTEMS," on your 10-DAY MONEY-BACK GUARANTEE. If not satisfied, I will return the book, in good condition, for refund. Name Address City Zone State

State

City Zone State Check Money-Order E SAVE POSTAGE. We pay postage if you remittance with order.

unless you are thoroughly familiar with the Master Antenna System . . . how it works, how it is installed, etc. . . . you may be heading for much unnecessary trouble and expense.

In TV MASTER ANTENNA SYSTEMS, the authors provide a practical working manual which deals with infor Master TV Antenna Systems; Installing Master An-tenna Systems; Electrical Specifications; and Other Valu-able Information.

50 million dollars will be spent in 1951 for TV Master Antenna Systems installed in apartments, multiple dwellings, hos-pitals, hotels... in both new and old buildings. If you are a part of the buildbuildings. If you are a part of the build-ing field, you owe it to yourself to fa-miliarize yourself completely with the Master Antenna System. And so...this is the book for you. 368 pages, 234 explanatory illustrations. Cloth bound. Only \$5.00

HOW TO AVOID **COSTLY MISTAKES IN** FOOD SERVICE PLANNING

Architects and food service operators must make the right decision on a host of important details in planning any food service operation. Facilities that are out of balance with menu, type of service or volume; a layout that unnecessarily increases labor cost, poor choice of equipment-these are just a few of the factors that make the difference between success and failure. Many of them are explained in detail in our new FREE booklet "3 Steps to Food Service Success." This authoritative booklet is based upon 30 years of planning food service projects. It may help you save thousands of dollars when planning or remodeling any type of food service establishment. It's FREE. Write today for your copy of "3 Steps to Food Service Success."

#### D E ASSOCIATES н 8480 BEVERLY BLVD., LOS ANGELES 48. CALIFORNIA

## ATTENTION **MANUFACTURERS'** AGENTS

THE MACAZINE OF BUILDING is compiling a new list of Dealers, Distributors and Manufacturers' Agents who are interested in adding new lines (building products, materials, specialties, household appliances, etc.). This list, when completed, will be available on request to interested manufacturers.

If you would like to be listed please write and be sure to tell us what territory you cover and what types of products you would like to handle.

Write: George P. Shutt

**Director** of Advertising THE MAGAZINE OF BUILDING **9** Rockefeller Plaza New York 20, New York

214 architectural FORUM february 1951

# From any angle, quality and precision fabrication distinguish Pittsburgh Doorways

Heavy steel construction, reinforcing the heavy extruded aluminum frame, prevents Pittsburgh Doorways from getting out of line and permits Herculite Doors to swing easily always. In this lower section of the frame, note side-light track an integral part of several standard style Pittsburgh Doorways. Also note how the unique Pittco Checking Floor Hinge is permanently placed in its reinforced box.

 Because of these quality features and careful workmanship, it is easy to understand why Pittsburgh Doorways are noted for their lasting satisfaction and for their ability to cut labor costs on the job to a minimum.

Pittsburgh Doorways are factory-assembled to precision standards. Expert craftsmen use special checking gauges to assure absolute accuracy of all dimensions. This means the saving of several days' installation work at the site. There are no time-consuming calculations, no costly fitting, locating or fabricating details in the field.

Think of the total-installed cost—not just the list price; consider the quality manufacture that marks every detail of construction and you'll choose Pittsburgh Doorways every time! For complete information, write today to Pittsburgh Plate Glass Company, 2048-1 Grant Building, Pittsburgh 19, Pennsylvania.

PAINTS

PITTSBURGH



Architects: Fuller & Beckett, Atlanta, Ga.

PLASTICS

COMPANY

Pittsburgh DOORWAYS

BRUSHES

GLASS · CHEMICALS ·

PLATE

GLASS

## **PRODUCT NEWS**

#### ULTRA VIOLET REFLECTOR brings outdoor freshness to public rooms.

Even with doors and windows closed, the air in a school or hospital room equipped with an Air-Tron Louvered Upper Air Unit is said to remain fresh and practically germ-free. A powerful disinfecting fixture, the Air-Tron has a large aluminum parabolic reflector which directs germicidal ultra-violet rays across the upper part of a room. Natural convection carries air currents up





Northern Indiana Children's Hospital, South Bend, Ind. Pohlmeyer & Pohlmeyer, Arch-itects; Skidmore, Owings & Merrill, Associates.

It's easy to maintain original

beauty with washable LIQUID VELVET walls!

Rigid washability tests prove O'Brien's Liquid Velvet superior to other leading flats. Liquid Velvet retains its rich velvet-like finish, even after repeated scrubbings. Made with patented Pre-Shrunk Oils. With Liquid Velvet you can be sure of practical as well as beautiful

walls for any interior. The O'Brien Corporation, South Bend 21, Indiana; Baltimore 13, Maryland.

NEW 1951 O'BRIEN ARCHITECT'S COLOR MANUAL Full page 6" x 3" swatches show over 100 selected, up-to-the-minute colors-in tune with latest decorating trends. Manual, divided for

easy comparison, includes standard colors and many easy-to-make mixtures with exact mixing specifications.

The O'Brien Corporation, Dept. A-2, South Bend 21, Indiana. Rush my copy of new 1931 O'Brien Architect's Color Manual. My check for \$1.50 is enclosed.



TOP QUALITY SINCE 1875

Air-borne bacteria are immediately destroyed as they pass through the germicidal ultra violet rays reflected by this large capacity room disinfector.

through the bacteria-destroying beam and then down again. Rays are not projected down into the room, however, where they might injure eyes or skin of people present. The 8 watt model provides protection for an area up to 80 sq. ft. and sells for \$19.10. The 15 watt retails at \$25.50. It will serve areas up to 150 sq. ft. For rooms up to 425 sq. ft., the 30 watt Air-Tron is available at \$44.50. The units are finding wide acceptance in bakeries, laundries, restaurants and factories and public buildings.

Manufacturer: Roy C. Stove & Co., 5848-52 S. Honore St., Chicago 36, Ill.

#### **GAS-BURNING INCINERATOR** has automatic shut-off.

New time controls and a thermo-magnetic valve on the Incinor eliminate return trips to the incinerator to turn off the gas. When the selected

time expires the fuel flow is stopped automatically. Made with a convenient ash removal drawer; cast iron grate, door and top; and heavy sheet steel firing chamber, the compact S-25 has a two bushel capacity. It is approved by the American Gas Assn. for use with natural, liquefied petroleum, manufactured and mixed



gases. Retail price for the model is \$119.50. Standard units without time control cost somewhat less.

Manufacturer: Bowser Inc., Incineration Div., Cairo, Ill.

#### **NEW KITCHEN CABINETS are sleek, accessible.**

In a move comparable to that of the early 30's in the automobile world, General Electric has taken one giant step in madame's kitchen and softened the lines on its new steel cabinets. The wall cabinets have counterbalanced doors which may be lifted up from the bottom with a finger's touch. When open the doors are out of the homemaker's way, eliminating the danger of bumping into them. Smaller sections fit directly beneath the (Continued on page 222)



Name

Address



Next time you Paint ..

with Pittsburgh COLOR DYNAMICS

RG

• Discriminating use of color adds to the beauty and utility of the general offices of the Milwankee Journal, Milwankee, Wis.

## New, scientific painting system uses <u>energy</u> in <u>color</u> to add to efficiency, comfort and morale of office workers

**COLOR,** used for decorative purposes in public and private office buildings, has taken on new significance in recent years because of its psychological and physical effect upon human beings.

• There is no longer reason for the depressing monotones usually found in commercial structures. Pittsburgh COLOR DYNAMICS enables architects, builders and contractors to specify color arrangements that retard fatigue, increase safety and improve the efficiency and morale of office workers.

• Science has shown that colors stimulate and inspire, rest and relax, depress and fatigue. Pittsburgh has made use of this knowledge of the energy in color in developing COLOR DYNAMICS.

• With this painting system you choose with scientific accuracy the

right colors for all types of offices in keeping with their purposes, their exposure to sunlight and their natural and artificial lighting.

• You lessen eye-strain, stimulate concentration, promote comfort and cheerfulness among those who work in these offices. Housekeeping problems are simplified.

• COLOR DYNAMICS makes office quarters look different and more attractive. It makes them seem longer or wider, higher or lower. You paint sunlight into dark and dismal halls and stairways. Lobbies and reception rooms reflect the spirit and character of their tenants.

• Why not discover for yourself how you can create a whole new world of helpful colors to bring new efficiency, new energy, new pleasure to those who occupy your buildings?

G

E

#### Let us make a COLOR DYNAMICS engineering study for you – FREE!

•For a complete explanation of what COLOR DYNAMICS is and how you can put it to work for you, send for our profusely illustrated booklet which contains numerous examples of its use in the painting of office buildings. It's FREE!

Better still, let us submit a color engineering study of your building, free and without obligation.

There's a trained COLOR DYNAMICS expert at each of our 75 warehouses. Call your nearest Pittsburgh Plate Glass Company branch and arrange to have one of its representatives see you at your convenience. Or mail this coupon.

#### SEND FOR A COPY OF THIS BOOK!



## How Flexwood SOLVED this ARCHITECTURAL PROBLEM



Executive office, Abbott Laboratories, No. Chicago, Ill. Designer-Harper Richards.

**PROBLEM** • To give office modernity with warmth. Wall covering must compliment contemporary furniture, serve as background for fine paintings, provide in itself rich, handsome decoration.

SOLUTION • Dark-toned English Oak Flexwood inside of panels provides subtle contrast with American Rift Oak Flexwood, lends enriching accent to paintings and other appointments. Panel treatment on door gracefully merges this element into harmonious interior pattern. Result is an exceptionally rich, inviting atmosphere.

FREE BOOK of Architectural Case Histories shows how Flexwood\* solved 17 actual architectural problems in private and public buildings. Send coupon below.

UNITED STATES PLYWOOD CORP. 55 West 44th Street, N. Y. 18, N. Y.

In Canada: Paul Collet & Co., Ltd., Montreal Flexwood is manufactured and marketed jointly by United States

--------

Plywood Corporation and The Mengel Company.

CHOICE WOOD IN FLEXIBLE SHEETS

exwood

NAME

United States Plywood Corporation, Dept. W-5 55 West 44th Street, New York 18, N. Y. Please send me, without obligation, Flexwood's Case-History Book; shows how Flexwood helped solve 17 actual architectural problems.

ADDRESS

- Flat-Cut Walnut Flexwood.

# G-E WIRING FACTS?

### HOW MUCH EXTRA CURRENT CAN YOU ADD TO EXISTING RACEWAYS?

Size for size, Deltabeston\* AVA cables carry more current than ordinary cables—pack more current into raceways—because heat-beating asbestos insulation permits higher operating temperatures. When you specify G-E Deltabeston cables, HOW MUCH CURRENT CAN YOU ADD?

### WHAT REALLY MAKES THE DIFFERENCE IN CONDUIT?

Wiring installations get double-protection with General Electric White rigid conduit. First, the top-quality, thoroughly-tested steel pipe is galvanized. Then a tough, smooth coat of Glyptal\* lacquer is applied. BUT WHAT REALLY MAKES THE DIFFERENCE?



### ANSWERS

1. G-E Deltabeston AVA cables can add as much as 64% more current-carrying capacity than ordinary Type R building wire.

2. G-E White rigid conduit is *hot-dip galvanized* in pure zinc—a premium finish that gives lasting protection.

**3.** In laboratory tests General Electric mercury switches stand up under more than a million On and Off cycles—about 247 years of normal use.

4. The new standard grounding outlet (GE3588) is designed to take three-prong grounding plugs, two-prong polarized plugs, and regular two-prong parallel-blade plugs.

5. The new line of G-E bar hangers offers you the offset you need. New design lets fixture stud move easily for leveling and positioning, locks it tight when it's set.

GENERA

FOR FURTHER INFORMATION on any General Electric wiring materials, see your local G-E Construction Materials Distributor, or write to Section K53-24, Construction Materials Department, General Electric Company, Bridgeport 2, Connecticut,

\* Registered Trade Mark of General Electric Company

## 3. WHAT IS THE TESTED LIFE OF A G-E MERCURY SWITCH ?

The silent General Electric mercury switch has no moving blades or contact springs to wear out—a pool of mercury does all the work! Mercury switches provide exceptionally long service— CAN YOU GUESS HOW LONG?

WHAT'S THE NEW STANDARD GROUNDING OUTLET?

For easy installation the new standard G-E twin grounding outlet can be side wired or back wired, but WHAT'S THE NEW STANDARD?

### HOW DO YOU POSITION A BOX EXACTLY WHERE YOU WANT IT ?

ELECTRIC

Positioning a box exactly and bringing it to the exact level is now an easy job with the new G-E bar hangers. HOW'S IT DONE?

the magazine of BUILDING 219



# We don't mind...

You might think we'd be disappointed in the Levitt House for 1951, Why? Because its open planning calls for fewer doors and fewer locks by Sargent.

But we like this imaginative new home. And we're proud that for this latest design — as for 20,000 Levitt houses since 1946—the choice is Sargent's famous 4500 line lock.

The Levitt organization has realized the important part that good hardware plays in the modern house,

And we believe that the architect or contractor who watches carefully both price and quality — who values ease of installation, styling for today, reliability — will choose locks by Sargent.

That's the kind of detailed planning, from Sargent 4500 locks to television sets, that has made Levitt the largest home-builder in the world.

So we don't mind if he builds a better home that needs fewer locks. We're happy as long as you can't open a Levitt door without turning a lock by Sargent.

Better products by-



Sargent and Company

New York, New Haven, Conn., Chicago Builders Hardware and Fine Tools since 1864

# Using Copper wisely in Building Design and Construction

#### WRITE FOR DETAIL DRAWINGS (Numbered for A.I.A. Filing) Details of the copper construc-

tion illustrated in this sketch are available in 8½"x 11" sheets convenient for filing. Other sketches showing how a little copper can go a long way in achieving good building construction will be featured in subsequent advertisements.



# 2.

Copper edging for built-up roofing having a fascia board or cornice at edge.

## roof edgings of Copper

Metal edgings which serve as gravel stops eliminate the need for more costly masonry construction. Copper is the preferred metal for roof edgings because of its lasting qualities, easy workability and weather-tight performance when properly installed. Sketches 2 and 3 suggest designs and method of installing. The edging strip shown in sketch 1 is for use on sloping roofs with asphalt shingles. For suggestions or counsel on any problem involving sheet copper write: The American Brass Co., Waterbury 20, Conn. 5137 In Canada: Anaconda American Brass Ltd., New Toronto, Ontario.

### nothing lasts like



**3**. For construction where a concrete slab forms the cornice. Facing of 24 oz. cold rolled copper has sliding joints top and bottom, permitting independent, unrestrained movement.

## **PRODUCT NEWS**

larger cabinets and have doors which open from the top down. By making the larger units 6 in. lower than conventional models and using small compartments beneath the cabinets (usually wasted space) the overall design provides better accessibility to all parts of the storage area. Mrs. America (who, research reveals, stands about 5 ft. 2 in. and putters in her kitchens in flat heels or slippers) can easily get things from the back of the top shelf. For added cleanliness and better vision, wire shelves similar to those in refrigera-





G-E's new steel wall cabinets keep kitchen items within reach

tors are used in the cabinets. Shelves in the "underwall" sections may be removed so tha toasters and other small appliances may be stored in them. Not only do the rounded lines give the cabinets a fresh look far removed from the fa miliar sharp-edged boxes, but they create a more recessive appearance which harmonizes with the wall surface and eliminates the need for building expensive soffits above the cabinets. Corner sec tions 26 x 26 in. with open shelves are also being planned for the line which will be available ir limited quantities in the Spring. Prices are ex pected to be about 15 to 20 per cent more thar the standard units.

Manufacturer: General Electric Co., Bridgeport 2, Conn.

#### REFRIGERATORS have large freezer compartments.

Three of the new refrigerators introduced by G-E have good-sized freezers across the top of the cabinets. One of them, the LC-8-H, is an 8 cu ft. model priced at \$299.95. It will hold 43 lbs of frozen foods. Another 8 cu. ft. unit, the LF-8-H has a separate door to its freezer compartment as does the 10 cu. ft. LF-10-H. These models sell for \$329.95 and \$395.95 respectively. The latter has room for 49 lbs, of frozen foods. Al



three refrigerators have magnetic latches which close the doors quietly and tightly, and a fullwidth tray is provided below the freezer for fast chilling of soft drinks or meat storage,

Manufacturer: General Electric Co., Bridgeport 2, Conn.

#### **RUBBER BASEBOARD** is sanitary, inexpensive.

Sani-base colored rubber baseboard may be installed around kitchen cabinets; laundry, bathroom and playroom floors to form a positive seal of neat concave molding. Verminproof and durable, the natural rubber is made with a <sup>3</sup>/<sub>4</sub> x <sup>3</sup>/<sub>4</sub> (Continued on page 228)





Plexiglas SKYLIGHT UNITS

UDDSCOLITE PATENT PENDING

2. Plexiglas Dome is removed from frame.

3. Frame is screwed to the curb.

I THE

18

1. 9:00 A.M. WASCOLITES arrive on the job.

5. Protective coating is . peeled off. 10:00 A.M. 5 sparkling WASCO-LITES completely and permanently installed.

> 4. Plexiglas Dome is fastened back on frame.

> > Science Hall Addition Brandeis University Waltham, Massachusetts

Architects: Isidor Richmond & Corney Goldberg Boston, Massachusetts From shipping carton to finished skylight in record time with WASCOLITES, the completely prefabricated skylight units. Neat and attractive in appearance, Wascolites flood interiors with unobstructed light. Inside nothing but the sky is visible — and Wascolites are strong, shatterproof, absolutely water-tight.

Find out more about this revolutionary new skylight. Send for our WASCOLITE A.I.A. folder. And ask the name of your nearest WASCO representative. He has a WASCOLITE unit to show you.

# Wasco Flashing company · cambridge · mass.

COMPLETELY INSTALLED IN 1 HOUR BY ONE MAN

Alfred Levilt says:

# "Today's home buyers insist on

# an automatic washer...

# Naturally, we pick the brand

# with the greatest

# public acceptance"

(P.S. All Levitt homes are equipped with a Bendix Automatic Washer)



# RIGHT BEFORE YOUR EYES....

With the cover off the case, it's easy to spot the Russwin "Ten Strike" Lock features that add up to *extra value*. Notice the exceptionally sturdy construction throughout... the forged brass knob hub and brass front with armored scalp... the heavy, formed, interior parts of rust-resisting steel ... the smooth precision-made case that holds the parts in permanent alignment. Features like these have put Russwin "Ten Strike" Mortise Locks in a class by themselves for exceptionally long, troublefree service ... proving the economy of quality.

There are over 800 possible lock combinations in the Russwin "Ten Strike" Line . . . made from three base locks in two backsets. All have the famous Russwin Adjustable Ball Bearing Pin Tumbler Cylinder. One size mortise for all functions. Since all "Ten Strike" Locks are reversible, changes in door swings will not add to the cost of hardware.

Recommend locks with the *extra value* . . . the Russwin "Ten Strike" Lock Line. Write for catalog. Russell & Erwin Division. The American Hardware Corp., New Britain, Conn. the EXTRA VALUE in Russwin "Ten Strike" Locks



Proving the Economy of Quality

# MINUTES MEAN MONEY

### When you complete 38 homes a day!

"We use MATICO because it's easier, faster to install... assures low cost...high quality."

> ... says Levitt & Sons America's largest builder of private homes.

Time is precious when you build 5,400 new homes a year. To meet such an exacting schedule, Levitt & Sons is geared to complete 38 new homes a day. That's why they select MATICO Asphalt Tile for flooring every room of their new 1950 Levittown economy-type homes and their Roslyn, N. Y. luxury-type homes. MATICO's precisioncut, squared edges save valuable installation time and MATICO assures a minimum of breakage — an important cost-cutting factor. Precision tested throughout manufacture, MATICO meets Federal specifications for flexure, indentation, curling and impact.

Homeowners like MATICO's durability ... economy ... and 27 rich, clear colors that harmonize readily with any decorative plan.

Specify MATICO for every type of installation — apartments, industrial plants, institutions, stores and homes.

#### Get to know MATICO

See our insert in Sweet's File Architectural section 13g/MAS. For free samples, write us on your business stationery.

MATICO colors and marbleization

go clear through the tile . . . last the life of the tile.



1-832

QUALITY CONTROLLED

FLOORING

MASTIC TILE CORPORATION OF AMERICA Member: Asphalt Tile Institute Factories: NEWBURGH, N. Y. + LONG BEACH, CALIF. You can save \$570 for every 10,000 square feet in your plant with **Westinghouse Bus Duct** 

> "On a recent field survey made by our Sales Engineering Division for the application of 440-volt plug-in bus duct versus wireway, it was found that for a complete bus-duct system the installed cost was \$17.30 per 100 square feet, whereas for a complete wireway system with taps, the cost was estimated at \$23.00 per 100 square feet. This cost does not evaluate all the advantages that plug-in duct offers for ease of making taps under safe conditions without shutdown."

> > \*

The Buffalo Electric Co., Buffalo, N. Y.

+

Many plants have found in Westinghouse Bus Duct a system of power distribution impossible to match for low installed cost and high carrying capacity in limited space.

Westinghouse Duct, in completely prefabricated sections, varying in length to suit requirements, is convenient to handle and easy to hook up. The longer the run, the greater the saving.

And Duct is easily disassembled for quick expansion or changeover-critical today when equipment must operate at uninterrupted top capacity, top efficiency.

Experienced WestinghouseFieldEngineers can help you plan your secondary power distribution system. Phone your nearest Westinghouse Office, or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-30046



FIGURE YOUR APPROXIMATE COST HERE

\$570

\$570

\$570

\$570

\$570

IN THE

\$570

\$570

Square Feet	Bus Duct	Wireway	You Save
1,000	\$ 173.00	\$ 230.00	\$ 57.00
10,000	1,730.00	2,300.00	570.00
20,000	3,460.00	4,600.00	1,140.00
50,000	8,650.00	11,500.00	2,850.00
100,000	17,300.00	23,000.00	5,700.00
250,000	43,250.00	57,500.00	14,250.00



## on NORTON non-slip Floors and Stairs

- Permanently non-slip
- Extremely wear-resistant
- Non-resonant

In office, cafeteria, washrooms and throughout your plant slipping can be eliminated. Water, chemicals, oil will not remove the permanent non-slip protection provided by Norton Floors.

The extreme wear-resistance of Norton Floors to the heaviest foot traffic makes their installation an economical investment in long, trouble-free service. Also, they are quiet and comfortable to walk on.

You have four choices of Norton non-slip floor products: (1) Stair and Floor Tile, (2) Ceramic Mosaic Tile, (3) Aggregate for Terrazzo Floors and (4) Aggregate for Cement Floors.

Write for our free Catalog No. 1935 or see our Catalog in Sweet's Architectural or Engineering Files.

Worcester 6, Massachusetts



## **PRODUCT NEWS**

in. core in flexible strips which can be fitted to curves as easily as to straight areas. Price for a carton containing a 20 ft. length of molding, waterproof Sani-cement, a brush for application and instructions is \$4. Sani-base is available in black, gray, red, blue, green and yellow. Colors are permanent so that once installed, the base



molding needs no painting. An occasional waxing along with the floor will keep its finish glossy and easy to clean. Although the cement secures it to wood or tile floor and wall surfaces, the molding may be removed at any time for re-use elsewhere.

Manujacturer: Cass Products Co., 6127 N. Cicero Ave., Chicago 30, Ill.

#### METAL FLOOR BRIDGING costs builder 10 cents less installed than wood.

Introduced at the Home Builders' Show in Chicago last month, Hercules trim-looking floor bridging should prove to be a practical product in residential construction. Formed of 20 gauge rustproofed steel, the bridging has sharp prongs on each end which bite into the joists (on 16 in, center) as the two parts of the bridging are pulled down and snap-locked together. No nailing nor sawing is required. Flooring can be laid first and the bridging applied underneath afterwards. A set of ordinary wood bridging, cut from lumber on the job and nailed in place, costs



the builder about 40 cents. Installed cost for a set of the new metal braces is 30 cents. If necessary, the Hercules bridging can be removed and re-set easily during heating, plumbing or electrical alterations.

Manufacturer: Glover Mfg. and Sales, 2491 Manchester Rd., Akron, Ohio.

#### PISTOL GRIP HACK SAW can cut for unlimited distances.

Unrestricted by the usual hack saw frame, the Endless Hack Saw will cut through almost any thickness of material and for any distance. It can be used for many jobs unapproachable with an ordinary hack saw: cutting out parts of floorboards, wall panels, metal doors, etc. The tool will take any standard 10 or 12 in. blade. An *(Continued on page 232)* 



The GRANT No. 17 Double track sliding door hanger allows for simplified installation of multiple unit doors, as well as ease of operation. GRANT No. 17 hangers are the only hangers featuring Nylon outer race ball bearing wheels for *silent* operation, three adjustments, automatic alignment of doors, center hung feature, doors can never jump the track. For single doors, the GRANT No. 16 sliding door hanger is recommended, which contains all the advantages of the No. 17 hanger on a single track. (Load capacity: 50 lbs. per door)

> GRANT also manufactures : Sash Pulleys • Curtain & Drapery Hardware Drawer Slides • Stage Curtain Hardware Sheaves & Track • Hospital Cubicle Hardware

Write Dept. F2 for complete illustrated literature.





You can use Structural Clay Facing Tile almost anywhere-and with maximum ease!

That's a big claim. In fact it took the combined efforts of the Facing Tile industry's leading manufacturers to make that claim a fact.

Today that fact is of real importance to you.

It means that, with Facing Tile, you can design unhindered by material limitations. You can select materials with greater ease. And, since Facing Tile is produced in modular sizes, you can build faster, and at less cost. You can *always* be sure that the Facing Tile you use is a fine material at its very best.

To accomplish this the Facing Tile Institute works with leading architects, universities and government agencies. Research determines the colors, shapes, sizes and quality standards that will best meet your needs, both structurally and functionally.

The result is a versatile, easy-to-use product that you can get from any Institute member. And it is guaranteed to pass each of the rigid tests of quality set up to maintain the Institute's standards.

Whatever you build, any of the Institute members will be pleased to help you in planning the job. Call on them at any time, or for complete technical data on Facing Tile, write the Institute, Desk MB-2, for our new catalog 51-C.

# FACING TILE INSTITUTE

1520 18th Street, N. W., Washington 6, D. C.



RENTAL HOUSING

BELDEN BRICK CO. Canton, Ohio CHARLESTON CLAY PRODUCTS CO. Charleston 22, West Virginia THE CLAYCRAFT CO. Columbus 16, Ohio HANLEY CO. New York 17, New York HOCKING VALLEY BRICK CO. Columbus 15, Ohio HYDRAULIC PRESS BRICK CO. Indianapolis, Indiana



### GOOD NAMES TO KNOW

MAPLETON CLAY PRODUCTS CO. Canton, Ohio

METROPOLITAN BRICK, INC. Canton, Ohio McNEES-KITTANNING CO.

Kittanning, Pennsylvania NATIONAL FIREPROOFING CORP. Pittsburgh 22, Pennsylvania STARK CERAMICS, INC. Canton, Ohio WEST VIRGINIA BRICK CO. Charleston, West Virginia





Completion of the Johnson Wax Research Laboratory marks a milestone in the effective use of reinforced concrete. Created for S. C. Johnson & Son, Inc. by famed architect Frank Lloyd Wright, the 154-foot tower and related structures used 6,960 yards of concrete, reinforced by 504 tons of bars and 542 tons of Wheeling Steelcrete-solid steel mesh made from ¾-inch plate, the heaviest expanded metal produced to date. In the four views below, Steelcrete and bars are seen as used in conjunction throughout various parts of the structure.

Steelcrete for reinforcing is only one of many products for which architects and builders rely on Wheeling. In the complete line of Wheeling building materials, they know they will find products that are the ideal solution to construction problems — whether in advanced design such as the Johnson Wax Research Laboratory, or for buildings of more conventional type. THE WHEELING LINE OF BUILDING MATERIALS INCLUDES :

Steelcrete Reinforcing Mesh, Expanded Metal, Metal Lath and Metal Lath Accessories, Tri-Rib Steel Roof Deck, ExM Angle Partitions and ExM Vault Reinforcing to meet = 10 Insurance Classification.

Write for descriptive literature and technical data.

> In this dramatic night view, the 154-foot Johnson Wax Research Laboratory shows the unique construction of its alternating full floors and circular mezzanines, all cantilevered out from a single reinforced concrete core. In its 2000 tons, the tower incorporates 542 tons of Wheeling Steelcrete Reinforcing Mesh.

# WHEELING CORRUGATING COMPANY · WHEELING, W. VA.

**BUILDING MATERIAL DIVISION** 

ATLANTA

BOSTON MINNEAPOLIS

BUFFALO NEW ORLEANS CHICAGO CO NEW YORK

COLUMBUS DETROIT PHILADELPHIA RICHM

TROIT KANSAS CITY RICHMOND ST. LOUIS

# the **BIG NAME** in **HEATIN**

110

00

— for radiant or radiator heat!

Compact, Efficient-Quickly Installed!

Type 10 Gas Boiler — from 54,000 to 378,000

## -fuel-thrifty boilers add sales appeal to every job you build!

This famous name on a radiator or radiant installa-tion wins immediate acceptance from your clients. And their satisfaction — years afterwards — is good-will that pays dividends.

Compact, beautifully styled, the Mueller Climatrol gas boiler is built for today's homes . . . sized to give close-to-capacity fits for every job . . . designed for quick, easy installation . . . and built to deliver troublefree comfort for years.

Specify or recommend the Big Name in Heating — Mueller Climatrol — for all your radiator or radiant heat jobs. Your choice is backed by Mueller's 94 years of home-heating leadership. Write for our new "all product" catalog. . . . L. J. Mueller Furnace Co., 2020B W. Oklaboma Ave., Milwaukee 15, Wis.



### PRODUCT NEWS

enclosed spring returns the blade automatically after each stroke. There are no holding pins to become bent or broken, and breakage of the blade-supported in the front casing by three steel balls-is said to be very low. Manufactured



in England, the device retails in the U.S. for \$3.95.

Distributor: Ziskind Co., Inc., 49 W. 37th St., New York 18, N.Y.

#### SAFETY VALVE shuts off gas flow following earthquake or severe explosion.

In event of an explosion or earth tremor, a chainsuspended ball in the Guardian valve automatically drops down to seal the gas line and cut off gas flow outside the building. It thus greatly reduces the possibility of fire or explosion from dangerous gas leaks in earth or masonry pockets. In the valve's normal or open position the brass ball rides on a special incline clear of the gas



flow channel; when shaken by an earth shock of damage-causing intensity the ball drops on to a synthetic rubber gasket, completely sealing the outlet. The valve may be reset after removing a threaded cap. The 1 in. size for most residential applications sells for \$24, installed. Eight larger sizes up to 6 in. are also being manufactured. Manufacturer: Guardian Valve Co., Box 465-E, Redwood City, Calif.

#### **REVOLVING DOOR LENS gives one-way view.**

Equipped with a wide-angle precision ground lens, the Detector Optical Door Viewer gives the user a full picture of the immediate area around the door front at a glance, but does not allow persons outside to see in. It is designed to fit any door; the only installation requirement is the drilling of a small hole to accommodate the instrument. Stationary and revolving models are available at \$3.95 and \$4.95 respectively. The latter has a lens set in a patented movable part so that it can be swiveled to almost any position. Both viewers are made in either brass or chrome finishes.

Manufacturer: The Home Protector Mfg. Co., 8258 Melrose Ave., Los Angeles 46, Calif. (Technical Literature, page 240)

# Why Builder Ralph D. Talbott EQUIPS ALL HIS HOUSES WITH ELECTRIC RANGES



The Talbott Building Company of Balti-more, Md. sold 44 of these houses in one day. Priced at \$8,990, they have two bed-rooms, living room, dining room, and completely electric kitchen. They are known as low cost, luxury homes.

These Talbott houses in the Lochearn de-velopment have electric kitchens which in-clude electric sink and dishwasher with waste disposer, automatic electric water heater and electric refrigerator. And the automatic range—of course, it's *Electric*!

"When I build a house," says Mr. Talbott, "I make sure to install the kind of equipment my prospective purchasers will want. I've found out what they want, and the way my houses sell proves that I'm right. The equipment might vary a bit from house to house-but there's one thing goes into every house I build. That's a modern, automatic Electric Range. When a woman sees that range, she sort of takes it for granted that everything else is up-to-the-minute."

Are you equipping your houses with the cooking equipment women want-automatic modern Electric Ranges?

#### ELECTRIC RANGE SECTION National Electrical Manufacturers Association

#### 155 East 44th Street, New York 17, N.Y.

ADMIRAL . COOLERATOR . CROSLEY . DEEPFREEZE FRIGIDAIRE . GENERAL ELECTRIC . GIBSON HOTPOINT . KELVINATOR . LEDO . MONARCH NORGE · PHILCO · UNIVERSAL · WESTINGHOUSE



# **120 Reasons** why <u>RUBEROID</u> dealers are better served

One of the Ruberoid factory sales representatives shown on this map is located close to you. He's ready to supply you with all the information, service and sales aids you need to help you build business and profits with Ruberoid Asphalt and Asbestos Roofing and Siding products.

Your Ruberoid salesman can help you boost business with such sales leaders as Ruberoid TITE-ONS, the *original* interlocking, wind-defying shingles . . . Ruberoid STONEWALL Board, one of the most universal building materials ever made, Asbestos-Cement Siding and a hundred other Ruberoid products.

Besides product leadership, Ruberoid offers you the support of a powerful advertising campaign in such magazines as Time, Good Housekeeping, Better Homes and Gardens, Country Gentlemen, Successful Farming, Farm Journal, Cappers', etc. . . . and, in addition, Ruberoid is first in the roofing and asbestos siding fields with the Good Housekeeping Seal of Approval, for extra sales support.

Your Ruberoid salesman can offer you prompt, efficient service from one of Ruberoid's eleven modern plants strategically located. For a bigger and better roofing and siding year, call your Ruberoid salesman now!











#### THE LANDIA HOUSE

# ... again in 1951 LEVITT Homes provide TRACY Stainless Steel Kitchens exclusively





This TRACY Stainless Steel Kitchen offers everlasting beauty and convenience; it cannot stain, mar, chip; cabinets are extra-heavy steel, double-thick Dulux finish; sound-deadened construction, smooth corners and edges; stainless steel handles. As in past years LEVITT & SONS, Inc., stress top quality in every detail and feature of their projects, including, of course, the TRACY STAINLESS STEEL KITCHENS which bring lifetime joy, beauty and convenience to thousands of fortunate families. The breath-taking Landia development on Long Island proves again that only Levitt can out-Levitt Levitt.

All over the country TRACY STAINLESS STEEL KITCHENS surge forward in their natural growth, as featured equipment in the fast-selling houses of leading builders, and through the nation-wide system of Tracy distributors and dealers. These kitchen specialists are meeting the solid demand for the enduring beauty of satiny, easy-to-clean stainless steel — and at prices which satisfy the budget-conscious new or remodeled home program.

In its new affiliation with the internationally recognized Edgewater Steel Company, Tracy production is scheduled for expansion. Added administrative and technical resources will give added force to the Tracy slogan — "SKY HIGH QUALITY — DOWN TO EARTH PRICES."



PITTSBURGH 30, PA.





They'll never find a "bargain in lighting" by "picking fixtures". Yet you meet hundreds like this every day. And so do we.

No one fixture will solve all lighting problems.

There are, in fact, literally thousands of luminaires engineered to do specific jobs. One may be the right answer—or it may take two or three.

Good lighting combined with practical economics takes the services of a qualified lighting engineer.

Whether you plan lighting, buy lighting or install lighting, the services of a Westinghouse lighting engineer are available to you. J-04280 Westinghouse PLANNED LIGHTING PAYS

# **TODAY'S MODERN HOMES**



# ... and **Hotpoint** Leads in Modern All-Electric Kitchens and Home Laundries!

Whether you are remodeling or building a single dwelling, an apartment house or an entire subdivision, you can set the standard for Better Living in the homes you build... with Hotpoint All-Electric Kitchens and Automatic Home Laundries.

Hotpoint's labor-saving electric appliances take over-automatically-the tedious, unpleasant, time-consuming kitchen and home laundry chores of today's modern homemaker. Thus, more time and energy are conserved for the more important responsibilities.

WIT

Engineered to be the finest ... designed for the greatest utility and styled at the peak of modern custom, Hotpoint All-Electric Kitchens and Automatic Home Laundries add the distinguishing quality to the truly modern home.

RANGES . REFRIGERATORS . DISHWASHERS . DISPOSALLS. \* WATER HEATERS . AUTOMATIC WASHE

# **IODERN KITCHENS...**

44. 111

# Write Now ...

for free literature on Hotpoint Home Appliances . . . Hotpoint will gladly give you helpful counsel in kitchen and home laundry planning for your particular project.

OTHES DRYERS . ROTARY IRONERS . FOOD FREEZERS . CABINETS

100

(A General Electric Affiliate)

Hotpoint Inc.

5600 WEST TAYLOR STREET, CHICAGO 44, ILLINOIS

## TECHNICAL LITERATURE

FURRING. Screwlock Metal Furring Channel. Catalogue No. SN-3. Sanymetal Products Co., Inc. 1698 Urbana Rd., Cleveland 12, Ohio. 12 pp. 81/2 x 11 in.

Complete information on the recently developed Screwlock furring channels is presented in this publication. A handy reference chart gives essential details on methods of application for using the incombustible metal channel with materials to be attached by screws. Some of the construction materials which may be fastened to Screwlock are acoustical tiles, insulating sheets and wall board. Photographs and diagrams illustrate installations and provide drafting details.

**RADIANT HEATING.** Electriglas Computation Guide. Appleman Glass Works, Bergenfield, N. J. 28 pp. 81/2 x 11 in.

The guide makes it quite simple to work out the watt requirements and power consumption for



any room or building to be heated with the man facturer's electric glass radiant heating pane Several pages of drawings show various strutural features which must be considered. Aft the heat loss for the building is determined Btu's, it is converted into watts required. The number of panels needed to fill these requires ments can then be established easily. A practic feature of the booklet is the table from whice operation costs can be figured for installation in any section of the country.

LIGHTING. Holophane Engineering Data for Hom Lighting. Holophane Co., Inc., 342 Madison Ave New York 17, N. Y. 24 pp. 81/2 x 11 in.

Useful installation directions and performance data on many of the firm's lighting units designer for home use are covered in this folder. Amone the attractive fixtures for outdoor and indoor applications are recessed incandescent ceilin lights, fluorescent units and bed lamps. All of them feature scientifically ribbed glass diffuser which control the pattern of light efficiently wit a minimum of glare,

**BUILDING PANELS.** Architectural Porcelain En amel. The Erie Enameling Co., Architectural Div Erie, Pa. 8 pp. 8½ x 11 in.

Uses and advantages of architectural porcelai enamel are described in the booklet. Applications in store fronts, showrooms, and service stations are illustrated. Engineering details of corstruction and erection methods are explaine with large, well drawn details.

FLOORING. Dodge Vinyl Cork Tile, Dodge Cor Co., Inc., Lancaster, Pa. 8 pp. 81/2 x 11 in.

Various features of the firm's cork-based viny floor tile are described in detail in the catalogue A color chart shows the 23 patterns in which thi durable flooring is produced. Included also ar results of tests made of the tile in compariso with other hard surface floor coverings. Installa tion instructions and directions for care an maintenance are given.

ACOUSTICS. Fiberglas Textured and Perforate Acoustical Tile. AC6.A1. Owens Corning Fibergla Corp., Toledo, Ohio. 8 pp. 81/2 x 11 in.

This design information sheet includes descriptive and specification data on textured and perforated acoustical products and application bmeans of adhesive, mechanical suspension, an clipping on wood furring strips. The publicatio is one of the series awarded a certificate of merby the American Institute of Architects and Producers Council, Inc. for product literature.

DOORS. Overly Architectural Metal Product: Overly Mfg. Co., Greensburg, Pa. 8 pp. 81/2 x 11 in

The pamphlet illustrates and gives specification for combination metal door frames, jamb an trim; and tin clad doors.

(Continued on page 246)



Georgia Baptist Hospital, Atlanta, Ga.

Architects: Stevens and Wilkinson, Inc.

Contractor: Henry C. Beck Co.

### For

# Georgia Baptist Hospital, It's ADLAKE...

The Weatherproof Windows That Pay for Themselves!



YES, the ADLAKE ALUMINUM WINDOWS in handsome Georgia Baptist Hospital form a perfect weather seal against air infiltration—and ultimately they will pay for themselves by eliminating all maintenance costs except routine washing! And what's more, they'll last as long as the hospital itself!



In a test conducted by an independent research organization, an ADLAKE ALU-MINUM WINDOW was opened and closed *one-million times* —and after the millionth opening still moved as eas-

ily, and fitted as snugly, as it did before its test! Only ADLAKE WINDOWS offer the combination of woven-pile weather stripping and patented serrated guides that assures minimum air infiltration and absolute finger-tip control. They keep their smart, modern good looks and easy operation for the life of the building.

Find out how ADLAKE WINDOWS can save you money! For full information, drop a card to The Adams & Westlake Company, 1122 N. Michigan, Elkhart, Indiana. No obligation, of course.



# A basic Levitt merchandising principle on display again—at LANDIA!



This is the new LANDIA house at Jericho, Long Island, N. Y., which Mr. Alfred Levitt designed.

In true Levitt tradition, plans for the Landia Development call for a full share of built-in features . . . features such as those that have sold Levitt homes by the thousands during the past few years.

ALFRED LEVITT

One of the major features of the Landia house, in the \$13,000 price range, is the attractive and efficient General Electric Kitchen.

In this kitchen, electrical servants take over much of the drudgery

In the Landia kitchen, the dishes are washed and dried automatically in an under-the-counter G-E Dishwasher. There's a luxurious electric Range with many timesaving features. The G-E Refrigerator is *family* size. And there's a G-E Food Freezer that keeps 140 pounds of fresh-frozen foods within elbow reach.

The Levitt Landia Kitchen is another example of how successful and practical builders all over America include all-electric living by General Electric, in the houses they build. Home Bureau, General Electric Company, Bridgeport 2, Connecticut.

GENERAL

of housework. With this kitchen, families have more time for leisure and the better life!

There is no doubt about it: today's home buyer—and the buyer of the future—wants his home to be a complete home ... a home with the worksaving General Electric Kitchen.



ELECTRIC

You can put your confidence in-

### Business is on the carpet, and carpet is our business

To serve its function, carpet must complete your design and your color plan. It must also stand up for years under daily wear. Your local Alexander Smith-Masland Carpet Contractor is a carpet specialist. He can tell you which weaves, in which qualities, will give your client the necessary service. He can show you literally hundreds of patterns and colors available to you. Let his years of experience save your time and your client's money. Call on him for expert advice, as well as skilled, economical installation.

### Alexander Smith and C. H. Masland

CONTRACT CARPETS 295 Fifth Ave., New York 16, N.Y.



Grange Cooperative Warehouse, Spokane, Washington, dimen-sions 165' x 150'. Roof is placed on top of cantilevered glued laminated girders on 16' centers. Three-inch tongue and groove wood roof sheathing is attached direct to top of girders, no purlins. Only two rows of posts in the entire building. Drawings

### **Build for Efficient Production** and Low Cost, too!

Open floor areas required for efficient industrial production and low cost, permanent construction are both accomplished

with glued laminated girders of Timber Structures, Inc. These girders are made of kiln dried structural Douglas fir material. They are:

Built to any size or shape.

Dimensionally stable—no seasoning action, no maintenance problem.

Readily available --- non-critical material.

Handsome in appearance when left exposed.

Completely prefabricated and delivered ready for erection without cutting or fitting, these girders go up quickly and easily. Parapet walls may be held at minimum height with substantial savings in cost.

Timber Structures, Inc., welcomes consultation on any building problem, complex or otherwise. See your nearest Timber Structures office, or write us the details of your project. Fill in and mail the coupon for "Engineered Timbers", an illustrated booklet giving detailed information on glued laminated structural units.

-				
1				
	POI	Box 3782-B, Portlan	d 8, Oregon	
TIMBER TIMBER IMBER STRI	Offices in New Texas; Eugene, STRUCTURES, STRUCTURES, Loco UCTURES, INC 2-B, Portland 8,	York; Chicago; Kansas Oregon; Seattle and INC., OF CALIFORN OF CANADA, LTD. al Representatives Coo Oregon	City, Missouri, Dallas, Spokane, Washington IIA • Oakland, C • Peterborough, st to Coast	alifornia Ontario
TIMBER TIMBER TIMBER STR O. Box 3782 Teose send a	Offices in New Texas; Eugene, STRUCTURES, STRUCTURES, Loc UCTURES, INC 2-B, Portland 8, copy of ''Engine	York: Chicago: Kansas Oregon: Seattle and INC., OF CALIFORN OF CANADA, LTD. al Representatives Coo Oregon sered Timbers'' to	City, Missouri, Dalles, Spokane, Washington IIA • Oakland, C • Peterborough, st to Coast	alifornia Ontario
TIMBER TIMBER IMBER STRI O. Box 3782 lease send a lame	Offices in New Texas; Eugene, STRUCTURES, STRUCTURES Loc UCTURES, INC 2-B, Portland 8, copy of "Engine	York: Chicago: Kansas Oregan: Seattle and INC. OF CALIFORN OF CANADA, LTD. al Representatives Coo Oregon eered Timbers'' to	City, Missouri; Dallas, Spokane, Washington IIA • Oakland, C • Peterborough, st to Coast	alifornia Ontario
TIMBER TIMBER IMBER STR O. Box 3782 lease send a lame company	Offices in New Texas; Eugene, STRUCTURES, STRUCTURES, Loc UCTURES, INC 2-B, Portland 8, copy of "Engine	York: Chicago: Kansas Oregon: Seattle and INC., OF CALIFORN OF CANADA, LTD. al Representatives Coo Oregon eered Timbers'' to	City, Missouri; Dallas, Spokane, Washington IIA • Oakland, C • Peterborough, st to Coast	alifornia Ontario
TIMBER TIMBER IMBER STRI O. Box 3782 lease send a lame iompany iddress	Offices in New Texas; Eugene, STRUCTURES, STRUCTURES, Loc UCTURES, INC 2-B, Portland 8, copy of "Engine	York: Chicago: Kansas Oregon: Seattle and INC., OF CALIFORN OF CANADA, LTD. al Representatives Coo Oregon eered Timbers'' to	City, Missouri, Dallas, Spokane, Washington IIA • Oakland, C • Peterborough, st to Coast	alifornia Ontario Zone



The FASCO Ventilator Line is complete. Models for ceiling, inside or outside walls.

Levitt & Sons, America's largest home builders, have featured FASCO for years.

More and more women are insisting on a kitchen ventilator in their new home. They know it keeps the home fresh, clean, and free from cooking odors. They want it quiet, automatic, smartly styled, and dependable . . . in short, they want a FASCO kitchen ventilator. Easily installed. Fit all thicknesses of walls. Very in-

KITCHEN

VENTILATORS

expensive. A big home selling feature item.

WRITE TODAY FOR COMPLETE INFORMATION



The Curtis "Sno-Flake", a new indirect incandescent luminaire, is outstanding in beauty of design and efficiency. It utilizes either a 300 or 500-watt mogul base silvered bowl lamp. The functional one-piece die-cast aluminum louver completely shields the lamp neck from view, eliminating distracting and uncomfortable glare. Equally important is the fact that the louver is designed so that there are no horizontal reflecting or diffusing surfaces to collect dust.

The "Sno-Flake" is supplied complete with louver, husk, canopy, self-aligning stem and necessary wire for connecting to new or present outlet boxes. The louver is finished with high temperature baked white "Fluracite" enamel. Component parts are finished metallic aluminum baked enamel.

The "Sno-Flake" is equally effective for classroom, office, store, and general commercial illumination.

Write for Bulletin 2407 for complete specifications and details.

18%



CURTIS LIGHTING, INC., DEPT. 1 B2-07 6135 WEST 65th ST., CHICAGO, ILLINOIS

Name\_\_\_\_ Address. City\_\_\_\_ **FLAKE** 

LIG HTING, INC. 6135 West 65th Street Chicago 38, Illinois;

State.

## **TECHNICAL LITERATURE**



FABRICS. Knoll Color Guide. Knoll Associates, Inc., 601 Madison Ave., New York, N. Y. 8 x 8 in. 4 pp. \$3 per set of 9 booklets.

A stimulating approach to the coordination of contemporary drapery and upholstery textiles is found in these new fabric guides. Good sized swatches ranging from hand woven Indian spun silk to serviceable sailcloth are placed in complementary color and texture groups. Prices (often surprisingly moderate) are quoted next to each

# **CUT CLOSET CONSTRUCTION COSTS** *Completely!*



### as selected by Levitt

# for the Landia House

With the Ra-Tox Flexible Door, all the costs of standard closet construction can be eliminated. The Ra-Tox Flexible Door can be hung from wall to wall and from ceiling to floor . . . taking the place of the closet wall section otherwise needed. You save the complete cost of special closet framing, wall surfacing, trim, hardware, fitting and finishing. The cost of the closet is only the cost of the Ra-Tox Flexible Door . . . an important dollar saving for every bedroom unit you build. First introduced less than one year ago, thousands of Ra-Tox Flexible Doors are already installed in Levittown and in homes throughout the country. Write for complete information.

#### **RA-TOX FLEXIBLE DOOR FEATURES:** \* LOW COST . . . supplied ready to install, with all hardware and finish painted.

- ★ BEAUTIFUL APPEARANCE ... harmonizes with any room ... supplied in wide color range or natural wood finish.
- QUALITY CONSTRUCTION . . . made of strong special basswood splints woven together with tough seine twine.
- **VENTILATION** . . . air circulates through
- SAVES SPACE . . . door folds to door frame.
- ★ LONG LIFE . . . unique design plus quality materials assure long wear-life.
  ★ EASY OPERATION . . . moves quietly and smoothly on durable nylon glides.



#### **RA-TOX FLEXIBLE** DOORS ALSO USED FOR ...





fabric. A distinctive hand print acts as key de sign for each set. One of the designers repre sented, Eszter Haraszty is to be credited for the thoughtful conception of the series.

METAL COMPARTMENTS. Sanymetal Toile Compartments. Catalogue No. 88. The Sanymeta Products Co., Inc., 1705 Urbana Rd., Cleveland 12 Ohio. 20 pp. 81/2 x 11 in.

Those concerned with planning public washroom will find this new booklet helpful. Illustrated with diagrams and colored halftones, the cata logue covers toilet and dressing room compart ments, shower stalls and cabinets, and hospita cubicles. It contains 20 color chips and a tabular summary of the materials and finishes, ways the five types of toilet compartments are used, and specification data for each style. The drawings include construction details, elevations and installation layouts.

PLASTIC SURFACING. G. E. Textolite Plastics Surfacing. CDL-18. General Electric, Chemical Dept., Pittsfield, Mass. 16 pp. 81/2 x 11 in.

The bulletin illustrates the new line of Textolite plastic surfacing patterns in full color. Applications described for this high pressure laminate include kitchen counters, tables, and lavatory vanities. Complete construction details are presented, and the material's abuse-resisting characteristics itemized.

LUMBER. Where to Use Douglas Fir Lumber. West Coast Lumbermen's Assn., 1410 S.W. Morrison St., Portland 5, Ore. 16 pp. 81/2 x 11 in.

This handsomely illustrated publication should be a useful reference for many in the construction industry. It covers the properties, characteristics and grades of Douglas fir, gives recommended grades for interior and exterior applications, and points out hundreds of structural and industrial uses of this versatile softwood.

**CENTRIFUGAL PUMPS.** Goulds Pumps. Bulletin 636.1. Goulds Pumps, Inc., Seneca Falls, N. Y. 8 pp. 81/2 x 11 in.

Details on the company's new self-priming centrifugal pump line are given in this bulletin. Built without valves, the pumps are said to be as efficient as standard centrifugal units. They are made in sizes ranging from 1/4 to 5 h.p. with open and closed impellers, and can handle suction lifts up to 25 ft.

KITCHENS. The World's Newest Kitchen Ideas. Mullins Mfg. Corp., Warren, Ohio. 24 pp. 11 x 81/2 in.

Illustrated with color photos and renderings, the booklet shows the entire Youngstown line and gives specifications and features. It includes sections on the Jet Tower dishwasher and a food waste disposer. Ideas on kitchen planning, meal preparation and clean-up, and unusual uses of steel kitchen equipment are also described.

# SCHARE: LOCKS

MOUNT ZION HOSPITAL San Francisco, Calif. ARCHITECT: MILTON T. PFLUEGER SKIDMORE, OWINGS & MERRILL ASSOCIATE ARCHITECTS CONTRACTORS: ENGINEERS LIMITED

## ... used in the world's finest buildings

SCHLAGE LOCK COMPANY San Francisco New York

ALL DESCRIPTION

The day and night wearing traffic throughout great buildings demands Schlage Cylindrical Locks ... Proved by over 25 years experience and use, Schlage Locks are today the highest achievement of the lockmaker's skill.

Schlage Saturn Design



For More Power at Less Cost to FACTORIES APARTMENTS OFFICE BUILDINGS

# CYCLOTHERM steam generators

Performance proves Cyclotherm years ahead in steam generation efficiency. The exclusive Cyclonic combustion principle produces more heat than conventional generators and does it faster and more economically.

The reasons are many, the proof is yours for the asking, write Dept. D.

**CYCLOTHERM** 

CORP.

Oswego, N.Y.

Boilers are designed for oil or gas operation from 18 thru 500 h.p., 15 to 200 lbs. operating pressure.

Years Ahead in Steam Combustion .

# SPECIFICATION AN

The advertising pages of The Magazine of BUILDING are th recognized market place for those engaged in building. house or any building could be built completely of product, advertised here. While it is not possible to certify building products, it is possible to open these pages only to those manu facturers whose reputation merits confidence.

	1000
dams-Rite Mfg, Co	214 24 222 196 31 225 81 205 52 185 164
tion) 148, Automatic Sprinkler Corp. of America	149 150
endix Home Appliances, Inc etter Homes & Gardens Sostitch, Inc Bruce, E. L., Co	224 174 180 2
abot, Samuel, Inc ambridge Tile Manufacturing Company, TheCov anvas Awning Institute, Inc., The Carr, Adams & Collier Company carrier Corporation	208 er II 202 172 173
Acco Steel Products Corporation	4, 5 212 213 12 68 171
Coleman Company, Inc., The	157 194 165 37
Co-Two Fire Equipment Co Opp Grane Co Opp Croft Steel Products, Inc Opp Curtis Companies	66 p. 35 196 181
Jurtis Lighting, Inc      Syclotherm Corporation	245 248
Day-Brite Lighting, Inc	2,03 202 44 188 204 212
Idwards Co., IncCove Iljer CompanyCove Ilkay Manufacturing Co	67 r III 212
Facing Tile Institute      'asco Industries, Inc      'iat Metal Manufacturing Company      Fir Door Institute      Fileet of America, Inc      Flynn, Michael, Manufacturing Company	229 244 60 58 70 69
Formica Company, The	252
## JYING INDEX

Fred Schmid Associates (Rexall Drug Co.)	4
Frigidaire Division (General Motors Corporation)206, 20	7
Conseal Floatnia Company 47 199 910 94	9
Seneral Matter Company	4
Seneral Motors Corporation ( <i>Friguative Division</i> )200, 20	0
Seneral Portland Cement Co. ( <i>Trinity Division</i> )	0
Frand Rapids Store Equipment Co	4
sramte City Steel Company	4
Frant Pulley & Hardware Co 22	0
sraybar Electric Co 15	4
rinnell Company, Inc	7
Sustin-Bacon Manufacturing Co	
Iarnischfeger Corp 15	5
Hauserman, E. F. Company, The 1	8
laws Drinking Faucet Co 24	4
Iotpoint, Inc	9
Hough Shade Corporation, The 24	6
Insulte Division (Minnesota and Ontario Paper Company) .53, 20	12
nternational Oil Burner Co 19	4
ohns-Manville	4
Karagheusian, A. & M., Inc 7	1
Kawneer Co., The 160, 16	1
Keashey & Mattison Company 6	1
Kelvinator Division (Nash-Kelvinator Corp.)	8
Kennedy, David E., Inc166, 16	57
Kinnear Manufacturing Company, The 7	6
Kitchen Maid Corporation, The 19	12
Kwikset Locks, Inc	1
Loador Electric Manufacturing Corporation	7
Libber Owens Ford Glass Company	)8
Ludman Corporation (Auto-Lok Aluminum Awning Win-	0
dows)	19
Lumber Fabricators, Inc 17	75
	19
Magazine of BUILDING 12	102
Marley Co	12
Marlo Coil Co	14
Mastic Tile Corporation of America	02
Medusa Portland Cement Company	55
Mengel Company, The	40
Mesker Brothers	66 10
Miller, Herman, Furniture Company	19
Minneapolis-Honeywell Regulator Company	11
Min 10 · · Dener Comments (Insulity Division) 52 90	70
Minnesota and Ontario Paper Company (Insulite Division) .53, 20	10
Minnesota and Ontario Paper Company (Insulite Division) .53, 20 Mississippi Glass Company	
Minnesota and Ontario Paper Company (Insulite Division) .53, 20 Mississippi Glass Company	
Minnesota and Ontario Paper Company (Insulite Division) .53, 20 Mississippi Glass Company	94
Minnesota and Ontario Paper Company (Insulite Division).53, 20   Mississispipi Glass Company	11 94 17
Minnesota and Ontario Paper Company (Insulite Division).53, 20   Mississispipi Glass Company	11 94 17 32
Minnesota and Ontario Paper Company (Insulite Division).53, 20   Mississispipi Glass Company	11 94 17 32 58
Minnesota and Ontario Paper Company (Insulite Division) .53, 20   Mississispipi Glass Company	11 94 17 32 58 8
Minnesota and Ontario Paper Company (Insulite Division).53, 20   Mississispipi Glass Company	11 94 17 32 58 8 33
Minnesota and Ontario Paper Company (Insulite Division).53, 20   Mississispipi Glass Company	11 94 17 32 58 8 33 93
Minnesota and Ontario Paper Company (Insulite Division).53, 20   Mississispipi Glass Company	11 94 17 32 58 8 33 93
Minnesota and Ontario Paper Company (Insulite Division).53, 20   Mississispipi Glass Company	11 94 17 32 58 8 33 93 10 95
Minnesota and Ontario Paper Company (Insulite Division).53, 20   Mississispipi Glass Company	11 94 17 32 58 8 33 93 10 95 6
Minnesota and Ontario Paper Company (Insulite Division).53, 20   Mississispipi Glass Company	11 94 17 32 58 8 33 93 10 95 6 55
Minnesota and Ontario Paper Company (Insulite Division).53, 20   Mississispipi Glass Company	11 94 17 32 58 8 33 93 10 95 65 75
Minnesota and Ontario Paper Company (Insulite Division).53, 20   Mississispipi Glass Company	11 94 17 32 58 8 33 93 10 95 6 65 75 98

O'Brien Corp	oration,	The	216
Otis Elevator	Compa	ny	251



## SECURITY MODEL SFA AUTOMATIC GAS-FIRED HI-LO COMBINATION



# **TWO-IN-ONE** Furnace

For Closet Installations Eliminates Duplicate Stock...Completely Factory-Assembled in One Package!



For Basement Installations

Yes, sir ... TWO-IN-ONE because only standard Security SFA Furnaces need be kept in stock. Factory-assembled and wired to serve in closet-type or usual basement-type installations. Return air duct connector for basement application is shipped knocked down ... can be attached to the back or to either side in a matter of minutes.

All controls are located in one compartment. Quick, accurate adjustments . . . easy replacements are expedited without disturbing other wiring. Builtin filter racks can be placed at installer's option.

Built of top-quality materials throughout. Complete information, specifications, prices and discounts available. Write today !

SECURITY MANUFACTURING CO. 1630 Oakland Ave. Kansas City 3, Mo.

#### SPECIFICATION AND BUYING INDEX

Overhead Door Corporation	Cove	r IV
Overly Manufacturing Company		3.
Owens-Corning Fiberglass Corporation		19
Owens-Illinois Glass Co. (American Structural Products	Com-	
pany, Subsidiary)		203
Peelle Company The		1
Pittshurgh Plate Class Company	215	911
Porete Mfg Co		105
Partland Cement Association		178
Pratt & Lambart Inc		201
Prefabricated Home Manufacturers Association		79
Pyle National Company The (Multi, Vent Division)		155
ryte-rational company, the (matter on Division)		100
Remington Rand		210
Revere Copper and Brass, Inc		
Rexall Drug Co. (Fred Schmid Associates)		214
Rider Publisher, Inc., J. F		214
Robertson, H. H., Company		153
Roddis Plywood Corp		46
Rohm & Haas Company		55
Rowe Manufacturing Company		147
Ruberoid Company, The	234,	235
Russell & Erwin Div. (The American Hardware Corp.).		225
Sargent & Company		220
Schlage Lock Company	*****	247
Security Mig. Co		250
Simpson Logging Company		49
Smith, Alexander-Masiand, G. H		243
Smith, A. O., Corporation		79
Standard Dry Wall Products Inc		196
Standard Dry wall Froducts, Inc		100
Stanley Works, The		45
Surface Combustion Corneration		101
		1.
Taco Heaters, Inc		240
Tile Council of America		35
Timber Structures, Inc		244
Tracy Manufacturing Company		236
Trane Company, The	· · · · ·	200
Trinity Division (General Portland Cement Co.)		208
Truscon Steel Company	• • • • • •	190
Tyler Fixture Company		196
Unistrut Products Co		56
United States Air Conditioning Corporation	5	0, 51
United States Plywood Corporation	20, 184	, 218
United States Steel Corporation		59
U. S. Steel (National Tube Company)		(
U. S. Stoneware		48
Universal-Rundle Corporation		209
Villian Comparting The		100
Vikan Tile Co		165
Virsinia Matal Products Corn		16
Vonnegut Hardware Company Von Duprin Division		150
Vonnegut Hardware Company, von Duprin Division		10.
Walworth Company		7
Wasco Flashing Company		22:
Waterfilm Boilers, Inc	• • • • • •	30
Weatherstrip Research		21:
Westinghouse Electric Corporation21,	33, 227	, 23
Wheeling Corrugating Company	230	, 23
Wilson, Grant, Inc.		18
Wood Conversion Company		18
wood-Mosaic Co., Inc		2
York Corporation		20
Zurn I. A. Mfg. Co		1
Autilia de das intiges colos es		





### AN ELEVATOR RIDE YOU'LL NEVER TAKE

Riding full speed on top of an elevator, to inspect it in action, is only one phase of the many services that keep Otis elevators performing like new—year after year! Otis service is engineered-service by the maker that prevents slowdowns and breakdowns... extends elevator life by 50%...eliminates expensive, unexpected repair bills... keeps replacement parts available over 60 years... supplies field-trained men having an aggregate of 20,000 years' elevator experience... provides 24-hour-a-day service on a nation-wide basis through 263 Otis offices. All, because we never lose interest in the performance of an Otis installation. Add Otis *elevator* service—which is unequaled anywhere—to Otis *elevator* research, planning, engineering, manufacturing and construction and you have the reasons why the Otis trade-mark is the symbol of the world's finest elevatoring. Otis Elevator Company, 260 11th Ave., New York 1, N. Y.





# FORMICA IN THE BATHROOM Where to use it - how to get it !

Few ideas in the history of building and decorating have so quickly captured the hearts of homemakers as the Formica Vanitory.\* Here is a basic idea conceived in the belief that every home needs beautiful, durable, usable space around the lavatory.

The practical use of colorful Formica in an endless number of Vanitory variations places no limit on design imagination.

Hundreds of skilled specialists in the fabrication of Formica are ready the country over to build to your specifications a single unit or dozens of Formica Vanitories. Look under "Plastics" in your classified phone book. If you fail to find a Formica Fabricator listed, write us for recommendation.

You will want a copy of the colorful idea folder titled, "What's New in the Bathroom." It's yours for the asking. Write Formica, 4631 Spring Grove Ave., Cincinnati 32, Ohio.

\*Trade Mark

**Beauty Bonded** 

Illustrated Vanitory Fabricated by eautility Corporation, Chicago, Ill.

4 REASONS WHY FORMICA IS YOUR BEST BUY!

Thirty-seven years continuous production experience. "JUST AS GOOD" IS A FABLE. LOOK FOR THE LABEL. INSIST ON GENUINE BEAUTY BONDED FORMICA.

Only genuine Beauty Bonded Formica has:

Newest and largest selection of . . .



Clear, clean, unclouding color patterns with . .



## For Those Who Expect a Lot for Their Money

You can't *see* all the quality features of Eljer Brass Fittings unless, of course, you subject them to various laboratory tests. But quality *is* there . . . and to such a degree that your clients, who are entitled to expect a lot for their money, will be more than satisfied.

The finest of materials ... modern, efficient equipment and machinery ... craftsmen highly skilled in their trades ... all contribute to this high standard of quality established by Eljer. To *you*, this means dependability and service from the items you specify. So be sure to specify the best . . . specify Eljer Fittings . . . designed for Eljer Fixtures.

#### A COMPLETE LINE

The fitting illustrated above . . . E-9430-R, C. P. Over-rim Bath Filler with Drop Spout ... is a popular item in Eljer's complete brass line. All moving parts are completely and easily renewable. For full descriptions of all Eljer Fittings ask your Eljer Distributor for a copy of Eljer's Brass Goods Catalog or write to Eljer Co., Ford City, Pa.



It pays you, it pays us-because we specialize in Plumbing Fixtures and Brass



